

Official TOD Guideline

রেজিস্টার্ড নং ডি এ-১

বাংলাদেশ



গেজেট

অতিরিক্ত সংখ্যা
কর্তৃপক্ষ কর্তৃক প্রকাশিত

বুধবার, মে ২৮, ২০২৫

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
গৃহায়ন ও গণপূর্ত মন্ত্রণালয়
প্রজ্ঞাপন

তারিখ: ১৪ জ্যৈষ্ঠ, ১৪৩২ বঙ্গাব্দ/ ২৮ মে, ২০২৫, খ্রিষ্টাব্দ

এস.আর.ও. নং ১৮৭-আইন/২০২৫।—যেহেতু Town Improvement Act, 1953 (E. B. Act XIII of 1953) এর section 73 তে প্রদত্ত ক্ষমতাবলে, সরকার, রাজউক এর এখতিয়ারাধীন ১৫২৮ বর্গকিলোমিটার (৫৯০ বর্গমাইল) এলাকায় ডিটেইল্ড এরিয়া প্ল্যান (ড্যাপ) (২০২২-২০৩৫) প্রণয়নের কাজ সম্পন্ন করেছে এবং সরকারের অনুমোদনক্রমে উহা এস.আর.ও. নং ২৮২-আইন/২০২২ তারিখ ২২ আগস্ট, ২০২২ মূলে এস.আর.ও. নম্বরযুক্ত গেজেট প্রজ্ঞাপন, দ্বারা প্রকাশিত হয়েছে; এবং

যেহেতু ডিটেইল্ড এরিয়া প্ল্যান (ড্যাপ) (২০২২-২০৩৫) এর তফসিল (প্রথম খণ্ড) এর অনুচ্ছেদ ৩.১২.১ এ বিস্তারিত Transit Oriented Development (TOD) গাইডলাইন প্রস্তুতকরণ ও প্রকাশের উল্লেখ রহিয়াছে এবং তদনুযায়ী রাজউক উক্ত TOD গাইডলাইন প্রস্তুত করিয়াছে; এবং

যেহেতু উক্ত ট্রানজিট ওরিয়েন্টেড ডেভেলপমেন্ট (টিওডি) [Transit Oriented Development (TOD)] গাইডলাইন সরকার কর্তৃক অনুমোদিত হইয়াছে;

সেহেতু Town Improvement Act, 1953 এর section 74 এর sub-section (1) এর বিধান মোতাবেক, সরকার, উক্ত Transit Oriented Development (TOD) গাইডলাইন অনুমোদনের বিষয়টি এতদ্বারা প্রকাশ করিল, যথা:—

১। শিরোনাম, প্রয়োগ ও প্রবর্তন।—(১) এই গাইডলাইন ট্রানজিট ওরিয়েন্টেড ডেভেলপমেন্ট (টিওডি) [Transit Oriented Development (TOD)] গাইডলাইন নামে অভিহিত হইবে।

(২) এই গাইডলাইন, রাজউক এর এখতিয়ারাধীন ১৫২৮ বর্গকিলোমিটার (৫৯০ বর্গমাইল) এলাকায় ডিটেইল্ড এরিয়া প্ল্যান (ড্যাপ) এলাকায় প্রয়োগযোগ্য হইবে।

(৫৩৪৭)

মূল্য : টাকা ৬০.০০

(৩) এই প্রজ্ঞাপন অবিলম্বে কার্যকর হইবে।

২। **তফসিল।**—এই গাইডলাইনের তফসিল হইবে নিম্নরূপ, যথা:—

“তফসিল

Transit Oriented Development (TOD) গাইডলাইন”

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About This Guidelines

Transit-oriented development, commonly known as TOD, is a planning and design strategy that focuses on creating urban development patterns which facilitate the use of public transport, walking and cycling, as primary modes of transport. TOD has supported vibrant, diverse, and livable communities in major cities in other countries. The first and foremost formal definition comes from Peter Calthorpe (1993) refers TOD as a mix-use community within an average of a 10-minute walking distance from a transit stop and core commercial area. Also considered this distance to be the maximum distance most people are willing to walk to a station for. This is the precinct within which residential and the other land uses had a higher chance of using the transit.

Usually, TOD considers the development around railway stations and sometimes for citywide. This contributes to increasing ridership of mass transit system and reducing private vehicle ownership. TOD is one kind of urban development where public transit stations are considered as a center and gain maximum land use by developing mixed land use around the center. Transit-land use synergy is a must to guide developments around the station and along the corridors for MRT stations, however, no guideline existed to implement TOD for Dhaka. RAJUK has taken initiatives to formulate the TOD guidelines under technical support from JICA to support the high-quality transit system and achieve the high-quality living environment.

The Purpose of the Guidelines

The main purpose of the guidelines is (1) to show basic and common concept of TOD in Dhaka. and (2) to guide planning, implementing and controlling development around transit stations.

The guidelines will guide for regulating development of the area around station with the following directions;

- densifying by both public and private sectors and in terms of increased floor area ratios (FAR), guiding land use, etc.
- inviting mix use to ensure a rich mix of choices, locational efficiency, value recapture, livability, and financial return.
- improving the transit system and connectivity through developing pedestrian and cycling networks, parking facility, etc.
- considering the transit capacity, plot sizes and street widths, innovative real estate negotiations, affordable housing near transit stations, or public space design with high-quality public realm.

Main target users would be;

- Public authorities (RAJUK, DTCA)
- Transit agencies and companies (DMTCL, BRTA, BRTC, DMP, etc.)
- Local governments (DSCC, DNCC, Municipalities, etc.)
- Private developers

Relationship of the Guidelines with related Policies and Plans

TOD Guidelines will support formulating TOD plans and projects basically based on the existing laws and regulations in Dhaka. The largest basis followed for TOD Guidelines is Detailed Area Plan (2022-2035) (herein after DAP), Dhaka Structure plan 2016-2035 first mentioned the importance of TOD in Dhaka. Following it, DAP is the first and only plan for Dhaka that indicates policy on TOD as land use plan and regulations around transit stations as “TOD zone”. Although TOD Guidelines basically follow DAP, it also provides recommendations for updating the current laws and regulations necessary to make TOD more feasible in Dhaka.

It is expected that the TOD Guidelines will become an official document in the form of an attachment to the next updated DAP. The TOD Guidelines themselves, however, will have no law enforcement and are assumed to be in a less effective position than other official policy and planning documents. Therefore the contents of the TOD Guidelines must be reflected to the policies and plans related to land use and transport in Dhaka such as DAP and Strategic Transport Plan for realizing TOD.

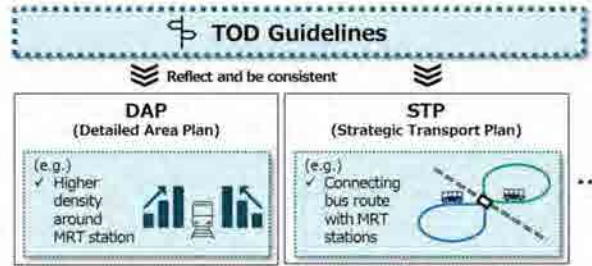
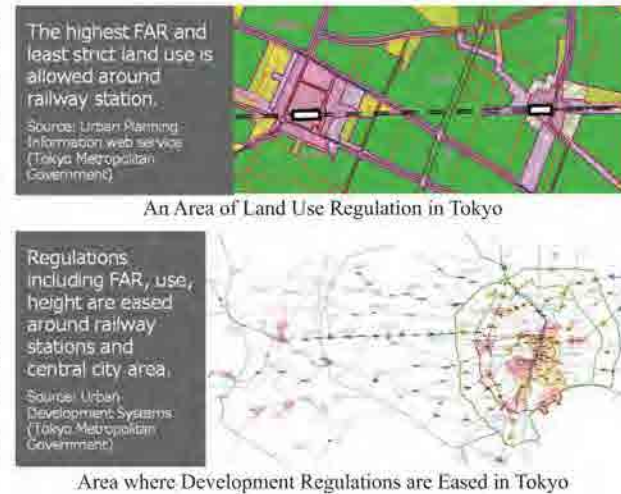


Figure 0.1: Image of Relationship of TOD Guidelines with Related Policies and Plans

For example, in Tokyo, where urban railway was developed more than 100 years ago, the concept of TOD is thoroughly reflected in the urban planning system, even though the word “TOD” is not used. The regulatory documents in Tokyo that define land use zones set the zones where the highest FAR is allowed mainly around railway stations. In the documents in Tokyo that define deregulation, such as FAR bonuses conditional on public contribution, the deregulation zones are set mainly around railway stations. Likewise, it is expected that TOD concepts will be reflected in the main regulatory and planning documents in Dhaka.



Area where Development Regulations are Eased in Tokyo

Figure 0.2: Examples of Policy and Planning Documents in Tokyo that incorporate TOD

Part 1: TOD in Dhaka

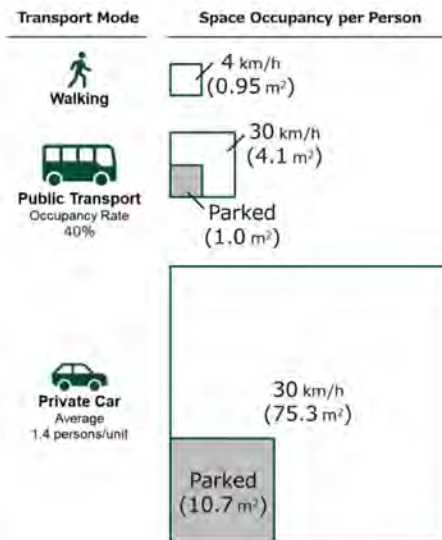
1.1 Why is TOD for Dhaka?

1.1.1 MRT Development in Dhaka

Dhaka's rapid growth in population and economic has simultaneously caused severe traffic congestion. The average vehicle travel speed in Dhaka dropped to just 7 km/h in 2018, and the economic loss caused by the traffic congestion was estimated to be 3.2 million hours per day, amounting to billions of US dollars. Several other factors specific to Dhaka may also have caused this traffic congestion; one of the largest population densities of any city in the world, unplanned and irregular urbanization, and the absence of mass transit system.

One of the most effective ways to improve traffic congestion is to encourage a modal shift from private cars to the use of public transport. The private car is a mode of transport that consumes large amounts of urban space. For example, according to a study conducted by the Vienna University of Technology, public transport (buses) consumes 4.1 m² of urban space to transport one person at a speed of 30 km/h, while private cars consume 75.3 m², 18 times more urban space than buses.

The first Mass Rapid Transit (MRT), Line 6, in Dhaka has been in operation since the end of 2022. The MRT will continue to be developed in Dhaka, with a total of 49 stations to be constructed along MRT Line 6, 1, and 5 North. The promotion of public transport use is, however, limited by the development of mass transit infrastructure alone. Coordinated development is necessary around mass transit stations, such as making land use more conducive to attracting passengers and developing a multi-layered public transport network that connects to the stations. Looking to other cities in neighboring countries, MRT boosted land value and it brought rapid increase in urban development demand. In addition, most of the MRT stations will be constructed in built-up areas in Dhaka. Proper spatial development planning and control at the right time must be triggered before land price increases too much and land acquisition gets difficult.



Source: Edited based on a research from "Hermann Knoeflacher, Zur Harmonie von Stadt und Verkehr, Boehlau Verlag, 1996"

Figure 1.1: Space Occupancy per Person for Each Transport Mode

1.1.2 TOD and Its Expected Benefits

Transit-Oriented Development (TOD) seeks to implement a more sustainable approach to urban planning and land use. By optimizing the use of land around transit stations, the principles of smart growth are followed. TOD is deliberately planned higher-density, mixed-use development within walking distance of a transit station by managing transport and land use in an integrated manner. TOD has resulted in higher levels of transit ridership, fewer automobile trips, lower car ownership rates than other types of development, reduced air pollution, enhance pedestrian friendly design, improve living environment, ensure economic development, and revenue generation for public sector in major cities in other countries.

1.1.3 Expected Benefits from TOD in Dhaka

As noted above, creating more convenient urban transport and space, more demands of public transport passengers and activities, and more profits for local economy are expected by managing transport and land use through TOD. In addition, it should be noted that these benefits are not independent of each other, but are possible to make a relationship that positively affects each other.

On the other hand, the cost of developing convenient urban transport and space in TOD is very high, requiring significant public investment in MRT development as well as in other public transport networks and urban infrastructure. With regard to MRT, the overall cost of the MRT project will be so high that even if the main operator, DMTCL, earns revenue not only from fares but also from non-rail business such as real estate development and advertising revenues at MRT trains and stations, it may not be sufficient to recover the entire costs.

Therefore, in order to continuously generate the benefits from TOD, it is also necessary to make coordination in various stakeholders so that development profits are returned from the beneficiaries to the infrastructure developer, creating a positive cycle of the benefits from TOD.

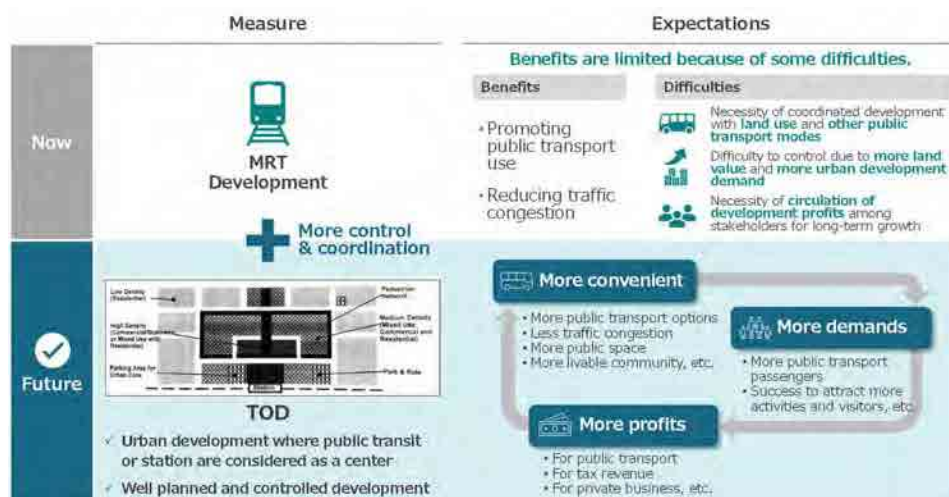


Figure 1.2: Expected Benefits from TOD in Dhaka

1.1.4 Necessity of the TOD Guidelines

The guidelines on TOD are essential to regulate the development around stations. The guidelines are expected to solve the problem on TOD planning and implementation through applying coordination mechanism between various stakeholders including government agencies and private sectors. Furthermore, these TOD guidelines are meant to provide the entire community of TOD stakeholders – transit agencies, local governments, regional planners, community groups, developers, and others – with a common vocabulary and frame of reference.

1.2 Composition of TOD Guidelines

The TOD Guidelines proposes to construct a framework of TOD consisting of principles, planning and implementation. The purpose of showing “Principle” is to enable related people have common general understanding on TOD in Dhaka in conceptual level. “Planning” methodology will be proposed to apply the principles of TOD to a particular area to plan and actual TOD development through coordination with stakeholders. “Implementation” methodology support realization of the principles and planning in implementation stage, by providing basic menu of urban development approaches.

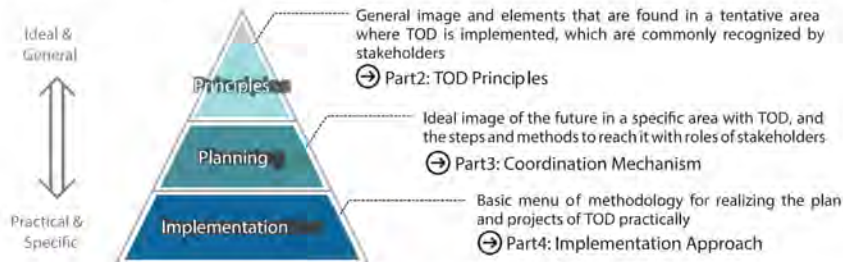


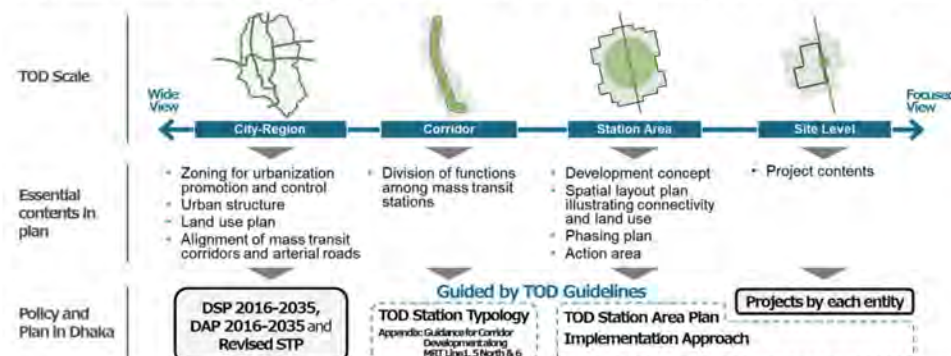
Figure 1.3: Framework of TOD Guidelines

1.3 TOD Scale

TOD aims to structure urban growth at a different planning scale from regional to local, in response to the diverse sites served by transport and different types of transit that serve communities. World Bank classified TOD at four different scale:

- i) city-region,
- ii) corridor,
- iii) station area, and
- iv) site level

The TOD Guidelines show policy and planning methods mainly at the scale of the station area level and below, based on the policies of DAP including the TOD zone. As for the corridor level, TOD station typology is presented that categorizes each station and shows how each type of station should be developed. In addition, basic planning process of Guidance for Corridor Development is presented in Appendix, which considers the area along a MRT line as an integrated area, which gives concept to each TOD Station Area Plan. It is expected to be formulated with localized surveys after operation of MRT.



Source: BD-TOD made the figure based on TRANSIT-ORIENTED DEVELOPMENT IMPLEMENTATION RESOURCES & TOOLS published by World Bank (2018)

Figure 1.4: Scales of TOD

1.4 TOD Station Typology

1.4.1 Concept and Purpose

TOD is not “one size fits all”. The relationship between transport and development is shaped by a variety of local and regional factors. On the other hand, there is also a limit to managing each of the many stations in a separate way. There are 47 MRT stations along MRT Line 1, 5 North and 6 in total, if two overlapping stations are counted as one each. Making types is, therefore, necessary for efficient management. The TOD Guidelines analyze the station areas along the MRT lines as well as guide all MRT stations in Dhaka including the ones to be developed in the future. Based on the situation above, following two concepts are set for making TOD Typology, 1) Making station types without too many types with a certain range for each type, and 2) Using data-driven process analyzing local and regional factors of the target stations in Dhaka. To connect the typology to guiding TOD developments in Dhaka effectively and avoid focusing on just categorizing types, the purpose of TOD Station Typology is set as “To balance land use and transport mode around transit stations according to the characteristics of areas in Dhaka”.

1.4.2 Classification

After overlaying several data sets for each station area in Dhaka which satisfied the requirements 1) relationship to the purpose, 2) accessibility to data, and 3) objectivity of data, two important factors were found to organize station classification, which are “Density” and “Use Type”. Scores of density and use type (the ratio of non-residential) respectively were calculated based on several indicators within walking distance of the stations. Since the development stage of suburban station areas (greenfield group) are quite different from built-up areas in the center area of Dhaka (brownfield group), those two groups were compared and plotted separately.

Seven types representing all 47 MRT stations planned in TOD stations of Dhaka are classified under seven different typologies as the result of the data-driven analysis:

1. Regional Center
2. Urban Center
3. Urban Neighborhood
4. Institution



Figure 1.5: TOD Station Type Matrix

5. Suburban Center
6. Suburban Neighborhood, and
7. Suburban Employment.

Current station area characteristics do not always represent the communities' intention for the future. As residents and employers move in and out of the area, and as development progresses, individual station classifications will need to be updated. Drastic changes to the system could require the typology to be entirely reorganized, to possibly include new station types.

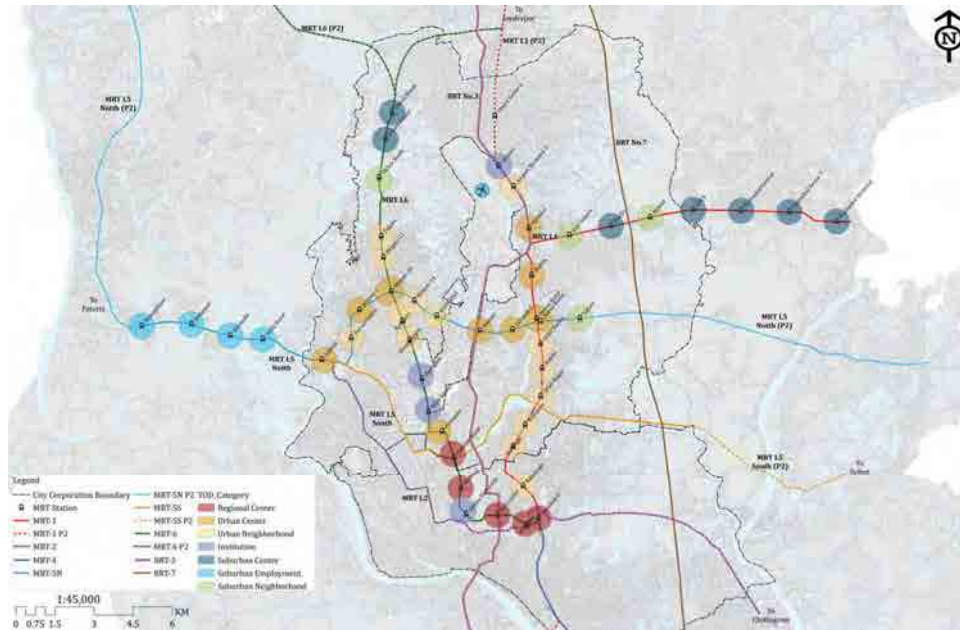


Figure 1.6: Distribution of TOD Station Type

1.4.3 Directions by TOD station type

TOD Station Type	Brownfield Group				Greenfield Group		
	Regional Center	Urban Center	Urban Neighborhood	Institution	Suburban Center	Suburban Neighborhood	Suburban Employment
Density	High	High-middle	Middle	Low			
Main Types of Land Use	Non-residential	Mixed Use	Residential	Non-residential	Mixed Use	Residential	Non-residential
Walking, Cycling, and Transit Connection	Promoted				Promoted		
Parking	Not promoted	Not promoted, except at the end of a transit line			Park & Ride is promoted		

Figure 1.7: Comparison of appropriate TOD characteristics by TOD station type

Table 1.1: Proposed General Directions by TOD Station Type (1/2)

TOD Type	Regional Center	Urban Center	Urban Neighborhood	Institution
Typical definition	- High dense - Mostly non-residential	- High - middle dense - High mixed use	- Middle dense - High residential	- Middle dense - Mostly non-residential
Multimodal direction 	- Provide infrastructure for a variety of public transport modes (e.g., bus lanes & stop, rickshaw stop, crosswalks) - Enhance drop-off access for vehicle passengers - Avoid surface parking and utilize structured parking	- Provide infrastructure for a variety of modes: (e.g., bus lanes & stop, rickshaw stop, bicycle lanes & parking, crosswalks) - Enhance drop-off access for vehicle passengers - Avoid surface parking and utilize structured parking - Manage traffic demand	- Provide clear connections to on-street transit - Enhance bicycle network - Manage traffic demand (e.g., time-limited traffic)	- Provide infrastructure for a variety of public transport modes: (e.g., bus lanes & stop, rickshaw stop) - Enhance drop-off access for vehicle passengers
Walkability direction 	- Maintain public space - Provide and maintain infrastructure for high pedestrian use (e.g., wide sidewalks)	- Provide key pathways to increase connectivity - Create and maintain public space - Provide infrastructure to encourage comfortable walking	- Build connections to existing pedestrian networks - Maintain public space - Provide sidewalks and bicycle infrastructure connecting to main activity centers	- Maintain public space - Connect developments to pedestrian uses - Provide infrastructure to encourage comfortable walking
Development direction 	- High FAR - Avoid large surface parking lots	- High FAR - Encourage mixed use - Multi-story housing complex - Avoid large surface parking lots	- Multi-story housing complex - Avoid large surface parking lots	Include complementary uses for commuters such as places to pick up necessities as well as sit-down and take-out lunches
Local examples	Motijheel 	Banani 	Pallabi 	Dhaka University 

Table 1.2: Proposed General Directions by TOD Station Type (2/2)

TOD Type	Suburban Center	Suburban Employment	Suburban Neighborhood
Typical definition	- Middle dense - High mixed use	- Less dense - High non-residential	- Less dense - High residential
Multimodal direction 	- Provide infrastructure for a variety of modes (e.g., bus lanes & stop, bicycle lanes & parking, crosswalks) - Enhance drop-off access at locations near main streets - Provide multimodal networks including on-street transit	- Make station known and visible by pedestrians from work centers and street network - Provide space for Park and Ride	- Provide clear connections to on-street transit - Enhance bicycle network - Provide space for Park and Ride
Walkability direction 	- Provide safe, visible connections around station and neighborhood streets - Provide alternative pedestrian routes off fast-moving streets - Create and maintain public space - Provide infrastructure to encourage comfortable walking	- Provide clear connections to employment centers including pedestrian connections through parking lots - Ensure connections feel safe and accessible during all local work hours	- Provide safe and visible pedestrian connections around the station - Provide alternative pedestrian routes off fast-moving streets - Provide sidewalks and bicycle infrastructure connecting to main activity centers
Development direction 	- Multi-story housing complex - Provide affordable housing - Develop walkable block size - If vacancy is high, plan development and infrastructure for future density	Include complementary uses for commuters such as places to pick up necessities as well as sit-down and take-out lunches	- Smaller housing complex or detached house - Provide affordable housing - Develop walkable block size - Include complementary uses for residents such as café, small neighborhood-serving retail, or pharmacy
Local examples	Purbachal Central 	Hemayetpur 	Joarshahara 

1.5 TOD Zoning System

How to use areas around transit stations, which are hubs of mass transit, is the key to enjoy the benefits provided by TOD. More people and activities including employment, living, commercial, walking, cycling and transit should be attracted for areas around transit stations. On the other hand, development demand around transit stations will increase, since more people and activities are attracted there.

Because of the strategic location in Dhaka and the high development demand, special management to control development is required around transit stations in addition to the general land use zone stipulated by DAP (Detailed Area Plan).

There are two requirements for the special management around transit stations in Dhaka. The first one is to start the management earlier. The MRT Line 6 has operated since the end of 2022, and citizens and developers have enjoyed and found the value of the new transport mode. It is necessary to proceed with special management for TOD before land price increases too much and land acquisition gets difficult. The second requirement is to guide appropriate development considering local conditions by station. There are 49 stations on MRT Line 1, 5 North and 6. In addition, more stations will be developed in other MRT lines. The character and development directions of the station areas must be different and customized.

This TOD Guidelines proposes two types of special management zone, (1) TOD Circle Zones and (2) TOD Station Area Plan, which complement each other to meet the requirements above. The roles of the zones are described in the following section.

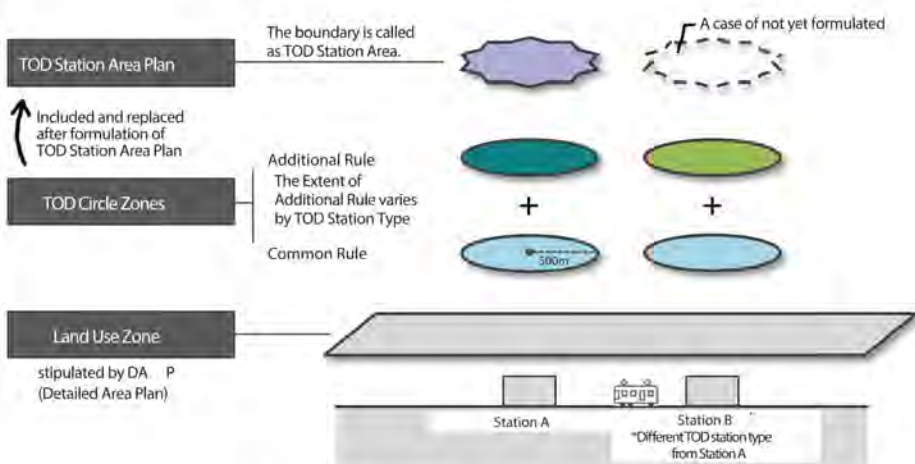


Figure 1.8: Image of TOD zoning system with multi-layers

1.5.1 TOD Circle Zones

The TOD Circle Zones, the first type of the special management zones, is set to manage the area around transit stations immediately. TOD Circle Zones provide principles and rules including minimum incentives, since providing big incentives without considering local conditions enough has risk to encourage improper development as TOD. Bigger incentives should be provided by TOD Station Area Plan, which will be formulated in the future considering local conditions.

The primary user group for transit and station surrounding area is pedestrians, since all transit trips begin and end with a pedestrian trip component. The distance a pedestrian is expected to travel to take transportation should be the main management zone for TOD. The 500m radius has been defined as basic walkable area, considering there are some studies showing people in Dhaka walk 600-700m per 10 minutes in average, and there are some corners and crossings to reach 500m distance radius. Consequently, the 500m radius surrounding a transit station will be “TOD Zone” subject to special management restrictions and incentives.

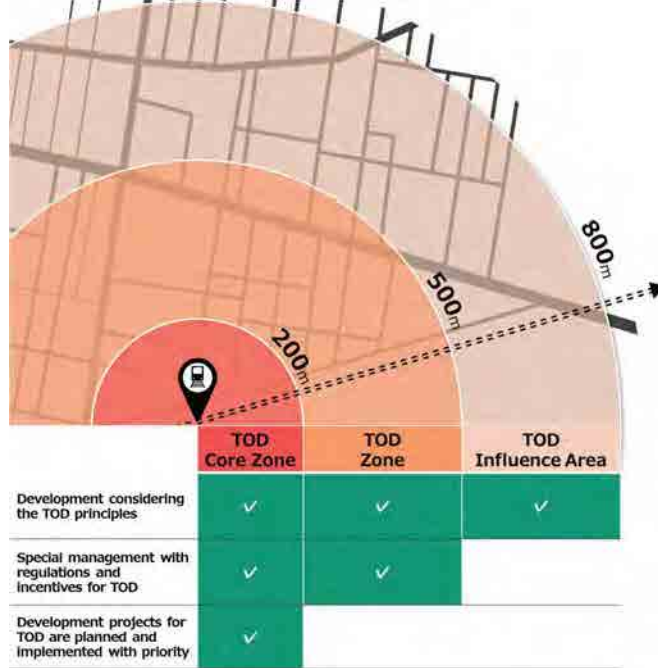


Figure 1.9: TOD Circle Zones

Of the TOD Zone in 500m radius, the area closer to a station is more important area and needs early actions for TOD. The 200m radius from the station is positioned as “TOD Core Zone” where development projects should be planned and implemented with more priority.

On the other hand, in some cases it may be appropriate to extend the station area beyond 500m radius. This can be taken into account because there are cases where properties outside of the 500m radius have direct pedestrian connectivity, share certain station area features, are not physically isolated from the station, and may be able to sustain land uses that assist transportation.

Based on it, a radius of 500m to 800m from a transit station is defined as “TOD Influence Area” that should be developed considering the principles shown in the TOD guidelines, although it is not subject to the special management of TOD including regulations and incentives.

At fringe of each 200m, 500m and 800m radius, if any part of plot is included within the radius, the entire plot is under the TOD Core Zone, TOD Zone and TOD Influence Zone, respectively. In case multiple MRT lines serve the same station, the TOD Circle Zones for the station would be the area joining the radius of each station.

TOD Zone is managed through two layers of rules to provide minimum incentives considering local conditions as well as to ensure the speed. The two layers of rules are the following common rule and additional rule.

1) Common Rules

Common rules are applied to every TOD zone in common. The rule is stipulated in the section 3.12.1 of DAP, including land use management, more non-residential use and FAR incentives.

2) Additional Rules

Additional rules provide minimum development incentives and conditions according to the expected development direction for each of the seven types categorized by the TOD Station Typology.

1.5.2 TOD Station Area Plan

TOD Station Area Plan is prepared with more special management in line with local conditions. This is not prepared flatly like TOD Zone, but prepared by station through local analysis and consensus process.

Based on the TOD Zone range (500m), entire zone for TOD Station Area Plan is determined by expanding or reducing it along topographic features such as major road, river and canal, ensuring the connectivity of the target area with the surrounding urban area and transport infrastructure. The boundary of TOD Station Area Plan is called as “TOD Station Area”. After the TOD Station Area Plan is formulated and enacted, the boundary of TOD Zone is replaced by the TOD Station Area.

The plan can designate Intensive Zone in TOD Station Area, where higher incentives and regulations are provided. Intensive Zone in the TOD Station Area Plan are determined to include areas that need early action to achieve vision which the station area is aiming for. Although the standard range of Intensive Zone boundary is generally around 200m radius from MRT station, the boundary can be determined according to the TOD Station Area Plan considering local conditions.

Part 2: TOD Principles

Part 2 provides general principles that are found in a typical station area where TOD is implemented, so that the entire community of TOD stakeholders in Dhaka can communicate with common vocabulary.

The principles are presented in the major elements, which are Density & Uses, Multimodal Connectivity, and Walkability respectively, according to the main components of the space around stations. In addition, the principles are presented for Land Value Capture, an important supporting element for making TOD in Dhaka sustainable.

Direction and approach, which indicate the principles of desired state and measures to achieve it, are presented for each element. They are accompanied by photographs of advanced examples from other countries to present images of real city spaces. Since the MRT and TOD in Dhaka have only recently begun to operate, photographs from several cities are shown to allow for a broader exploration of possible forms that might be suitable for Dhaka.



Figure 2.1: TOD Principles and the Spaces They Cover

Table 2.1: TOD Principles at a Glance

Elements	Direction	Approach
Density & Uses	✓ Density: Develop Higher Floor Area Density, Regulate Too Small Lot Size ✓ Uses: Develop Use for Relatively High Dense Population, Develop Areas or Buildings with a Mix of Uses, Develop Horizontal or Vertical Mixedness, Activate Ground Floor, Allocate Open Space from Privately Owned Land, Include Affordable Housing When Possible	✓ Incentives: By Common Rule, By Additional Rule ✓ Uses: Required Conditions, Evaluated Conditions
Multimodal Connectivity	✓ Transit Function Priority – 1st: Walking & Cycling – 2nd: Transit Connections – 3rd: Drop-off – 4th: Park and Ride	✓ Road Network ✓ Transit Network ✓ Bus Network ✓ Drop-off / Pick-up ✓ Parking Policy ✓ Rickshaw Management ✓ Bicycle Network and Parking
Walkability	✓ Walkable Distance ✓ Safe and Comfortable Environment	✓ Connectivity: Identify Primary and Secondary Pedestrian Routes, Expand Walkshed When Possible, Maximize Pedestrian Connectivity with Walkable Blocks and Frequent Intersections ✓ Pedestrian Route: Provide Walkable Way, Ensure Safety at Street Crossing, Create Tree Canopy ✓ Streetscape: Activate Public Space, Create a Station Identity, Increase Visibility, Place Lighting, Pedestrian Scale Architecture
Land Value Capture	✓ Land Value Capture	✓ Tax- or fee-based LVC ✓ Development-based LVC

2.1 Density & Uses

Density and uses are key elements in development for TOD. When densely development and transit infrastructure is concentrated around transit nodes, more people in Dhaka are accessible by public transport such as MRT and bus to and from destinations and origins. If people can satisfy most of their needs within walking distance of a transit node, they choose the area as destination or origin. The integrated development and transit infrastructure will maximize transit use and boost revenues for transit agencies, municipalities, and other stakeholders investing in real estate at or near stations as well. The general guidelines are described here for density and uses, which are key elements in creating positive growth cycle that TOD brings about.

2.1.1 Direction

(1) Density

1) Develop Higher Floor Area Density

In general, floor area density around a station should be higher than the surrounding neighborhood and greatest in close proximity to the station, to maximize people's convenience, transit use and revenues of stakeholders. However, the density should be balanced with the existing context so as to not overwhelm the surrounding neighborhood. As a way to promote and control it, 0.5 of FAR bonus is provided within the TOD zone in Dhaka on the value of base FAR regulated in DAP 2022-2035¹. In addition to the bonus above for all stations, a system of additional FAR bonus varies according to the station typology in Dhaka should be considered.



Figure 2.2: Taller Buildings around a Station in Tokyo

2) Regulate Too Small Lot Size

Development on too small lot size should be regulated to prevent various elements from degrading the TOD environment. Several negative effects are anticipated when too small size is allowed, such as limiting use of the site because of the small flat space, making it difficult to develop high-rise and high-density building, and increasing low-quality buildings which deteriorates the surrounding environment in terms of disaster prevention and landscape with less open space.



Figure 2.3: Image of Regulation to Prevent Too Small Lot Size

¹ Section 2.1.1 of Detailed Area Plan 2022-2035 for Dhaka Metropolitan Region

(2) Uses**1) Develop Use for Relatively High Dense Population**

Uses that serve higher density population should be encouraged in station areas, such as commercial or institutional office, retail, housing complex, higher education, medical complex, major cultural facility, or sports venue. On the other hand, uses that result in lower density populations or generate large car trips without employment opportunity should be discouraged, such as large factory, large logistics center or car workshop.



Figure 2.4: A Station Surrounded by Office and Commercials in Tokyo

2) Develop Areas or Buildings with a Mix of Uses

TOD should include a mix of uses with an emphasis on creating places to live and work that are adjacent to transit, thereby reducing individual trips. Primarily residential uses should include complementary uses such as a café, small neighborhood-serving retail, beauty salons, or pharmacies. Primarily employment uses should include services useful to commuters, such as places to pick up necessities as well as sit-down and take-out lunches. Where a single, large existing use dominates a station area, such as a hospital or university, encourage the addition of convenience retail and support commercial and residential uses to round out the general mix of uses and to reduce automobile trips.



Figure 2.5: A Block with Retail Shops, Offices and Housings in Portland

3) Develop Horizontal or Vertical Mixedness

The mix of land uses may be horizontally or vertically integrated; that is, the mix of uses may be incorporated in multiple buildings across an area or found within a particular building. This provides a variety of uses within a compact, walkable station area and creates a synergy between the varying types of development.



Figure 2.6: Horizontal and Vertical Mixedness

4) Activate Ground Floor

Station approaches and key public space around transit stations should be surrounded by ground-level neighborhood-serving businesses such as restaurants or retail to attract commuters, residents, and other transit-inclined consumers. The highly visible atmosphere shared with many publics provided by the active ground floor can be also expected to build a feeling of safety and security in the area.



Figure 2.7: Buildings with Active Ground Floor in Tokyo

5) Allocate Open Space from Privately Owned Land

While buildings are being densely developed in Dhaka, allocating open spaces and walkway should be encouraged so that people can move and spend time in the area safely and comfortably. In brownfield areas that are already largely occupied by privately owned land and buildings, there is a limit to providing sufficient public space from space of roads and public land alone. Practical systems that promote allocating open space for public should be considered, such as a system that allow landowners in TOD zones to develop a portion of their land where the public is accessible in exchange for incentives to the landowners.



Figure 2.8: Open Space on Privately Owned Land in Tokyo

6) Include Affordable Housing When Possible

A range of housing options in unit types and sizes, including affordable housing, should be part of the mix of uses at TOD destinations. Equitable TOD incorporates housing for the people who most need access to transit. It ensures that people who would otherwise be priced out due to high land values can live in close proximity to the transit asset that is critical to their ability to access employment, shopping, and other services. When people can use transit for all of their trips, they save money while the system grows stronger, ensuring sustainability. As the way to promote affordable housing, DAP provides an incentive that 0.75 of FAR bonus is provided for development with minimum 5 units of affordable housing. In addition to the bonus above for all areas, a system of additional FAR bonus within TOD zone in Dhaka should be considered.



Figure 2.9: Affordable Housings Near Station in Osaka

2.1.2 Approach

(1) Structure of Incentives and Conditions

Based on the directions outlined above, the TOD Guidelines propose to formulate TOD Station Area Plan for surrounding area of stations to guide proper urban development considering their local characteristics. Some station areas, however, will require a certain time until formulating the plan, because there is a number of stations in Dhaka. As an immediate measure, rules on TOD zone are established, which include incentives to increase upper limit of Floor Area Ratio (FAR), Maximum Ground Coverage (MGC), or non-residential use ratio for buildings on mixed-use area.

The rules provide basic incentives as well as additional incentives, depending on the level of achievement of conditions. There are two levels of conditions; 1) required conditions including location in a planned developed area and minimum plot size, and 2) evaluated conditions for contributing to the public and TOD. Those conditions for application are mentioned in the following section.

The incentives provided by the rules on TOD zones are minimum levels to prevent from encouraging inappropriate development without taking into consideration of the local conditions. Bigger incentives should be provided by TOD Station Area Plan, which will be formulated in the future considering local conditions.

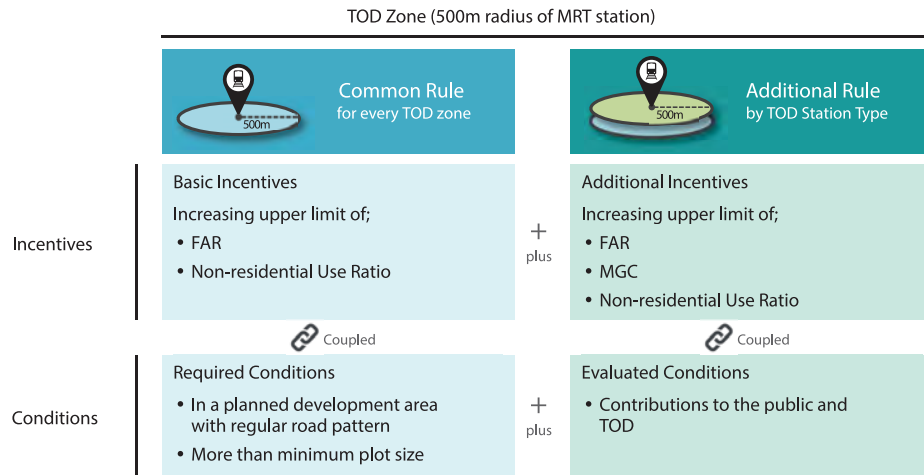


Figure 2.10: Relationship between Incentives and Conditions in TOD Zone

(2) Incentives

1) By Common Rule

- **Increasing Upper Limit of FAR:** Additional 0.5 of FAR is added to the maximum FAR limit for developments in TOD zone. In case of residential use, where the lower of Area-based FAR or Plot-based FAR is set as Base FAR and the higher is Maximum FAR, the additional FAR 0.5 is added to the Base FAR up to the Maximum FAR.
- **Increasing Upper Limit of Non-residential Use Ratio:** The upper limit of non-residential use ratio is increased for development in residential area within TOD zone. Specifically, the original maximum amount 10% for development on front road with 20-80 feet width is increased to 20% for 20-40 feet, 30% for 40-60 feet, and 40% for 60-80 feet. (Refer to the Table “Allowed Upper Limit of Non-residential Use Ratio”.)

2) By Additional Rule

• Increasing Upper Limit of FAR

- **Area-based FAR:** In case of residential use area, where Area-based FAR is applied, the upper limit of Area-based FAR can be raised according to TOD Station Typology where the development is located, if evaluated conditions are met for the development. The maximum allowable Area-based FAR for each TOD station type is mentioned in the following table. Each of the value is the highest Area-based FAR stipulated in DAP among the same TOD station type.

Table 2.2: Maximum Limit of Area-based FAR for Development which Meets Evaluated Conditions

TOD Station Type	Upper Limit of Area-based FAR	Maximum Density (ppa)
Regional Center	5.5	220
Urban Center	5.7	250
Urban Neighborhood	3.2	250
Institution	5.5	200
Suburban Center	4.6	200
Suburban Employment	3.6	150
Suburban Neighborhood	3.1	220

- **Plot-based FAR:** An increase in the maximum Plot-based FAR by 20% is permitted, if evaluated conditions are met for the development.

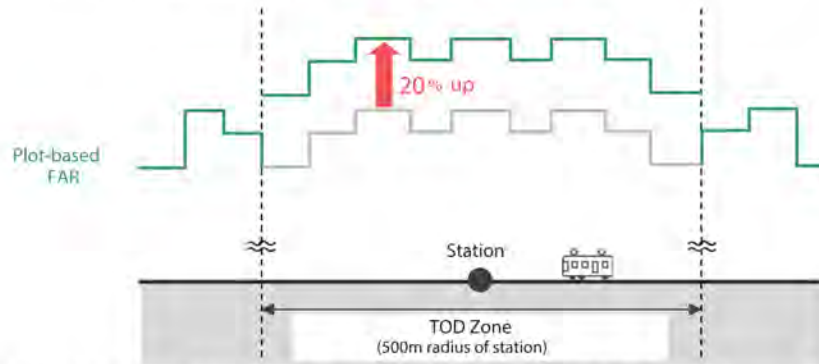


Figure 2.11: Image of Increasing Maximum Limit of Plot-based FAR for Development Which Meets Evaluated Conditions

• Increasing Upper Limit of MGC

Maximum Ground Coverage (MGC) is the ratio of building area to plot area. MGC should be lower in areas such as residential area where sunlight and ventilation as well as disaster prevention are particularly important by providing appropriate open space. On the other hand, MGC should be higher in areas around transit stations where non-residential areas predominate, because the higher MGC is expected to lead to active and diverse mixed use of the ground floor, which is easily accessible by pedestrians. Based on the points above, the upper limit of MGC is increased by 10% for development of commercial buildings with large plot sizes (more than 939 m² (14 Katha)) in Regional Center, Urban Center and Suburban Center types, which are classified as high-density and non-residential areas.

Table 2.3: Increased Upper Limit of MGC for Development which Meets Evaluated Conditions

TOD Station Type	Conditions		Increase in MGC
	Building Use	Plot Size	
– Regional Center – Urban Center – Suburban Center	Commercial Building	More than 939m ² (14 Katha)	10% Increase (Increased to 60%)*

*50% of MGC is provided for the development of commercial buildings over 939m² (14 Katha) by BCR (2008).

• **Increasing Upper Limit of Non-residential Use Ratio**

Areas around station should have a higher percentage of mixed use than other areas because they are areas where many people intersect. Among the TOD station types, Regional Center, Institution, and Suburban Employment are provided with increased non-residential use ratio with the highest level, because they are the TOD station types with a high percentage of non-residential use. In addition, Urban Center and Suburban Center are allowed to increase the ratio with medium level, so that they have a strong mixed-use character. The increased upper limit of the percentage of non-residential use of them is described in the following table.

Table 2.4: Allowed Upper Limit of Non-residential Use Ratio

Mixed Use	Existing Road Width (feet)	Permitted Non-residential Use (%)				*Additional setback (m) against the permitted limit
		Original	TOD Zone			
			Common Rule	Additional Rule by TOD Station Type		
				• Urban Center • Suburban Center	• Regional Center • Institution • Suburban Employment	
Residential Area	80 <	100	100	100	100	1.0 (for ground floor only)
	60-80	10	40	40	100	
	40-60	10	30	30	70	
	20-40	10	20	20	60	
	< 20	10	10	10	45	
Mixed Use Area: Residential Main	80 <	100	100	100	100	
	60-80	50	50	100	100	
	40-60	30	30	70	70	
	20-40	20	20	60	60	
	< 20	10	10	45	45	
Mixed Use Area: Commercial Main or Industry Main	60 <	100	100	100	100	
	40-60	70	70	70	70	
	20-40	60	60	60	60	
	< 20	45	45	45	45	

*DAP set the regulation for setback as – “An additional setback will be 1.0 meter (for ground floor only) and the plot must be located on the side of the main road (inter-regional, internal regional or collector roads)”.

(3) Conditions

1) Required Conditions

Required conditions are established for the use of incentives provided by the common rule to prevent from encouraging improper development that deteriorates the public including local economy, traffic, sanitation, disaster prevention. There are two conditions in terms of location and plot size respectively.

The first requirement is that the development site must be located in an area with designed regular road pattern. The purpose of this requirement is to prevent large developments in areas or sites with irregularly shaped roads or poor road connectivity from leading to traffic congestion and ineffective use of land. This requirement, however, can be skipped, if RAJUK determines that a local community has prepared basis to redevelop the unplanned area such as organizing town improvement meeting to formulate TOD Station Area Plan.

The second requirement is that the plot size of the development site must be more than 400m². When buildings are densely built on small sites, the environment, such as sunlight and ventilation, may deteriorate, and the risk of fire may increase. The purpose of this regulation is to prevent such small-scale development and to create or maintain a favorable urban environment. The figure of 400 m² is set with reference to the general existing plot size surrounded by regular shaped street around a MRT station in Dhaka.



Figure 2.12: Required Conditions for Common Rule

2) Evaluated Conditions

In order to induce private development toward realization of TOD, the application of additional incentives has conditions for contribution to the public and realization of TOD. Development with contribution to walkable environment, multimodal connectivity, social welfare, and high intensity are evaluated and allowed to increase upper limit of FAR, MGC or non-residential use ratio for buildings on mixed-use area.

Type of Contribution	Example of Development
Walkable Environment	- Privately owned open space for public pedestrians - Providing partial frontage sites for important planned pedestrian network - Active ground floor, etc.
Multimodal Connectivity	- Space for drop-off - Bicycle parking for public - Bicycle share station, etc.
Local Social Welfare	- Kindergarten - Childcare facility - Affordable housing, etc.
Clean and Safe Urban Areas	- Large land area, including land amalgamation - Green building with LEED certification, etc.

Figure 2.13: Evaluated Conditions for Additional Rule

(4) Image of Incentive Utilization

When utilizing the incentives described above, how much of a restriction relaxation can be approved by what kinds of conditions also depends on where the plot is located. As an example, the following figure shows a case where the incentives are applied to a plot in the TOD zone around Uttara Center Station. In this case, if the conditions are met, Basic Incentives would increase the FAR by 0.5 and the Non-residential Use Ratio by 30%. In the case of utilizing Additional Incentives, the conditions will need to be investigated and determined, but a maximum of 1.0 additional FAR can be added to the Basic Incentives. In the case of the TOD Station Plan, the degree of restriction relaxation and conditions will be determined at the planning stage, but further relaxation of restrictions is expected. Common to all of these incentives is the principle that greater incentives require that greater conditions be met, particularly public contributions.

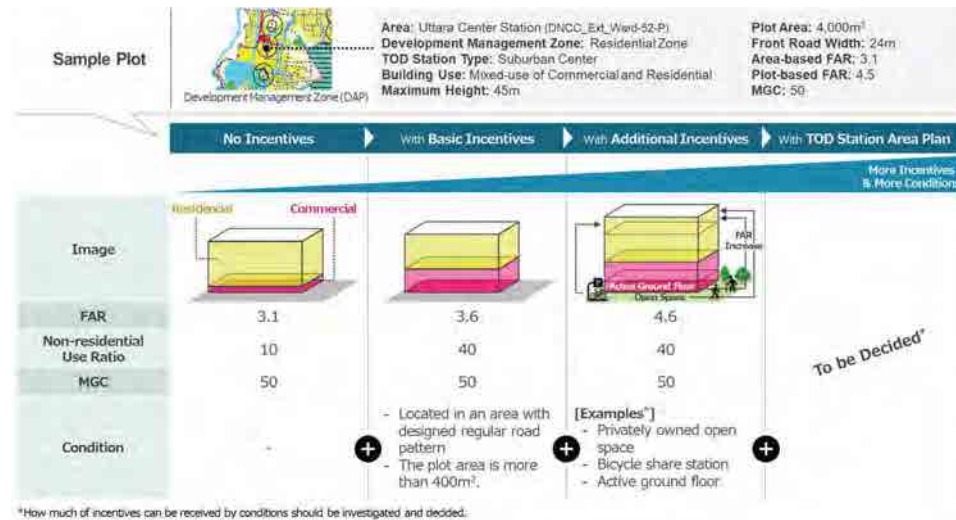


Figure 2.14: An Image of Incentive Utilization - a Sample Plot in the TOD Zone around Uttara Center Station -

2.2 Multimodal Connectivity

The success of TOD relies upon people's ability to access the station and destination via their mode of choice. In general, many trips in the TOD, particularly to and from the station, will be walking trips. In Dhaka, another portion will be made by bicycle, bus, and rickshaw, and additional trips will be made by car or motorcycle. Many people arriving by car will want to drop-off or park on site.

These modes of transport should be connected to the stations and other nearby destinations in a safe, convenient, and comfortable way. The easier access to the stations promotes a modal shift from private vehicle use to public transport. This section elaborates on how to integrate the full range of transport modes into TOD.

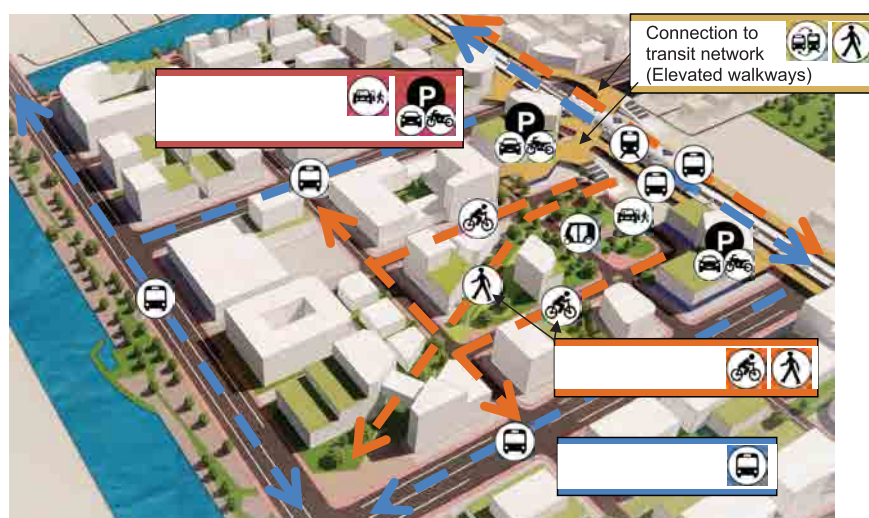


Figure 2.15: Multimodal Connectivity in a Station Area

2.2.1 Direction

(1) Transit Function Priority

When TOD is present, it usually occupies the space between public streets and transit stations. Because there is often limited space around a transit station in Dhaka, the transit function priority and resulting design of a TOD is critical to ensuring multimodal access to the station. Tough decisions have to be made with regard to how access is organized.

People must be able to easily get where they need or want to go, and in whichever way they prefer. To facilitate connectivity, the TOD Guidelines use transit function priority to guide the best use of limited station space. Modes bringing the greatest number of people relative to the space they require and preserving the safety and quality of the pedestrian experience should receive greater priority over others.

- Walking & Cycling:** Since every transit using public transport begins and ends with walking, pedestrians are the top priority in station areas. Safe, direct and attractive pathways are a few key elements of walkable communities. More details are available in the Walkability section of the TOD Guidelines. In addition to walking, cycling should be highly prioritized with regard to mode access to stations. On their own bicycles, or using the bicycle share system, many transit passengers cycle for the first and last miles of their trips. With the option to store

bicycles at stations, bike connections and amenities require significantly less space and infrastructure than other mode options. Although the demand for large bicycle parking spaces is not high in Dhaka because the share of bicycle use is not yet high, it is necessary to consider bicycle parking space development in anticipation of increased usage.

- **Transit Connections:** Seamless and smooth transit is the second priority mode in station areas. Riders arriving at MRT stations need to easily access and connect with on-street bus service, where it is available, and vice versa. When people need to transfer to complete transit trips, making connections as easy as possible helps riders and sustains ridership for the agency; this is a function of good pedestrian and multimodal connections. In TOD planning and design, consideration should be given to how transit and paratransit services can deliver riders to convenient locations in accessible proximity with the station. Consideration should also be given to how TOD plans impact transit operations.
- **Drop-off:** Drop-off locations, areas near stations where private vehicles dispense or collect a passenger, are a convenient option for multimodal households and a great use of space for station and TOD planners. As the third-highest priority in the mode hierarchy, drop-off areas should be given sufficient space.
- **Park and Ride:** Park and Ride facilities provide a convenient transit access point for people living in communities without good connections including walking and transit to transit routes. Park and Rides are particularly valuable in suburban locations where car ownership is high and local bus service is impractical.

This transit function hierarchy is a guide and should be considered in the context of each station area. The modes are not exclusive and the first three should be possible to accommodate in all station areas.

Table 2.5: Transit Function Priority

1 st	Walking & Cycling
2 nd	Transit Connections
3 rd	Drop-off
4 th	Park and Ride

Note:

- This transit function hierarchy is a guide and should be considered in the context of each station area.
- The mode priorities are not necessarily exclusive and the first three should be accommodated in all cases.

2.2.2 Approach

(1) Connect Roads in a Hierarchical Manner

Directly connecting access roads from arterial roads to residential areas would cause traffic on arterial roads to concentrate in residential areas. This would increase traffic congestion and the risk of traffic accidents in the station area. To prevent this, traffic should be dispersed by connecting roads in a hierarchical manner. Future development should be considered when designing road network.

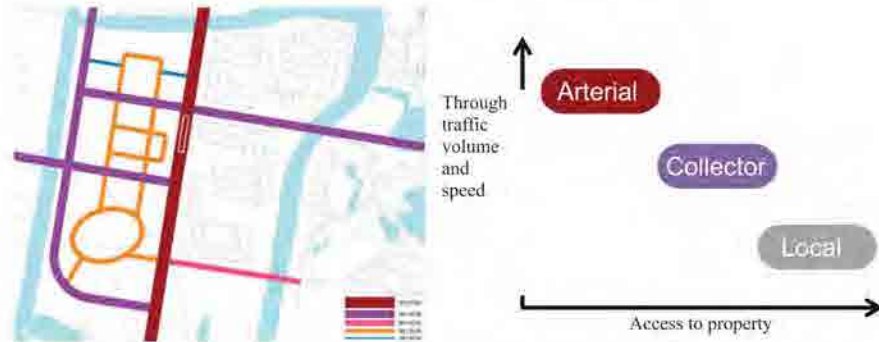


Figure 2.16: Road Hierarchy

(2) Connect Transit Network

Connections between transit routes are important for many people to get to their destination. When it is integrated with MRT stations, TOD should facilitate pedestrian connections between the MRT station and multimodal mode, such as bus service (existing bus route, shuttle bus service). Connections to transit can be strengthened through infrastructure improvements, wayfinding, service coordination, and strategic routing. Collaboration on everything from new or improved pedestrian pathways to effective paratransit drop-off locations will lead to TOD design that makes it easier and more appealing to access and utilize transit stations.



Figure 2.17: Connect to Transit Network around MRT Station

1) Strategic Routing

At each MRT Line 6 station, feeder transport such as buses and rickshaws are waiting for you when you exit the MRT station ticket gate and go down the stairs. Thus, by setting up a transfer route that takes the shortest time to reach the feeder transport after using the MRT, users can minimize the time required for transferring.



Figure 2.18: Example of Agargaon Station

In addition, roofs and handrails can be installed on the routes for transfers to provide more comfortable travel space.

2) Wayfinding

It is necessary to provide information on transfers due to all users to travel comfortably and smoothly. It is important to provide not only information on the boarding points for each mode of transport, but also more detailed information such as the direction of major buildings in the surrounding area that could be the user's destination and bus stops by destination (route) in an easy-to-understand manner.



Source: <https://www.hyojito.co.jp/business/navita/station/>

Figure 2.19: Connect to Transit Network around MRT Station

(3) Connect Bus Network

Excessive traffic concentration at MRT stations is expected when the number of MRT users increases in the future. Therefore, providing public transport services and discouraging the use of private vehicles

will provide comfortable and safe travel within station area. Here, public transport services should be feeder buses to support last mile travel within station area.

For areas outside the walking or rickshaw range (1 km or more), it is necessary to expand the station catchment area by forming a public feeder transport network with buses and other public transports capable of transporting multiple passengers. As for the bus network, it is necessary to optimize the bus routes based on coordination with DTCA's RSTP, BRT, BRTC, and other bus operators on the premise of an urban rail network.

- **Feeder Bus Service Matching with MRT Schedule for Last Mile:** To make the feeder bus service convenient for railway passengers, it should provide routes and frequencies that match the needs of passengers and be operated to match with the MRT schedule.
- **Feeder Bus Service to Expand Station Catchment Area:** To make feeder bus network that connects the surrounding residence development and MRT station to expand station catchment area to increase MRT passengers.

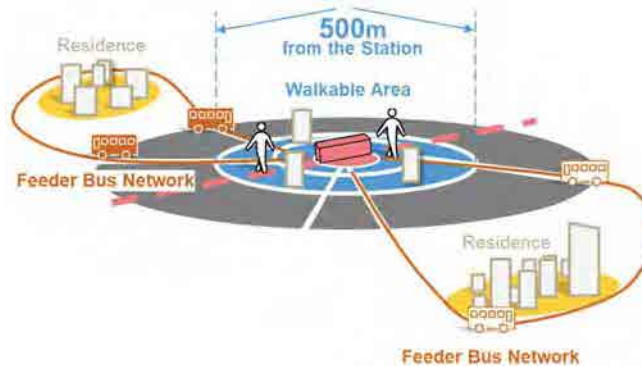


Figure 2.20: Feeder Bus Service When Station Area is under Development



Source: The Original Tour London

Figure 2.21: Image of Expansion of Station Catchment Area with Public Feeder Transport Network

(4) Provide Space for Drop-off / Pick-up

Drop-off activity can be difficult to control as drivers seek the most convenient position relative to the station. Spreading out this activity is ideal. By providing easy access from as many directions as possible, drop-off/pick-up locations can provide a more efficient vehicle access than parking by allowing many vehicle loads throughout the day. These drop-off locations should be arranged with sufficient distance from the station to ensure that non-motorized transport is prioritized. Drop-offs should be positioned to ensure that they don't create barriers to station access for other transit modes. Incorporating pull-off areas can also decrease the traffic congestion and confusion that would occur as drivers stop and wait, to pick-up/drop-off riders.

(5) Limit Parking Space

In order to promote TOD, it is necessary to encourage a shift from automobile-oriented development to one that is centered on walking and public transportation. Parking policies play an important role in this process. In particular, policies should be implemented to limit the number of parking spaces and encourage the use of public transportation in order to reduce dependence on automobiles.

1) Parking Minimization

Minimize parking space for private vehicles in new development projects near stations. Parking should be greatly reduced, especially in areas within 500 meters of MRT stations. It is recommended that fringe parking be established in the area beyond 500m from the station and that no extra vehicle enter the TOD zone.

Table 2.6: Parking Space Installation Requirements

TOD Circle Zone	Distance from Station	Parking Space Installation Requirements	
		Private Vehicle	NMT
TOD Core Zone	Within 200m	No parking (Drop-off location only)	Pedestrian / NMT priority zone and constructed for multi-modal interchange.
TOD Zone	Within 500 m	Allow 20% to 50% reduction in the number of parking spaces over the existing requirement.	Provide parking to meet NMT demand.
TOD Influence Area	Within 800m	Fringe Parking (Integration of parking spaces including the ones that were previously within 500m from station)	-

2) Setting Parking Fees

Set parking rates based on supply and demand, and raise rates during peak hours to reduce parking demand. Furthermore, to control long-hour parking, higher rates are set for long-hour parking to encourage short-hour parking.

3) Improving the Efficiency of Parking Use

Improve the efficiency of parking lot usage by allowing residents and visitors to share parking spaces in commercial and office buildings. Introducing a parking reservation system to facilitate the identification and reservation of available parking spaces will also improve the efficiency of parking use.

4) Providing Park and Ride when Appropriate

Park and Ride means a transit system that people drive their personal vehicle from their point of departure, park it at a parking lot adjacent to a public transport station, and use public transport to go to their destinations. By increasing the convenience of transit from private vehicles to public transport only in necessary areas such as suburbs, it will contribute to promoting public transport use and decreasing parking space demands in the city center of Dhaka.

The amount of parking appropriate at a transit station depends largely on the context in which that station is located. As communities along a transit line become more dense and walkable, the station area is better used to connect and attract those who walk, cycle and transfer through TOD that also provides amenities. Parking lots should be limited to station areas where car access to the transit station dominates, either due to lack of density and walkability or the station being uniquely positioned for it (e.g. end of the MRT line). In today's Dhaka, the provision of Park lot space should be considered for the purpose of promoting public transport in Suburban Neighborhood and Suburban Employment-type and at MRT line terminal stations, in case land is available for parking.

(6) Control Excessive Demand for Rickshaws

Over 1 million rickshaws in Dhaka as of 2024 are used as a low-cost and convenient means of transport for citizens. City Cooperations, the official licensing authority for rickshaw registration, is attempting to control the number of registered rickshaws. However, abrupt restrictions without offering alternatives are unacceptable to both rickshaw drivers and users. This is evidenced by the massive protests that occurred when the DNCC banned rickshaws on three major roads in 2019.

Rickshaws are considered a contributing factor to traffic congestion in Dhaka due to their large number and speed, which is the main reason for limiting the number of rickshaws and banning their entry. However, from a TOD perspective, rickshaws provide a last-mile function for rail users beyond the walking distance from the station to their destination, and there is no problem with getting into the station area itself, as long as the controlled and appropriate number of vehicles and appropriate waiting and running rules are respected. Therefore, banning rickshaws into station areas without providing a last mile alternative mode of transport is not always desirable from a TOD perspective.

In station areas, the following initiatives will be promoted to ensure that passengers have access to their destinations on the basis of the use of railways.

- Provision of medium-distance feeder transport networks such as buses. [operators: BRTC and private bus operators]
- Provision of shuttle bus services inside a designated area such as apartment complexes, new towns, large private developments, etc. [Operators are on a case-by-case basis and maybe not only public agencies but private developers may provide a shuttle service to residents.]
- Development of comfortable pedestrian walkways: from railway stations and bus stops to within walking distance (approximately 500 m to 1,000 m), comfortable walking walkways should be developed so that people can reach to their destinations on foot.

Even if the above feeder transport and walking environment improvement initiatives provide access from stations to destinations, there is still a need for a certain number of paratransit services such as taxis and rickshaws for travelers going to inaccessible areas and those who have disadvantage of walking to their destinations. Rickshaw can be considered as the sub mode only to be benefitted with inter-connection of modes by managing the schedule with proper integration.

However, the number of paratransit vehicles required would be reduced if the last mile transport measures described above were secured, and the management of waiting spaces and operations for paratransit vehicles would be easier.

Taking this into account, the policy for the proper management of rickshaws within the station areas is to provide, where possible, the following facilities.

- Providing pocket parking space for Rickshaw with other paratransit modes can be arranged in lands adjacent to the running lanes/distributing roads (other than the trunk roads) instead of roadside parking due to limited road capacity.
- Providing lanes for rickshaws on trunk roads and supplementary trunk roads.
- The private sector can be engaged in arranging those parking facilities under the control of Parking Wardens in each of the parking areas.

Through the above initiatives, a shift to public transport and walking as the main mode of transport is attempted in the station area to gradually reduce the excessive demand for rickshaws.

(7) Create a Bicycle-friendly Environment

Interest in the use of environmentally friendly and healthy bicycles is expected to increase in the future in Bangladesh. In addition, since bicycles are easy to use, it is expected that the use of bicycles for the last mile between MRT stations and home will increase. Therefore, it is necessary to consider connecting to the bicycle network and installing bicycle parking at MRT stations.

1) Bicycle Network

TOD plan should consider how destination developments and stations can ensure safe cycling connections to the new bicycle network. This will require cooperation and coordination among developers, transit agencies, and local jurisdictions to achieve safe connections across site boundaries.

2) Bicycle Parking

Considering the growing popularity of cycling as a mode of transport, it is important in the design of multimodal facilities to consider bicycle parking when cyclists arrive at their destinations. Cyclists should feel that their property is safe and protected when parked. Shelter from the elements is an important first step, and a bicycle garage is desirable to provide safety from theft and keeping bicycles dry.



Source: <https://www.kanaloco.jp/news/social/entry-6967.html>, and <https://www.lxil.co.jp/lineup/exterior/hybridroof/>

Figure 2.22: Image of Bicycle Network and Parking

2.3 Walkability

Regardless of the method used to arrive at the station, walking connections are crucial to link passengers to their multimodal connections and their destinations. From another perspective, walking needs the least space for transport infrastructure compared to the other transport modes, and is most likely to generate people's activities including incidental activities in addition to their primary purpose. Increasing walkability, therefore, is a crucial element to maximize people's activity around station area. As described above, the TOD Guidelines place the top priority on the pedestrian space in areas surrounding MRT stations. The general principles and approach are described here for connectivity, pedestrian route and streetscape, which are key elements to create walkability.

2.3.1 Direction

(1) Walkable Distance

Since most people have limits to how much effort and time they are willing to dedicate to walk, it is important to provide compact walking routes and major destinations within walking distance. The size of urban blocks and networks tends to be designed according to the main means of transport there. In Dhaka, where private cars are becoming increasingly popular, some blocks have been developed with fewer turns and are larger than the pedestrian scale. A change of mindset is required to develop pedestrian-friendly walkable-sized networks in Dhaka, particularly between transit stations and other destinations around MRT stations.



Figure 2.23: Walking Distance in Stockholm

(2) Safe and Comfortable Environment

Simply locating development within walking distance to the station does not ensure the development can be reached by transit-using pedestrians. The ability and willingness to walk is shaped by much more than distance alone. Walkability occurs when physical environments produce a space where walking or staying feels safe, easy, and comfortable. This safety, ease, and comfort drastically impact the real decisions of pedestrian walkers, as does distance. Furthermore, every pedestrian trip to and through a TOD should be safe and efficient, but also memorable and enjoyable. For examples, safe sidewalks and crosswalks that can separate pedestrians from motor vehicles should be provided, and the ground floor of buildings and public spaces should be active so that people can enjoy walking. Such walkable environment should be created in pedestrian route and public realm areas surrounding MRT stations in Dhaka.



Figure 2.24: A Safe and Comfortable Sidewalk in Vancouver

2.3.2 Approach

(1) Connectivity

1) Identify Primary and Secondary Pedestrian Routes

Primary routes run directly between the transit platform and station site and major pedestrian destinations in the surrounding community. These routes will attract high pedestrian volumes, associated pedestrian oriented services and act as the major connections to the station. Primary routes would typically include wider sidewalks and may include station access bridges, public easements, and regional pathways. Secondary routes do not provide a direct link to the transit station site but feed into the primary routes. These routes would typically include standard sidewalks and private accesses to individual buildings.

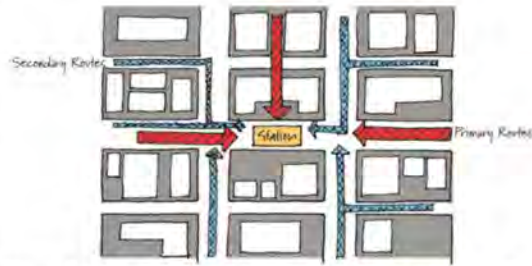


Figure 2.25: Primary and Secondary Pedestrian Connections

2) Expand Walkshed When Possible

A station's walkshed may be expanded by creating pedestrian links across existing barriers, building a rich pedestrian TOD network in and around the vicinity of the station and designing the TOD site so that the station has many connections with the surrounding neighborhood.



Figure 2.26: Image of Expanding Walkshed by Creating Pedestrian Links

Walkshed is a map-based representation of the distance a pedestrian can walk within a given time period. For TOD purposes, equivalent to 10 minutes of walking for an average adult, are commonly used to graphically predict the “reach” of transit ridership for a specific station. Considering average pedestrian walking speed in Dhaka, approximately 700m is equivalent to the 10 minutes of walking. Walksheds using simple circles, originating at the station and extending equally into the surrounding neighborhood fabric, do not take into account pedestrian barriers such as highways, rivers, railroads, and even dangerous intersections. Realistic, irregularly-shaped walkshed areas can be mapped by acknowledging those obstacles and also incorporating the entire walking network: sidewalks, pedestrian paths, and pedestrian bridges.

3) **Maximize Pedestrian Connectivity with Walkable Blocks and Frequent Intersections**

The block length of local streets should not be too large to allow better access for people who walk or cycle. Walkable or short blocks create more intersections, resulting in a greater number of highly visible corner block locations that can become prime centers of activity and contribute to the overall quality of life of TOD. The appropriate block length for a TOD may be determined by a typical block length based on contextual area precedents. Many walkable cities in the world have block lengths between 60m and 120m.



Figure 2.27: Image of Making Walkable Blocks

(2) **Pedestrian Route**

1) **Provide Walkable Way**

A safe and attractive pedestrian walkway, separate from the vehicular street, is essential in improving the use of any transit amenities. Provide enough width of pedestrian walkway according to the land use as the following table. The widths given in the table are standards for typical cases, and it is recommended that wider spaces be examined and provided for special roads with a high volume of pedestrian traffic, such as roads with a concentration of commercial buildings and recreational spaces. In addition to the path of travel, street furniture should be incorporated into the sidewalk design whenever possible. Install streetscape elements such as bus stop shelters (architecturally integrated where appropriate), benches, properly scaled street lights, and planters along the edge of sidewalks to create a diverse and engaging pedestrian environment.



Figure 2.28: Intersection of Different Parts of the Pavement

Table 2.7: Standard Widths of Walkway according to Land Use

Land use	Maximum pedestrian traffic	Frontage zone (m)	Pedestrian zone (m)	Utility zone (m)	Total width (m)
Central commercial area	80 people / min	1.0	3.0-4.0	1.5	5.0-6.5
Park, schools and other places where pedestrian traffic is high					
Local road (commercial)	60 people / min	1.0	2.0-2.5	1.5	4.5-5.0
Commercial areas outside the central commercial zone					
Residential area	50 people / min	0.5-1.0	1.5-1.8	1.0	3.0-3.8
Collector road					

Source: Detailed Area Plan (2022-2035)

2) Ensure Safety at Street Crossing

With intersecting uses for pedestrians, transit vehicles, drivers, cyclists, diners, shoppers, and more, streets are activity centers that must balance the safety needs of many uses. TOD will benefit greatly from safety improvements at street crossings. Crosswalks should be stop- or signal-controlled, highly visible, and well-maintained. Visibility and traffic calming measures such as textured or reflective paint, lighting, tactile warning strips, and speed humps can assist in integrating the walker with the numerous other modes crossing the street. The ultimate goal is for those walking to get to their destination safely and conveniently.



Figure 2.29: Crossing Controlled to Allow People to Cross Safely in Copenhagen

3) Create Tree Canopy

A healthy tree canopy creates a vibrant urban environment that people want to navigate and that city residents feel connected to. Tree canopies offer a myriad of environmental benefits including reduced emissions and energy demand for air conditioning, reduced stormwater pollution, public space for rain shelter, protecting pedestrians from the sun on very hot days, which improves walkability in the neighborhood. Plant street trees in continuous planting beds, where possible, allowing for additional root growth and general health of the tree. Soil amendments improve the quality of planting material for both existing and proposed trees. Consider existing overhead utilities when selecting a tree species for the area. Where space allows, plant larger shade trees to establish a more robust canopy.



Figure 2.30: Street with Tree Canopy in Portland

(3) Streetscape

1) Activate Public Space

Surround public space at transit stations with active uses such as ground-level restaurants, cafes and other pedestrian-friendly offerings to attract commuters, residents, and other transit-inclined consumers. Encourage people to use public space at stations even if they are not planning to ride transit. Accommodate casual, incidental public space use by providing seating, lighting, bike parking, and landscape amenities. Public space at transit stations should fulfill a need for quality open space within urban and urbanizing areas, and can be an integral part of a community's everyday life.



Figure 2.31: Public Space Surrounded by Shops and Street Furniture in Copenhagen

2) Create a Station Identity

Create public space that memorably integrate transit infrastructure with the surrounding area. As the first part of the transit station that many people will encounter, public space must thoughtfully accommodate the movement of people to and from transit destinations. It is equally important to establish a sense of place, or arrival, that is unique to the specific station. This can be accomplished through larger design gestures, with thoughtful landscape and site material choices, and by including public art as an integral part of the overall public space design. Public-private partnership should be used for many station areas in Dhaka to ensure that the built environment in and around transit stations achieves a degree of coherency and consistency of experience for all visitors.



Figure 2.32: Station Plaza with Unique Design in Tokyo

3) Increase Visibility

The level of visibility is a big indicator of sense of safety. Without visual access to other people on the space or activity centers, a feeling of isolation can encourage real or perceived danger. Consequently, the visibility to and from walking connections should be maximized from all angles. By increasing visibility in all directions, surveillance is added to support public safety. Lighting and ground level transparency of buildings contribute to visibility as well.



Figure 2.33: Streetscape with Highly Visible Condition in Warsaw

4) Place Lighting

Lighting should be significant to allow visibility of walkable areas with particular attention to pathways, stairs, entrances and exits, parking areas, and all areas where individuals may gather such as at station platforms and around ticket vending machines. Lighting should not be too bright so as to create deep shadows, glare, or discomfort for viewers. Light fixtures themselves should not cause obstructions to visibility, but should be at height to allow visibility of the faces of those in the space. Natural lighting should be utilized to the best extent possible for enclosed areas and supplemented where it's inadequate. Outdoor lighting should be responsive to the changes in natural lighting that occur throughout the day and through various weather patterns.



Figure 2.34: Visible Streets with Lighting in a Downtown Area in Vancouver

5) Pedestrian Scale Architecture

The design of the ground floor area at eyelevel of pedestrians, which is about 3m from the ground, needs to be interesting and transparent to create a vibrant and walkable street frontage for TOD. Doorways and windows should be oriented to the street level in order to provide ease of entrance, visual interest and increased security through informal viewing. Architectural variety (windows, variety of building materials, projections) should be used on the lower stories of a building to provide visual interest to the pedestrian. Buildings higher than 4 to 5 stories should step back higher floors in order to maintain the more human scale along the sidewalk and reduce shadow impacts on the public street.



Figure 2.35: Ground Floor Frontage with Variety of Building Materials in Seattle

2.4 Land Value Capture

Since the construction of railway facility costs a large amount of money, it generally takes a long time to recover the funds from revenues from the railway business alone. In addition to the railway facility, promotion of TOD requires the development of pedestrian and public spaces around stations, which requires a large amount of government funds. On the other hand, land prices around stations are expected to rise due to the development of railway and public spaces. As an example, a report indicates that land price in the catchment area of MRT-3 metro stations in Manila uplifted 2-3 times after 5 years of deciding the construction of MRT. This section provides basic directions and potential approaches of Land Value Capture in Dhaka, which is the concept of mobilizing some or all of the increase in land value (unearned income) resulting from non-landowner actions to the funds of investment for the community.

2.4.1 Direction

(1) Land Value Capture (LVC)

LVC is a kind of public financing method by which governments and relevant agencies capture the increase in land values through several measures, such as investments for improving accessibility (particularly infrastructure development like mass rapid transit) and/or update of planning policies such as a change in land use or floor area ratios (FAR). The principle of land value capture is to jointly create value from TOD and to share this with all stakeholders to develop more sustainable urban spaces.

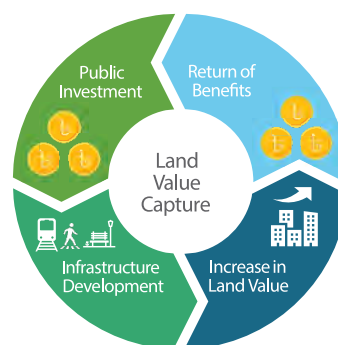


Figure 2.36: Image of Land Value Capture

2.4.2 Approach

There are two main categories of LVC: 1) Tax- or fee-based LVC, on which the public bodies directly recover costs, and 2) Development-based LVC, on which the public bodies indirectly recover costs. Tax- or fee-based LVC is a method for the public side to indirectly benefit from development profit back from beneficiaries including landowners and corporations in the area. Using a Tax-financing mechanism, the public side could collect infrastructure development investment. Development-based LVC, on the other hand, is a method of promoting the development of land and buildings through a rights conversion approach, based on the premise that land values will rise due to improved transport convenience, and land plot reorganization, etc. It is an approach to indirectly return funds to the public side by selling or leasing public lands with increased land values due to deregulation, infrastructure development. Neither of both categories of LVC system has been established in Bangladesh, but some of the following methods may be adaptable in Dhaka and should be explored going forward.

Table 2.8: Potential LVC Methods in Dhaka

Category	Method	
Tax- or fee-based LVC	1) Expected increase in tax revenue (Property Tax)	If land prices in the area surrounding stations increase as a result of the construction of the station, property tax revenues are expected to increase. In such cases, the Local Government can increase the property tax, DMTCL can impose a relevant fee, and RAJUK can impose a betterment fee. However, since property tax is generally a general revenue source, it is necessary to revise the legal system in order to allocate a portion of the increased tax revenues to the TOD related facilities.
	2) Betterment Fee	Betterment fee is imposed by governments on estimated benefits created by public investments, requiring beneficiaries who benefit directly from public investments to pay for their costs.

		In the future, it may also be considered that part of the betterment fee from beneficiaries could be given to DMTCL for their huge financial contribution for metro development.
	3) Self-developed Infrastructure	Self-developed Infrastructure is a case for a developer to increase convenience and land values by building infrastructure facilities such as roads around the development site by the developer itself. The idea is similar to Betterment Fee, but the difference is the private sector will directly construct the infrastructure and make it open to the public for benefit to both public and private sector.
Development-based LVC	4) Land Readjustment	Landowners in the project area provide a part of their land to improve and create roads and other public facilities, which increases land values in the entire district, and the landowners benefit from this. On the public side, roads and other public facilities are improved, resulting in benefits for both the private and public sectors.
	5) Urban Redevelopment	Landowners work with developers to consolidate land and construct buildings, and add new building floors, which increases land values on and around the area. The landowner acquires new building floors and the developer benefits by making new use of the additional building floors or selling them to third parties. Both Land Readjustment and Urban Redevelopment above are mutual cooperation between the public and private sectors. Both public facilities and real estate development are beneficial to both parties, but only if the right holders concerned reach a consensus.

Part 3: Coordination Mechanism

This part illustrates how the multiple stakeholders should coordinate for planning and implementation on TOD in Dhaka. Although each authority and entity in Dhaka related to urban development and transport traditionally has its own role, there have been few coordination mechanisms to interrelate and align them under TOD, which involves multiple sectors. Focusing on TOD at the scale of station area, the TOD Guidelines propose (1) role and responsibility and (2) process for main parties involved as the coordination mechanism, following the flow illustrated below from the planning phase for the TOD Station Area Plan to the implementation phase for development consistent with that plan.

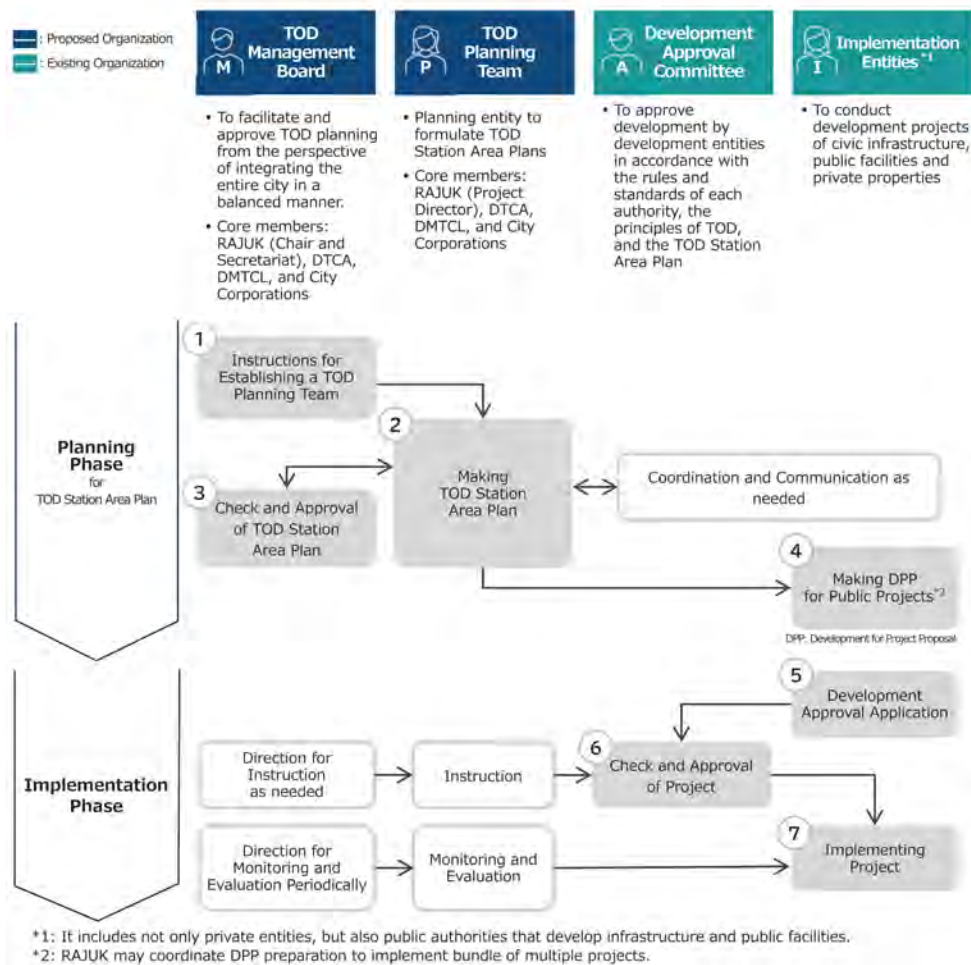


Figure 3.1: Overall Coordination Mechanism at the Scale of Station Area

3.1 Role and Responsibility

Development projects are the responsibility of different tiers of field administration of ministerial departments and directorates/agencies like-RAJUK, DTCA, Dhaka North and South City Corporations, DMTCL, BRTA, RHD, D-WASA, NHA, PDB, PWD, etc. involved from plan preparation to implementation with the prior approval procedures in different stage. Under the management of administrative authorities, private entities implement development projects.

A large number of stakeholders are often involved in TOD planning and projects, especially around TOD Station Area, because TOD is an approach that integrates multiple sectors including land use regulation, traffic management, road related facilities, public transport, and property development. To integrate activities of the stakeholders into TOD planning and projects consistent with the vision of developments, establishment of coordination mechanism is compulsory. The TOD Guidelines propose the establishment of a TOD Management Board and TOD Planning Team with RAJUK as the chair and secretariat and related organizations as members to facilitate and coordinate development with the TOD approach.

An overview of major roles and responsibilities of main players of TOD planning and projects, which are TOD Management Board, TOD Planning Team, Development Approval Committee, and Implementation Entities, are outlined below:

3.1.1 TOD Management Board



The Guidelines recommend permanently establishing the TOD Management Board separated from planning teams. The main reasons for this are 1) to separate those who develop the plan from those who review the planning process and contents and 2) to ensure consistency and balance in multiple planning areas. That is why the TOD Management Board, an oversight and decision-making body, is first to be established with the agencies' agreement to prioritize the stations that will develop TOD Station Area Plans and approve the establishment of the Planning Teams.

The roles of the management board are to facilitate and approve TOD planning including TOD Station Area Plan from the perspective of integrating the entire city in a balanced manner. This board will play a pivotal role in overseeing the successful planning, development, and implementation of TOD in Dhaka. Its primary function is to ensure that TOD projects align with the broader urban development goals, integrate land use and transport planning, and involve all relevant stakeholders in the process. The detailed role and responsibility are described in the following table.

RAJUK will lead the management board and all planning teams under the board, because it develops and updates the DAP, establishes the TOD policy as a land use plan, and regulates the area around the station as a TOD zone and secure the necessary budget for the plan. Alternatively, budget sharing will be decided in advance by the management board. (Besides organizing the management board meetings, there will be costs for many other activities such as information gathering, analysis, mapping, stakeholder meetings, etc.)

The members of the TOD Management Board are from the public sectors. The core members are RAJUK, DTCA, DMTCL, and the concerned City Corporations. Additional members, such as Road Transport and Highways Division, utility companies, private developers, public transport providers, and academic experts may be invited as and when needed for planning purposes and opinion hearings. There is no need for the same inputs for all stations. Depending on the TOD station type, the composition of the management board members and the number of stations to be covered can differ. If the board members fail to make decisions due to differences in opinions on development directions or any other issues, they may send it to the government for decisions and the decision of the government is final. Government will support accelerating the development process as and when required for public interest.

Table 3.1: Role and Responsibility of TOD Management Board

Strategic Oversight and Guidance	• Policy Formulation: The Board sets the strategic direction and policies for TOD projects, ensuring that they align with national and regional urban development goals. • Vision Alignment: Ensures that all TOD initiatives support the vision of creating sustainable, connected, and livable urban spaces in Dhaka. • Coordination with Government Policies: Aligns TOD strategies with existing government policies, such as the national urban policy, transport policy, and environmental standards. • Updating the Guideline and directions: The Board will need to support updating information, station typology, include new station/area to consider TOD and updating the guidelines, development controls, etc. time to time
Coordination Among Stakeholders	• Multi-Agency Coordination: Acts as a central coordinating body, bringing together multiple agencies such as RAJUK, DTCA, DMTCL, City Corporations, Bangladesh Railway, and private sector developers. • Conflict Resolution: Resolves conflicts between stakeholders by providing a platform for discussion and negotiation, ensuring smooth implementation of TOD projects. • Stakeholder Engagement: Engages with a wide range of stakeholders, including local communities, private developers, and civil society, to incorporate their inputs and address concerns.
Planning Approval and Development Oversight	• Approval of TOD Station Area Plans: Reviews and approves TOD Station Area Plans and individual project proposals, ensuring compliance with TOD principles and regulations. • Guidelines and Standards: Develops and enforces guidelines, standards, and benchmarks for TOD planning and implementation, including land use, density, and transport integration. • Integration of Land Use and Transport: Ensures that land use planning and transport infrastructure development are fully integrated, enhancing accessibility and reducing dependency on private vehicles.

3.1.2 TOD Planning Team



A TOD Planning Team should be established as the planning entity to formulate TOD Station Area Plans for a group of TOD station areas centered on a hub station and monitor the implementation. One of the roles of the team is to formulate TOD Station Area Plans including situation analysis around the TOD station area, identifying constraints and opportunities, developing vision and concept (schematic plan, future land use, and transport plan), identifying projects (business approach, private development) and programs (regulatory approach), and grouping multiple projects (project package). The other main role is to monitor project implementation as the supervisory body to facilitate the implementation by each executing agency and private sector. The monitoring work includes instructing administrative authorities on criteria for individual development projects that cannot be licensed by the authorities alone, following the principles of TOD and the contents of the TOD Station Area Plan. The detailed role and responsibility are described in the following table.

The members of TOD Planning Team are from the public sectors. The team leader is a RAJUK member, and the core members are RAJUK, DTCA, DMTCL, and City Corporations. Additional members, such as Road Transport and Highways Division and utility companies, may be invited as needed for planning purposes and opinion sharing.

Unless activities are funded through existing budget systems, a budget for the Planning Team's activities will be required. RAJUK is expected to consider and propose of budgeting system.

In developing the TOD Station Area Plan, there will be opportunities to hear and exchange opinions with secondary transport operators (e.g., bus operators), local commerce and industry associations, developers, residents, and others. However, they do not participate in the discussions to develop the TOD Station Area Plan. The Planning Team will hold public hearings to explain the TOD Station Area Plan to the stakeholders and to obtain their input on the TOD Station Area Plan.

A Memorandum of Understanding (MOU) would be formulated and agreed upon among the member government agencies, describing the basic rules for establishing the planning team, including the members of the planning team, their roles, outputs at each planning stage, how to agree on the content of discussions, and budget sharing for the planning team's activities.

Table 3.2: Role and Responsibility of TOD Planning Team

Formulating TOD Station Area Plan	• Definition of TOD Zone Boundary: Defines TOD zones based on population density, transit accessibility, and land use potential trend of developments. • Spatial Planning: Develops the master plan including land use, transportation, infrastructure, and public spaces and considering other development integration. • Target Setting: Set planning guidelines, including density targets, mixed-use development standards, and sustainability criteria. • Meeting Coordination: Coordinates regular meetings to discuss, coordinate, and review the content and progress of the project to support approvals, implementation and progress of the projects. • Deliverables: Takes full responsibility for the final deliverables.
Monitoring and Evaluation	• Performance Monitoring: Monitors the progress of TOD projects against defined targets and milestones, ensuring timely delivery and adherence to quality standards. • Impact Assessment: Conducts periodic evaluations of the social, economic, and environmental impacts of TOD projects to ensure they meet the intended objectives. • Adjustments and Improvements: Recommends adjustments to plans and strategies based on monitoring and evaluation outcomes, adapting to changing circumstances or emerging challenges.

3.1.3 Development Approval Committee



There are several roles of the Development Approval Committee related to TOD, which are planning, managing and implementing development projects of civic infrastructure and property development in Dhaka. In the context of the Coordination Mechanism, development approval, which is the role that only the Development Approval Committee has within the main players, is addressed. The key role of the Development Approval Committee is to license and approve development by development entities in TOD Zone or TOD Station Area in accordance with the rules and standards of each authority, the principles of TOD, and the TOD Station Area Plan. For example, RAJUK and DTCA determine the granting of incentives as indicated in the TOD Principles of the TOD Guidelines, in addition to checking against building standards and conducting Traffic Impact Assessments.

3.1.4 Implementation Entities



Implementation Entities who conduct development projects of civic infrastructure, public facilities and private properties are also in the coordination mechanism of TOD. In the implementation phase of TOD, it is necessary for them to follow the principles and regulations of TOD with opportunity to obtain development bonus if requirements are met. Some implementation entities may participate in the planning phase of TOD Station Area Plan, upon invitation from the TOD Planning Team, such as when private sector partnership is required for a significant planned area or facility that will give future direction to the station area.

3.2 Coordination Process

This part illustrates the process of TOD initiatives from the planning phase to the implementation phase. MRT stations are unique, and the development process from planning to implementation may not be the same, but the development target should be the same, following the guide and ensuring a coordinated development system to implement a more sustainable approach to land-transport integration and promote density.

RAJUK might have a Road map to ensure developing the master plan for each of the station areas to identify the implementation arrangements. Each of the stations might have unique requirements with a unique vision so that the planning team can be established accordingly to guide and control the developments to keep balanced land use and transport mode around the transit stations following the characteristics of areas.

3.2.1 Instructions for Establishing a TOD Planning Team

The planning team needs to be established following the requirements of each individual station analyzing the type and development vision of the area. In each of the activities of TOD planning, RAJUK will need to be considered by the central coordination body.



Figure 3.2: Process to Establish a TOD Planning Team

Table 3.3: Points to Establish a TOD Planning Team

1. Project Director and secretariat from RAJUK	- RAJUK will play the role for central coordination. - Project Director of a TOD Planning Team shall be basically selected from RAJUK because it is responsible for developing and updating DAP and designating TOD zones. - It is possible for a certain public organization member other than RAJUK to be Project Director after consultation with the organizations concerned if appropriate, such as in the case of an area to be developed mainly by the public organization. - Apart from the Project Director, secretariat members will be selected from the RAJUK members. - For special case of TOD, RAJUK can create the MOU with relevant departments and ministries to get suitable decisions and for better coordination.
2. Contact point for each organization	Since TOD is a multi-faceted effort, having a single point of contact in each relevant organization is most effective.
3. Flexible adjustment of member composition	- Since the issues of discussions and the contents of the TOD Station Plan are not yet apparent, the primary direction, such as the development vision and concept, shall be discussed by the selected core members first. - When the direction and project contents are determined, the relevant members should be invited to join the Planning Team.
4. Information sharing	- It is desirable to first proactively share the information each organization has such as status of projects. - Then build a platform for information sharing so that necessary information including the content of discussions can be accessed by the Planning Team members and the people involved in their home organizations.

3.2.2 Making TOD Station Area Plan

This part guides a typical process and contents of planning for the TOD Station Plan. The station must be identified according to the typology and then analyzed following the distinct place types, area shape, density, building type and use. Analyzing the existing trend of growth of the station area, the TOD area will need to be defined considering the TOD core zone, TOD Zone and TOD influence area.



Figure 3.3: TOD Planning Process

The TOD station area plan comprises 1) the analyzing stage and 2) the planning stage. The analyzing and planning process and contents for the TOD plan shown here are typical and can be customized according to the actual situation and schedule.

The Analysing Stage

1. Analysis and Clarification of Situation

Analyzing the current situation of the target site through data collection.

- **Positioning of the station in a larger context:** Analyzing the position and features of the station at the city level and intermediate macro scale by reviewing the regional and city level plans, development projects and policies.
- **Creation of Base Map:** A base map must be developed in GIS/CAD format through the survey (physical features, land use, contour, road inventory, other infrastructure, etc.) or data collection (shapefiles, KML files, satellite images, etc.).
- **Site observation and analysis:** The development-related information will need to be collected and integrated into the map by conducting regular site visits in the target area to analyze and confirm detailed conditions to forecast the requirements of development integration.

2. Identification of Constraints and Opportunities

The constraints and opportunities/potentials from the perspective of TOD development for the sites should be analyzed based on the results of existing conditions, public opinions, etc. The perspective of the analysis will vary from site to site..

3. Real Estate Demand Estimation

Real estate market demand must be analyzed targeting the year considered for the TOD Station Plan. Due to the lack of a relevant real estate database, it is difficult to estimate current and future demands. The estimation should consider the trend of real estate supply following real estate demand estimation methods. The method should consider using the information collected through direct interview surveys of real estate developers and should forecast the demand strategically based on an urban development viewpoint.

Planning Stage

1. Development Vision and Concept

Based on the analysis of current conditions, constraints and opportunities, and future development potentialities, the vision of TOD needs to be formulated for the target site. The development vision and concept must be finalized, and stakeholder opinions must be confirmed and reflected through the stakeholder meeting.

2. TOD Station Area Boundary

The TOD Station Area boundary can be determined by analyzing the existing inventory of roads, topography, drainage systems, water bodies, other natural environments, urban growth trends, etc. The boundary may consider analyzing the 5-10 minutes walking distance (500 to 800m approximately) from the station. The TOD Station Area boundary may extend beyond 500m in radius considering the connectivity with the surrounding urban area and transport infrastructure.

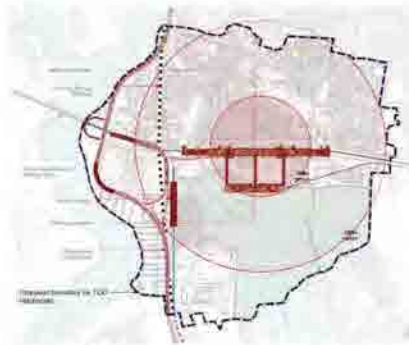


Figure 3.4: TOD Boundary of Gabtoli Station Area

3. Feedback from Stakeholders

Based on the current situation analysis and addressing the development vision/concept, the development framework for the TOD Station Area can be expressed through alternate planning options. Explaining multiple development options through schematic diagrams to achieve stakeholder feedback is much easier.



Figure 3.5: Alternate Planning Option

4. Setting Design Principle

Design principles for the TOD planning study need to be determined through analysis of the development vision, concept, and schematic plan. The design principles of the TOD plan for the Uttara Center and Gabtoli stations were considered.

UTTARA CENTER	GABTOLI
1. Synchronize with the larger urban context 2. Connect the Station with the neighborhood, both East and West of the transit corridor 3. Integrate with Existing Canals & Blue – Green Network of the site context 4. Enhance ‘Walking & Cycling’, Public Space Experience 5. Multi-Modal Transport Integration 6. Create Vibrant TOD Mixed Use Development as a new hub for Uttara / Northern Dhaka	1. Rejuvenate Under-utilized land 2. Upgrade Existing Neighborhoods 3. Bring together the fragmented parts 4. Integrate with Landscape Assets of the Site 5. Create a ‘Multi-Modal Hub’ 6. Enhance ‘Walking & Cycling’, Public Space Experience

5. Analyzing integrated development options

Land use and transport/public transit, including the pedestrian network, are the major pillars of formulating the ToD plan, which aims to achieve an integrated development policy. It must promote high-quality urban design, including building facades, streetscapes, public spaces, and landscape features. This enhances the aesthetic appeal and functionality of the TOD area. It will ensure that new buildings are compatible with the surrounding context, preserving heritage structures where relevant and enhancing the overall urban fabric.

The primary development considerations for Uttara Center:

- A) Analysis in the significant area context
- B) Major development scope based on land ownership patterns
- C) Availability of open spaces
- D) Road connections & road hierarchy
- E) Open space structuring (plazas, urban Spines, pocket parks, connections, etc.)
- F) Development plots for real estate development
- G) Nodes & Landmarks
- H) Gateway Buildings and Urban Anchors

A) Analysis in the significant area context



B) Major development scope based on land ownership patterns



C) Potential Open Spaces



D) Road Connections & Hierarchy



E) Open space structuring (plazas, urban spines, pocket parks, connections, etc.)



F) Development plots for real estate development



G) Nodes & landmarks



H) Gateway buildings and urban anchors



Figure 3.6: Analyzing Integrated Development Options in the Uttara Center Area

6. Land Use

Land use will be determined based on the concept and type of urban developments by analyzing existing land use plans in DAP and the real estate demand estimation results.

The highest transit facility needs to be considered, including open space for people to gather in front of the station. Land use zoning will need to be examined by analyzing the attraction of passengers to specific urban developments. Land use zoning will also support the development of commercial and mixed-use perspectives. It must encourage sustainable building practices that align with national green building standards, such as energy efficiency, water conservation, and green materials.

The availability of land for transit facility and open space in front of the station differs greatly depending on the station's location (built-up areas or new town area). Therefore, in some cases, it is necessary to secure public facility functions by using the ground floors of buildings in built-up areas.

7. Floor Use Plan (Development Program)

The floor uses for each building block will need to be determined. The floor area for each use will need to be analyzed using real estate demand estimation following the land use and block-based building plan in the TOD Station Area. Each building block must be designed to confirm regulations such as FAR, MGC, setbacks, road widths, etc.

8. Development Limit

A separate TOD Development rule may need to be formed by RAJUK to get guidance with learning the maximum limit of land use, physical development, etc., within the zone. The possible limits to follow according to the typology of the MRT station are mentioned in this guideline already to follow:

Specific zones within the TOD area include residential, commercial, mixed-use, and public facilities. RAJUK can regulate the type of developments permissible within each zone to maintain the intended character of the TOD. Density regulations and maximum FAR will encourage high-density developments around transit stations while maintaining appropriate urban forms and preventing overcrowding.

Mixed-use development combining residential, commercial, and recreational uses can be promoted under the regulation, which will support reducing the need for long commutes and enhancing the area's vibrancy.

It will also support estimating the highest limit of building height and MGC, setbacks to optimize sunlight, ventilation, and visual aesthetics, as well as maintaining the scale and character of the area.

9. Transport Network and Transit Facility

It must ensure that new developments within TOD zones have direct and easy access to transit stations, minimizing walking distances and maximizing convenience. The development of pedestrian-friendly



Figure 3.7: Land Use Plan of Uttara Center Area



Figure 3.8: Floor Use Plan for Uttara Center TOD Area

pathways, cycling lanes, and seamless connections between different modes of transport, including bus, metro, and rail, must be considered.

- **Parking:** Parking must consider following the type of urban developments of the selected TOD area and analyzing the appropriate size and location to support the community's goals of increasing transit ridership, walking, biking, etc. Maximum parking limits will be needed to discourage private vehicle use and promote public transport, walking, and cycling. Consider park-and-ride facilities as part of a broader transport strategy.



Figure 3.9: Parking Proposal in Uttara Center TOD Area

- **Multi Modal Interchange:**

- **Macro Scale:** Road accessibility for the transit facility in front of the station must be considered. For feeder transport, wide-area feeder transport (e.g., city bus), middle-distance feeder transport (e.g., shuttle buses in new towns, etc.), and short-distance personal mobility (e.g., cabs, rickshaws, etc.) are expected base on the practice of intra and interconnectivity. For wide-area feeder transport, confirmation of bus routes connecting to rail stations is essential in the TOD station area with organizations in charge of public transport except rail, such as DTCA and BRTC. In addition, the location of the bus stoppage needs to be confirmed.



Figure 3.10: Multimodal Connectivity (Macro Scale)

- **Station Area Scale:** The routes for medium-distance feeder bus transport and personal mobility for intra-connectivity will need to be considered to ensure access by walking from the development blocks inside and around the TOD Station Area. Mainly for access to the transit facility in front of the station, the access road should be indicated as much as possible to accommodate the high traffic concentration.

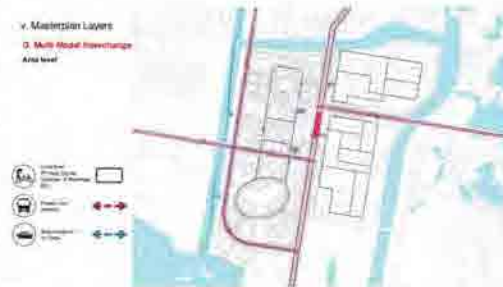


Figure 3.11: Multimodal Connectivity (Station Area)

- **Station Scale:** Transit facilities in front of stations and temporary waiting areas for rickshaws and other personal mobility vehicles will need to be incorporated into the plan from the traffic management perspective to encourage the use of these public transport services.

Rickshaw stoppage and waiting areas must be arranged in consultation with the City Cooperations and the Dhaka Metropolitan Police.

It may not be easy to eliminate private vehicles from the station area, but it can discourage access to the station and surrounding facilities.

A transit facility for private vehicles, such as a Park & Ride and a Drop Off in front of the station, must be arranged.



Figure 3.12: Multimodal Connectivity (Adjacent to Station Only)

10. Public Hearing

- Purpose

The 'Public Hearing' is a way to gather public opinions (on issues and proposals) of the draft plan while convincing all stakeholders by explaining the project schemes' implementation process and outcomes.

The TOD Station Plan finalisation process will need various exchange opinions through different meetings with relevant stakeholders (local private/public landowners, real estate developers, public authorities, local government agencies, public service providing companies and agencies, and professional bodies) who are/will be responsible for developing the concerned area.

The positive and negative impacts/effects of widened walkways, large-scale Market Plaza or station plaza, joined development, and re-development strategies will need to be consulted with the residents within the 200 m, 500 m, or 800-meter radius approximately. The modification of the draft Plan to be finalised as per logical feedback from the said stakeholders is a part of the TOD Station Area Plan preparation process to get approval.

Again, supervision, monitoring, and evaluation of the TOD Station Plan/project finalisation and implementation will be continuous. It will need to earn/achieve the concerns of the landowners/beneficiaries and other stakeholders (to make them responsible for supporting future development activities) to accomplish the project as a collective and integrated approach through analysing the impacts properly to get the plan/project's approval.

- Process

Hearings should be considered 'informational', and concerned officials or assigned experts should consider a significant amount of time to explain the problems, development visions, detailed process, prospectus of detailed design, ultimate benefits, discuss or defend the proposed actions, answer the public questions, etc. It should also be considered 'consultative' as the opinions and suggestions are sourced from individuals outside or unconnected to the decision-makers.

- The concerned agency will notify citizens, concerned public service-providing agencies, and relevant other stakeholders to check and provide their opinions on the draft TOD Station Plan within the defined period (ex: maximum 2 months).
- The same moderators should be responsible for hearing from selected areas to keep continuous communication between moderators and stakeholders. However, as public hearings are the process of gathering opinions, stakeholders invited to public hearings should not be involved in the final decision-making process.
- Hearing can be processed by proper notification to the said stakeholder using visual maps, information through PowerPoint presentations, or educational lectures on the technical aspects of the issue, which will need to be decided by the organiser. Especially for major problems for TOD, such as infrastructure and zoning, redevelopment or acquisition, the future value of developments, area to be consumed, future land uses, development controls, public-private partnership, etc., should be considered.
- To utilise the decision-making information, every process may need to be appropriately documented.

3.2.3 Check and Approval of TOD Station Area Plan

TOD Management Board must review and approve TOD plans and policies that must combine various individual projects (including infrastructure and building developments). The approval process will need to be streamlined based on the review results from relevant agencies and the public hearing results.

TOD Management Board will approve the plan by reviewing the plan (Assessing impacts, including traffic, environmental, and social aspects).

- The Board will need to engage members of relevant agencies to analyse phased base development options, integrate them with growth incrementation, and check and ensure that infrastructure and services are scaled appropriately, following the design standards to make the whole development in a modern shape.
- A robust monitoring system must be established to ensure that developments adhere to approved plans and regulations, with regular inspections and enforcement actions for non-compliance.

The relevant organization will play a vital role in supporting and reviewing the plan with the board during the Plan approval process:

3.2.4 Making DPP for Public Projects

Preparation of the Development Project Proposal (DPP) is the last stage of the TOD Implementation Plan Preparation process to make it a public project. ToD projects may be planned to be implemented as a complete and individual project for the station or different components of a TOD project by various agencies under an approved plan for that particular project. However, the DPP mode is a prerequisite for government approval of projects. DPP (TAPP in case of Technical Assistance Project) is the formal paper required for project approval in Bangladesh irrespective of the source of fund (own fund/GoB fund/Grant/Loan project/PPP/mixed sources) or type of project. DPP's approval level depends on the amount of money involved in project implementation and the source of funds. The following table shows a summary.

Table 3.4: Approval Authority by Project Type

	Type of projects	Criteria	Approving authority
1	Investment projects	Estimated total project cost (ETPC) ≤ Tk. 50 crore	Minister/State Minister for Planning
		ETPC > Tk. 50 crore	ECNEC
2	Feasibility study projects	ETPC ≤ Tk. 5 crore	Minister/State Minister for the sponsoring Ministry/Division
		ETPC > Tk. 5 crores or ETPC ≤ Tk. 50 crore	Minister/State Minister for Planning
		ETPC > Tk. 50 crore	ECNEC
3	Self-financed projects	ETPC - no limit for fully funded by sponsoring organisation	Minister/State Minister
		If the acquisition and utilisation of land over 20 acres	ECNEC
4	Technical assistance projects and technical projects	ETPC ≤ Tk. 10 crore	Minister/State Minister for the sponsoring Ministry
		ETPC > Tk. 10 crore	Minister/State Minister for Planning

Source: Public Investment and Management Guideline, 2023

It is important to note that self-financed projects on less than 20 acres of land require a shorter approval process, and the technical assistance project proposal (TAPP) requires a pre-DPP to be approved by ERD. In all cases, a feasibility study is needed for projects more than BDT 50 crore. These are shown in the following figures.

**Figure 3.13: Flow Chart of Investment/Technical Assistance Project Approval****Figure 3.14: Flow Chart of Self-financed Project Approval by Autonomous/Corporations/State-owned Companies etc.****Figure 3.15: Flow Chart of Pre-DPP Approval for Technical Assistance Project**

After approval of the DPP and initiation of the project, it is included in the Annual Development Program (ADP) and annual budget.

Primary considerations of DPP preparation for TOD projects

Identifying funding and financing resources to implement the TOD projects would be an important concern, and the following major development components can be addressed in the initial stage.

- **Preparation and approval of TOD Station Plan:** can be considered non-capital investments.

- **Securing the Land Properties:** through property acquisition if private lands need to be acquired for public infrastructure developments, through a direct land transfer process if the land belongs to another ministry, through developing private-private partnerships if the real estate development requires private developers on private owner's lands. Land readjustment or land redevelopment may also be used as alternative land management tools.
- **Identifying public infrastructure development demands including access, utility, and amenity improvements:** need to identify funding sources and relevant public agencies who will develop, and maintain the project, etc.
- **Transit-oriented real estate projects develop and identify the funding source:** identifying the source of funds would be the mainstay for real estate development in the TOD Station Area. Detailed designs through a feasibility study must be prepared to estimate the detailed cost.
- **Environmental studies:** as per the requirements
- **Coordination among concerned agencies:** Each TOD project will involve a coordination mechanism of different concerned agencies if developed jointly or each project component developed separately by other agencies. The level and coordination mechanism are discussed in Part 4 of these guidelines.

3.2.5 Development Approval Application

The process for development approval in Bangladesh involves multiple steps, including Planning permits and project implementation permits. There is a government-approved DPP format for this process to be applied to the project by different agencies, departments, etc.

3.2.6 Check and Approval of Project

Within the scope of the TOD Station Plan, it is essential to formulate various projects efficiently while avoiding duplication. To this end, the following steps may be taken into consideration.

Step-1 Identification of Sector Projects: Set up public sector projects such as infrastructure and public facilities as the smallest unit. Examples include access roads connecting to the station, transport facilities such as the station plaza, major public facilities (referral hospitals, higher education, sports stadiums, city parks and green spaces, etc.), which the TOD Station Plan might introduce. These should first be identified as projects of respective government agencies.

Step-2 Identification of Private Sector Projects: The TOD Station Area may also include projects such as commercial facilities and apartment complexes by private developers. Furthermore, landowners will also be responsible for a part of the project in cases such as the redevelopment of existing urban areas. It is also possible that RAJUK will undertake the project alone or as a joint project between private developers and residents. RAJUK should actively collaborate and formulate such private projects, especially if several projects identified in Step-1 overlap spatially on private land.

Step-3 Identification of Multi-sectoral Projects: Formation of a complex project should be pursued as much as possible since those projects are likely to be correlated. However, it is not always necessary to combine everything because it is often very time-consuming to combine all of them. Formulation of the multisector project should be pursued with a sense of reality with the range of viability and acceptability of all the project owners concerned, including the landowners and private developers. An area-based phasing approach may be practical if the multi-sector project's scale necessarily becomes large. The final setting of the boundary of this multi-sectoral project will be highly dependent on the existing land use. Those projects not involved in the multi-sectoral project will be pursued by implementation of independent projects, unless there are needs and possibilities of smaller joint projects distant from the significant multi-sectoral project.

3.2.7 Implementing Project

TOD project implementation lies in the hands of different public entities and private developers based on context, station typology, etc. This should take the form of combined/integrated development. In the implementation phase of TOD, it is necessary to follow the principles and regulations of TOD and obtain a development bonus if requirements are met. The detailed implementation process is described in Part 4 of these guidelines.

Part 4: Implementation Approach

The Implementation Program encompasses all TOD Station Area will significantly influence both the formation and implementation of projects, encompassing public facilities, private commercial developments, and residential buildings. Additionally, even for undeveloped areas beyond designated projects, a regulatory guidance program should be established to ensure individual private land uses align with the broader TOD Station Area Plan.

To effectively consider program content and establish appropriate ones, the programs within the TOD Station Area Plan can be classified based on land ownership and existing land use. The following categories of built-up areas provide a useful framework:

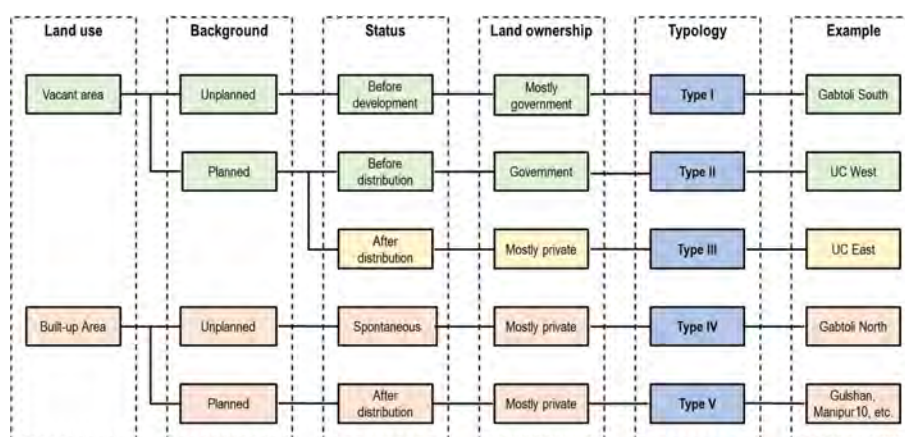


Figure 4.1: Typology of Land Conditions in Station Area

4.1 Type I : Vacant Unplanned Area

There are vacant lands in unplanned areas in Dhaka, typically found in peri-urban areas and low-lying areas near lakes or floodplains in the inner suburbs. Similar situation can be found when existing large public facilities are to be relocated, as is the case with Gabtolli South.

Since these areas are mostly public land, they are well-suited for large-scale development projects, either as a single large site development or in the shape of super block formed by consolidation of surrounding private and/or public lands. Therefore, it is crucial to seize this opportunity to create well-rounded projects that can realize the most ideal TOD environment.

In terms of the regulatory programs, there is little risk of creating a large-scale informal settlement, even if it is left unregulated. This is because public land ownership discourages sizable investment by ordinary people. On the other hand, it is also difficult to formulate a joint project without strong initiative.

Since Type I areas lack infrastructure, development of transport infrastructure is essential. This will inevitably involve land owned by multiple parties. If a land readjustment can be implemented on this occasion, it will be possible to achieve the most desirable land use suitable to TOD, along with interest of each landowner.

To promote this, it is effective to establish and designate a “Project Promotion Area” and make it mandatory for stakeholders to consult with RAJUK.

4.2 Type II : Vacant Planned Area Before Land Distribution

If large scale township development by RAJUK has been completed but the land plots have not been subdivided or distributed, it can be recognized as the land for Station Area development has already been secured. Therefore, this is the type of areas where formulation and implementation of projects can be carried without obstacles as far as land preparation is concerned. This situation particularly exists in suburban areas where new township development projects are underway or completed quite recently.

However, it should be noted that changing the introduced functions from the original plan may increase the load on the constructed infrastructure. This is particularly true when introducing park-and-ride systems. Functionality of the road network configured in the original plan need to be assessed. In some cases, even if the width remains the same, modifications such as changing the ratio of roadways to sidewalks by maintaining the same road width may bring a significant effect on creating a proper TOD area.

In order to make such consideration mandatory, a “Project Promotion Area” should be set up as in the case of Type I, by the TOD management Board as soon as possible. By doing so, a system will be created to effectively review the original plan with the participation of transport-related organizations prior to start distribution of land plots. When creating a project plan, the project implementation scheme shall also be considered, including the possibility of private developers’ participation.

4.3 Type III : Vacant Planned Area After Land Distribution

If a township development by RAJUK has been completed and land has already been subdivided and allocated, but building has not yet proceeded on private land, securing land for Station Area improvements would be essentially the same as for brownfields. This is because it would be emotionally repugnant to re-acquire the land immediately after the subdivision. Furthermore, the act of buying back land plots with increased value after development is deemed to be a wasteful public investment.

In this situation, it is necessary to take full advantage of the Regulative and Incentive Program to guide individual construction on privately owned land in the immediate vicinity of the railway station, prior to the permit of applied construction plans. By doing so, the shape of the buildings in these areas can be adjusted to suit the area of TOD, which were not considered at the time of formulating the original township development plan.

Specifically, the following policies should be established:

- In order to create an active streetscape, the ground floor of the designated area should be limited to retail use, while use as offices or warehouses are prohibited. With regard to the retail portion, open cafes and portico designs are encouraged.
- In order to enhance the usability of the station, a smooth pedestrian flow line shall be ensured. Public pedestrian walkway space shall be created by joint use of multiple plots at designated area. In other areas, encourage the building design to incorporate a design of buildings with hollow ground floor (*piloti*), to be passed through by pedestrians, compensated by provision of higher FAR as contributing to providing public convenience.
- In order to improve safety level, as well as maintaining an active streetscape, Location of the entrances and exits to parking lots shall be placed at the rear side, rather than from the main road.
- To improve convenience for station users, mandate that elevators and/or escalators be installed in buildings around intersections in conjunction with sky corridor described below.

- For the smooth movement of station users, install public sky corridor at the ticket gate level as a public project.

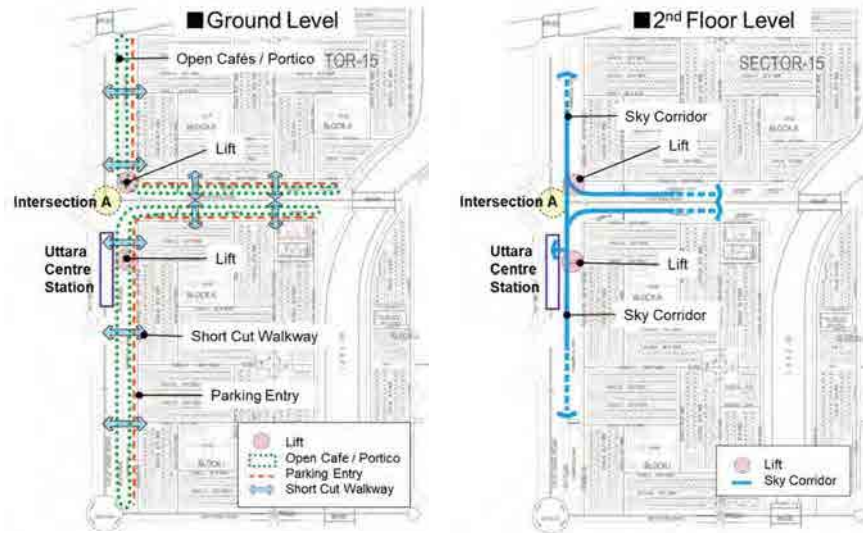


Figure 4.2: Image of Space Design

Achieving these goals will be difficult through area-based regulations and incentives such as zoning, and will require individual planning consultations. For this purpose, a Project Promotion Area will be established in the necessary areas, as in the case of Type I and Type II, and landowners will be required to consult with RAJUK before undertaking any construction activities.

The most ideal case for realizing the TOD environment would be a formulation of development project where multiple plots are jointly used. To this end, it would be effective for RAJUK to hold explanatory meetings for landowners in the Project Promotion Area and present incentives including FAR bonuses for joint use, as well as subsidies from RAJUK for construction costs. While FAR bonuses and RAJUK subsidies can be obtained through TOD-oriented designs on individual land plots, it is important to emphasize that the benefits become even greater when multiple plots are combined and the project area expands.



Figure 4.3: Image of Joint Development with Incentives

4.4 Type IV: Built-up Unplanned Area

Areas where urbanization has progressed ahead of land development by RAJUK are characterized by high density with inadequate infrastructure, a large population, and the formation of a certain degree of community. These areas face many challenges, such as narrow roads that make it difficult for emergency vehicles to access. On the other hand, these areas also have a lively commercial atmosphere and form an attractive cityscape that is unique to Dhaka.

While such areas inherently have a high need for improvement, from a TOD perspective, there is a need for more intensive land use and the creation of public spaces that are convenient for station users, especially in areas close to the station. On the other hand, there is a need to improve the area while protecting the community through retrofitting, especially where there is some distance from the station.

In light of these circumstances, it is necessary to divide the area into several zones based on its current characteristics and set goals and implement measures accordingly. In the case of the north side of Gabtoli Station as an example, it is conceivable to divide the area into four categories.

- Priority Redevelopment Zone 

This zone is located in close proximity to the station and has a high demand for public space, including transport infrastructure development. The redevelopment project will improve the road network and create public space, while transforming land use to be appropriate for the station front.

- Redevelopment Zone 

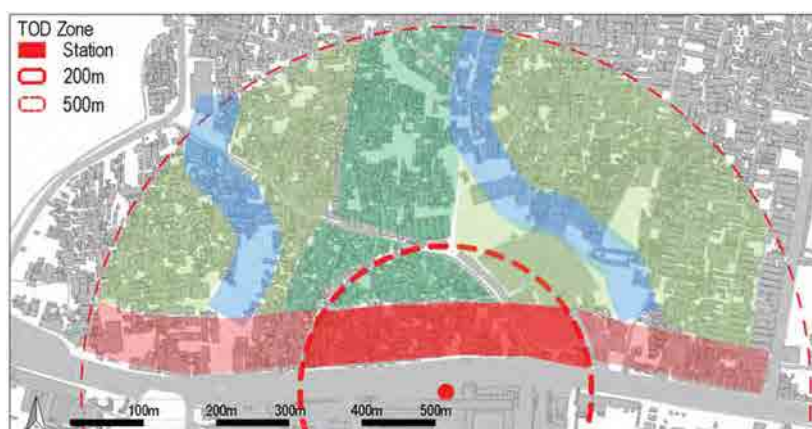
This zone is located along the access roads to the station that are proposed for improvement, and thus, there is a high need to promote redevelopment in conjunction with road development. The effective FAR after the project will be greatly improved, so there is potential for realization through redevelopment projects led by private developers.

- Rehabilitation Zone I 

Despite being close to the station, this zone lacks existing road space and does not provide a sufficient living environment. It is desirable to promote land consolidation by landowners, improve necessary infrastructure, and promote redevelopment based on improved effective FAR conditions with the expansion of road space. Active coordination by RAJUK is desirable.

- Rehabilitation Zone II

This zone is a relatively well-equipped area consisting of small-scale land development projects, and there are no major problems as an urban area. However, since being close to the station, it is desirable to improve the pedestrian space and urban amenity. Additional FAR shall be provided to guide enhancing the value of public space in line with individual redevelopment. Conditions of providing additional FAR need to be clarified by the TOR Planning Team at the time of formulating the TOD Plan, identifying target pedestrian and public transport related facilities to be introduced.



Note: Blue zone is a reserved area in a specific example, which is not the proposed typology mentioned above.

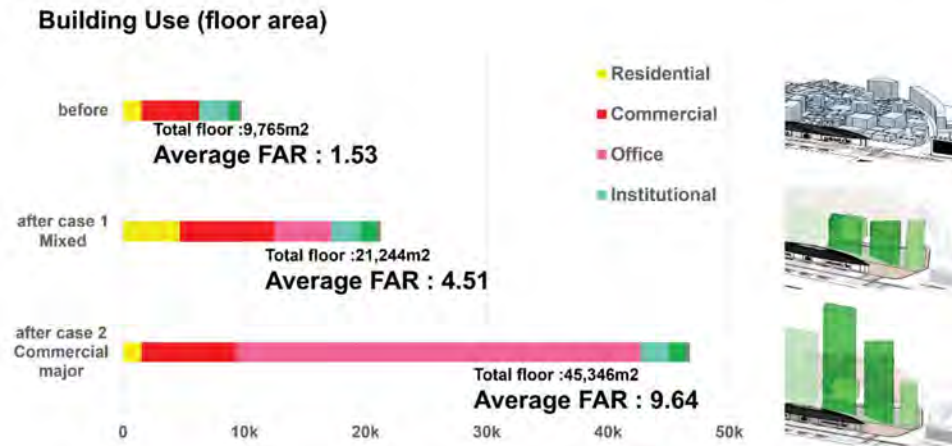
Figure 4.4: Image of Zoning around MRT Station

4.5 Type V : Built-up Planned Area

Most of the officially development areas by RAJUK in the past have been fully subdivided and sold to private and have formed mature urban areas with mid-rise buildings. Since land use is achieved in a healthy and efficient manner, there is no particular need for improvement. However, it is desirable to modify the composition of the area near the station to fit the newly developed railway station.

Since MRT is generally constructed along major roads, the urban area near the station faces the major trunk road of the city. According to Dhaka's building regulations, there is no restriction on the FAR of commercial buildings along these major roads. Therefore, if several existing buildings are consolidated and reconstructed into a commercial building and a condominium for existing residents separately, a significant increase in floor area after the project can be expected to the level where feasibility of redevelopment with the participation of private developers can be expected.

In view of this, a Project Promotion Area shall be established in such blocks near the station, especially in cases where aging of the buildings is observed, and redevelopment shall be promoted under the coordination of RAJUK.



Actions with the TOD Guidelines

The First Actions

Land use factors such as density, use mix, and connectivity affect how people travel within a community. When development is spread out, destinations are far apart, and the private car is the predominant mode of transport out of necessity. When development is compact, destinations are proximate and people can access all of their needs by walking, including using public transit to complete their trips. Transport and land use planning are natural partners essential to one another. Without this coordination, costly impacts can result in falling ridership, isolated developments, and greater public infrastructure needs.

Although public authority and large stakeholder, RAJUK has limited control over land development beyond its own property. The characteristics of high-quality TOD outlined here must be implemented to ensure success in projects on land owned by others. It is expected that the implementation of TOD will be accompanied by the cooperation and collaboration of many entities in Dhaka, with the TOD guidelines being referred to as a common frame.

With the cooperation and collaboration of the related entities, the following actions should be implemented as the first actions.

- **Identifying station areas which need TOD planning earlier:** In addition to the station area of Uttara Center and Gabtoli, where TOD plans were drafted earlier, stations will be identified where a TOD Station Area Plan should be established earlier. The selection should be based on several points, including the importance of the station in terms of the number of passengers and the number of intersecting lines, the timing of reconstruction of key facilities, and the modeling perspective of applying lessons learned to subsequent stations, such as selecting one station from each TOD station type.
- **Practice of planning and implementation of TOD Station Area Plan:** TOD Station Area Plans are formulated, and projects are implemented. Through this practice, good practical ways to coordinate and proceed among the entities involved are established. Effective incentives and public contributions to obtain them will also be materialized.
- **Reflection of the TOD Guidelines to the major policy in Dhaka:** The contents of the TOD Guidelines should be reflected to the policies related to land use and transport in Dhaka such as DAP and Strategic Transport Plan for realizing TOD in an effective manner.

Further Actions in the Future

Public transport development and TOD practices in Dhaka are still in the development stage, as one MRT line in Dhaka has only been opened since the end of 2022. With two new BRT lines scheduled to open by the end of the 2020s, Dhaka will need to further promote TOD along with multiple MRT and BRT lines in the future. Based on these conditions in Dhaka, the following actions are expected to be implemented in the future.

- **Monitor, evaluate and review of the TOD Guidelines:** It is important to monitor and evaluate planning and implementation through the practice of the TOD guidelines and provide opportunities to revise the guidelines to make them more effective rules.
- **Incorporate new TOD Station Areas:** Along with new MRT/BRT line construction and extension, the characteristics of the new station areas to be opened should also be incorporated into the guidelines, and the guidelines should be revised to be broadly applicable. In addition, as areas of people's activities will be expanded and shaped by the operation of multiple lines, it is expected that the area plans will be made at the level of interconnected MRT and BRT lines, and they will enable diverse and efficient development in the limited urban space.

রাষ্ট্রপতির আদেশক্রমে,
মোঃ নজরুল ইসলাম
সচিব

মোহাম্মদ আবু ইউসুফ, উপপরিচালক (উপসচিব), বাংলাদেশ সরকারী মুদ্রণালয়, তেজগাঁও, ঢাকা কর্তৃক মুদ্রিত।
মোঃ নজরুল ইসলাম, উপপরিচালক (উপসচিব), বাংলাদেশ ফরম ও প্রকাশনা অফিস, তেজগাঁও,
ঢাকা কর্তৃক প্রকাশিত। website: www.bgpress.gov.bd

Presentation Material for the 7th JCC



The 7th Joint Coordination Committee



Project for Development of Policy and Guidelines for
Transit Oriented Development along Mass Transit Corridors

26th April, 2026

Topic:

1. Introduction of Participants
2. Project Overview and Overall Output
3. Report of progress of activities
 - 1) Right Conversion Rules
 - 2) Case Study of RC project in Gabtoli North
 - 3) Integrated Development Plan and Proposed Land Arrangement project in Gabtoli South (including video image)
4. Way Forward and Discussion

1. Project Overview and Overall Output

Project Outline

Expected Goals

- To ensure **planned development** through preparation and implementation of Transit Oriented Development (TOD) **policy and guidelines** in Dhaka.

Deliverables

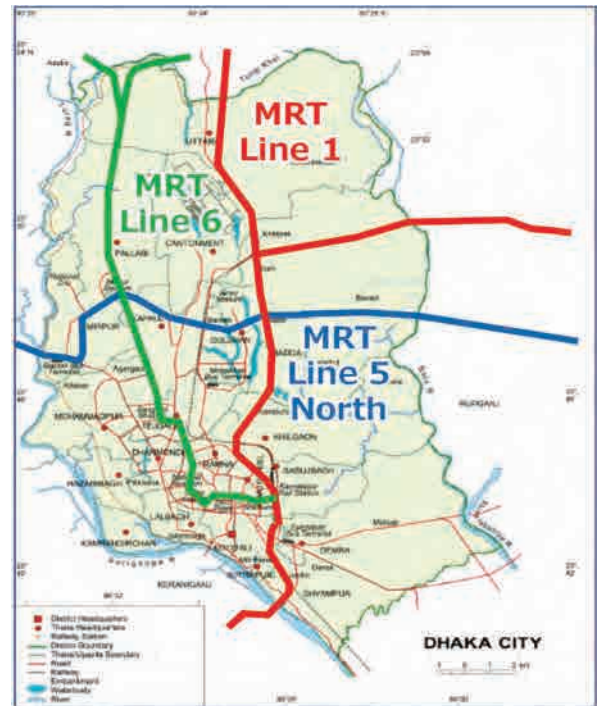
- Technical Reports on i) integration of land use and transport planning; ii) policy and legal framework study; iii) TOD Case Studies in Japan and other countries
- **TOD Guideline**; (Published as Official Gazette in May 2025)
- **TOD concept Plan** at pilot sites (2 sites)
- Draft Rules for Right Conversion Project under TIA Act; and
- Technical study and proposal of development scheme for Gabtoli South area.

Target Area

- Area along MRT Line 1, Line 5 (North Line), Line 6

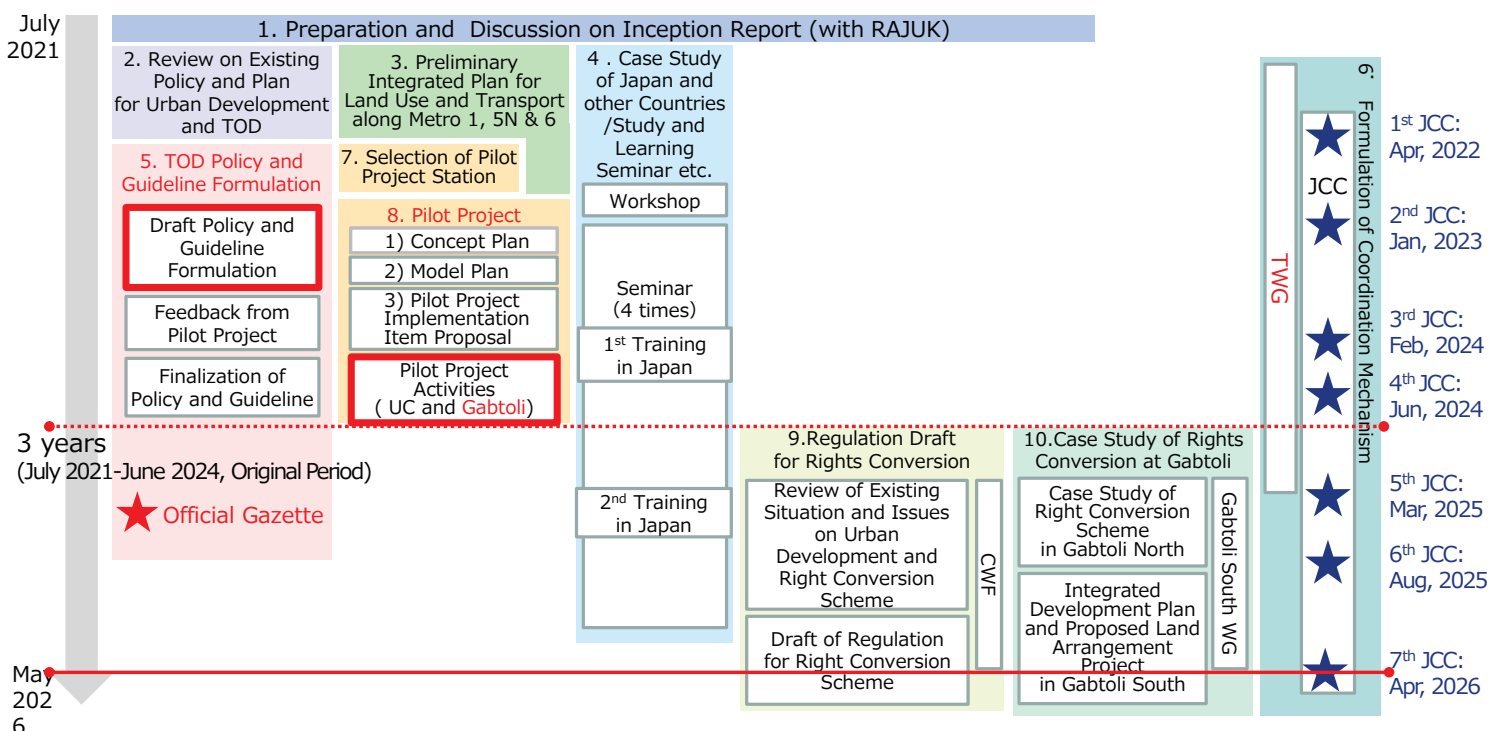
Duration

- 3 years + 1 year 11months (July 2021-June 2024~May 2026)



Location of MRT Lines

Work Contents & Schedule



Major Outputs from the Project

- 1. Selection of Stations for Pilot Project
- 2.TOD Guideline (Official Gazette in May 2025)
- 3.TOD Concept Plan for 2 Pilot Stations
- 4.TOD Learning and Training in Japan
- 5. Formulating Draft Right Conversion Rules under TIA Act and Case Study in Gabtoli North Area
- 6. Technical study and proposal of development scheme for Gabtoli South area

● Outputs of Original Period ● Outputs of Extension Period

1.Overall Selection Process of Stations for Pilot Project

1 Preliminary Selection

- 15 candidate stations.
(13 stations specified in the RD plus 2 more stations proposed by DSCC)

2 Second Selection

- Narrowing down to 4 stations from a viewpoint of 3V approach + TOD Model Impact

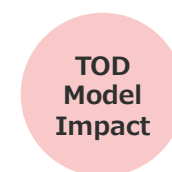
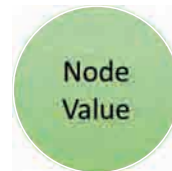
3 Final Selection

- Narrowing down to 2 stations based on opinions in discussion at TWG 1 & 2

- Approval from JCC members

TOD Concept Plans/Model Plans/Pilot Projects in

- 1) Uttara Center Station
- 2) Gabtoli Station



TOD Station Typology

- TOD is not “one size fits all”.
- Seven types of stations are grouped as the result of the data-driven analysis with density and mix of uses by brown- or green-field.



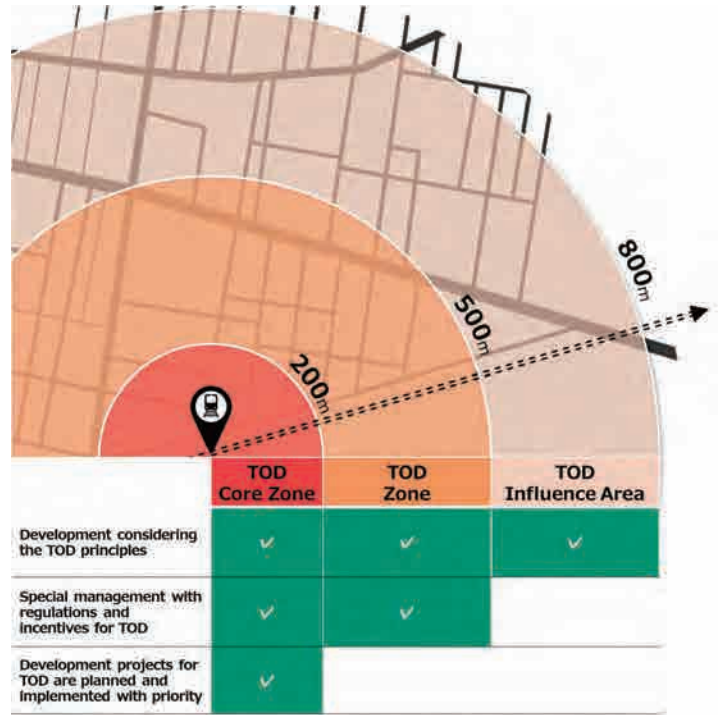
Concepts by TOD Station Type

TOD Station Type	Brownfield Group				Greenfield Group		
	Regional Center	Urban Center	Urban Neighborhood	Institution	Suburban Center	Suburban Neighborhood	Suburban Employment
Density	 High	 High-middle	 Middle	 Low			
Main Types of Land Use	 Non-residential	 Mixed Use	 Residential	 Non-residential	 Mixed Use	 Residential	 Non-residential
Walking, Cycling, and Transit Connection	 Larger scale Promoted Smaller scale						
Parking	 Not promoted		 Not promoted, except at the end of a transit line			 Park & Ride is promoted	

TOD Zoning System – How to control development around transit stations

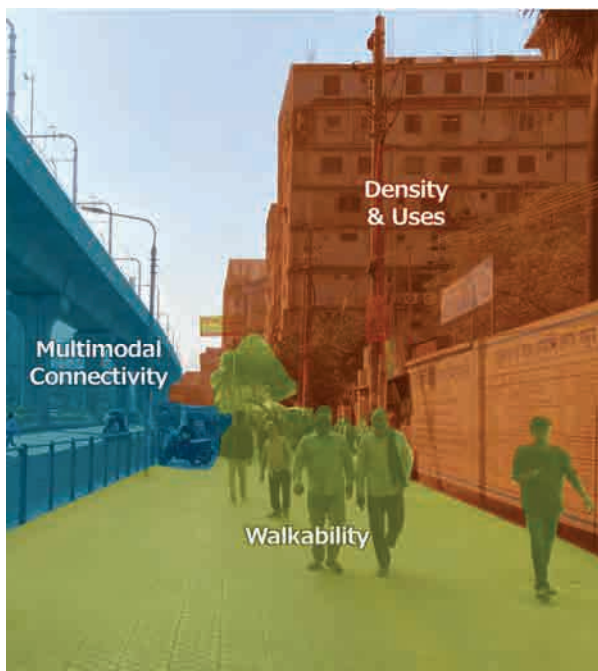
TOD Circle Zones

- **TOD Zone (500m) :**
Basic walkable area subject to special management restrictions and incentives
- **TOD Core Zone (200m) :**
Area where TOD projects should be planned and implemented with more priority
- **TOD Influence Area (800m) :**
Area to be developed considering the principles shown in the TOD guidelines



Outline of Part2

Part2 explains general image and elements that are found in a typical station area where TOD is implemented, which are commonly recognized by stakeholders.



Density & Uses

Multimodal Connectivity

Walkability

Land Value Capture

Direction

- ✓ **Density:** Develop Higher Floor Area Density, Regulate Too Small Lot Size
- ✓ **Uses:** Develop Use for Relatively High Dense Population, Develop Areas or Buildings with a Mix of Uses, Develop Horizontal or Vertical Mixedness, Activate Ground Floor, Allocate Open Space from Privately Owned Land, Include Affordable Housing When Possible

Approach

- ✓ **Incentives:** By Common Rule, By Additional Rule
- ✓ **Conditions:** Required Conditions, Evaluated Conditions

Direction

Transit Function Priority

1st: Walking & Cycling, 2nd: Transit Connections, 3rd: Drop-off, 4th: Park and Ride

Approach

- ✓ **Road Network**
- ✓ **Transit Network**
- ✓ **Bus Network**
- ✓ **Drop-off / Pick-up**
- ✓ **Parking Policy**
- ✓ **Rickshaw Management**
- ✓ **Bicycle Network and Parking**

Direction

- ✓ **Walkable Distance**
- ✓ **Safe and Comfortable Environment**

Approach

- ✓ **Connectivity:** Identify Primary and Secondary Pedestrian Routes, Expand Walkshed When Possible, Maximize Pedestrian Connectivity with Walkable Blocks and Frequent Intersections
- ✓ **Pedestrian Route:** Provide Walkable Way, Ensure Safety at Street Crossing, Create Tree Canopy
- ✓ **Streetscape:** Activate Public Space, Create a Station Identity, Increase Visibility, Place Lighting, Pedestrian Scale Architecture

Direction

Land Value Capture

Approach

- ✓ **Tax- or fee-based LVC**
- ✓ **Development-based LVC**

3.TOD Concept Plan for Uttara Center Station Area

Current Situation



Land Ownership



3.TOD Concept Plan for Uttara Center Station Area



This plan is introduced in "Advisory on Transit Oriented Development" Issued by Ministry of Housing and Urban Affairs, Government of India in Sep.2023

3.TOD Concept Plan for Uttara Center Station Area

Land Use/ Building Height
Dev. Schedule



Elevated Walkways and Connections



Walking & Cycling Network



Multi-Modal Connectivity
(Wide scale)



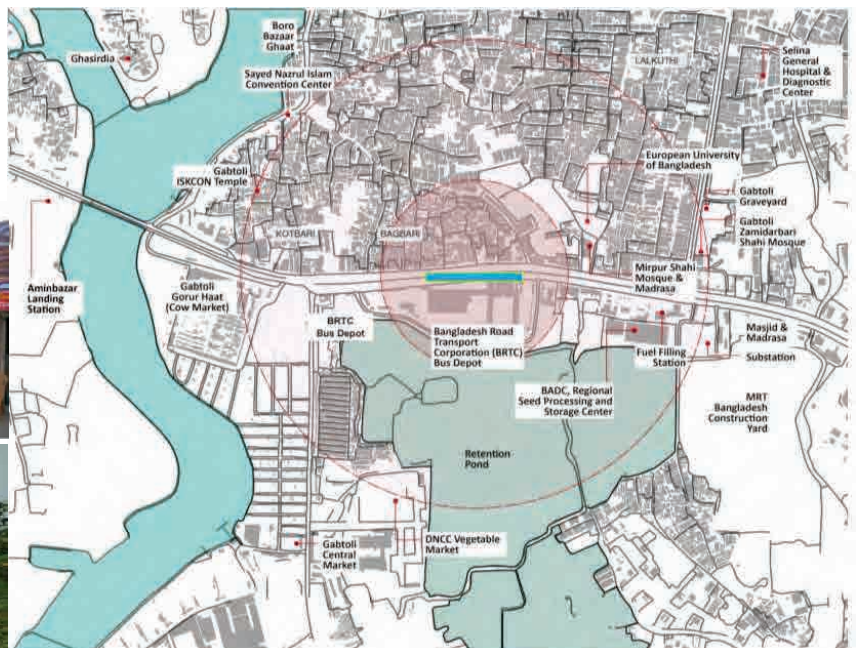
Multi-Modal Interchange
(Station front)



Parking Strategy



3.TOD Concept Plan for Gabtoli Station Area



3.TOD Concept Plan for Gabtoli Station Area



Multimodal Transportation Hub

Development of Multiple Stations, Connect Transportation Network with Comfortable & Accessible Public Spaces



Cultural & Community Exchange Agricultural Research & Development Center



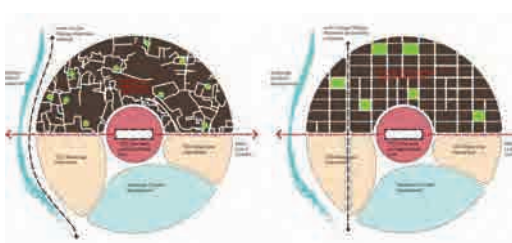
Flood Control in Rainy Season Securing Rainy Season Flood (5yr-RP)



Waterscape

3.TOD Concept Plan for Gabtoli Station Area

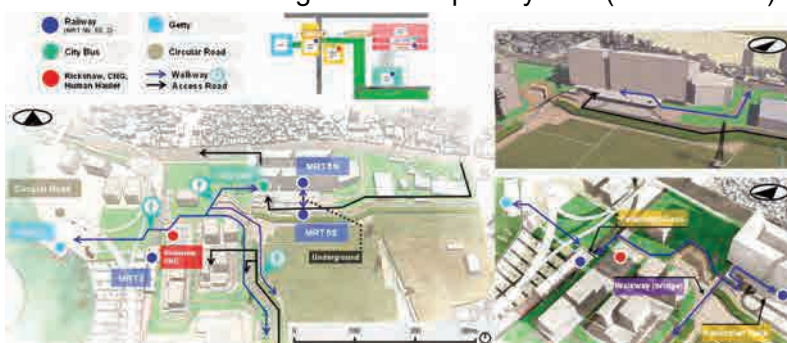
Comparison of
Development Direction



Comparison of
Development Scenarios



Multi-Modal Interchange and transport system (Station front)



Land Use/ Building Height
Development Schedule



Flood Control



4. TOD Learning and Training in Japan

Purpose : To study about project methods (e.g. land readjustment, right conversion etc.) and the roles of the stakeholders, in order to deepen understanding of TOD and its implementation.



4. TOD Learning and Training in Japan



Major Outputs from the Project

- 1. Selection of Stations for Pilot Project
- 2. TOD Guideline (Official Gazette in May 2025)
- 3. TOD Concept Plan for 2 Pilot Stations
- 4. TOD Learning and Training in Japan
- 5. Formulating Draft Right Conversion Rules under TIA Act and Case Study in Gabtoli North Area
- 6. Technical study and proposal of development scheme for Gabtoli South area

● Outputs of Original Period ● Outputs of Extension Period

Thank you! ধন্যবাদ!



The 6th Joint Coordination Committee



Progress of Activities 2) Right Conversion Rules



Project for Development of Policy and Guidelines for
Transit Oriented Development along Mass Transit Corridors

April 26, 2026

Topic:

1. Introduction
2. Purpose and Technical Approach
3. Draft Regulations for Right Conversion Rules (under discussion)
4. Discussion

2. Progress of Activities Right Conversion Rules

Why Right Conversion Scheme?

- ✓ MRT development increases the need for urban (re)development around stations.
- ✓ More sustainable development scheme is required.

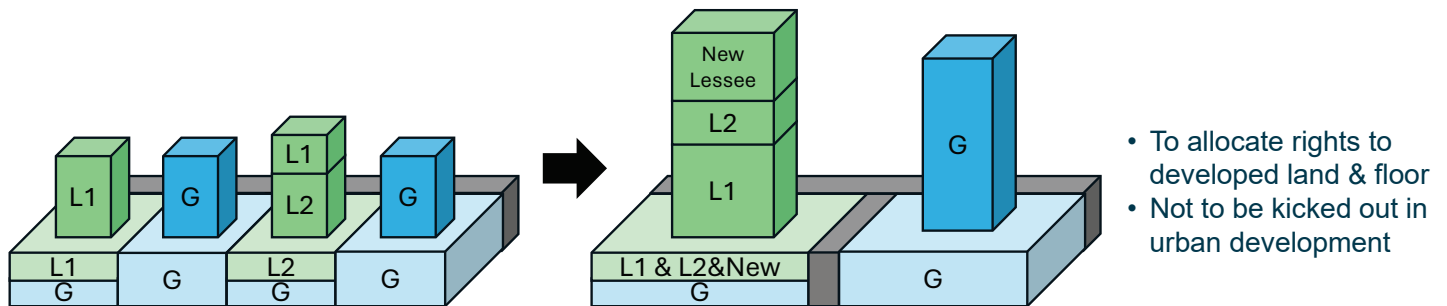
→ **Rules (draft) for Land Readjustment and Land Redevelopment is prepared**

Social Inclusion

- To conserve existing rightsholders within the site
- To reflect opinions of rightsholders in design

Financially feasibility

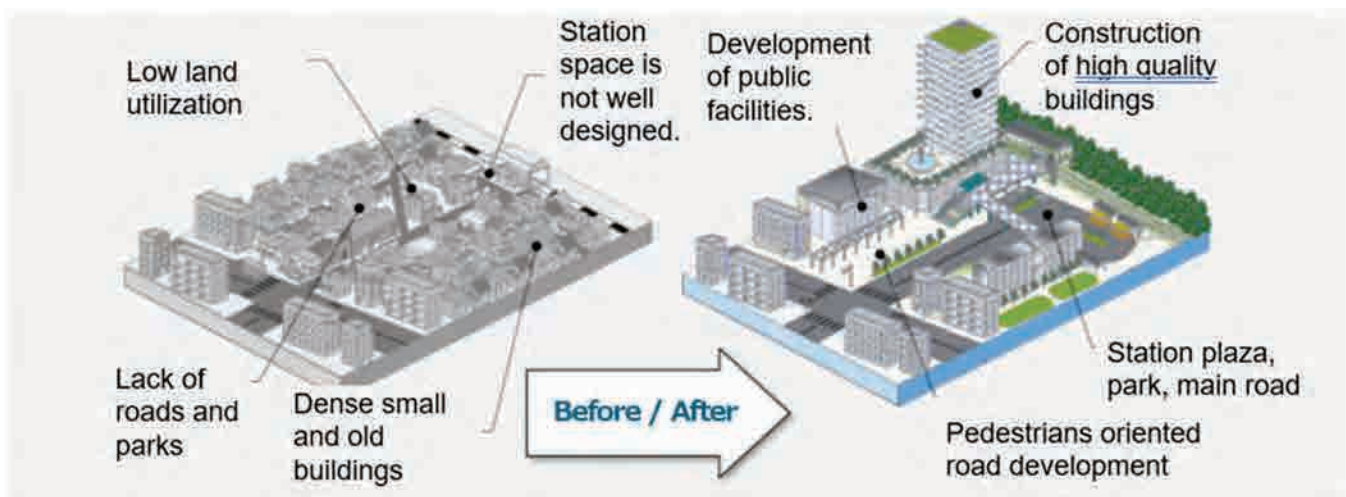
- To minimize land acquisition and compensation
- To gather contributions from rightsholders (beneficiary-funded)



What is the Benefit of Right Conversion Scheme?

While conserving existing rights, RC Scheme can

- ✓ Develop infrastructure comprehensively
- ✓ Unlock FAR potential through integrating scattered plots and tiny buildings



How the Rules Developed?

- ✓ 50+ hours discussion through 17 times of meetings with RAJUK, local experts and academia.
- ✓ Submitted Draft Rules (English) from JPT in Nov 2025
- ✓ Improved Draft Rules (Bengali) by RAJUK and Bengali experts in Jan 2026



Legal framework

- ✓ RAJUK Ordinance 2026 is a Mother Act for the Rules.
- ✓ The Rules is expected to be approved by the minister of MoHPW.
- ✓ Documentation of supplemental / technical guideline is expected.
- ✓ After the legal base is established, first project shall be implemented soon to prove concept.

Act Parliament	<i>Mother Act</i> ✓ RAJUK Ordinance, 2026 approved on 27 th Nov 2025
Rules Minister, MoHPW	✓ Land Readjustment and Land Redevelopment Rules, 2026 submitted to MoHPW
RAJUK document RAJUK Chairman	✓ Technical Guideline (supplemental output) to be included in Final Report

Composition of Rules (draft)

✓ It is composed with essential items for the first project in Dhaka.

Ch.1: Preliminary & Definitions

1. Short title, extent & commencement
2. Definitions

Ch.2: Project Proposals & Institutional Framework

3. Project Implementing Organization
4. Class and Type of Projects
5. Project Approving Authority
6. Pre-feasibility Evaluation/Verification Committee
7. Project Office and Project Management Committee
8. Project Evaluation Committee
9. Landowners Council
10. Coordination Committee
11. Partner Developer or Investor
12. Consistence/compatibility of the Project Area with Relevant Plans
13. Types of Rights Conversion
14. Guidelines and Standards for General Project Implementation

Ch.3: Project Initiation, Framework & Consensus

15. Project Initiation and Consent
16. Public Notice and Disposal of Appeals and Objections
17. Preliminary Boundary Delineation and Publication of the Comprehensive List of Landowners
18. Participation and Commitment Agreement
19. Preliminary Approval of the Project
20. Feasibility Study Report and Its Contents
21. Project Implementation Framework (Work Structure/Plan)
22. Project Financing
23. Formation of Arbitration Committee and Dispute Resolution

Ch.4: Rights Conversion Plan, Valuation & Approval

24. Rights Conversion Plan Preparation and Contents
25. Land and Property Valuation Policy
26. Property Allocation and Ownership Transfer Policy

27. Consensus on Plan and Objection Resolution
28. Final Approval of the Plan

Ch.5: Project Implementation & Interim Measures

29. Final Project Participation Agreement
30. Land Acquisition for Non-Consenting Landowners
31. Development Implementation Committee
32. Development Control and Interim Allocation
33. Eviction, Relocation, and Compensation
34. Construction Work and Implementation
35. Final Asset Allocation and Transfer of Ownership
36. Reserved Property and Cost Recovery
37. Project Completion

Ch.6: Miscellaneous

38. Oversight, Reporting, and Directives
39. Maintenance and Management of Common Amenities
40. Violation of Rules and Remedies

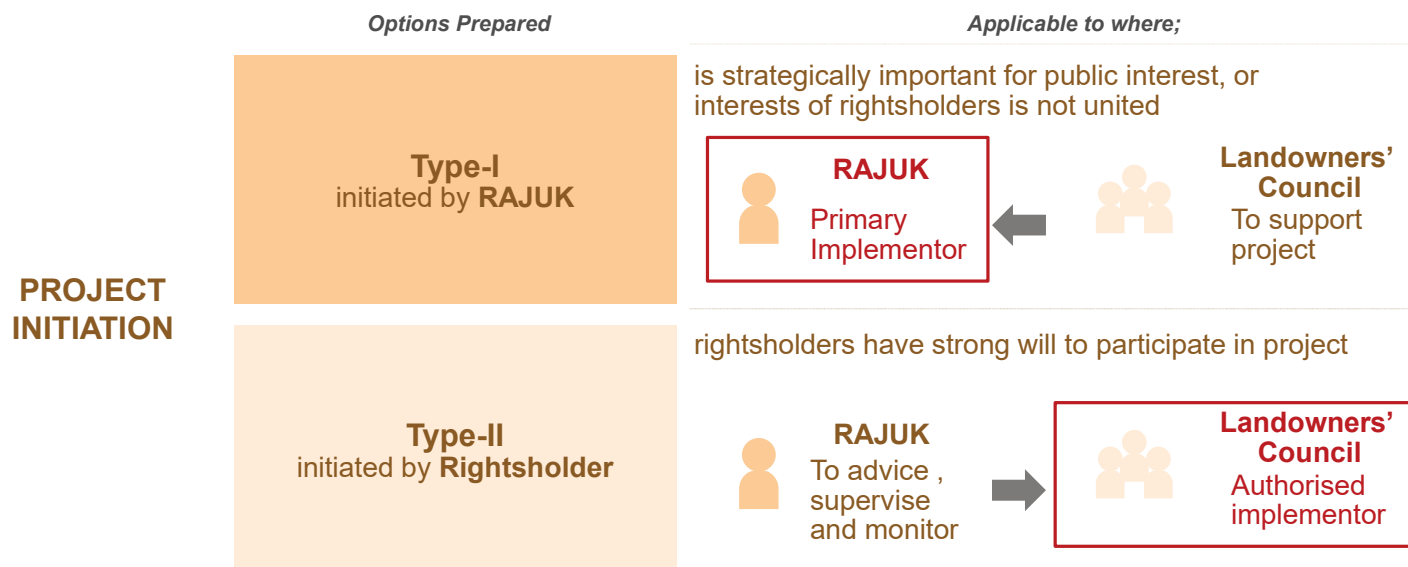
Options for Flexibility

- ✓ Draft Rules allow several options to cope with a variety of needs in Dhaka
- ✓ Standard or most usable options shall be identified through trial in actual project

	Options Prepared		Applicable to where;
PROJECT INITIATION	Type-I Led by RAJUK		is strategically important for public interest, or interests of rightsholders is not united
	Type-II Led by Rightsholder		rightsholders have strong will to participate in project
DEVELOPMENT TARGET	Land Readjustment	Land to Land	is greenfield to develop infrastructure for urbanization
		Floor to Land	has needs more open space or buildings to be preserved
	Land Redevelopment	Land to Floor	landowners have few capacity to promote development
		Floor to Floor	spontaneously developed but has high potential
CONVERSION EQUIVALENCY	Equal based on existing state	Num of unit	relocation/rehousing for such as low-income community
		Area	existing state by rightsholder are similar
		Value	existing state by rightsholder are diverse
	Equal to investment proportion (including 50-50 scheme)		Partner Developer joins to the project financing

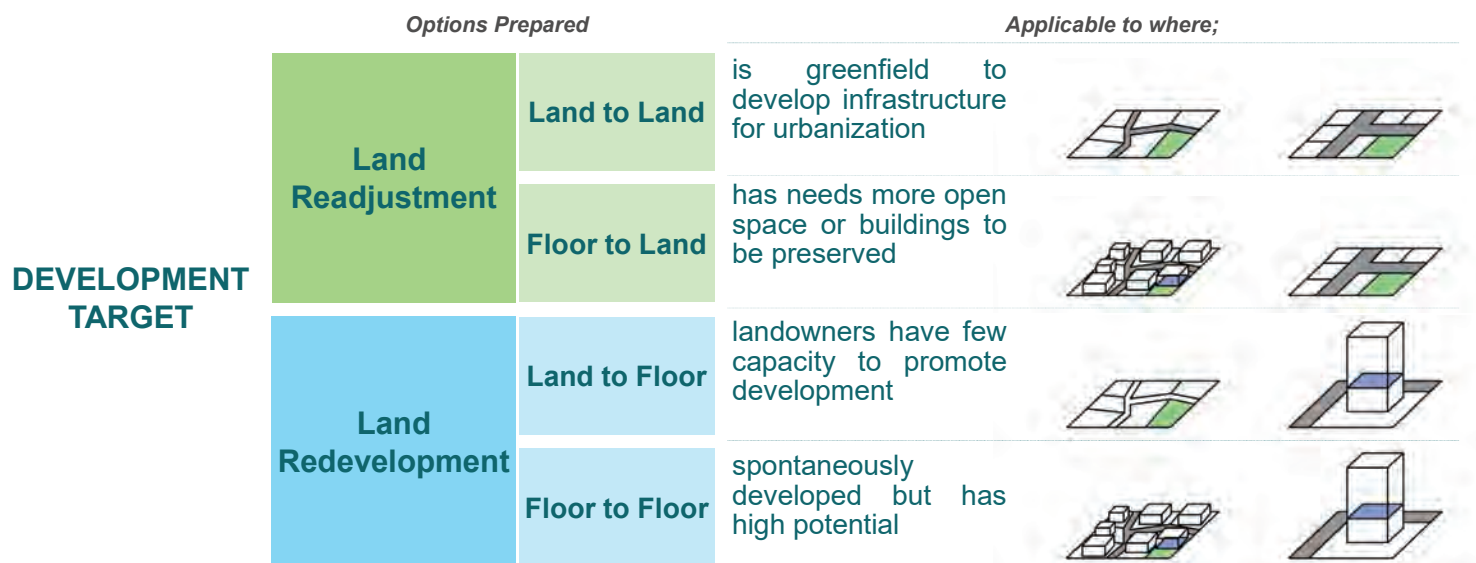
Options for Flexibility

- ✓ Type-I project is led by RAJUK
- ✓ Type-II project is led by rightsholders under management by RAJUK



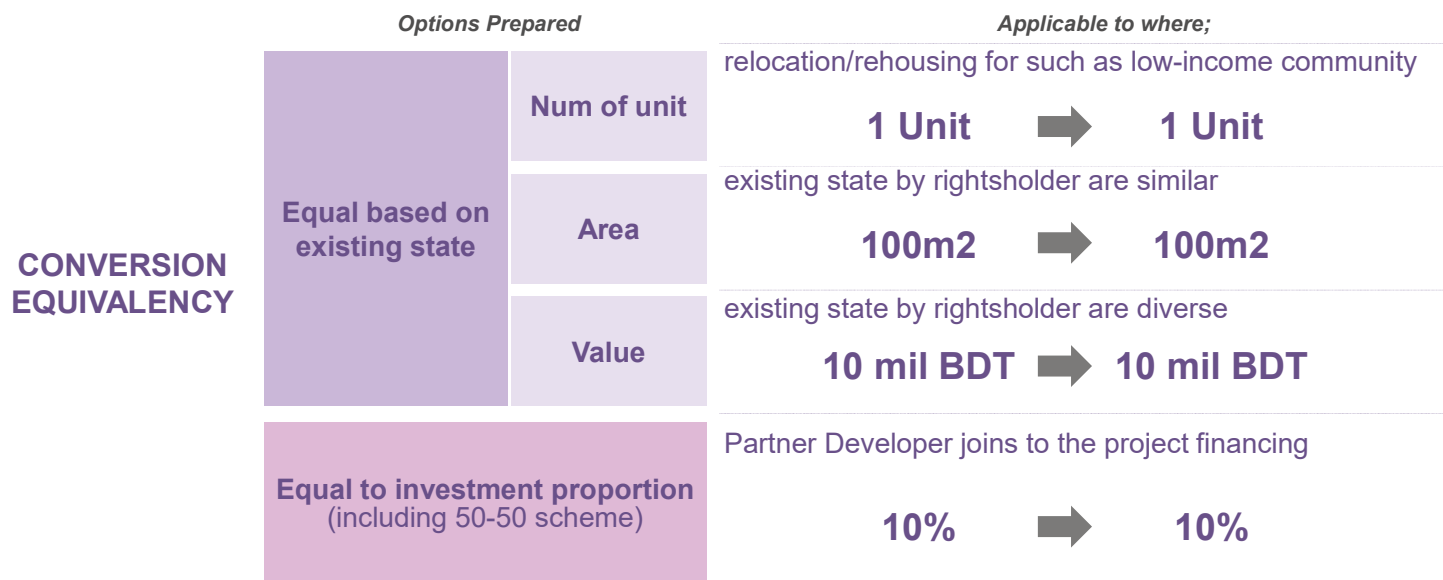
Options for Flexibility

- ✓ There are Land-based conversion and Floor-based conversion.
- ✓ Single type or combination of several types of conversion method are selected in each project



Options for Flexibility

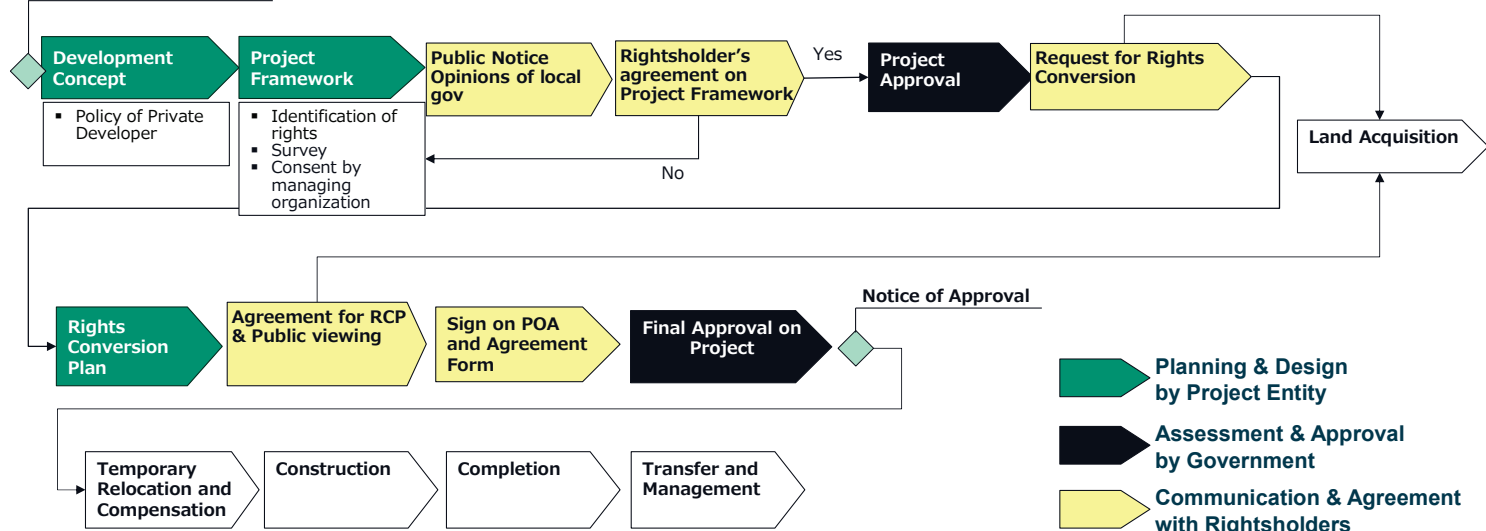
- ✓ Conversion rate shall be fair and equitable, and shall be agreed among rightsholders
- ✓ Various patterns are possible depending on the diversity of existing state of properties



Flowchart

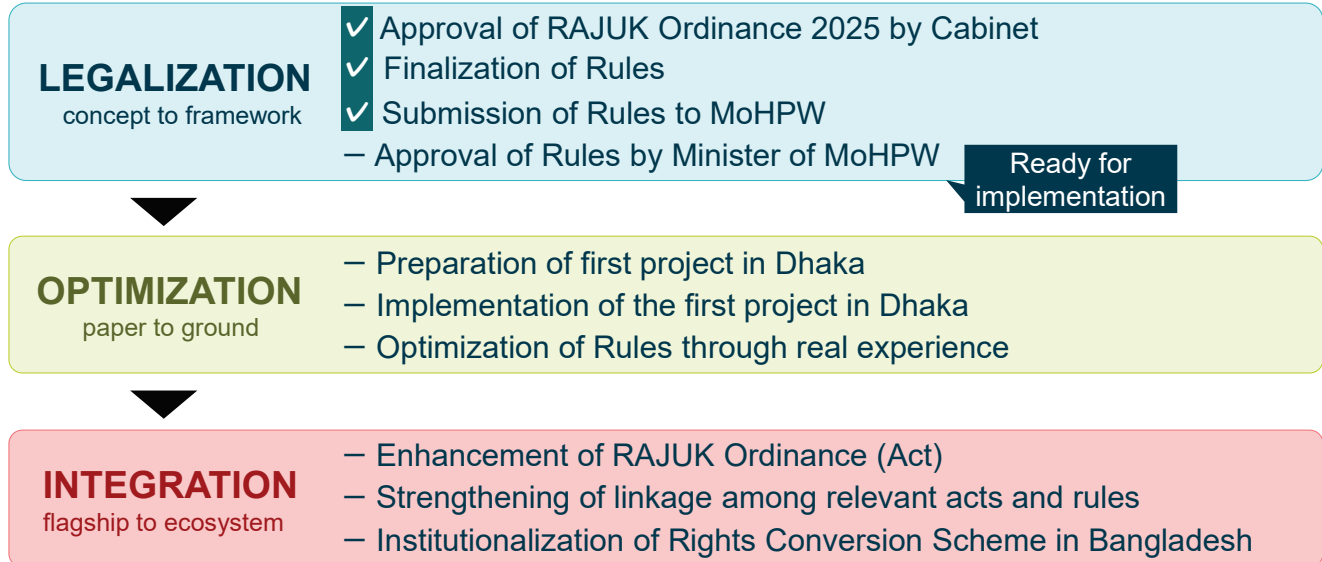
- ✓ Rights Conversion Project needs step-by-step planning and building consensus
- ✓ Careful communication with rightsholders and assessment by the Government are crucial

Decide Proposed Project Area



Way forward

- ✓ It is expected to be legally approved soon
- ✓ First project to get knowledge from actual implementation will optimize legal framework



Case Study of Right Conversion Project in Gabtoli North



Project for Development of Policy and Guidelines for
Transit Oriented Development along Mass Transit Corridors

April 26th, 2026

Topic:

1. Activities for Case Study in Gabtoli North
2. Key Outputs

Activities for Case Study in Gabtoli North

- ✓ Case study in Gabtoli North has been implemented since July 2023
- ✓ A lot of insights were reflected to outputs in this project

Initial Scope

1. To identify needs and potential

- 1-1. Confirm development direction
- 1-2. Understand current situation in the target area
- 1-3. Analyze redevelopment needs and potential

2. To formulate RC Project Framework

- 2-1. Study land use and infrastructure plan
- 2-2. Study architectural plan
- 2-3. Study financial consideration

Additional Scope

3. To study Rights Conversion Model

- 3-1. Select type of conversion equivalency
- 3-2. Evaluate property value
- 3-3. Develop rights conversion model
- 3-4. Study project promotion method

Achievement

1. Reflect to TOD Guidelines

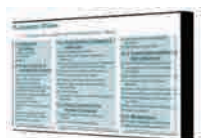
→ Officially in Gazette (May 2025)

2. Clarify Key Issues for Rules

→ Drafted Rules is set (Jan 2026)

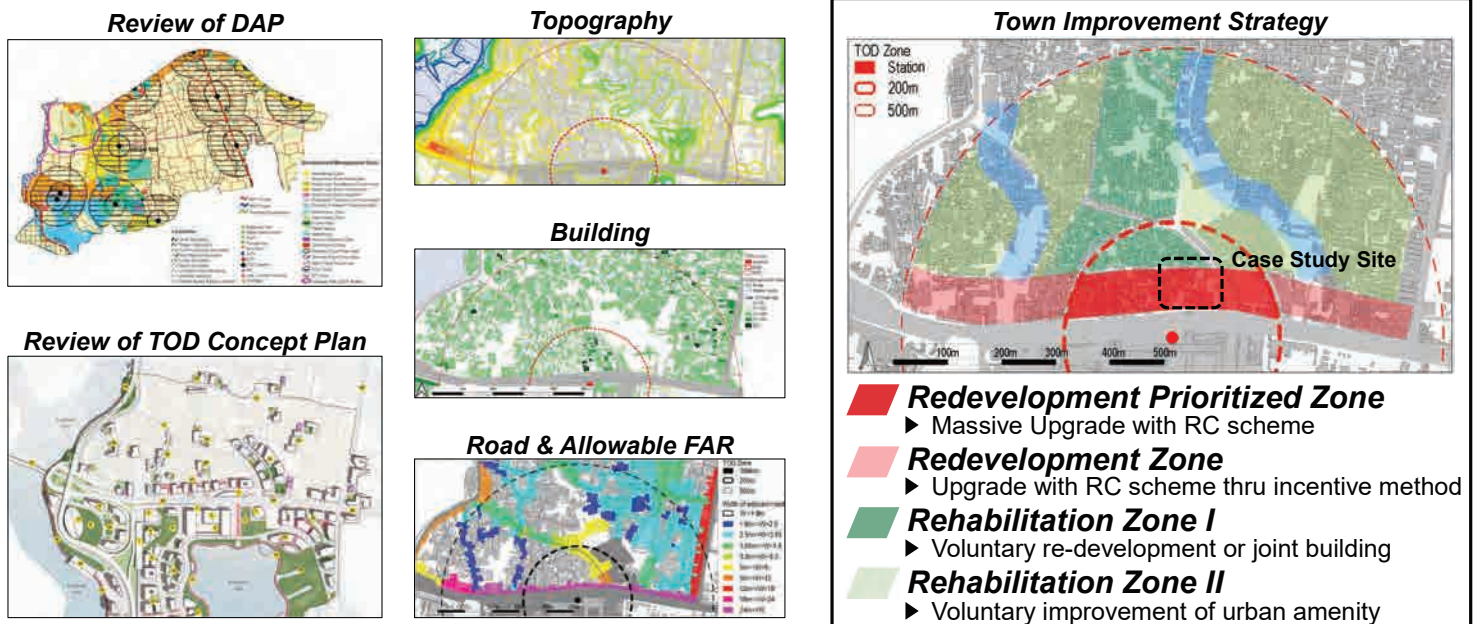
3. Identify Feasibility of the Scheme in Dhaka

→ The gained knowledge is expected to be utilized in the first project



1. To identify needs and potential

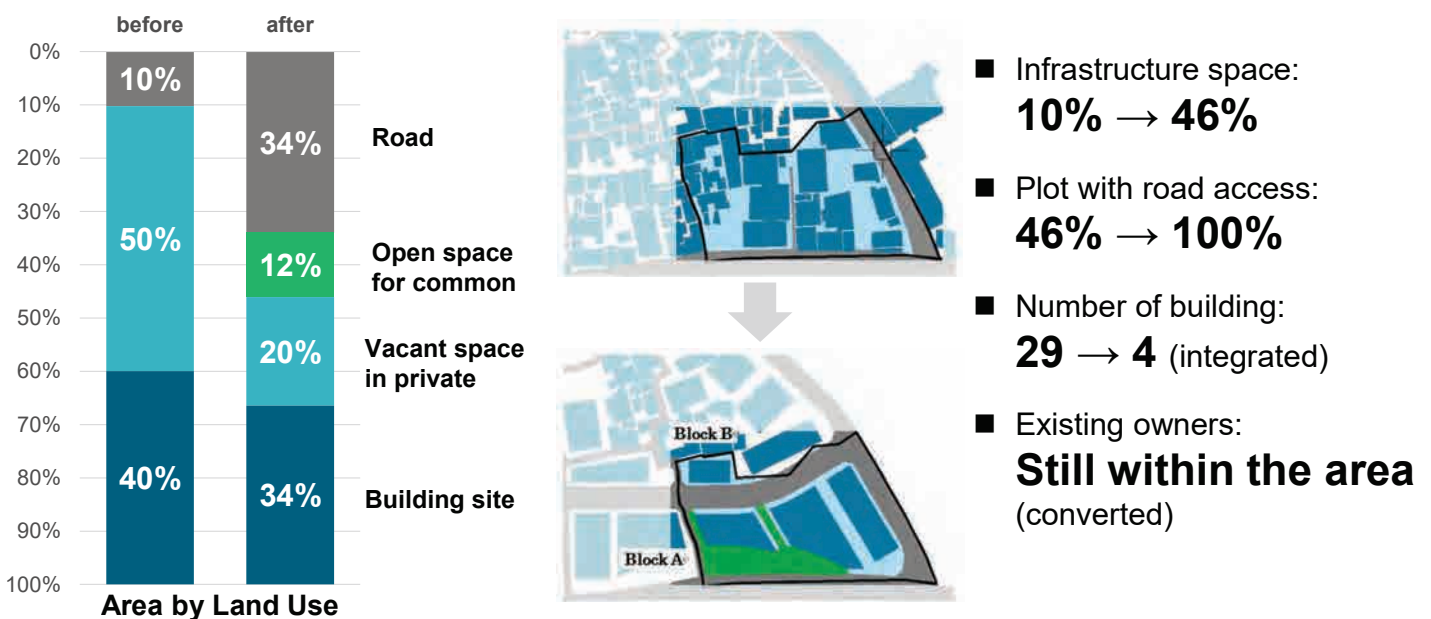
- ✓ Town improvement strategy was developed based on detailed technical assessment



2. To formulate RC Project Framework

2-1. Study land use and infrastructure plan

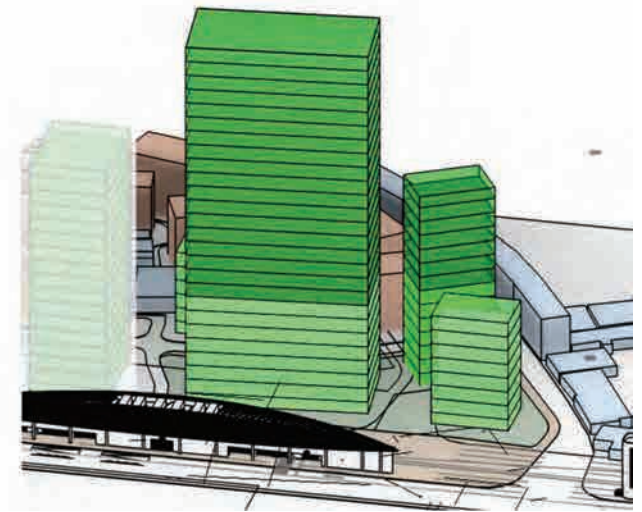
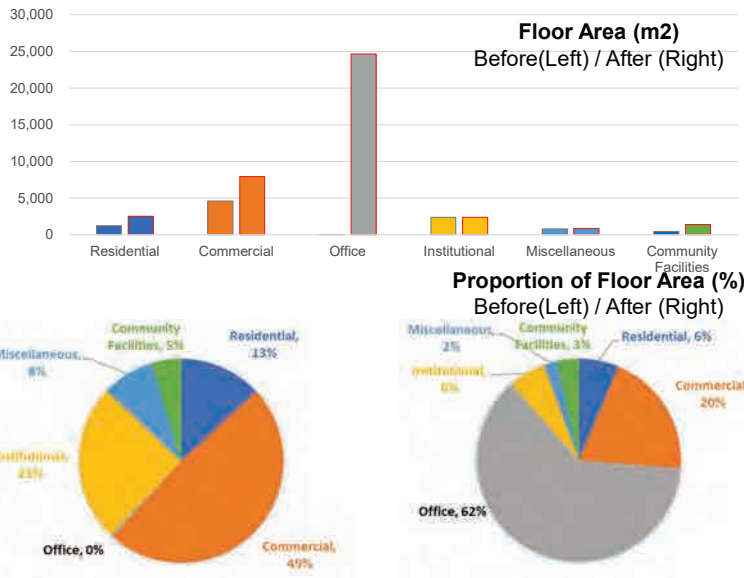
- ✓ Infrastructure with wide collector road and open space for passengers is introduced



2. To formulate RC Project Framework

2-2. Study architectural plan

- ✓ Redevelopment unlock potential FAR
- ✓ Non-residential use is introduced for station area

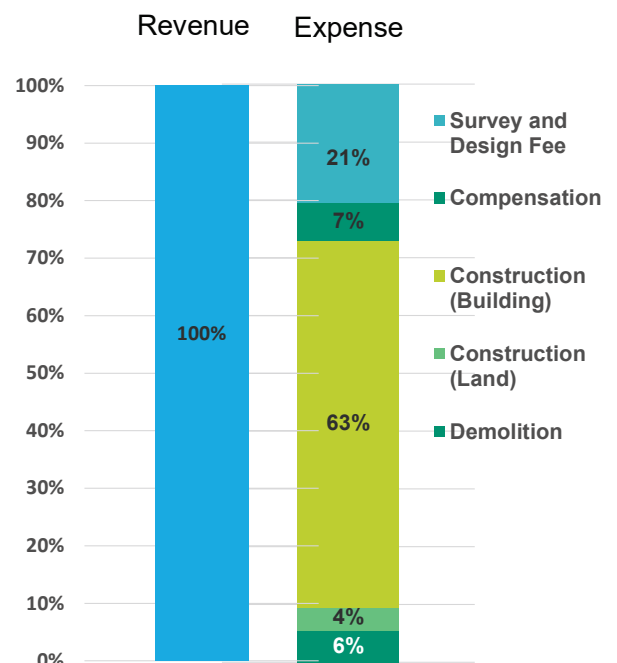


- Total Floor Area:
9,462m² → 39,676m²
- Floor Area Ratio:
1.48 → 8.43

2. To formulate RC Project Framework

2-3. Study financial consideration

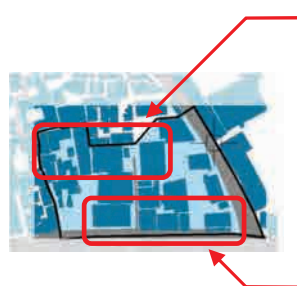
- ✓ Project expense is approx. 3 billion BDT
 - Compensation cost for temporary relocation is needed
 - Survey and Design Fee is comparatively high; because RC project requires frequent communication with rightsholders and design reflecting their intentions
- ✓ All expenditure can be fully recovered by sales of reserved floor
 - Increase of floors contribute to earn sufficient revenue
 - Though it can be self-financed, governmental subsidy should be considered. Because trunk infrastructure is not only for the rightsholders within the project area



3. To study Rights Conversion Model

3-1. Select type of conversion equivalency

- ✓ Potential of lands are much different depending on existing and future state
- ✓ Conversion to same value is appropriate for this case study site



No access to road with 6 ft+ widths.
DAP doesn't allow building.
→ Significant benefits from project

Facing to Dhaka-Aricha Road.
400%+ FAR at maximum allowable.
→ Rightsholder may feel inequal

Convert to
Same Num of Units
as before

In a case that;

- Existing land or floor is too tiny
- Low-income community

Convert to
Same Area
as before

In a case that;

- Values among lands are similar

Convert to
Same Value
as before

This Case Study

Convert based on
Investment Ratio

So-called 50%-50%
(Private Sector's Practice)

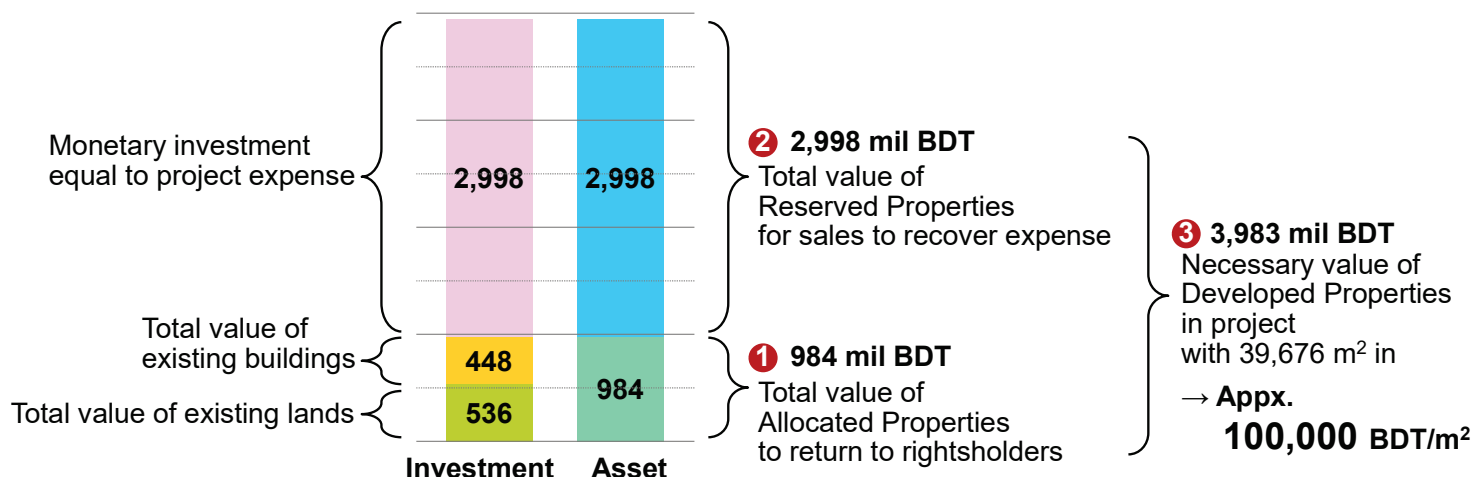
In a case that;

- Project needs financial support by Partner Developer

3. To study Rights Conversion Model

3-3. Develop rights conversion model

- ✓ Firstly, valuation framework is set, which secures;
(1) to return to existing rightsholders, and
(2) to sell to recover project expense
- ✓ This project may be feasible because market value is higher than unit rate minimally required



3. To study Rights Conversion Model

3-3. Develop rights conversion model

- ✓ It is confirmed that all rightsholders can get property with same value as before; **value-based $\pm 0\%$** .
- ✓ Changing rate tends to increase when existing value is higher and existing floor area is smaller.
 - Due to vertical expansion and reserved floor sales, share of land by existing rightsholder is reduced.
 - On the other hand, most rightsholders get bigger floors because of higher land value than floor.

Average Changing Rate in Area between Before and After

Existing state	Allocated state	Tower A [Commercial]	Tower B [Residential]	Tower C [Institutional]
	No road	Land: -96% , Floor: +47%	Land: -67% , Floor: -25%	NA
	0<W<6ft	Land: -89% , Floor: -24%	Land: -88% , Floor: +37%	NA
	20≤W<30ft	Land: -93% , Floor: +61%	NA	Land: -30% , Floor: +10%
	30≤W<40ft	Land: -92% , Floor: +85%	NA	NA
	80ft≤W	Land: -78% , Floor: +78%	NA	NA

3. To study Rights Conversion Model

3-4. Study project promotion method

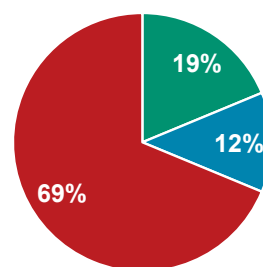
- ✓ Preliminary survey to gather resident's interests is done with BUET
- ✓ Agreed ratio at baseline was 31%, because few needs on resident side
- ✓ On the other hand, MRT's effect is recognized and big expectations
- ✓ Low agreed ratio at the beginning is not special (same in Japan).
Should start continuous communication to prepare for MRT opening.

Positive Opinion of residents in Gabtoli North

- Expectations for the opening of MRT
- High potential thanks to the transport convenience
- Request for establishment of urban core functions

Negative Opinion of residents in Gabtoli North

- No need and intension to rebuild
- No dissatisfaction or inconvenience
- Rejection to land acquisition
(Citizen automatically thinks redevelopment is done with land acquisition)
- Not ready for redevelopment because the land is currently in dispute



- Agree to redevelopment with full compensation for relocation
- Agree to redevelopment and willing to remain
- Disagree to redevelopment

Agreed ratio for Redevelopment

Actions to be taken

- To provide information about impact and chance of MRT opening
- To let rightsholders know mechanism of RC scheme

Key Outputs

- ✓ To share know-how to select potential site through technical assessment and calculate RC plan.
- ✓ To identify technical key findings which may be commonly utilized in preparation in built-up areas.
- ✓ To provide inputs to drafting rules.
- ✓ To clarify next actions to be taken toward establishment of RC project In Gabtoli North.
 - To confirm theoretical feasibility in terms of spatial design and finance.
 - To start consultation with community to draw future district image with MRT and get their detailed needs.
 - To start sounding survey to find Partner Developer/Investor
 - To survey formal freeholders and related rightsholders within the project site.

Technical Key Findings

- ✓ Road development and widening are essential to unlock potential FAR.
- ✓ Non-residential development increase financial feasibility by increasing allowable FAR.
- ✓ Land value in market is comparatively higher than floor as such in other countries. It can promote participation of small-floor owners, but can be a disadvantage for large-floor owners due to bigger reduction of land share.
- ✓ Property sales price is too high than construction cost. It currently supports financial feasibility.
- ✓ Most of rightsholders can get bigger floors. It helps consensus building



The 7th Joint Coordination Committee



Case Study of Right Conversion Project in Gabtoli South



Project for Development of Policy and Guidelines for
Transit Oriented Development along Mass Transit Corridors

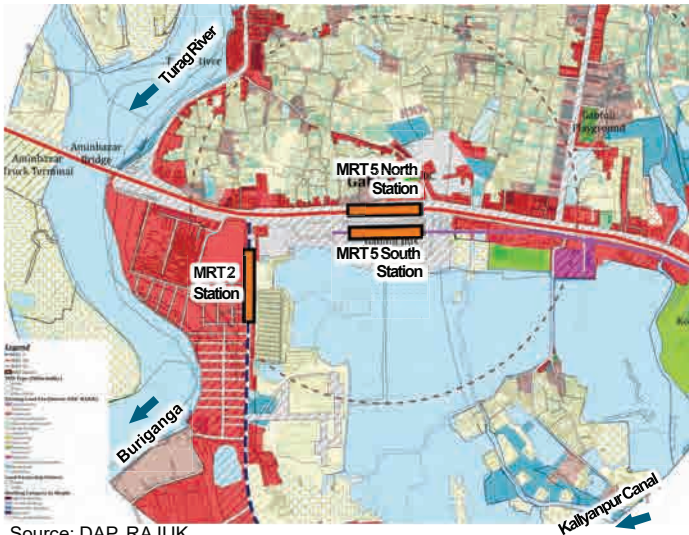
April 26th, 2026

Topic:

1. Targe Area
2. Integrated Development Plan
3. Draft Implementation Plan
4. Discussion

Case Study Site : South District of Gabtoli Station Area

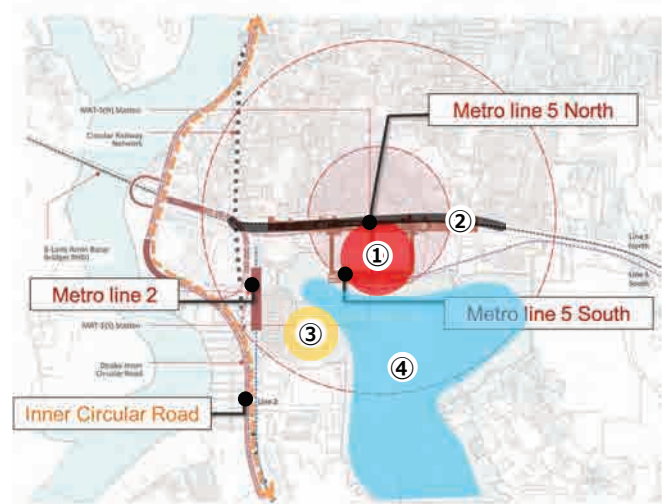
- Gabtoli south is mainly waterbody in rainy season.
- Turag river and Buriganga river is located west side,
- Kallyanpur canal is located north side
- 3 MRT station is planned to develop in the future.



Source: DAP, RAJUK

Current Planned Development Project (* Tentative Location)

- ① Bus terminal re-development
- ② Road re-alignment in front of bus terminal
- ③ Proposed sweeper housing
- ④ Proposed 'eco park development



Goal, Approach and Working Group (WG) in Gabtoli South

Goal

Smooth
Implementation of
the Gabtoli South
Area Plan

- Target 1: Create a plan that is agreed upon by all stakeholders
- Target 2: Reach an agreement on adjusted land ownership distribution
- Target 3: Reach an agreement on the implementation mechanism

WG Organization



RAJUK
Coordinate and Assist for
integrated development

Approach

Discussion
and make
agreement through
Gabtoli South
Working Group

- 1st WG: Mutual understanding of each other's plans, identification of common issues, and agreement on the direction of solutions.
- 2nd WG: Review and general agreement on the draft land use plan.
- 3rd WG: Review the land arrangement and project implementation system.
- 4th WG: General agreement on the land arrangement and project implementation system.

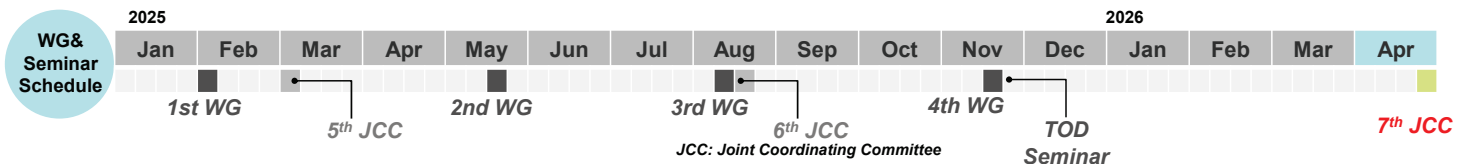
Working Group e.g.) 3rd Working Group



+

Meeting with
each
organization

WG Organization : RAJUK, DMTCL, BADC, DNCC, DWASA, RHD (BRTC), BWDB, BIWTA



2.Integrated Development Plan

1) Concept

Concept and Strategy, Expected Functions

Concept

Integrated Urban Gateway

A Waterfront Hub for Mobility and Urban Community

In formulating the development plan, the adoption of the core elements of all stakeholders' intentions shall be a guiding principle, as detailed below:

Strategy

- (1) Development of a Multimodal Transportation Hub
- (2) Revitalization of Public Spaces and Urban Infrastructure along the Waterfront
- (3) Enhancement of Functions as a Space for Cultural and Community Exchange

Function	Specific Expectations
 Transportation	Development of a multi-functional multimodal transportation hub (MMTH) integrating multiple public transportation modes (rail, bus, water transportation)
 Business	Development of large-scale office buildings and hotels , improved convenience for business users and tourists, economic revitalization
 Public Facilities	Development of advanced public facilities such as universities, cultural facilities, and medical centers, promotion of public transportation use
 Cultural and Recreational Facilities	Strengthening of regional identity through the development of advanced cultural facilities , development of waterfront spaces and parks with good access to public transportation
 Commercial	Revitalization of the local economy through the concentration of large-scale commercial facilities , improvement of access to commercial facilities by public transportation
 Residential	High-density residential development around the station, residential development considering access to public transportation, supply of affordable housing
 Public Spaces	Promotion of community interaction through the development of large-scale public spaces , development of plazas, green spaces, and pedestrian walkways to promote the use of public transportation

2) Layout

① Zoning Layout



Multimodal Transportation Hub

Development of Multiple Stations, Connect Transportation Network with Comfortable & Accessible Public Spaces



Cultural & Community Exchange

Agricultural Research & Development Center



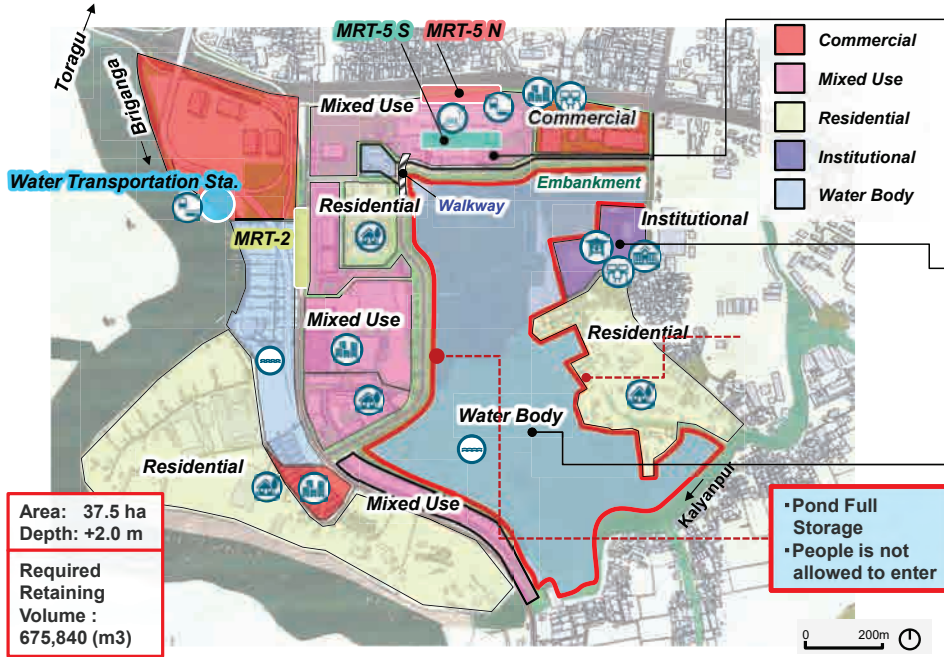
Flood Control in Rainy Season

Securing Rainy Season Flood (5yr-RP)



2) Layout

① Zoning Layout



Multimodal Transportation Hub

Development of Multiple Stations, Connect Transportation Network with Comfortable & Accessible Public Spaces



Cultural & Community Exchange

Agricultural Research & Development Center



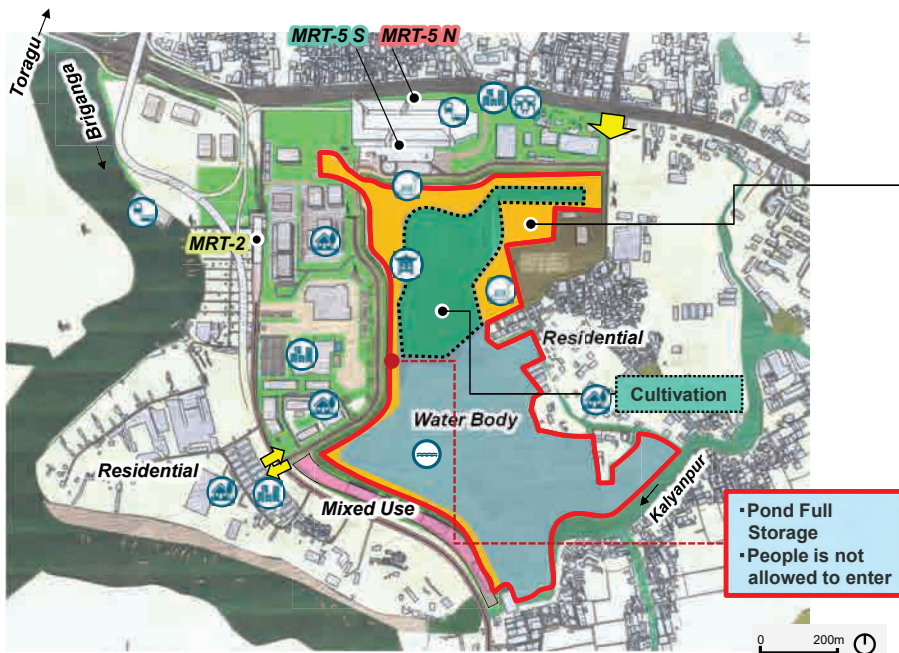
Flood Control in Rainy Season

Securing Rainy Season Flood (5yr-RP)



2) Layout

② Zoning Layout (Dry Season)

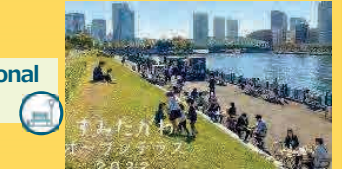


Dry Season

Cultivation & Event



Recreational Park



Walkable Space



Temporary Structure

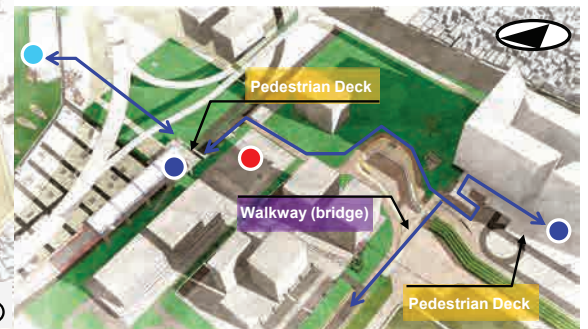
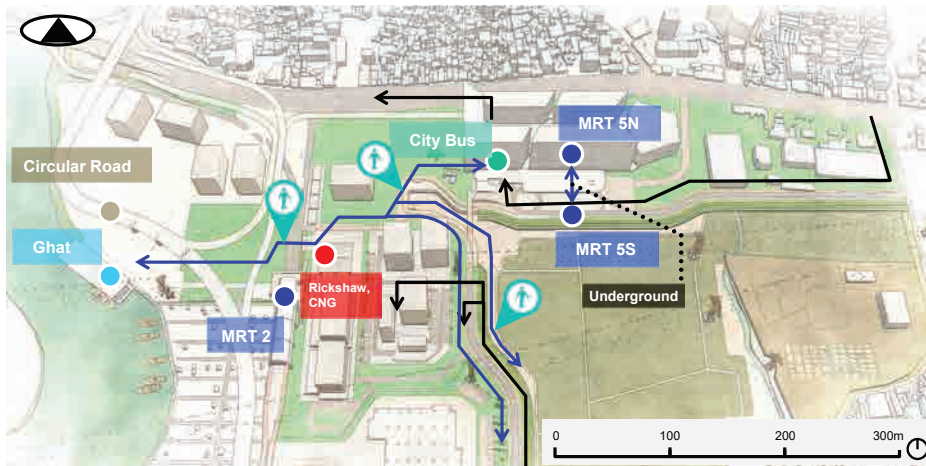
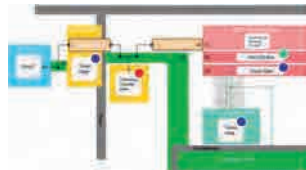


2) Layout

③ Conceptual Image for Transportation

Planning and design measures are needed to ensure smooth transfers between public transport modes in the future and to alleviate traffic congestion around the bus terminal.

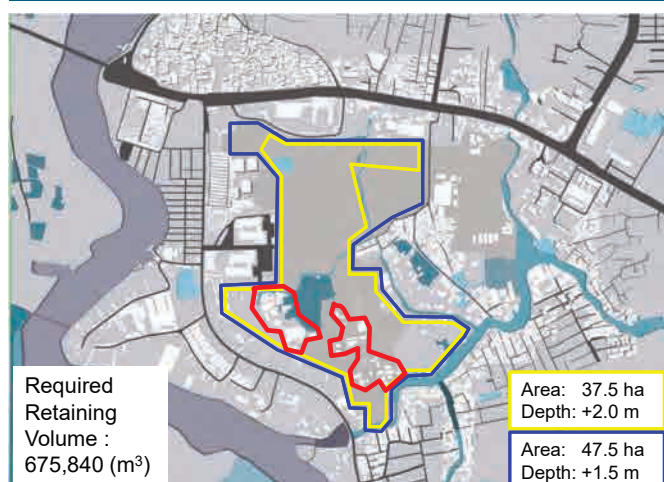
● Railway (MRT 5N, 5S, 2)	● Getty
● City Bus	● Circular Road
● Rickshaw, CNG, Human Hauler	→ Walkway
	→ Access Road



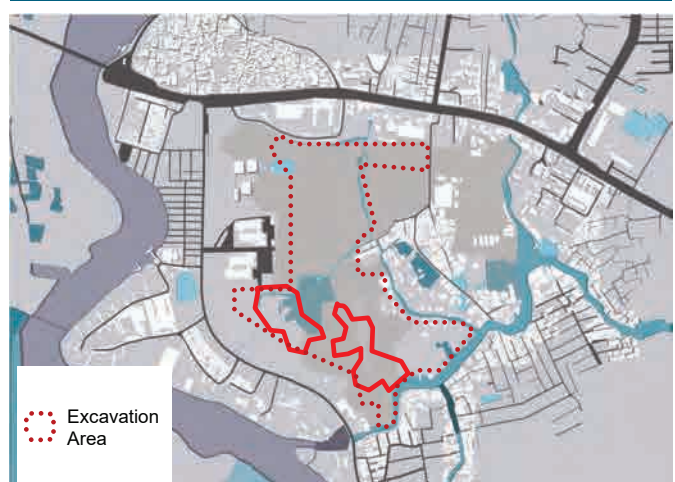
2) Layout

④ Conceptual Image of Flood Control

Retention Pond Area (Water body Area)



Demolish Structure for securing Retaining Volume



Demolish & Excavation



3.Draft Implementation Plan



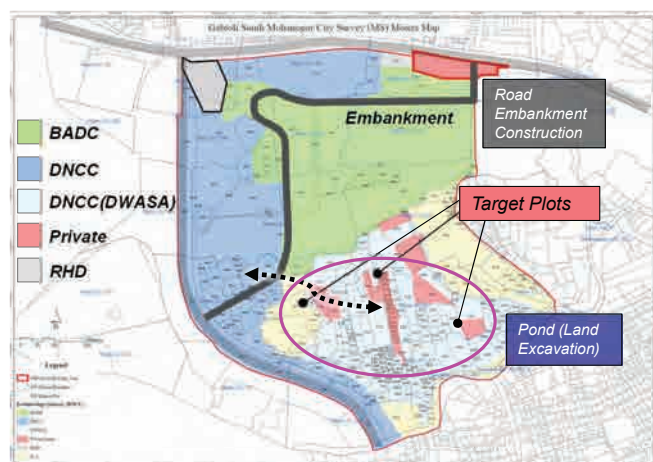
1) Strategic Overview

Conceptual Image of Land Arrangement

Land Readjustment

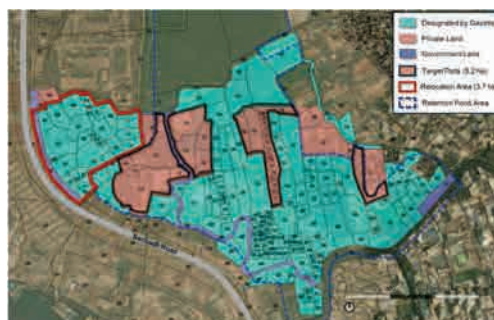
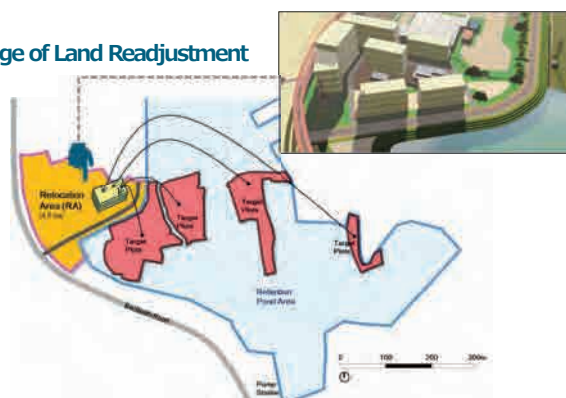
In addition to the landownership information from "DNCC", verification with the "Land Office" confirmed that **private land** exists within the pond area.

⇒ The pond, embankment, and relocation sites will be developed using a **land readjustment** approach.



Source: JICA Study Team based on DNCC Kallyanpur Conceptual Plan

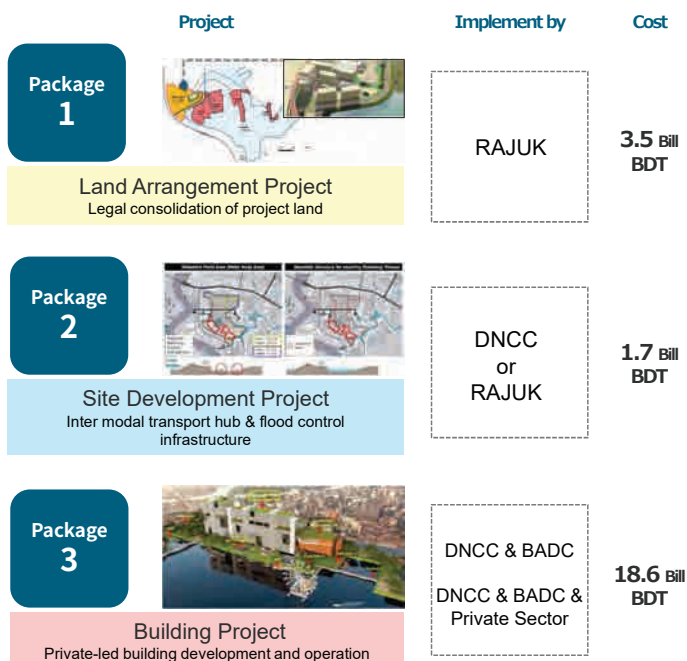
Image of Land Readjustment



Source: JICA Study Team based on Land Office

1) Strategic Overview

Integrated Implementation Approach

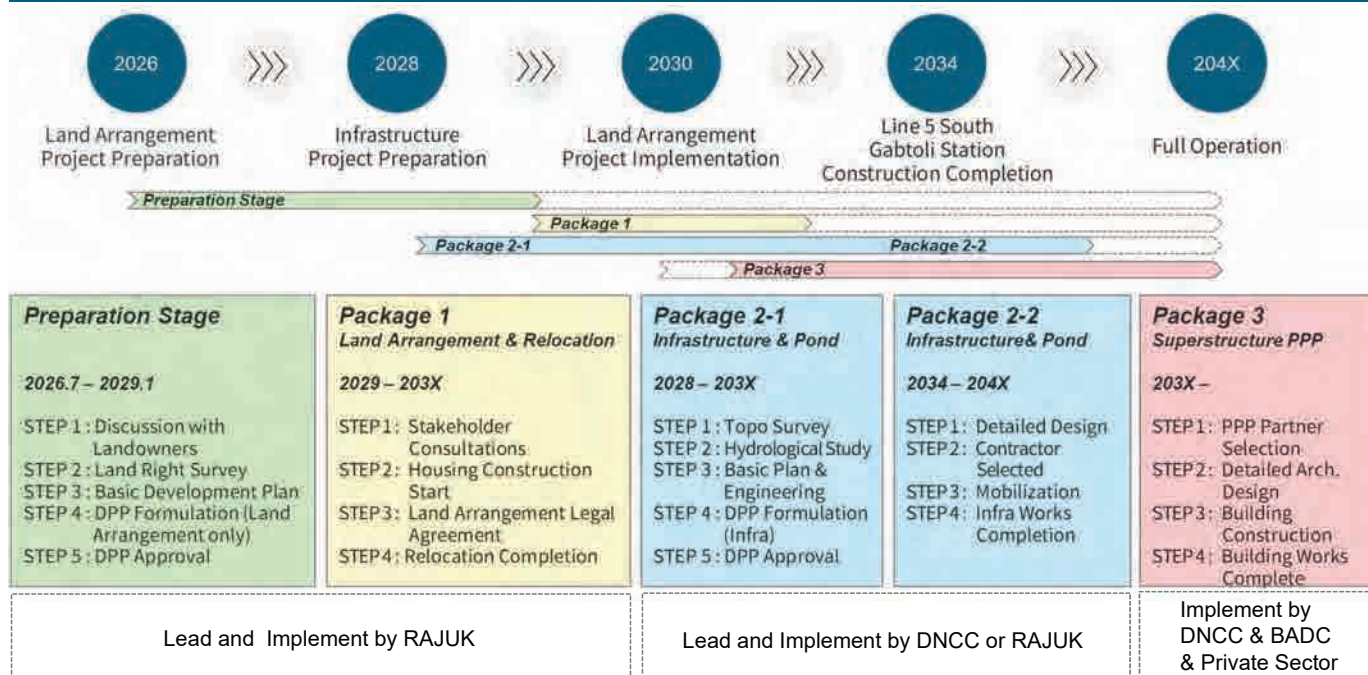


Rough Cost Estimate of each Project

Category	Unit	Volume	Amount (BDT)	Remarks
Package 1 – Land Arrangement Project				
Access Road	m	600	59,495,400	
Civil Work	-	-	1,253,302,800	Land Grading, Landscaping, utilities
Housing Development	m ²	43,200	1,419,120,000	
Preparation	-	-	216,284,670	Demolition of Buildings & Building Relocation Compensation Cost
Survey & Design Work	-	-	273,191,820	
Others	-	-	294,232,245	Administrative Cost & Miscellaneous Expenses
Subtotal			3,515,626,935	
Package 2 - Site Development Project				
Road (Embankment)	m	1,329	41,808,640	
Land Grading	m ³	143,563	1,373,464,083	Retention Pond area
Drainage/Sewerage	m	1,329	89,982,603	
Landscaping	m ²	39,879	52,280,740	
Design Work	unit	1	160,000,000	
Subtotal			1,717,536,066	Without Compensation Cost
Package 3 - Building Project				
TOD Building	unit	1	11,412,000,000	
Boat Station	unit	1	13,600,000	
Public Building	unit	1	1,453,180,000	
Public Facilities	unit	1	487,930,000	
Subtotal			13,366,710,000	Without Compensation Cost
Grand Total			18,599,873,001	

2) Public-Led Implementation Schedule

Proposed Key Milestones from 2026 and 204X



3) Land Arrangement Project Cost

Package
1

Land Arrangement Project
Legal consolidation of project land

① Land Use in Relocation Area

RA

Land Use (RA)	Area (m ²)	Ratio (%)
Reserved Land (Private)	23,712	64.0%
Relocation Plot (Public)	6,630	17.9%
Road (Public)	4,200	11.3%
Utility (Public)	2,500	6.8%
Total	37,042	100.0%

② Land Reduction Ratio

Category	Area (m ²)	Ratio (%)	Remarks
Original Target Plots Area	51,931	100.0%	Total private land to be acquired
Allocated Land (Relocation Plot)	6,630	12.8%	= Total RA (37,042) - Public Facilities (6,700) - Reserved Land (23,712)
Total Reduction Area	45,301	87.2%	= Public Facility + Reserved Land + Value Difference
- Public Facility Contribution	6,700	12.9%	Roads, Parks, and Utilities within the RA
- Reserved Land Contribution	23,712	45.6%	To finance the project costs
- Reduction due to Value Difference	14,889	28.7%	Area reduction from equivalent value exchange

Reserved land is planned along Beribadh Road



③ Project Cost Balance

Revenue
3,515,683,392 BDT

Expenses
3,515,626,935 BDT

3.5 Bill BDT

Reserved Land

= 148,265 BDT/m²
× 23,712 m²

1.3 Bill BDT

37% Utility & Infrastructure
Road, Land Grading, Landscaping

1.4 Bill BDT

41% Housing Development @Relocation Area

8% Design
Architecture & Civil for Housing

0.3 Bill BDT

6% Demolish & Relocation Compensation

0.2 Bill BDT

8% Others
Administrative Cost
Miscellaneous Expenses

0.3 Bill BDT

Way Forward after the JICA project



Project for Development of Policy and Guidelines for
Transit Oriented Development along Mass Transit Corridors

Way Forward after the JICA project toward Realization of TOD in Dhaka

1. Uttara Center TOD (TOP model project in Green Field)

- A) RAJUK Land : Apartment Block B and CBD area will be developed by RAJUK based on RAJUK's master plan considering TOD concept plan
- B) DMTCL Land : DMTCL will develop the inter-modal transit space as public project and commercial area by attracting private investment, with support by RAJUK. DPP is necessary.

MoU between DMTCL and RAJUK



Way Forward after the JICA project toward Realization of TOD in Dhaka

2. Gabtoli South TOD (Integrated Development under cooperation of multiple government agencies)

- Decision of Inter-ministrial meeting on December 3rd, 2025:
- RAJUK will take initiative for stepped integrated development with cooperation of stakeholder agencies, such as DNCC, BADC, DMTCL etc.
- For the first step, preparation study (right holder survey, discussion with private landowners and public landowners for land arrangement project (Package 1) as preparation of development projects (Package 2 &3) is needed.



Way Forward after the JICA project toward Realization of TOD in Dhaka

3. Piot Project for Right Conversion Method (Under RAJUK Ordinance 2026, and RC rules)

- Case study in Gabtoli North shows the are is difficult for short-term redevelopment due to complexity of rights and internation of residents.
- RAJUK will find the other potential sites for pilot project of Land Readjustment or Urban Redevelopment.
- Tentative potential sites are:
 - 1) Purbachal West
 - 2) Joar Shahara

Both sites are located along Dhaka Metro Line 1



Way Forward after the JICA project toward Realization of TOD in Dhaka

4. Redevelopment of Public-owned Land in CBD (Gulshan etc.)

When the land within the TOD Zone is publicly owned:

- Prepare appropriate development plans in accordance with the TOD Guidelines.
- Coordinate closely with relevant government agencies.
- In principle, the landowner leads the process by attracting private developers and undertaking joint development.
- Possible Implementation Body: DNCC, DMTCL etc.

5. Pilot social experiment on rickshaw management and public transport services around station areas

This topic was consistently of high interest at the JCC.

Following activities could be promoted to enhance people's awareness and behavior change.

- Rickshaw management in station area
- Feeder shuttle / bus service as POC



Thank you! ধন্যবাদ!

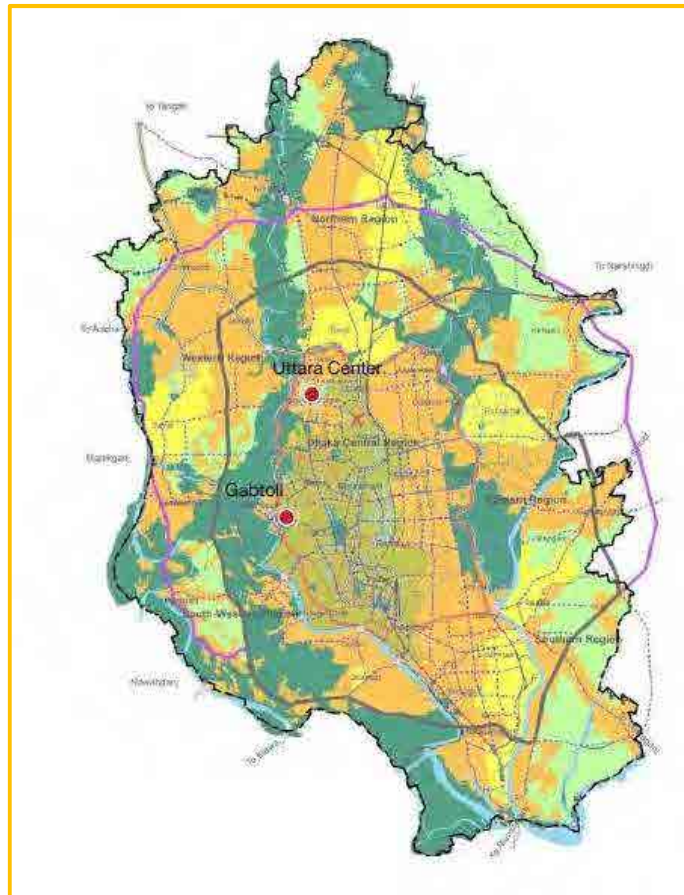
Envrionmental and Social Considerations Survey Report

Surveyed by the local subcontractor, BETS Consulting Services Ltd.

DRAFT FINAL REPORT

Environmental and Social Considerations Survey for Uttara Center TOD and Gabtoli TOD

TRANSIT ORIENTED DEVELOPMENT IN BANGLADESH



Original submission: 15 March, 2023

Submitted By:



BETS Consulting Services Ltd.

House-10, Road-135, Gulshan-1, Dhaka-1212, Bangladesh.
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E-mail: bets@betsbd.com www.betsbd.com

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Acronyms

ADB	Asian Development Bank
AoI	Area of Influence
ARIPA	Acquisition and Requisition of Immovable Property Act
BRT	Bus Rapid Transit
CCTV	Closed Circuit Television
DMTCL	Dhaka Mass Transit Company Limited
DNCC	Dhaka North City Corporation
DoE	Department of Environment
DWASA	Dhaka Water Supply and Sewerage Authority
ECA	Environmental Conservation Act
ECC	Environmental Clearance Certificate
ECR	Environmental Conservation Rules
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMoP	Environmental and Social Monitoring Plan
ESS	Environmental and Social Standards
FGD	Focus Group Discussion
GAP	Gender Action Plan
GHG	Green House Gas
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IEE	Initial Environmental Examination
IFC	International Finance Corporation
JICA	Japan International Cooperation Agency
JST	JICA Study Team
MCM	Million Cubic Meters
MoEFCC	Ministry of Environment, Forest and Climate Change
MRT	Mass Rapid Transit
NEP	National Environmental Policy
NEQS	National Environmental Quality Standards
OP	Operational Policy
PWD	Persons With Disability
RAJUK	Rajdhani Unnayan Kartripakkha
RSTP	Revised Strategic Transport Plan
SAP	Social Action Plan
SEA	Strategic Environmental Assessment
SPS	Safeguard Policy Statement
TOD	Transit Oriented Development

Executive Summary

In recent years, Dhaka City has experienced the quickest infrastructural growth as a result of expanding urban area. Rajdhani Unnayan Kartripakkha (RAJUK) with the assistance of Japan International Cooperation Agency (JICA), has taken a project for development of policy and guidelines for Transit Oriented Development (hereinafter referred to as TOD) along the corridors of MRT- Line 01, MRT- line 05 North and MRT-line 06 . JICA Study Team (JST) hired BETS Consulting Services Limited to conduct a survey on environmental and social aspects along MRT corridors since TOD may raise environmental and social issues. This final report covers Environmental and Social Scoping, Situation Analysis including initial environmental and social impacts, and their Mitigation and Monitoring for the two pilot stations' TOD activities (Uttara Center and Gabtoli). Survey was conducted to examine the most appropriate proposal for pilot projects based on environmental and social considerations; and to determine whether an Environmental Impact Assessment (EIA) is required for the pilot projects in consideration of future project development in accordance with the laws and regulations of Bangladesh. The survey also covered the perspective of social considerations so that the current situation should be grasped for women, people with disabilities, and the poor not to be negatively affected. As a part of the Survey, tasks that have been carried out are:

- literature reviews,
- developing methodologies for the survey,
- conducting 10 (two rounds) numbers of Focus Group Discussion (FGD) with five different targeted groups at areas of Gabtoli station and Uttara Center station of MRT, and
- a photo survey on examples of women and disable friendly public spaces in Dhaka City.

Nonetheless, BETS has also carried out three numbers of Stakeholder Consultation Meetings and the feedbacks have been shared in the report. Accommodating all the findings of aforementioned tasks followed by a robust analysis, BETS has prepared this final report.

TOD concept in Bangladesh is new and there is no specific indication or guidance on the environmental and social considerations' requirement for TOD with the existing environmental or social policies and guidelines of Government of Bangladesh (GoB). However, an analysis on the environmental and social considerations from the existing national and international policies, guidelines that might be related to the TOD was performed under this assignment.

The relevant national regulations are:

- ✓ Environmental Conservation Act (ECA), 1995 (Amendment 2000,2002,2010)
- ✓ Environment Conservation Rules (ECR), 1997 (Amendment 2010, 2012, 2023)
- ✓ Bangladesh Labour Act, 2006 and Labor Rules, 2015
- ✓ The National Water Policy, 1999
- ✓ National Biodiversity Strategy and Action Plan, 2004 and Biodiversity Act, 2015
- ✓ Environment Court Act, 2000 and subsequent amendments in 2002
- ✓ Bangladesh Water Act, 2013
- ✓ Solid Waste Management Regulation, 2021
- ✓ Hazardous waste (E-Waste) Management Rules 2011
- ✓ The Acquisition and Requisition of Immovable Property Act, 2017 etc.

International relevant regulations/guidelines are:

- ✓ JICA environmental and social considerations guidelines (JICA Guidelines)
- ✓ Asian Development Bank (ADB) Safeguard Policy Statement (SPS), 2009
- ✓ World Bank (WB) Operational Policy (OP)
- ✓ WB Environmental and Social Standards (ESS)
- ✓ International Finance Cooperation (IFC) Environment
- ✓ Health and Safety (EHS) guidelines
- ✓ World Bank, Operation Policy: 4.12 (involuntary Resettlement) etc.

The fieldwork for this assignment showed many suggestions like gender, children and disability-sensitive arrangements, the provision of necessary facilities, safety, security, and hygienic environments, among other suggested environmental and social factors related to TOD. Nonetheless, many of the positive and negative environmental and social impacts were revealed.

For the target TOD projects, several environmental and social aspects needed to be taken into account. The ground level conditions during the construction and operation stages have also tried to recognize through field works (e.g., FGD, direct observation, photo survey). It is identified that following facts are also needed to consider:

- assistance for persons with disability,
- provision of women corner,
- special stairs for elderly persons and persons with disability,
- toilet facilities,
- prayers room,
- entrance and exit from TOD areas,
- provision of drinking water facilities,
- establishment of park,
- resting place,
- mini shopping center,
- footpath,
- foot over bridge,
- good management system for labors and hawkers,
- security force,
- firefighting arrangements,
- first aid corners and health service facility,
- waste management,
- cleaning of TOD facilities,
- effective monitoring etc.

Results from the scoping process have supported to evaluate the initial environmental and social implications of TOD projects as a whole. Consultation, pollution prevention for air quality, water quality and water use, waste, noise and vibration, odor, natural environment/ecosystem and biodiversity, resettlement, living and livelihood, and grievance are the issues that the scoping results have provoked.

Based on the 500–1000 m radius of each of the two covered metro stations, the situation analysis was conducted. By taking into account various environmental and social parameters/components, such as geology, soils and groundwater, surface hydrology and water quality, meteorology and air quality, biological resource, socioeconomic resource, gender and related matters, etc., baseline environmental and social conditions for both of the

areas were captured.

The study project has considered to develop the TOD plan for two stations (Gabtoli station under MRT line 05 North and Uttara center station MRT under Line 06) as the pilot project. Those two stations are in center city are of Dhaka. So a details geo-environment condition of Dhaka city has tried to analyses-

Dhaka city falls in seismic zone II of the seismic zoning map of Bangladesh as per Geological Survey of Bangladesh. It is classified as being on the upper end of the scale for moderate risk. Significant damaging historical earthquakes have occurred in and around Bangladesh and damaging moderate-magnitude earthquake occur every few years. According to Higgins (2014), land subsidence in Dhaka occurs at the rate of 0 to > 10 mm/y, and is likely related to groundwater abstraction.

⇒ Tested samples for ground water in Uttara Center TOD area found within World health organization (WHO) and Bangladesh Government's standard except COD (Chemical Oxygen Demand). All the measured values for ground water of Gabtoli TOD area were found within WHO and Bangladesh Government's standard. For surface water samples of Uttara Center TOD area, Dissolved Oxygen (DO) is generally high, near saturation, in all the lakes, pH of the khals is slightly acidic, approaching DoE's lower limit for pH. The khal contains high amount of Total Dissolved Solids (TDS) and conductivity is also high. The air quality in Uttara Center TOD area is assumed to be better than that of Gabtoli TOD area.

The tested results of surface water of Gabtoli TOD area were found within national standards. Generally, in Dhaka City the noise level is high but this for Uttara Center TOD area is assumed to be better than that of Gabtoli TOD area.

Both of the pilot projects underwent alternative analyses that took into account social and environmental factors. The issues revealed in alternative analysis are: noise, air/dust pollution, oil contamination, soil erosion, vegetation and flora and fauna, fisheries and aquatic biodiversity, changes in landscape water quality, oil contamination, drainage, improved footpath, traffic jam in front of station, risk of accident, gender-based violence, child labour, involuntary resettlement, public health, occupational health and safety, traffic congestion due to construction, HIV/AIDS, solid wastes etc.

From the alternative analysis for the three alternatives of Uttara Center TOD area,

- The environmental and social impacts of alternative 1 is assessed to be lower than alternative 2 and alternative 3.
- Impact of alternative 2 and alternative 3 on air quality will be better than alternative 1, but the impact of alternative 2 and alternative 3 on air quality will be same.
- Alternative 3 will have more impact on noise level than alternative 2.
- Traffic jam during operation is anticipated to be lower for alternative 3 than alternative 2.
- Risk of accident during the operation phase is anticipated to be lower for alternative 3 than alternative 2.
- For Gabtoli TOD's alternative 3, more occupational health and safety risks are anticipated than alternative 1 and alternative 2.

Through this study the initial environmental and social impacts have considered to evaluate,

and the impacts (positive and negative) would be base on-

the flood risk, sustainability, vegetation loss, involuntary resettlement, local economy such as employment and livelihood, land use and utilization of local resources, the indigenous and ethnic people, the poor, cultural heritage, local conflict of interests, Infectious diseases such as HIV/AIDS, gender and children's rights, increasing real estate potentials, increase property value, topography and geographical features, groundwater, soil erosion, hydrological situation, Flora, fauna and biodiversity, meteorology, landscape, global warming, reduced green coverage, air pollution, water pollution, soil contamination, waste, noise and vibration, ground subsidence, offensive odor, pollution load, accidents, traffic jam etc.

Adequate mitigation and monitoring measures for both of the pilot projects have also determined. This environmental and social consideration survey has given an array for next level study that requires to be complied with national regulatory requirements. Environmental and Social impact Assessments (ESIA) and the development of Environmental and Social Management Plans (ESMP) must be completed in each TOD areas before implementing or beginning construction activities of TOD projects.

Chapter 1: Introduction

1.1 Background of the Study

Urban development in Dhaka is progressing at the fastest rate to meet the needs of the city's rapidly expanding population in terms of comfort and daily necessities. In this regard, the recent rapid expansion of the city of Dhaka's infrastructure is being observed. Among the infrastructural developments, Mass Rapid Transit (MRT) and Bus Rapid Transit (BRT) projects are mentionable.

Rajdhani Unnayan Kartripakkha (RAJUK) with the assistance of Japan International Cooperation Agency (JICA), has taken a project for development of policy and guidelines for Transit Oriented Development (hereinafter referred to as TOD) along the corridors of MRT-line 1, MRT-line 05 north and MRT-line 06. The Environmental and Social Considerations Survey for Uttara Center Station and Gabtoli station area have considered to conduct under the JICA study project to analyze possible environmental and social issues that would impact during the implementation stage of TOD. BETS Consulting Services Limited (hereinafter referred to as BETS) has been assigned by the JST to carry out the Environmental and Social Consideration Survey. This report represents the Scoping, Situation Analysis including the initial environmental and social impacts and their mitigation measures and monitoring for both the Uttara Center Station TOD and Gabtoli TOD.

1.2 Purpose of the Study

A TOD is a compact area of mixed use residential and commercial designed to maximize access to public transport, and also frequently encourage transit ridership. A TOD area typically is composed of a center with a transit station (train station, metro station, tram stoppage, or bus stoppage), surrounded by relatively high-density development with progressively lower-density development spreading outward from the center. TODs are generally located within a radius of 400 to 800 m from a transit stop, or 600 m on average as a comfortable walking distance (around 10-minute walk). Based on the Revised Strategic Transport Plan (RSTP), 2016; three routes, MRT line 01, MRT line-05 north, and MRT line 06 are currently being developed under Japan's Official Development Assistance (ODA) loan and MRT Line 05 southern route is currently being developed under the fund Asian Development Bank (ADB).

The policies and guidelines for TOD, have not been developed yet. Thus, the JICA study Project for Development of Policies and Guidelines for TOD along Mass Transit Corridors is considered to contribute to the promotion of appropriate urban development based on the plan and establishing and operating a coordination mechanism in Dhaka. Accordingly, Environmental and Social Consideration Survey for the said study project has considered to be conducted and JST has engaged the BETS.

1.3 Methodology

The assigned survey was conducted to examine the most appropriate proposal for pilot projects based on environmental and social considerations; and to determine whether an

Environmental Impact Assessment (EIA) is required for the pilot projects in consideration of future project development in accordance with the laws and regulations of Bangladesh. The survey also covered the perspective of social considerations so that the current situation should be grasped for women, people with disabilities, and the poor not to be negatively affected.

Under the technical direction and supervision of JST, BETS has conducted literature reviews, developed methodologies for the survey, and conducted 10 numbers of Focus Group Discussions (FGD) with 5 different targeted groups (two rounds) in the areas of Gabtoli MRT station and Uttara Center MRT station. BETS has also carried out a photo survey on examples of women, children and disable friendly public spaces in Dhaka City. Moreover, three numbers of Stakeholder Consultation Meetings (SCM) were conducted to share the projects information as well as environmental and social considerations findings of the survey. Basic policies and guidelines of GoB and JICA and other international organizations were reviewed and followed for the survey. To prepare this final report, both qualitative and quantitative analyses of all the data and information obtained during fieldwork and secondary research were conducted.

Tasks have been conducted following above methodology are-

Participants included stakeholders from many sectors who are important to the development of TOD. On 24th March 2022, the first SCM (Stakeholder Consultation Meeting) was held. In that SCM, TOD concept, explanation of environmental Considerations and the findings of the Scoping exercise (covered for overall TOD projects) were shared. Stakeholders' views, opinions and suggestions were taken, and those will need to be addressed throughout the process of policy and guidelines development.

- Preparing the Situation Analysis on environmental and social considerations related to the TOD at Uttara Center Station area before holding the second SCM was the appropriate stage, according to the sequential steps of the environmental and social consideration activities.
- The Situation Analysis provided a starting point for the subsequent tasks and an array to begin necessary processes (e.g. identification of mitigation measures for the initial environmental and social impact identified by this Situation Analysis as well as to develop the monitoring plan for the mitigation measures).
- The findings of this Situation Analysis were shared in the second SCM that held on 02nd June 2022 focusing on Uttara Center Station TOD where the views, opinions and suggestions of the stakeholders were also taken into account. The third SCM was conducted for Gabtoli ToD following the same processes of second SCM on 31 January 2023.

After accomplishing the above tasks, the mitigation and monitoring requirements have been established for the identified initial environmental and social impacts of Uttara Center Station TOD and Gabtoli TOD.

This report represents the environmental and social scoping for overall TOD project, situation analysis for Uttara Center TOD and Gabtoli TOD (it included initial environmental and social impacts that is at the level of Initial Environmental Examination along with proposing mitigation and monitoring measures), and mitigation and monitoring requirements for the identified initial environmental and social impacts.

Recommendations relating to TOD development focusing on environmental and social considerations based on the scoping result and situation analysis and mitigation and monitoring have also been presented in this report.

Chapter 2: Relevant National and International Policies, Regulations, Guidelines and Standards

2.1 Policy and Legal Framework

Since the TOD idea is new in Bangladesh, there is no clear indication or advice on the requirements for TOD with regards to the current environmental or social policies, legislation, or guidelines of the Government of Bangladesh (GoB). However, this section gives an analysis on the environmental and social considerations from the existing national rules, regulation and guidelines those are somehow related to the TOD.

The GoB and investors have enunciated the regulatory requirements for the protection and conservation of the environment and various environmental resources as well as the protection of the social environment from the adverse effects of projects and activities related to them. Important among these requirements are summarized as follows. In addition to national laws, it is important that the different development Projects meet international requirements or not in which Bangladesh is a signatory.

The summaries of the major applicable national laws, regulations for environmental and social aspects are provided in below table:

Table 2.1: Summary of government laws and Regulations Applicable to the Project

Laws, Regulations and Standards	Brief Description	Responsible Agency	Relevance
Environmental Conservation Act (ECA), 1995 (Amendment 2000,2002,2010)	ECA is for the conservation of environment, improvement of environmental standards and control environmental pollution. This act provides for (i) remedial measures for injury to ecosystem; (ii) discharge of environmental pollutants; and (iii) inspection of any activity for testing any equipment.	Department of Environment (DoE), Ministry of Environment, Forest, and Climate Change (MoEFCC)	The provisions of the act apply to the construction and operational stage.
Environment Conservation Rules (ECR), 1997 (Amendment 2010, 2012 and 2023)	The Rules (ECR, 2023) outline the processes and requirements of environmental clearances for specific type of projects: (i) Green, (ii) yellow (iii) orange and (iv) red. The rules specify the procedures for issuing Environmental Clearance Certificate (ECC) for the various categories of projects.	DoE, Ministry of Environment, Forest, and Climate Change (MoEFCC)	As per ECR, 2023, the category of TOD will be defined well during the next level study like ESIA. Initially based on the discussion with DoE, it was revealed that TOD projects might fall under red category project.
Bangladesh Labour Act, 2006 and Labour Rules, 2015	This Act and Rules consolidate and amends the laws relating to labors' employment, health and hygiene, safety, welfare, condition of service and employment, employment of adolescents and children, maternity benefits, working hours and leave, wages and payment, workmen's compensation for injury by accidents, trade unions and industrial relations regulation of employment and safety of dock workers etc.	Ministry of Labour and Employment	To provide adequate health and safety facilities to construction works during construction period.
The National Water Policy, 1999	This policy deals with protection and restoration of water resources, water quality including strengthening regulations concerning industrial effluents and	Ministry of Water Resources	Wastewater from the TOD may degrade the quality of the surface water during the construction (mostly

Laws, Regulations and Standards	Brief Description	Responsible Agency	Relevance
	participation of local communities in water sector development.		construction wastewater) and operation phases (e.g., from the facilities like drainage/ sewerage if provisioned) .
National Biodiversity Strategy and Action Plan, 2004 and Biodiversity Act, 2015	This strategy and action plan prohibits activities that may have an adverse effect on endangered animals or organisms. This includes activities which might have an effect on the environmental characteristics of the endangered ecological community, including its habitat (e.g. wetland).	MoEFCC	Construction activities may hamper the local aquatic and terrestrial biodiversity if proper mitigation measures are not undertaken.
Environment Court Act, 2000 and subsequent amendments in 2002	GOB has given highest priority to environment pollution and passed Environment Court Act, 2000 for completing environment related legal proceedings effectively.	MoEFCC	The provisions of the act apply to the construction stage in case of any non-compliances of the environmental issues.
Bangladesh Water Act, 2013	This act focuses on all forms water resource related issues.	Ministry of Water Resources	The provisions of the act apply to all forms of water.
Solid Waste Management Regulations, 2021	The Regulations define the responsibilities related to solid waste management and impose collection, recycling, and disposal obligations according to Extended Producer Responsibility (EPR) of non-biodegradable products such as glass, plastic, and bottles etc..	DoE, MOEFCC	The provisions of the regulations apply to the construction and operational stages.
Hazardous Waste (e-waste) Management Rules, 2021	The E-waste rule covers the products listed in the Schedule (home appliances, monitoring and control equipment, medical equipment, automatic machines, IT and communication equipment), and establishes obligations for manufacturers, assemblers, collectors, sellers, and consumers of the products. The rule also sets provisions to limit the use of the 10 substances covered by the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive.	DoE, MOEFCC	The provisions of the rules apply to the construction and operational stages.
The Acquisition and Requisition of Immovable Property Act, 2017	The Acquisition and Requisition of Immovable Property Act, 2017 (ARIPA) is the principal legislation governing eminent domain for land acquisition and requisition in Bangladesh. ARIPA, 2017 explains the land acquisition process from section 4 to section 19 and land requisition process from section 20 to section 28.	Ministry of Land	If the land acquisition for TOD is required, this act will be applicable.

Among the above listed, the key legislations along with brief on them are as follows:

i) National Environmental Policy (NEP), 2018

The National Environment Policy envisaged environment conservation, pollution control, biodiversity conservation, and mitigation of the adverse effect of climate change to ensure sustainable development.

ii) National Environmental Management Action Plan (NEMAP), 1995

The NEMAP is a plan which proposes actions for sustainable development created by the MoEFCC of the government of Bangladesh and which puts particular emphasis on the participation of the people in its implementation and monitoring. Key actors in the decision-making process include government agencies, people's representatives, civil society groups, and individuals. All actions of the plan are prioritized based on the criteria- the number of people likely to be affected, the urgency of action necessary to protect ecosystems, the dependability of people's participation, and the feasibility of pilot projects.

iii) Environmental Conservation Act (ECA), 1995, (Amendment 2000, 2002, 2010)

This umbrella Act includes laws for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. According to this act (Section 12), no industrial unit or project shall be established or undertaken without obtaining, in a manner prescribed by the accompanying Rules, an Environmental Clearance Certificate (ECC) from the Director General of DoE.

iv) Environmental Conservation Rules (ECR), 1997 (Amendment 2010, 2012, 2023)

These are a set of rules, promulgated under the ECA, 1995 and its amendments. So, the ECR is the main guidance documents of Bangladesh to comply the national environmental legislation for a particular project

ECR provides categorization of industries and projects and identify types of environmental assessment required against respective categories of industries or projects. The Rules set:

- The National Environmental Quality Standards (NEQS) for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhaust etc.;
- The requirement for and procedures to obtain environmental clearance; and
- The requirement for Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) according to categories of industrial and other development interventions.

The ECR, 1997 was issued by the GOB in exercise of the power conferred under the ECA (Section 20). Under these Rules, the following aspects, among others, are covered:

- Declaration of ecologically critical areas;
- Classification of industries and projects into 4 categories;
- Procedures for issuing the Environmental Clearance Certificate (ECC); and
- Determination of environmental standards.

2.2. Categories of Projects according to ECR, 2023

ECR, 2023 provides a classification of industrial units and projects into four categories, depending on environmental impact and location. These categories are:

- Green;
- Yellow;
- Orange ; and
- Red

The categorization of a project determines the procedure for issuance of an ECC. All proposed industrial units and projects that are considered to be low polluting are categorized under "Green" and shall be granted Environmental Clearance. For proposed industrial units and projects falling in the Yellow Orange and Red Categories, firstly a site clearance certificate and thereafter an ECC will be required. A detailed description of those four categories of industry/project

For the Red Category of projects, a full EIA is required. All regional and national highway, railway and bridge projects of over 100 m length fall in the red category. All MRT projects clearly fall under RED

category. As per the list provided by ECR, 1997 for project categories, there is no direct indication or guidance for TOD. So, for TOD of MRT stations, BETS will consider the relevant guidelines comply with this category.

2.3. Environment Clearance Certificate (ECC)

The ECR, 1997 and 2023 also contains the procedures for obtaining ECC from the Department of Environment (DoE) for different types of proposed units or projects. Any person or organization wishing to establish an industrial unit or project must obtain ECC from the Director General. The application for such a certificate must be in the prescribed form together with the prescribed fees laid down, through the deposit of a Treasury Challan in favor of the Director General. As per the rules, it is a requirement that certificates be renewed at least 30 days before they expire. As TOD concept is new in Bangladesh and ECR, 1997/ 2023 does not have any clear guidance on this, International Environmental and Social Consideration Expert of JST along with BETS study team conducted a meeting with officials of DoE during late March 2022 on the national/ DoE requirement of TOD Project. From the discussions it was revealed that TOD project may conduct detail SEA as this TOD concept is new in Bangladesh that will give proper guidelines for this sector. However, as per the national legislative mandates, the Project will need to conduct EIA/ESIA for each of the TODs.

2.4. Strategic Environmental Assessment (SEA)

The ECA, 1995 or ECR 1997 has no clear indication about Strategic Environmental Assessment. The SEA is the top-level decision-making instrument for examining environmental and social components of policies, programs and plans (PPPs). Applications of the instrument need an in-depth local understanding of physical, social, economic, ecological systems and functions. The experts on this instrument therefore gathered field level data using participatory methods involving representatives of social-economic-ethnic groups. In that consideration, well-informed community groups play useful roles by providing information from their perspectives.

But NEP, 2018 stressed SEA in different sections. The objective section of the NEP, 2018 emphasized that EIA and SEA will need to be ensured in all necessary cases. This section also guided a requirement to ensure area/region based ecological land zoning and SEA. Organizational set up of the NEP stressed that where applicable for the policies, plans and programme of ministries/ Departments, SEA is needed to be performed. Implementation plan/activities section guided that it is required to carry out EIA and SEA before preparing each of the national/ regional project and masterplans for accommodation, housing and urbanization and the implementing authorities are ministry of housing and public works, local government department, ministry of environment, forest and climate change, DoE, department of public works, department of architect, housing and building research institute. NEP also guided that land zoning needs to be performed for establishment of industries in planned manner through conducting SEA, industrialization in residential areas needs to be prohibited and the industries situated in residential areas need to be shifted to the industrial designated industrial areas. The implementing authorities of the SEA for policies, plan and programme of ministries/ departments where applicable are relevant ministry/department, MoEFCC and DoE.

2.5. Environmental Safeguard

The following policies and guidelines must be adhered to in order to address environmental safeguards issues.:

- ECR, 1997 (along with its amendments) of GoB
- JICA Guidelines
- Asian Development Bank (ADB) Safeguard Policy Statement (SPS), 2009
- World Bank (WB) Operational Policy (OP)

- WB Environmental and Social Standards (ESS)
- International Finance Cooperation (IFC) Environment, Health and Safety (EHS) guidelines.

2.6. Social Safeguard

Bangladesh national policy for land acquisition/involuntary resettlement issues has been described in the National Acquisition and Requisition of Immovable Property Act (ARIPA), 2017. The following regulations are applicable for social safeguards issues and may be addressed in the social management plan):

- ARIPA, 2017, GoB
- Asian Development Bank Safeguard Policy Statement (SPS), 2009
- World Bank, Operation Policy: 4.12 (involuntary Resettlement)
- Mainstreaming Gender in Road Transport: Operational Guidance for World Bank, 2010, by World Bank
- JICA Environmental and Social Considerations Guidelines.

Acquisition, if found necessary, shall entail the payment of compensation to the legal owners. Livelihood restoration and rehabilitation program may be included in development of each TOD if their livelihood is interrupted by TOD but it is not clearly mentioned in ARIPA, 2017. Key considerations for the land acquisition are:

- a. Cash compensation equal to lost income for one year, based on tax record or, in its absence, comparable rates from registered businesses of the same type with tax records
- b. Provision of retraining, job placement, additional financial grants and microcredit for equipment and buildings, as well as organizational/logistical support to establish Affected Person (AP) in alternative income generation activity.
- c. Displaced persons shall be resettled and rehabilitated under the international donors' Involuntary Guidelines including the squatters.
- d. In case of land acquisition, three times more than the market price of the portion of land to be paid (ARIPA,2017-point 21).

Squatters and encroachers: Squatters are socio-economically vulnerable persons or households, who do not have legal rights to the affected lands, but use any empty land available near road side, any markets side, or housing areas of others but for residential, commercial or livelihood purposes. Encroachers are vulnerable and non-vulnerable persons or households who extended their possession into the affected public lands. The squatters and encroachers, if displaced, will not be compensated for lands but only for assets built or grown on the land they occupy. The Executing Agency/Consultant Agency will identify the eligible affected squatters and encroachers.

- a. **Owners of displaced businesses:** Compensation for income loss from businesses that is displaced from private lands. Compensation/assistance will be given to the actual owners of the affected businesses.
- b. **Rental income earners**, from built premises situated on private lands: Affected rental income earners from built premises situated on private land will be compensated for loss of income. Those who earn rental income by erecting buildings/structures on City Corporation, Government and other public lands will be ineligible for compensation /assistance (a. Government: A single administrative division having corporate status and powers of self-government or jurisdiction as granted by national and regional laws to which it is subordinate).

In Bangladesh, about 339 government already established since 1973. (b. City Corporation: a group of people authorized by law to act as a legal personality and having its own powers, duties, and liabilities, also called: municipal corporation.

- c. **Usufruct rights holders** of affected land/property: Owners of affected business, agricultural, fisheries and other activities on formally leased-in government land, where leases stipulate compensatory conditions in cases where lands are taken back or acquired before lease expiration.

Cut-Off-Dates: Affected persons' eligibility for compensation and assistance will also be governed by the eligibility cut-off dates. These dates will be established to identify the non-land assets that will qualify for compensation and discourage abuse of the mitigation policies by defrauding the project.

These are the dates on which censuses of the affected persons and assets are completed on particular area (mauza/Ward. No person or his/her assets will qualify for compensation directly through Executing Agency (must be by third party/NGO) unless they are recorded in the census taken on the cut-off date.

Contingency for Displacement Fund and Public Consultation: A Contingency or Displacement Fund may be allocated in the event of the need to compensate temporary business losses, damages to minor structures, felling of trees, and unforeseen losses.

Description of JICA policies on land acquisition and resettlement are summarized as follows:

- (i) Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives.
 - (ii) When, after such an examination, avoidance is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected.
 - (iii) People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels.
 - (iv) Compensation must be based on the full replacement cost as much as possible.
 - (v) Compensation and other kinds of assistance must be provided prior to displacement.
 - (vi) For projects that entail large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP 4.12,
 - (vii) In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people.
 - (viii) Appropriate participation of affected people must be promoted in planning, implementation, and monitoring of resettlement action plans.
 - (ix) Appropriate and accessible grievance mechanisms must be established for the affected people and their communities. Above principles are complemented by World Bank OP 4.12, since it is stated in JICA Guideline that "JICA confirms that projects do not deviate significantly from the World Bank's Safeguard Policies". Additional key principle based on World Bank OP 4.12.
 - (x) Affected people are to be identified and recorded as early as possible in order to establish their eligibility through an initial baseline survey (including population census that serves as an eligibility cut-off date, asset inventory, and socioeconomic survey), preferably at the project identification stage, to prevent a subsequent influx of encroachers or others who wish to take advance of such benefits.
 - (xi) Eligibility of Benefits include, the PAPs (Project Affected Persons) who have formal legal rights to land (including customary and traditional land rights recognized under law), the PAPs who don't have formal legal rights to land at the time of census but have a claim to such land or assets and the PAPs who have no recognizable legal right to the land they are occupying.
1. Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based.

2. Provide support for the transition period (between displacement and livelihood restoration).
3. Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc.
4. For projects that entail land acquisition or involuntary resettlement of fewer than 200 people, abbreviated resettlement plan is to be prepared.

In addition to the above core principles on the JICA policy, it also laid emphasis on a detailed resettlement policy inclusive of all the above points; project specific resettlement plan; institutional framework for implementation; monitoring and evaluation mechanism; time schedule for implementation; and, detailed Financial Plan etc.

In accordance with the JICA Guidelines, Resettlement Action Plan (RAP) is prepared to cover all affected persons irrespective of their title to land; compensation for lost assets; restoration and enhancement of livelihood of affected populations. The affected person will receive cash compensation at replacement cost and other relocation assistances. JICA's safeguard policy commitments to affected populations of the typical project that will also to be followed for TOD project are as follows:

- Avoid and minimize the impacts on involuntary resettlement and loss of means of livelihood;
- Prior compensation at full Replacement Cost;
- Determination of scope of Resettlement Action Plan through SIA;
- Conceive the Resettlement Action Plan as development program;
- Recognizes entitlement eligibility of non-titled affected persons on public land;
- To improve or at least to restore standard of living;
- Restoration and Enhancement of Livelihood;
- Special attention paid to the affected poor and vulnerable groups especially those below poverty line, women headed, and landless, elderly ethnic and indigenous households;
- Provide Transitional and Relocation assistances;
- Disclose compensation and resettlement policy to the affected populations;
- Ensure public participation in Resettlement Planning;
- Appropriate and accessible Grievance Mechanisms must be established; and
- Monitor and evaluate the impact of RAP implementation.

In Bangladesh most of the infrastructure development projects are financially and technically assisted by the donors like JICA, WB, ADB, etc. In estimating the Replacement Value of the affected/displaced properties, the harmonization between the donor and GoB policies have always been done in past projects which has been followed similarly for this project also.

Table 2-2: Probable Gaps Comparison Between ARIPA, 2017 Bangladesh and JICA's Policies Related to Resettlement

SI No	Issues	ARIPA, 2017	JICA Policy	GOB Regulation's Gaps with JICA
1	Avoid Involuntary resettlement	Avoidance of resettlement is not specifically mentioned in the 2017 Act.	Involuntary resettlement and loss of means of livelihood should be avoided by exploring all viable alternatives.	Gaps with regard to this principle to avoid resettlement impact through alternative options.
2	Land acquisition	As mentioned in 2017 Act that the land owners to be paid in case of land acquisition, three times more than the 'mouja price-rate' of the portion of land to be paid (ARIPA, 2017-point 21).	JICA has guidelines same as 2017 Act with increased rate	JICA may provide more than three times price if necessary

SI No	Issues	ARIPA, 2017	JICA Policy	GOB Regulation's Gaps with JICA
3	Minimize involuntary resettlement	The law only implicitly discourages unnecessary and excess land acquisition, as excess land remains idle and unused and lands acquired for one purpose cannot be used for a different purpose. Land that remains unused should be returned to the original owner(s).	When, after such an examination, avoidance is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected.	Notice under section (u/s)-4 under 2017 Act requires notification only; no consultation is required.
	Mitigate adverse social impact	The mitigation measures are cash compensation only for lost assets. The complexities of resettlement are not addressed by the ARIPA, 2017.	People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by project proponents in a timely manner.	In Bangladesh legislation, only cash-based compensation for acquired assets are addressed. The impacts of income and livelihood and the need for resettlement is not considered.
	Identify, assess and address the potential social and economic impacts	The 2017 Act requires preparation of a Land Acquisition Plan (LAP) for land acquisition and compensation purposes. However, GOB environmental rules/guidelines (1997) synchronize various applicable laws and policy frameworks of the country for early identification of impacts on biophysical, socioeconomic and cultural environment of a project intervention and to mitigate the assessment of technical alternatives, including the no action alternative to minimize adverse environmental impacts, include impact on human health and safety. EIA identifies measures to minimize the problems and recommends ways to improve the projects.	The impacts to be assessed with regard to environmental and social considerations. These also include social impacts including migration of population and involuntary resettlement, local economy such as employment and livelihood, utilization of land and local resources, social institutions and local decision making institutions, existing social infrastructures and services, vulnerable social groups such as poor and indigenous peoples, equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and working conditions including occupational safety.	Impact assessments are typically done in the case of externally funded projects; otherwise, a land acquisition plan is prepared for acquisition purposes. Project impacts on properties, livelihoods and employment, health and environment are discussed in IEE/ESIA reports, but do not provide enough information to determine losses and basis for compensation. Existing laws do not have provision for identification of indigenous people to recognize their particular problem and inconveniences due to the project.
	Prepare mitigation plans	The Deputy Commissioners (DCs) has the mandate in their respective jurisdiction as per law to acquire land for any requiring project (public agency or private person). The requiring body requests the Deputy Commissioners for acquisition of land for their project/scheme. DCs investigate physically the requirement of land and carry out Joint Verifications of assets and type of land for assessing the quantity of losses (u/s 9 (1) of the law). The Affected titled holders receive compensation the assessed and determined by DC according to the mouza rates plus 200% additional for land and 100% additional for Structures, Trees and crops The	People whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by project proponents etc. in a timely manner.	"Market value" of property is often found low in respect of current market price, it can be raised, if appealed, by a maximum of 10 percent each time which in most case is not sufficient to match with real market price

SI No	Issues	ARIPA, 2017	JICA Policy	GOB Regulation's Gaps with JICA
7		Deputy Commissioner follows the rate of PWD for structure, Department of Agriculture Extension (DAE) for crops, Department of Forest (DoF) for trees, etc.). Affected owners have the right to appeal on acquisition or on the compensation amounts determined as per law.		
	Consider alternative project design	Feasibility studies including social, political, cultural and environmental impact assessments, detailed engineering surveys as basis for acquisition of private property or rights.	Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives.	social impact should consider as the high priority.
	Involve and consult with stakeholders	The ARIPA2017 have provisions (Section 4 and 4/1) to notify the owners of property to be acquired. Any party having any objections can appear to DC for a hearing with 15 days of notification.	Appropriate participation by affected people and their communities must be integrated in the planning, implementation, and monitoring of resettlement action plans and measures to prevent the loss of their means of livelihood.	There is no provision in the law for consulting the stakeholders but the land allocation committees at district, division and central government level. People have limited scope to negotiate with the government on the price of land, but have no right to refuse acquisition.
9	Disclose and inform PAPs of RAP and mitigation measures	The ARIPA, 2017 requires serving a "notice" to be published at convenient places on or near the property in a prescribed form and manner stating that the property is proposed to be acquired (u/section 3).	In preparation of a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance.	Disclosure takes place in case of donor-funded projects.
	Support existing social and cultural institutions of the affected persons	Generally, any social and cultural institutions should be avoided.	The impacts to be assessed with regard to environmental and social considerations. These also include social impacts, including social institutions such as social capital and local decision-making institutions, existing social infrastructures and services.	If avoidance is not possible, the Government shall acquire, but will reconstruct or rebuild the social and cultural institutions.
11	Focus on disable, senior citizen and women group	No special provision in the ARIPA,2017 for disable and senior citizens.	JICA may makes efforts to Focus on disable, senior citizen and women group.	There is a gap to support disable people, senior citizen and women group

Chapter 3: Relevant Survey Analysis

According to the ToR of the study, the team of consultant's has carried out 10 numbers of FGDs with five different groups¹, photo survey for women, children and disable friendly examples in different public spaces of Dhaka City and took direct observations from the surrounded areas of Gabtoli and Uttara centers stations areas. This section presents the analysis of environmental and social considerations revealed from the field works that are related to TOD.

The participants in the FGDs and other fieldworks emphasized numerous facilities features and provisions that were recommended to be included in the TOD. Both positive and negative impacts on environmental and social aspects were suggested to include for TOD implementation.

The analysis of findings considering the ground works is explained shortly by features level and impact level:.

3.1 Features level

3.1.1 Gender, Child and Disable Sensitive Arrangement

The scoping study revealed the following gender and disable friendly features with the TOD:

Seating arrangement in the transport: It was revealed that reserved seats need to be ensured in transports for women and Persons with Disability (PWD). There should be some seating, steel chairs, sitting areas, etc. for women and PWD who may wait at the TOD location where they can access an MRT train.

Waiting room: Adequate waiting rooms at applicable places of TOD will be required. Women, child and disable friendly features (e.g. breast-feeding corners, separate sitting arrangement for men and women, sitting arrangement that is accessible to PWDs) will need to be ensured there.

Assistance for PWDs: Different exercises of consultants with the stakeholders found that the TOD facilities need to be considered with assistance for PWDs. To do so, wheelchairs that are easily accessible to lift and escalator need to be ensured along with presence of attendants for the PWDs at TOD areas where applicable.

Special stairs those are friendly (e.g. easy access, easy to operate) to elderly persons and PWDs will need to be provisioned.

Women corners: At the required places of the TOD areas, women corners will need to be provisioned. Moreover, breast feeding corners for the kids will need to be ensured at the applicable places.

Toilet facilities: Adequate toilet facilities will need to be ensured at the TOD areas. These facilities will need to be separated for men and women which will also needed to be friendly to be used by the PWDs along with facility like baby changing corner.

Prayer room: Provision of prayers room will need to be ensured at the required spots of the TOD areas. It should be ensured that separate prayer spaces for men and women are provided in the appropriate TOD locations.

3.1.2 Amenities

Entrance and exit from TOD areas: The people who participated in FGDs stressed the need to ensure facilities like lift, escalator etc. with auto door system for entry to/ from the TOD areas where applicable.

Drinking water: Supply of safe drinking water is very important in public spaces of Dhaka City. So,

¹ i. Persons with Disability ii. Low Income Community persons iii. Local representatives iv. Women and v. Senior citizens

provision of supply of safe drinking water will need to be ensured at required places of TOD areas.

Establishment of parks in TOD areas: The establishment of parks in TOD zones may be considered. This will need to be considered with separate toilet facilities for men and women, women corners, breast feeding corners, sitting arrangements, recreational items for elderly persons (e.g., organized walkway, facility for physical exercise) and children (e.g., rides), sitting and walking arrangement for PWDs. Nonetheless, different types of fruits, timber and medicinal trees will need to be planted and it will need to be ensured that no exotic or invasive species of trees are planted. It was also suggested by the participants of the FGDs of Gabtoli station areas to establish park with planted trees and sitting arrangement along the bank of the river near the Gabtoli station that may increase environmental quality locally and people's recreational facility.

Resting places: For the public, day laborers, etc., rest areas with the required facilities are suggested to be constructed at various TOD locations.

Parking: Spacious, designated, and demarcated parking places will need to be provisioned at the different required places of TOD areas.

Mini shopping center: Mini shopping centers at suitable locations of TOD areas and in underground (e.g. Gabtoli station area) road crosses may be established. This will make it simple for those who are traveling to purchase their necessities.

Other Amenities: This will also be required to ensure the 24-hour lighting system, Closed Circuit Television (CCTV) system, waiting room with TV, free WIFI, newspaper, mobile charging spots, table, chairs etc. at required places of TOD areas.

3.1.3 Safety, Security, Hygiene Environments

From the Scoping Study following issues related to safety, security, hygiene and environment were revealed:

Footpath: To inspire people to walk (that ultimately reduces using of vehicles further from stations and reduce traffic jam as well as greenhouse gas emission indirectly and enhances walking habit), footpath with enough width and trees planted to give shade, oxygen, and a better aesthetic view needs to be considered. Nice siting arrangement (Street furniture) may consider for widened footpaths to support.

Foot over bridge: Foot over bridge to ensure the safety of the pedestrians will be required at the required areas of TOD. Specially, it was discovered that the Gabtoli station area is a very busy location where intercity buses and interdistrict buses travel, along with their passengers. As pedestrians cross the road in this region, accidents frequently occur.

Good management system for labors and hawkers: To keep the disciplines related to labors and hawkers, the specific areas for labors/ hawkers will need to be designated in stations and TOD areas rather allowing them in every places. For easy carrying of the passengers' goods, provision of trolleys for the labors would be also good options in stations and TOD areas. For smooth running of hawkers' jobs, it is necessary to establish hawkers' committees by the TOD authority. Presently there are hawkers' committees at some market places, thus it can advise to those small-scale entrepreneurs to have a committee for a disciplined business. It is evident that committees exist at each of the big markets. For example, in New Market of Dhaka there are four committees. Dhaka North City Corporation (DNCC)/ Dhaka South City Corporation (DSCC) may take initiative to organize the hawkers' group to form committees in order to maintain business in disciplined manner to avoid different types of irregularities.

Security force: To ensure security (e.g., stealing, crime, eve teasing) in TOD areas, security force will

need to be deployed.

Firefighting arrangement: At the required places of the TOD, adequate firefighting arrangements (e.g. fire hydrant, fire extinguishers, sand buckets, water bucket, demarcated no smoking/ smoking zones) will need to be provided. The fire alarm system will also need to be provisioned along with placing of fire services' office numbers in visible places.

COVID-19: Considering the COVID-19 situation, messages/ signage on precautionary measures of COVID-19 may be placed in visible places of TOD areas if required.

First aid corners and health service facility: First aid corners at the different required places of the TOD areas will need to be ensured. Nonetheless, establishment of health service facility will be also required at TOD areas. Emergency ambulance services will also need to be in place at the TOD areas.

Waste management: Due to lack of awareness among the people and inadequate management system in place, waste management in Dhaka City is always a challenge. Provision of adequate waste management system (e.g., setting different types of bins for degradable/ non degradable wastes with adequate awareness raising messages including array of ultimately disposal) will need to be ensured in required TOD areas.

Cleanliness': Proper cleaning system/ arrangement will need to be ensured at different facilities of TOD areas.

Traffic signal signing system: Traffic signal and signing system should arrange properly in the TOD area.

3.1.4 Monitoring

A continuous monitoring system on operation and maintenance system may need to be established for the facilities to be established as part of TOD.

3.2 Impact level

Construction and operation of TOD facilities are anticipated to have both positive and negative environmental and social impacts. For the anticipated negative environmental and social impacts, proper mitigation measures during the construction and operation period of TOD facilities will need to be undertaken. The anticipated positive and negative environmental and social issues are briefed below.

3.2.1 Anticipated Positive Aspects of TOD

Easy access to buy required items: Locals and commuters will benefit if TOD includes stores, small retail centers, or malls because they will have easier access to buy necessities.

Increased recreational scope: The inclusion of amenities like open space, parks with necessary furniture's, children play ground, water front park (if water bodies are adjacent to the station) etc. will support to create recreational opportunities for people and enhance the environment.

Employment of opportunities: For the operation and maintenance of the facilities that the TOD project would develop, there are also anticipated to be many new job opportunities in TOD locations.

Reduction of traffic jam and accidents: MRT along with TOD are expected to reduce use of bus and private vehicles that will ultimately reduce traffic jam and street accidents.

Reduction in Green House Gas (GHG) emissions: TOD is expected to reduce the use of private vehicles that will ultimately reduce the GHG emissions.

3.2.2 Anticipated Negative Aspects of TOD Which will Need the Mitigation Measures

Disruption to the current professions: MRT works will disrupt some of the people's current

professions who will need to be compensated and they may be deployed in TOD oriented jobs (e.g. in markets, park management, small shops etc.)

Workers' health, safety and security: For the constructions of the TOD facilities, construction workers will have health, safety and security concerns if adequate measures will not be taken and insurance for the health, safety and security of construction workers will need to be undertaken along with the required mitigation measures.

Wastewater: Wastewater may be generated from the construction works associated with TOD but that will need to be managed in such a way that this is not polluting or increasing pollution burden to nearby river or other water bodies and land.

Noise: To regulate the noise that will be produced during the construction of TOD facilities, the necessary mitigation measures must be taken (e.g., noise barrier, works only in day time, use of Personal Protective Equipment (PPE) by the workers, use of demarcation at the worksite).

Air Quality: Air quality may be deteriorated for the construction works, to mitigate the air pollution, water spraying, use of good quality construction equipment and machinery will need to be ensured.

Waste generation: Construction activities associated with TOD will involve generation of wastes/ construction debris. Proper waste/ debris management during construction works for TOD will be required in a way that no land or surrounded water body is polluted.

Chapter 4: Scoping Results

4.1. Identification of Relevant Considerable Items for the Pilot Projects

Scoping exercise has identified the features/ facilities that will need to be considered with the TOD. Construction or establishment of these features/ facilities in TOD areas will have environmental and social issues that will need to be in account.

The scoping study under the environmental and social considerations survey has been drawn based on the analysis of existing national level policies, regulations and guidelines as well as analysis of the findings of field works carried out for the ground level development works associated with TOD. The key issues resulted from the Scoping are as follows:

Need to define the interventions, features and facilities under TOD: Gabtoli represents redevelopment of existing urb area and Uttara Center Station area represents green development. The stated list of activities that will be carried out under a particular project is required in order to comprehend and evaluate the environmental and social effects of any project.

Though the specific activities of the TOD projects have not been defined, many activities/ interventions/ features have been come through this scoping study (section 5, 8 and 9) that may be part of TOD.

Scenario of policies, regulations and guidelines related to TOD: The upshot is that the TOD is not being guided by the current national environmental and social policies, rules, and guidelines. However, some of them can guide in different ways once the interventions/ plans are defined. No SEA has been carried out for TOD in Bangladesh yet. There is also gap in terms of presence of environmental and social assessment tools or guidance for TOD.

Key environmental and social issues need to consider for impact assessment and preparation of mitigation plans: Scoping exercise has identified the key environmental and social issues those are considered in impacts assessment and preparation of mitigation plans for the planned TOD activities.

4.2. Scoping Results

The scoping results for TOD projects are summarized in following Table 4.1

Table 4-1: Summary of the Scoping Result

SI	Items	Applicable for Gabtoli Station	Applicable for UC Station	Reason	Scope
1	Consultation	Yes	Yes	The environmental and social considerations those need to be accounted require the opinion and suggestion of the relevant stakeholders.	To gather the thoughts, ideas, and suggestions of various stakeholders as well as to provide project information, two rounds (three numbers) of SCMs have been organized.
2	Pollution and prevention				
2.1	Air quality	Yes	Yes	This has been anticipated that the construction activities associated with TOD may have adverse impact on the air environment. However, in the long run TOD will reduce use of private vehicle that is	Analysis of air parameters (NOX, SOx, PM, CO) from existing sources

SI	Items	Applicable for Gabtoli Station	Applicable for UC Station	Reason	Scope
				expected to reduce the emission of GHG.	
2.2	Water quality and water use	Yes	Yes	Construction activities associated with TOD as well as lack of proper facilities with wastewater management may lead to water pollution.	Analysis of surface and ground water parameters from existing sources
2.3	Waste	Yes	Yes	Construction activities associated with TOD as well as operation of TOD facilities are anticipated to generate wastes and improper management of wastes may lead to pollution and public health concern.	To analyze the construction related wastes and their impacts
2.4	Noise and vibration	Yes	Yes	During the construction works related to TOD, increased level of noise and vibrations is anticipated.	Analysis of noise and vibration level from existing sources
2.5	Odor	Yes	Yes	Moderately anticipated during the construction phase and also anticipated for the operation phase if there will be lack of maintenance for facilities like water/ sanitation/ sewerage facilities.	Analysis of odor from the existing sources
2	Natural environment/ ecosystem and biodiversity	Yes	Yes	Though the project is not anticipated to cut trees or disrupt ecosystem but there might be disturbance to soil, aquatic and terrestrial ecosystem if the waste, wastewater and air quality related to project construction/ operation are not maintained well	Analysis on the floral and faunal diversity
3	Social environment				
3.1	Resettlement	Yes	Yes	There may have resettlement issues due to establishing the TOD facilities	Analysis with indication on the resettlement
3.2	Living and livelihood	Yes	Yes	The construction and operation of TOD facilities may cause disruption to the usual livelihood and lives of the people	The lives and livelihood status of the people to be analyzed
3.3	Grievance	Yes	Yes	During the construction and operation phase of the project, there might be	To analysis the anticipated array on grievances and provide

SI	Items	Applicable for Gabtoli Station	Applicable for UC Station	Reason	Scope
				grievances from AP and stakeholders.	guidance on redressal system.

The following are the environmental and social considerations that must be taken into account during the TOD construction and operation phases which give an initial idea on the impacts that are elaborated in following chapters:

Construction period

- Workers' health, safety and security for the construction works associated with TOD
- Generation of wastewater from the construction activities that may lead to pollution of waterbodies and land
- Increase of noise level from the construction activities
- Deterioration of air quality for the construction activities
- Waste generation from the construction activities
- Disruption to the ecological settings due to lack of adequate measures
- Risk of introduction of exotic or invasive or alien plant species under tree plantation intervention
- Disruption to the current professions of people
- Displacement of people from the sites where TOD facilities will need to be constructed or established.

Operation period

- Changes in socio economic condition (e.g., positive or negation changes)
- Changed scenario in accessing of civic amenities (e.g., increased transit, footpath, feeder service)
- Changes Poverty scenario (e.g., minimized poverty due to increased livelihood options or quick mobility)
- Changes in rate of education (e.g., increased educational institutions, students' easy mobility to educational institution)
- Changes in income (e.g., increased options of earnings)
- Changes in livelihood (e.g., bus related to TOD related)
- Gender aspects (e.g., access to amenities, separate infrastructures)
- Disability aspects (e.g., ramp, accessible footpath and other public spaces)
- Security in established TOD areas
- Comfort ability of people
- Easy access for people to facilities.

Chapter 5: Study Area Analysis

5.1 Study Area Analysis (Uttara Center Station TOD)

5.1.1 Situation Analysis

Uttara Center Station area is situated under ward 52 and ward 53 of Dhaka North City Corporation (DNCC). The potential areas of TOD have been delineated keeping in mind: i) 500-1,000m radius from Metro Station; ii) developable land available to the west of the Metro Station for potential Transit Oriented mixed-use development; and iii) possibility to integrate canal edges bounding the site. The boundary of the Uttara Center TOD area is presented in below Figure 5.1.

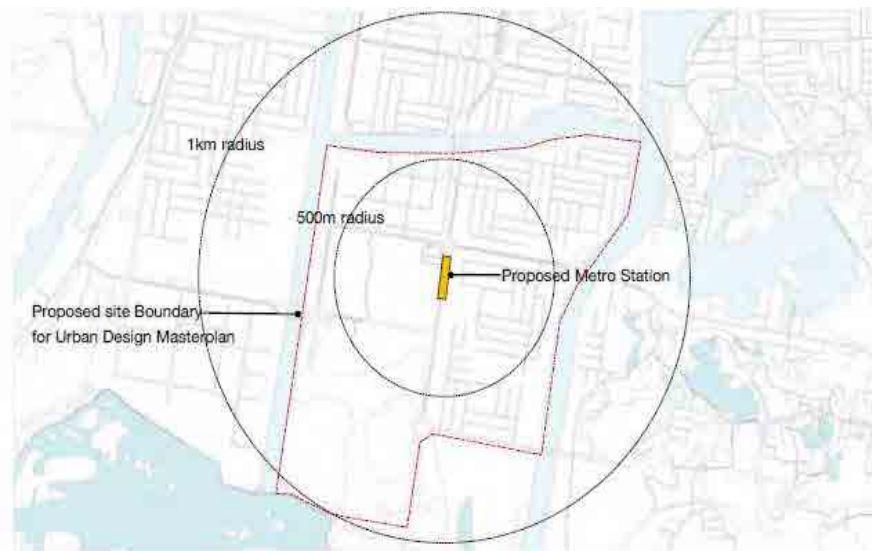


Figure 5-1: Uttara Center TOD Area Boundary

Source: JST

Uttara Center station lies in the Northern part of Dhaka City and on MRT line 6. It is part of Uttara phase 3 development, a newly urbanizing area of Dhaka. Figure 5.2 represents the land use map of proposed TOD at Uttara Center Station area. The TOD Zone of 500m radius of Uttara Center station is planned to be mixed zone where residential area is predominant.



Figure 5-2: Land Use Map of Uttara Center TOD Area and It's Surrounding Area

Source: JST

5.1.2 Existing Site Features

As mentioned earlier, proposed Uttara Center Station is set amidst a newly developing mixed area with residential area of Uttara Phase 3 projects. There are residential areas to the East of the Station and a commercial area to the Northwest of the Station. To the southwest of the station, there is RAJUK housing, and the Uttara Center TOD area is bounded by a water channel.

There is existing road infrastructure considering the planning and development of Uttara Phase 3 project. The proposed infrastructures are upcoming elevated metro corridor, inner circular road and inner circular railway that is proposed to the West of the site.



Figure 5-3: Planned Location Map of Uttara Center TOD Area

Source: JST

5.1.3 Land Ownership

Privately owned residential areas make up the majority of the land use. Nonetheless, RAJUK is in charge of several land parcels that will be turned into residential areas. There is also a land parcel allocated to the Dhaka Mass Transit Company Limited (DMTCL) in the West of Uttara Center Station. Eastern side of Uttara Centre Station TOD area consists of land leased to private individuals. This area also includes CBD of Uttara third phase.

5.1.4 Constraints

The water channels and wetlands in the TOD area need to be dealt with in a sustainable manner. The site's water logging problem will need to be properly handled. A large part of the TOD surrounded area has a road grid layout that is partially formed roads and it needs to be integrated with other plans. A large part of the land of the TOD site is privately owned so this may limit the possibility for new TOD

development (Reference: presentation of JST on TOD Concept Masterplan).

5.1.5 Opportunities

As the site will be newly developed (greenfield site), there is a great opportunity for a unique TOD development. The water channels offer immense potential for waterfront and canal scape developments. The MRT will boost the real estate potential of the land in/around the TOD site. TOD area is surrounded by waterbodies, thus if TOD takes blue network into account, that might be a model design following water sensitive infrastructure .

5.2 Environmental and Social Baseline Condition of the Study Area (Uttara Center Station TOD Area)

This section gives a broad overview of the baseline condition of the environmental and social elements of the study areas which are physical, biological and socioeconomic resources. The baseline was created using data and information from secondary sources, and in many cases, an overview of Dhaka City or its surrounding areas was provided.

5.2.1 *Geology, Soils and Groundwater*

⇒ **Geology and Soils**

Dhaka lies in the extreme south of the Madhupur Tract, which is situated in the central-eastern part of Bangladesh. The planning area is covered mainly by the Pleistocene Madhupur Clay, a yellowish brown to the highly oxidized reddish brown silty clay; and by Holocene sediments to the south, west and east made up of alluvial silt and clay, and marshy clay and peat. The moisture content and liquid limit results obtained for the Madhupur clay show that it is normally consolidated to slightly over-consolidated, perhaps due to groundwater pumping. The clay has intermediate to high plasticity, and is overlain by the Dupi Tila formation of medium to coarse sand. The incised channels and depressions within the city are floored by recent alluvial flood plain deposits. In general, a surface clay layer is found throughout, underlain by layered medium to very fine sands.

⇒ **Earthquake Risk**

Faults and lineaments that have occurred due to tectonic movements appear along the edge of the Dhaka terrace on the east, trending south-west and along the Tongi Khal in Tongi-Uttara-Uttar Khanarea, trending east-west.

Dhaka city falls in seismic zone II of the seismic zoning map of Bangladesh as per Geological Survey of Bangladesh. It is classified as being on the upper end of the scale for moderate risk. Significant damaging historical earthquakes have occurred in and around Bangladesh and damaging moderate-magnitude earthquake occur every few years. The country's position adjacent to the very active Himalayan subduction plate in the north, moving east, and the westward movement of the Burma deformation produce the potential for earthquakes. A history of earthquake activity in Bangladesh, focusing on probable effects for Dhaka, can be found in Akhter (undated). It appears that there is a rather high danger of a major earthquake. Lack of an appropriate earthquake building code makes people more susceptible to injury and fatalities.

⇒ **Subsidence**

According to Higgins (2014), land subsidence in Dhaka occurs at the rate of 0 to > 10 mm/y, and is likely related to groundwater abstraction. Variations in the rate of subsidence correspond to local variations in shallow subsurface sediments. Outside of the city, rates vary from 0 to > 18 mm/y, with the lowest rates appearing primarily in Pleistocene Madhupur Clay and the highest rates in Holocene organic-rich muds. Subsidence is primarily controlled by local stratigraphy, with rates varying by more than an order of magnitude depending on lithology. According to surveyed data subsidence rates on

the order of 2-4 mm/year are typical in the project area.

⇒ **Groundwater**

The total groundwater abstraction from licensed production wells operated by the Dhaka Water Supply and Sewerage Authority (DWASA) and private (mainly industrial) operators is around 700 Million Cubic Meters (MCM) per year. In addition to DWASA tube wells, there are more than 1,000 privately managed deep tube wells that are primarily unlicensed and for which no abstraction data are available. Most deep tube wells have a depth of more than 400 meters. The quantity of water abstracted by unlicensed tube wells is not known but estimated to be significant since it meets the demands for areas that are not connected to the DWASA water-supply network.

Groundwater quality data (source: EIA of MRT6) taken from well (location- Deep Tube well in Milestone College, 23°52'38.31"N, 90°22'2.35"E) nearby area of Uttara Center TOD sampled and analyzed by MRT6 project shows 0.8 mg/l Chemical Oxygen Demand (COD), pH value 7.32, 0.4 ms/cm conductivity, 02 ppt TDS, 1.6 mg/L nitrate, less than 0.005 mg/L arsenic, 0.5 mg/L iron and 0.05 mg/L manganese. Except COD, all the measured value were found within World health organization (WHO) and Bangladesh Government's standard.

5.2.2 Surface Hydrology and Water Quality

⇒ **Drainage**

The Turag River is the major drainage for the north part of the Metro line 6, whereas the Buri Ganga and Shitalakhya Rivers (the latter by way of Begum Bari Khal) drain the areas towards the center and south. Most drains flow into these rivers and the Khal are covered by concrete culverts. Around the TOD areas, water channels are existed that offer immense potential for waterfront development and canal-scape development.

⇒ **Wetlands**

Open water bodies of natural origin are found in the north part of the project area near the depot and along the alignment between the depot site and Pallabi. Originally much of the area was subject to flooding, but is now drained through a series of pumped discharge canals (khals), since construction of the Dhaka Flood Control Embankment bordering the Turag River in the early 1990s. The khals or lakes are natural drainage channels, or river meanders that were cut off from the main channel. The land was filled adjacent to the khals, which helped to define them and increase their cross-sectional areas. No wetland of ecological importance is present in the area.

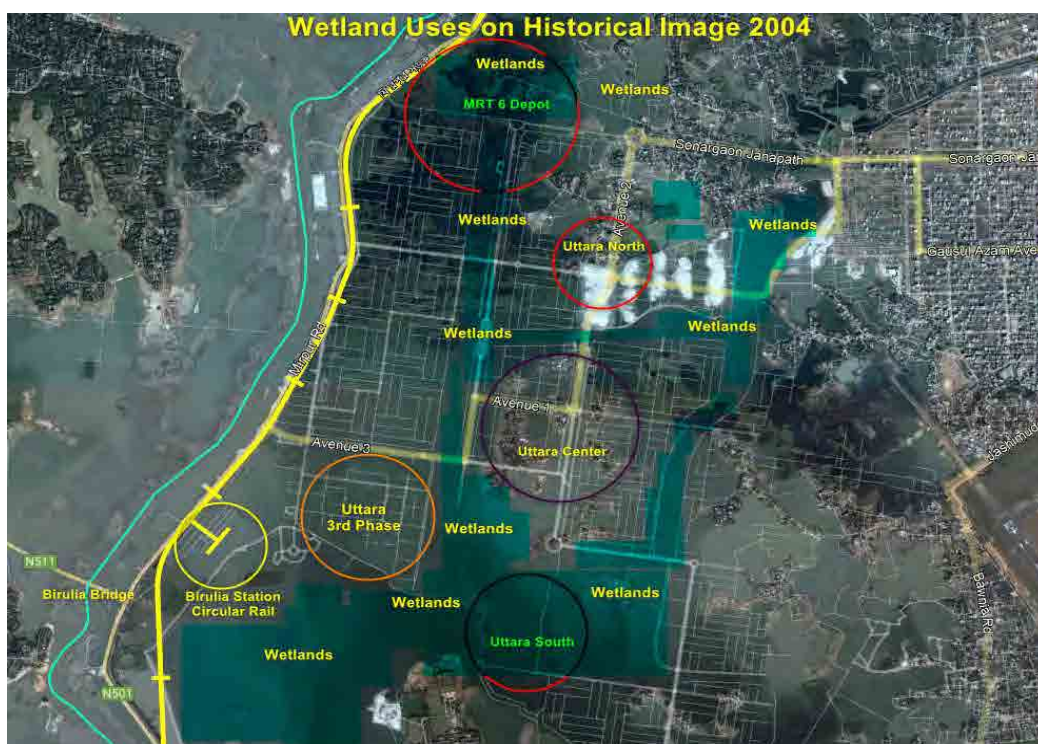


Figure 5-4: Current Large scale Landuse and Wetland Map on Historical Image (2004)

Source: JST

⇒ Water Quality

Surface water samples were collected, tested and analysed under the EIA of MRT6 in Uttara Center Surrounded areas and the location and detail of the samples tested are presented in below table.

Table 5-1 : Sampling Locations for Surface Water Quality Monitoring

Location	Sampling ID	Geographic Coordinate
Uttara 3rd Phase Lake 10	SW1	23°52'28"N, 90°21'39"E
Uttara 3rd Phase Lake 2	SW2	23°51'52"N, 90°21'52"E
Uttara 3rd Phase Lake 12	SW3	23°51'29"N, 90°21'30"E
Uttara 3rd Phase Lake 6	SW4	23°50'54"N, 90°21'54"E

Source: MRT 6 EIA

Data collected during field surveys for the EIA of MRT6 is shown in Tables 5.2 and 5.3. Samples taken along the north end of the alignment are from the lakes in Uttara Phase 3 area. These serve as drainage channels for storm water from Uttara as well as the depot site.

Table 5-2 : First Round of Surface Water Quality Monitoring (dry season)

Sample ID	DO (mg/l)	pH	Cond. (ms/cm)	Temp. (°C)	TDS (ppt)	COD (mg/l)	TSS (mg/l)	Turbidity (JTU)	Total Coliform n/100 ml
SW1	6.5	8.34	0.30	22.0	0.15	24.5	162	208	11000
SW2	6.0	7.40	0.44	22.9	0.22	39.25	172	328	17000
SW3	6.2	7.62	0.34	21.5	0.17	22.3	157	176	7000
SW4	4.2	6.63	0.72	24.8	0.36	48.7	183	209	23000

Sample ID	DO (mg/l)	pH	Cond. (ms/cm)	Temp. (°C)	TDS (ppt)	COD (mg/l)	TSS (mg/l)	Turbidity (JTU)	Total Coliform n/100 ml
Bangladesh standards	≥5	6.5-8.5	2.2	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined

Source: MRT 6 EIA

Table 5-3 : Second Round of Surface Water Quality Monitoring (wet season)

Sample ID	DO (mg/l)	pH	Cond. (ms/cm)	Temp. (°C)	TDS (ppt)	COD (mg/l)	TSS (mg/l)	Turbidity (JTU)	Total Coliform n/100 ml
SW1	6.8	7.31	0.22	29.9	0.11	10.2	121	165	6000
SW2	6.5	7.28	0.28	30.4	0.19	8.15	138	178	7000
SW3	6.3	7.26	0.23	29.6	0.12	13.2	129	135	6000
SW4	5.1	6.13	0.46	30.5	0.23	21.6	145	157	7000
Bangladesh standards	≥5	6.5-8.5	2.2	Not defined	Not defined	Not defined	Not defined	Not defined	Not defined

Source: MRT 6 EIA

Dissolved Oxygen (DO) is generally high, near saturation, in all the lakes. pH of the khals is slightly acidic, approaching DoE's lower limit for pH. The khal contains high amount of Total Dissolved Solids (TDS) and conductivity is also high.

COD is indicative of organic pollution, perhaps from septic tank connections to storm drains and from street runoff. Total Suspended Solids (TSS) and turbidity indicate inflow of sediment from surrounding areas. Coliform bacteria counts are high, exceeding in the dry season by a factor of 14, the most relaxed water quality classification of the DoE. Coliform bacteria are a sign of human-caused pollution.

5.2.3 Meteorology and Air Quality

⇒ General Weather Conditions

Dhaka experiences a hot, wet and humid tropical climate. The city is within the monsoon climate zone, with an annual average temperature of 25 °C and monthly means varying between 18 °C in January and 29 °C in August. Nearly 80% of the annual average rainfall of 1,854 mm occurs between May and September (BMD).

⇒ Weather Extremes

As per the Bangladesh Meteorological Department Climate Division thunderstorms are most frequent in May, though rainfall is greater in both June and July in Dhaka City regions.

⇒ Air Quality

Data on air quality associated with Uttara Center was not available. But it is assumed that the air quality of the Uttara Center area considering the green field context is better than the air quality of highly dense area of Dhaka city.

5.2.4 Typical Noise Levels in Dhaka

A number of sources report high noise levels at urban locations throughout the City. The Preparatory EIA (2011) metro rail project reports that "according to a WHO survey at 45 locations of Dhaka city, most of the traffic points and many of the industrial, residential, commercial, silent and mixed areas are suffering noise levels exceeding the standard limits of Bangladesh. WHO found noise levels of 70 dB at Dhaka Medical College, 75 dB at Shakhari Patti, 90 dB at English Road, 88 dB at RAJUK Avenue

and 85 dB in Tejgaon, though the standard limit for those areas are 50, 55, 60, 70 and 75 dB respectively.”

5.2.5 Biological Resources

⇒ Protected Areas

DoE designation of Ecologically Critical Area is intended to identify an environmental protection zone. None of these have been defined for urban areas, though the ECA allows for such. There is no protected area or Ecologically Critical Area within or near the Uttara Center TOD area.

⇒ Flora

As no survey was conducted for baseline there is no specific information on flora of the study area. However, based on the quick observation at the study areas the common species found are Aswath (*Ficus religiosa*), Debbaru (*Polyalthia longifolia*), Narikel (*Cocos nucifera*), Ashok (*Saraca indica*), Mahogany (*Swietenia* sp.), Shegun (*Tectona grandis*), and Sissu (*Dalbergia sissoo*).

5.2.6 Mammal and Bird Life

⇒ Mammals

Mammals present in Dhaka include domesticated cats, dogs and farm animals, rats, house shrews and fruit bats.

Indicated in EIA (2011) metro rail project that most academic reporting on mammals present in Dhaka are the risk of rats, feral cats and fruit bats to transmit bacterial and viral pathogens. Bats of the family Pteropodidae can be seen in Dhaka and are known to transmit Nipah virus. Outbreaks in Bangladesh have linked the disease in humans with bats. Rats and shrews transmit *Bartonella*, a family of bacteria most commonly associated with cat scratch disease. *Bartonella* has drawn the attention of researchers concerned with whether these agents might be responsible for human cases of febrile illness of unknown etiology in Bangladesh and elsewhere in south Asia. (Bay et.al. 2007) Ecological and bacteriologic observations of small mammals captured in Dhaka indicated that *Bartonella* infections occurred in high prevalence among lesser bandicoot rats (*Bandicota bengalensis*), black rats (*Rattus rattus*), and house shrews (*Suncus murinus*).

Bartonella bacteria cause several diseases in humans. The three most common are cat scratch disease, caused by *B. henselae*; trench fever, caused by *B. quintana*; and Carrión's disease, caused by *B. bacilliformis*. Ubiquitous to an extent, species of *Bartonella* have been found in mammals ranging from mice to sheep to sea otters to dolphins. According to one epidemiologist, there are at least 30 different species of *Bartonella* that have been identified, and 13 of those are found to infect human beings.

⇒ Birds

The green spaces in Dhaka are home to a variety of avian fauna. Considering the context of the Uttara Center TOD areas species those are assumed to be found are House Sparrow, Common Myna, Pied Myna, House Crow, Oriental Magpie Robin, Vented Bulbul, Spotted Dove, Asian Palm Swift, House Swift and Rose Ringed Parakeet. Other species (Vulture, Griffon, Vulture and Hoopoe) may be also seen occasionally.

5.2.7 Socioeconomic Resources

⇒ Administrative Divisions

Administrative zones serve to order socioeconomic data, such as population statistics, social services and social infrastructure. Two separate types of administrative division are prominent in Dhaka City. Wards are identified within the City Corporation boundary that are further subdivided into mouza. In

the greater Dhaka Metropolitan Area, the prominent division is thana, used also within Dhaka City Corporation (DCC), but subdivided further outside the DCC into unions. (Pervin 2013). The Uttara Center TOD area falls under Ward 52 and Wards 53 of DNCC and under Uttara Thana.

⇒ Population

The greater Dhaka metropolitan area has a population of 15 million and covers an approximate area of 1,353 sq km, that is administered by DCC as well as suburban and exurban areas (MRT 6, EIA). Over the past decade, both population and main areas administered by DCC have increased.

There used to be a village in the Uttara center TOD area. Due to the development, GOB acquired land and villagers are displaced. Yet, there are still settlements in east and west sides of the station. Details need to be studied, and the resettlement plan need to be prepared, ensuring their lives in a good manner based on the international guidelines since JICA is involved in the project.



Figure 5-5: Settlements Located in the Uttara Center TOD Area

Source: JST

5.2.7.1 Religion

Islam is the dominant religion in Bangladesh, followed by Hinduism, Christianity, Buddhism, Animism and various tribal belief systems. Dhaka is a cosmopolitan; secular city and the majority of its inhabitants are Muslim. The traits of secularism are ensconced in Dhaka, based on education, enlightenment and engagement in the global economy. The dwellers of Dhaka maintain their religions

in harmony and fraternity irrespective of religious beliefs.

5.2.8 Community Infrastructure

The community infrastructure around the Uttara Center TOD areas are as follows:

- Proposed Uttara Crescent Medical College
- Temple (Depot area of Uttara North)
- A small Hindu temple in DMTCL area and in the west of the Uttara Center station
- A small mosque next to the land addressed
- Road's network.

5.2.9 Accidents and Injury on Roadways

Statistics available from the Nippon Koei Dhaka Metro Association (NKDM) traffic demand study indicate that economic losses due to traffic accidents are on the order of 2 to 3 % of GDP. Police reported accidents on Bangladesh roads causing at least 3,000 fatalities annually, and grievous and simple injuries of around 3,500. Other sources estimate fatalities as high as from 12,000 per year that is severe by international standards. There are some 60 to 150 fatalities per 10,000 motor vehicles in Bangladesh compared to round 25, 16, 2 and 14 in India, Sri Lanka, USA and UK respectively.

5.2.10 Crime and Criminal activities

Dhaka has been the scene of a variety of violent crimes, including drug trafficking, organized crime and sexual abuse. Some of these behaviors are associated with affluence, while others stem from unemployment, under-employment, deprivation, frustration and political motive. The pattern and types of crime have changed over the years along with a shift in the stratification of society. Crime and violence affect all members of society regardless of sex, age, and income. These are more prevalent in urban areas, especially among the poor living in marginalized neighborhoods. Crime intrudes into homes, schools, commercial establishments, public transport, and sports and other public venues. Fear of crime changes the living habits of people. Concern about crime pushes wealthier populations out of city centers and into segregated, enclosed, private and fortified enclaves. Apart from the human suffering inflicted, crime acts as a stumbling block for social development.

The causes of crime may lie with the mastans (local gang-members), which are blamed for more than half of the crimes committed. Government activists are also responsible for acts of arson and murder.

The city administration has recently taken several measures to combat crime and criminal activities. Community policing and community-based organizations such as volunteer committees, clubs and organizations take part in public awareness and corrective measures, which have seen an increase that has lowered the crime rate. Special branches of the police force and paramilitary, such as Rapid Action Battalion, have been given special responsibility to increase awareness among communities and to combat crime and criminal activities at the local level.

5.2.11 Gender related Matters

Patriarchal norms still shape the gender relations of the country to a significant extent. However, this attitude has been challenged both in urban and rural areas. Changes in patriarchal, gender-based relations to create a more equitable balance is a remarkable achievement of post-independence Bangladesh. Reducing patriarchal influence in gender relations implies that social justice is being achieved and empowered women are contributing to national reconstruction.

The current participation status of women in different sectors of the economy needs to be better understood to ensure equal participation of women in economic development. Gender disaggregated data is essential for formulating an effective plan for women's empowerment and to monitor the progress of women in different sectors.

However, the above situations are a generic view. To have a clear idea on gender related matters a detailed baseline survey is required for the TOD considering different gender aspects (e.g., gender role in their communities, their mobility, safety and security, economic activities,).

5.2.12 Employment

Research findings and Bangladesh Bureau of Statistics (BBS) data show a significant number of the labor force employed in Dhaka city both formally and informally. The percentage of formally employed is higher in Dhaka city in comparison with the informal sector. Employment includes white collar work, business entrepreneurship, transport workers, garment workers, industrial laborers, petty traders, floating business people, maid servants, hotel operators and servers, vendors, hawkers, welders, rickshaw drivers and van pullers.

Readymade garment is the leading sector in terms of women workers' employment in Dhaka city. At least 2.7 million women workers are employed in Dhaka city and its peripheral sub-urban areas in this sector. The female labor force has radically transformed the socioeconomic setting of Dhaka city. Women are empowered through this employment opportunity which improves their status and helps them maintain better livelihoods in terms of education, health, housing, sanitation, safety and security.

A number of self-employed people in various professions and occupations are seen in Dhaka and its peri-urban areas. There are significant numbers of service providers in small-scale and advanced technologies related to areas of the internet and cable services.

5.2.13 Historical, Cultural and Archeological Sites

A survey was conducted to identify historical and archeological sites by MRT6. Although a total of 20 important sites were identified along the MRT 6, none of them fall under Uttara Center TOD area.

In the village in east side of the station, there are religious facilities. Because there are settlements, the temples are still used. Details needs to be studied, and the detailed social impact assessment need to be conducted, ensuring people's lives in a good manner based on the international guidelines since JICA is involved in the project.



Figure 5-6: Religious Facility located in the Uttara Center TOD Area

Source: JST

5.2.14 Indigenous People

There is no indigenous people's residence at the Uttara Center area and no indigenous people directly or indirectly impacted by the TOD development.

5.3. Study area analysis (Gabtoli Station TOD)

5.3.1 Situation Analysis

This section covers the environmental and social considerations which are related to the TOD development at Gabtoli that lies at the Western edge of Dhaka Central Region and part of the Gabtoli site context is an ecological conservation area. Nonetheless, Gabtoli is a hub for MRT lines 5 North, South and 2 along with exiting highway/ inter-district bus terminal. Based on the analysis of project context and opportunities for TOD site, the JST has developed the TOD Masterplan boundary with the consideration of: i) 500m radius from Gabtoli Line 5 North Metro Station; ii) developable land available to the south and south west of the Metro Station; iii) existing road network of the neighborhoods to

the north of the station (Kotbari, Bagbari) and; v) natural feature of Buriganga River and Kalyanpur retention pond. The boundary of the Gabtoli TOD masterplan is presented with the below **Figure 5.7.**

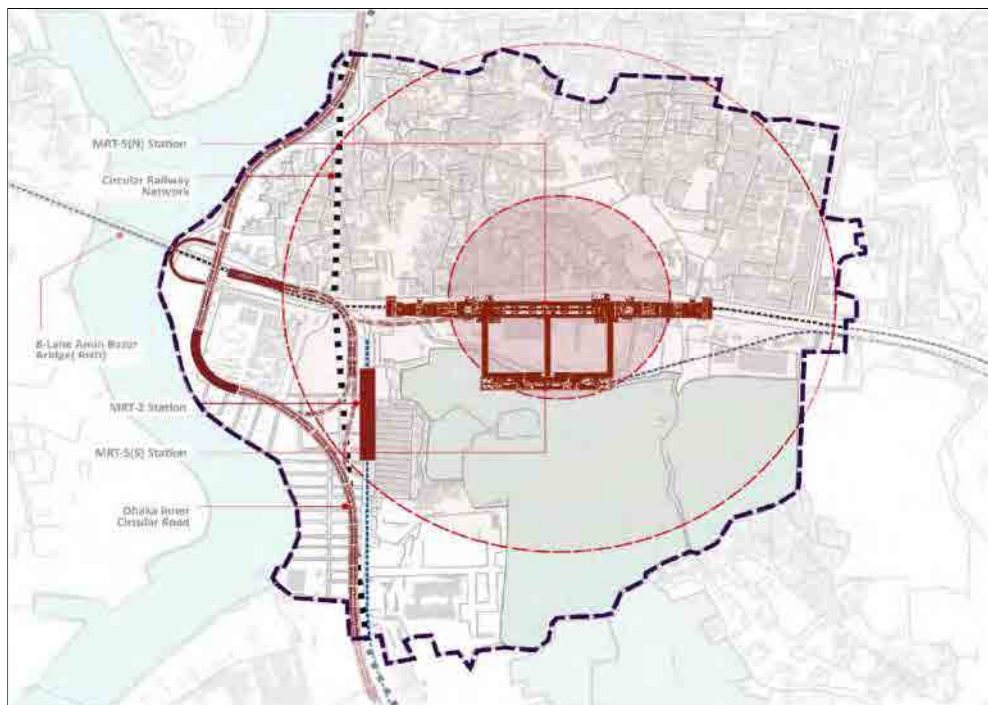


Figure 5-7: TOD Area Boundary

Source: JST

The Gabtoli TOD area featured as dense mixed-use neighborhood to the north of the Metro corridor and commercial development along the Dhaka Aricha road. Figure 5.8 represents the land use map of proposed TOD at Gabtoli area.

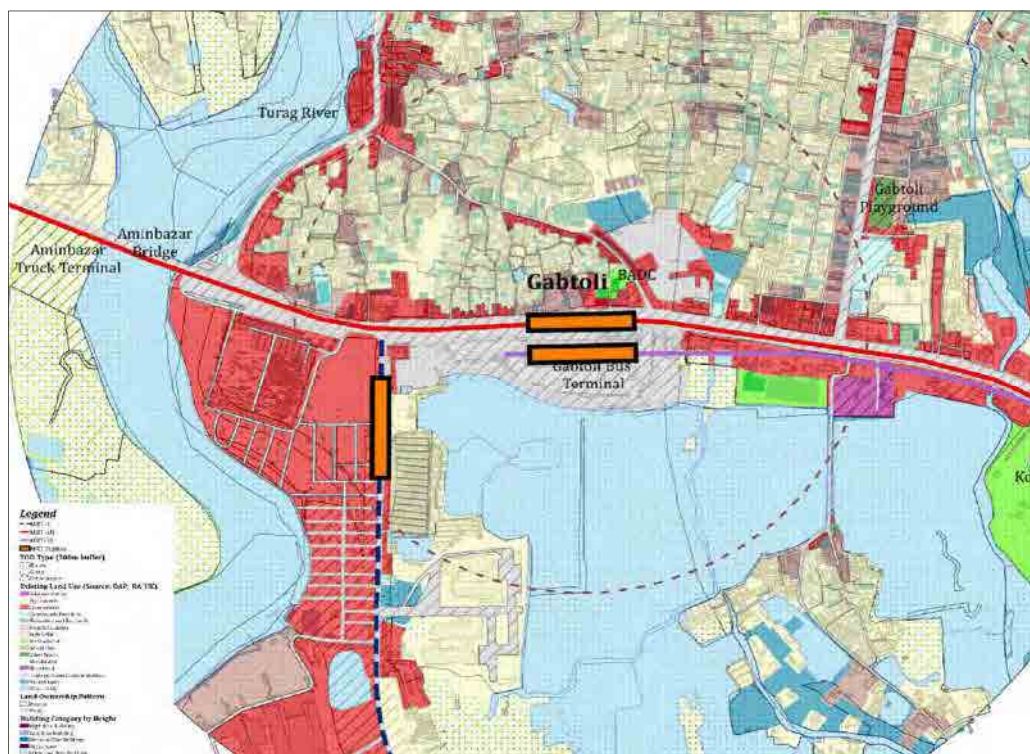


Figure 5-8: Land Use Map of Gabtoli TOD Area and It's Surrounding Area

Source: JST

5.3.2 Existing Site Features

Gabtoli area is set amidst dense mix used area along with commercial development.

5.3.2.1 Existing and Proposed Infrastructures

Dhaka core city comes under the Dhaka central region, part of a larger Dhaka metropolitan region. Gabtoli lies at western edge of the Dhaka central region. significant ecological conservation area is also a part of the surroundings of the Gabtoli site. The area has existing roads and bus transport hub for inter-city and inter-districts road communication (Figure 5.8). The proposed infrastructures are Metro line 5 North, Metro line 5 South, Metro line 2, Inner Circular Road and Circular Railway Line (figure 5.9). Moreover, figure 5.8 and 5.9 represent the current bus terminus and related surrounding facilities that include bus terminus along with booking counter. The Dhaka Aricha highway, Sadarghat Gabtoli road, cattle market, construction materials stocking area, Buriganga river, congested Kotbari area, private bus company offices, various government offices, including the seed processing and storage center of Bangladesh Agriculture Development Corporation (BADC), and European University of Bangladesh are among the existing features that are in the surrounding area or will be within the TOD area of influence. It is also important to note that the Gabtoli TOD is surrounded by Kallyanpur wetland.

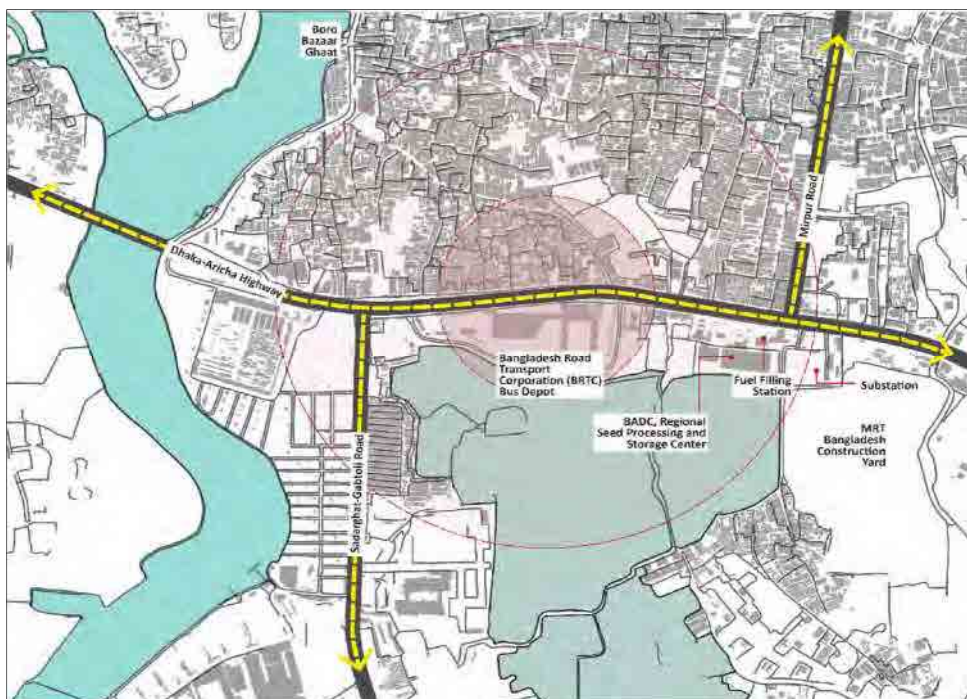


Figure 5-9: Existing Infrastructures of Gabtoli TOD Area

Source: JST

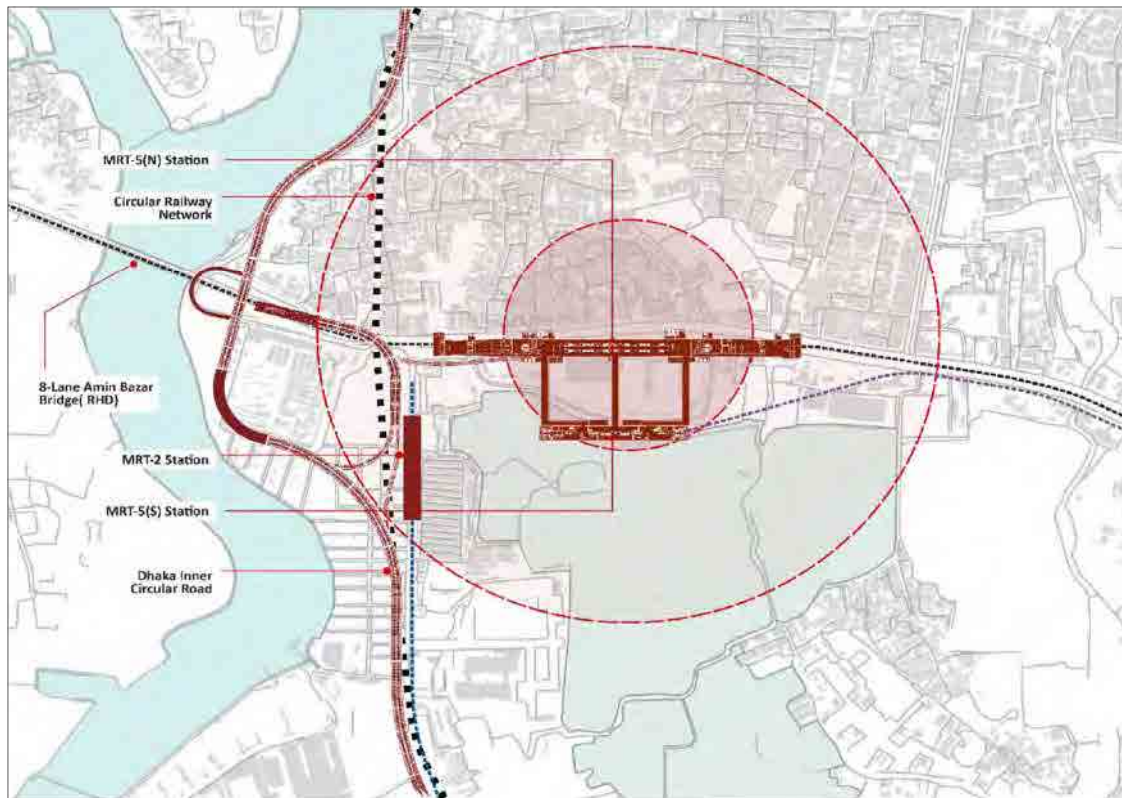


Figure 5-10: Existing Infrastructures of Gabtoli TOD Area

Source: JST



Figure 5-11: Bus Terminus Building with Booking Counters

Source: JST



Figure 5-12: Drive way outside the Terminus Building Bus Terminus Building with Booking Counters

Source: JST

5.3.2.2 Land Ownership

Lands south of the Metro Corridor (Line 5 North) are controlled by various government agencies, making them public areas that will be simple to incorporate into the TOD plan. Private property and structures fill the densely populated, mixed-use neighborhood that makes up the Metro Corridor's northern section. It would be more complex to include this part in the TOD plan. The land ownership of the area is presented in Figure 5.13.

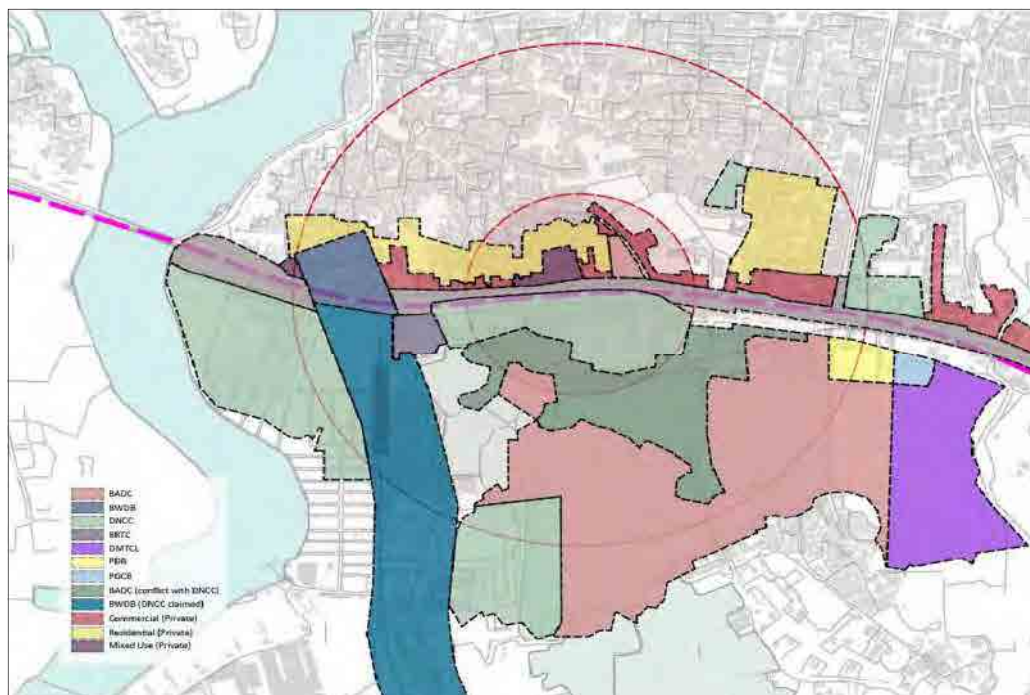


Figure 5-13: Land Ownership at the Gabtoli TOD Area.

Source: JST

5.3.2.3 *Constraints and Issues*

In light of the Gabtoli TOD, JST team has revealed sets of constraints/ issues. These are listed as follows:

- there is of lack planning among MRT Line 5 North, Line 5 South, Line 2, Inner Circular Railway and Inner Circular Road for integration of urban transport infrastructures;
- Inner Circular Railway is cutting across the dense Kotbari area and there is no detailed information of the feasibility study and on its implementation;
- there is potential for water transportation in the Buriganga River that is not being utilized currently;
- because of the current set up with gorur haat (cattle market), construction materials stackyard and BADC seed storage center, the area might not be good fit for TOD scenario;
- bus terminus land needs reappropriation for TOD scenario;
- river front edge is passive along with an unused market that needs to be reactivated;
- there is presence of squatters on the land;
- there is a major retention pond to the south that is eco sensitive area;
- Kotbari and Bagbari areas are dense mixed neighbourhoods with inadequate utilities and amenities;
- intense commercial development along the Dhaka Aricha highway;
- couple of vacant land parcels used for bus parking;
- there is existence of religious spaces like mosques, temples and graveyard; and
- if there is not a master plan, an action plan, and certain regulatory inducements, and individual land developments proceed without site and street order, and the area as a whole will be subject to unplanned land use.

5.3.2.4 *Opportunities*

The JST has identified some TOD potentials in the Gabtoli location. These are as follows:

- land to the south of Dhaka -Aricha road is owned by government that might ease to include it in TOD plan;
- intercity bus transport activity will be moved to Hemayetpur so this land can be redeveloped and can have vertical mixed use along with transport hub;
- TOD node or hub or plaza can be formed to tie various transport modes together (e.g., line 5 North, line 5 South, line 2, Circular Railway);
- existing waterbody to the south can be developed as large recreational space;
- riverfront can be created and the water transport in the river can rejuvenated;
- the vacant land to the north of Dhaka Aricha highway can be used for TOD interventions;
- existing community spaces in the north can be revitalized and can be used as anchors to upgrade the neighbourhood in terms of public realm, utilities and amenities; and
- utilize additional space formed by road realignment, to create a new multi-purpose interface- landscaped public spaces, sunken courts for crossover and layby for buses, rickshaws etc.

5.3.3 *Environmental and Social Baseline Condition of the Study Area (Gabtoli TOD Area)*

This chapter provides a general overview of aspects of the existing environment that could be affected by the Project, or could affect the project's functioning. The baseline has been also prepared based on the data and information from secondary sources, and for many instances, overall view for Dhaka City was captured in Uttara Center areas, the same information is not repeated at this chapter. Information that is related to Gabtoli TOD areas have been captured in this section. The data and information available related to Gabtoli TOD area are also inadequate in secondary sources to capture

the complete scenario. The primary baseline survey couldn't be done because it wasn't covered by BETS's contract to conduct a full field survey on baseline.

5.3.3.1 *Geology, Soils and Water Resources*

⇒ River and River Morphology

Gabtoli TOD area is next to the Buriganga River. According to a study carried out in 2000, (by JICA study team) changes in Buriganga River bed elevation is -6.3-to--16.2-meter changes to top width is 7.3 to 12.4 meter per year, left bank line change is 1.7 to 5.8 meter per year and right bank line change is 1.3 to 6.8 meter per year.

⇒ Groundwater

Groundwater quality data (source: EIA of MRT Line 5) taken from tube well, location- Deep Tube well at house of Mr. Abdul Malek, Gabtoli, 23°46'44.0"N, 90°20'49.7"E nearby area of Gabtoli TOD sampled and analyzed by MRT5 project shows 6.75 pH, 28 mg/l sodium, 4 mg/l potassium, 10 mg/l calcium, 170 mg/l bicarbonate, 12 mg/l chloride, 2 mg/l sulfate, 0.10 mg/l nitrate, 0.002 mg/l arsenic and 0 mg/l fecal coliform at per 100 ml of water sample. All the measured values were found within World health organization (WHO) and Bangladesh Government's standard.

5.3.3.2 *Surface Hydrology and Water Quality*

⇒ Drainage

The Buriganga River is the major drainage for the Gabtoli TOD area. Most drains flow into the river are covered by concrete culverts. Around the TOD areas, water channels are existed that offer immense potential for refunctioning of water transports.

⇒ Water Quality

Surface water sample was collected, tested and analysed under the EIA of MRT5 Gabtoli nearby area that is between Wetland between Modhunmoti Station and Amin Bazar and the exact location is 23°47'25.00"N90°19'18.40"E. The test result shows 7.08 pH, 3.2 mg/l DO, 8 mg/l BOD, 32 mg/l COD, 15 mg/l TSS, 290 TDS and 786 coliform per 100 ml. The tested results were found within national standards.

5.3.3.3 *Meteorology and Air Quality*

⇒ Air Quality

Air quality sample was collected, tested and analysed under the EIA at MRT5 Gabtoli Station (23°47'0.29"N 90°20'36.07"E). The test result shows 345 microgram per cubic meter (µg/m³) Particulate Matter (PM₂), 145.6 µg/m³ PM₁₀, 120.5 µg/m³ Nitrogen Dioxide (NO₂), 24.6 µg/m³ Sulfur Dioxide (SO₂), 0.1 µg/m³ Lead and 5.1 parts per million Carbon Monoxide (CO). Except PM₂, PM₁₀ and NO₂, other tested parameters were found within national standards. Given the movement of huge numbers of vehicles at the studied areas, the exceedance of standards for value of PM₂, PM₁₀ and NO₂ might be the main cause.

5.3.3.4 *Noise Level*

Noise level was tested in different hours under the EIA at MRT5 Gabtoli Station (23°47'0.29"N 90°20'36.07"E). The following table shows the value of noise level at Gabtoli Station.

Table 5-4: Noise Level of Gabtoli Station at Different Hours

Hour	Noise in Decibel
1:00-1:59 AM	71.8
2:00-2:59 AM	67.4
3:00-3:59 AM	65.6
4:00-4:59 AM	67.2
5:00-5:59 AM	65.7
6:00-6:59 AM	67.2
7:00-7:59 AM	68.3
8:00-8:59 AM	69.0
9:00-9:59 AM	71.6
10:00-10:59 AM	66.7
11:00-11:59 AM	68.8
12:00-12:59 PM	70.2
13:00-13:59 PM	69.9
14:00-14:59 PM	71.0
15:00-15:59 PM	72.6
16:00-16:59 PM	68.3
17:00-17:59 PM	70.5
18:00-18:59 PM	72.4
19:00-19:59 PM	71.1
20:00-20:59 PM	69.0
21:00-21:59 PM	68.2
22:00-22:59 PM	67.7
23:00-23:59 PM	68.5
00:00-00:59 AM	66.2

5.3.3.5 Socioeconomic Resources

⇒ Administrative Divisions

Administrative zones serve to order socioeconomic data, such as population statistics, social services and social infrastructure. Two separate types of administrative division are prominent in Dhaka City. Wards are identified within the City Corporation boundary that are further subdivided into mouza. In the greater Dhaka Metropolitan Area, the prominent division is thana, used also DCC, but subdivided further outside the DCC into unions. (Pervin 2013). The Gabtoli TOD area falls under Ward 10 of DNCC and under Mirpur Thana.

⇒ Community Infrastructure

The community infrastructures around the Gabtoli areas are as follows but not limited to:

- Different government offices
- Temple
- Bus terminals
- Mosques
- Education institutions
- Roads' networks etc.

⇒ Indigenous People

There is no indigenous people's residence at the Uttara Center area and no indigenous people directly or indirectly impacted by the TOD development.

Chapter 6: Alternatives Analysis

6.1 Uttara Center Station TOD

The alternatives analysis has been carried out based on the following three options:

Alternative 1: Development based on the land use plan as do-nothing case (see Figure 6.1)

Alternative 2: In addition to the above Alternative 1, feeder bus services will be developed to connect with Uttara Phase 1 and 2 developments to bring commuters. Bus stop will be along the road as the other bus stops in the city. (See Figure 6.2)

Alternative 3: Instead of Alternative 2 of feeder bus stops along the roads, a station plaza will be developed in front of Uttara Center Station.

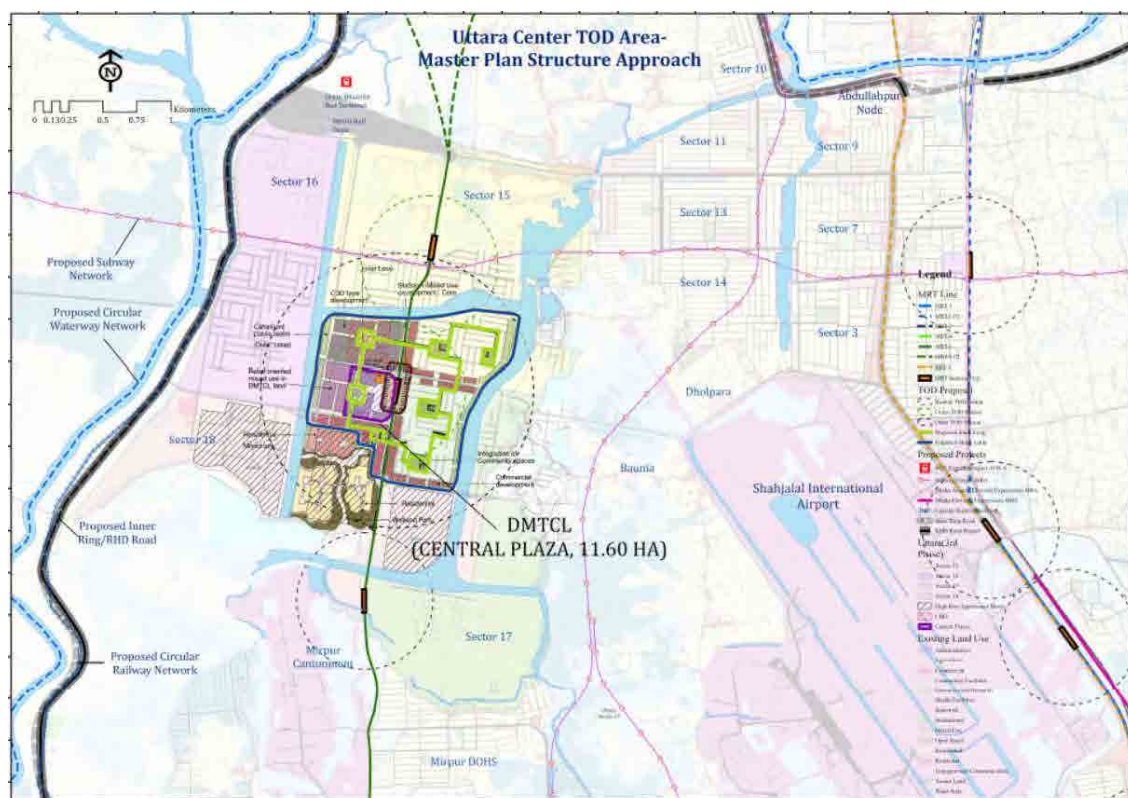


Figure 6-1: Alternative 1 (Tentative)

Source: JST

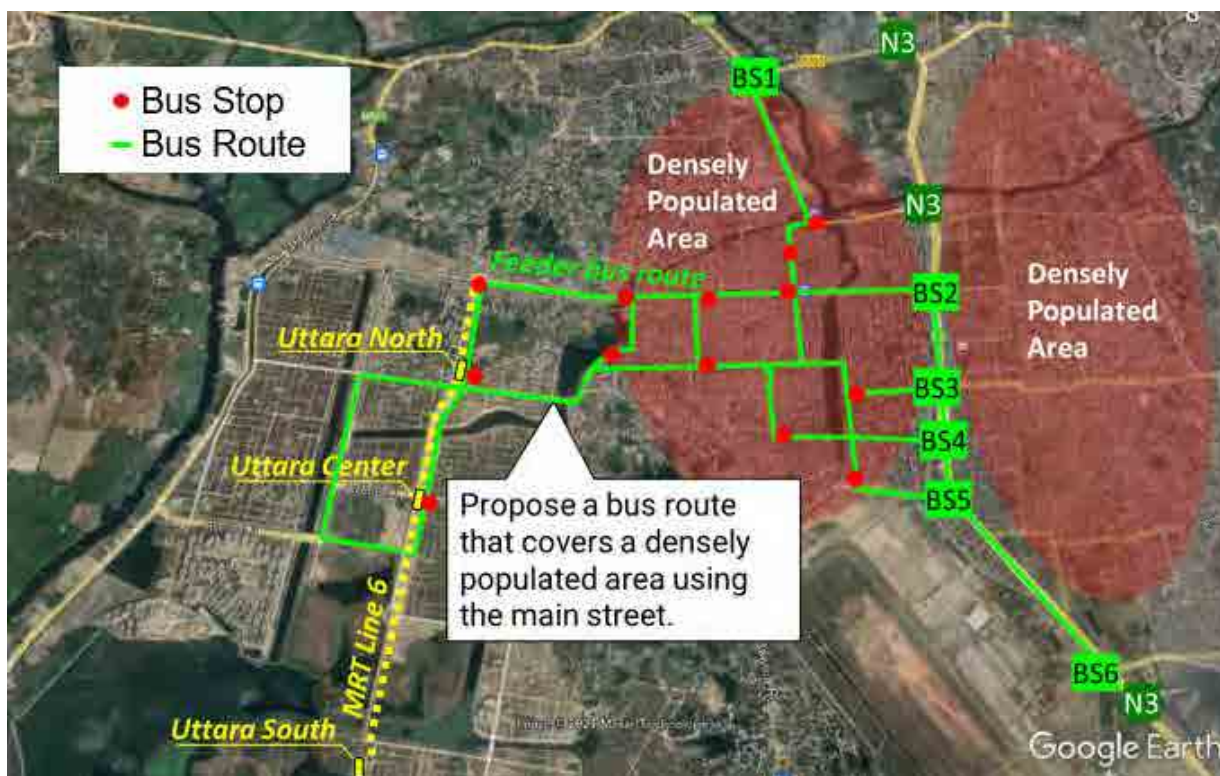


Figure 6-2: Alternative 2 (Tentative)

Source: JTP

More elaborated initial environmental and social impacts for each of the alternatives are depicted in relevant chapter. A summary analysis for the above alternatives in the operation stage is provided in below table.

Table 6-1: Alternative Analysis of TOD options for Uttara Center Station

Alternative	Environmental Impact	Social Impacts
1: Development based on the land use plan as do-nothing case	It is projected that land development under this option will have a variety of environmental effects, including: Noise During the construction stage construction vehicles and communication by workers may generate relative noise and vibration. Air/dust pollution During construction, dust and exhaust emission from the construction activities may pollute the ambient air. Oil contamination Petroleum oils and grease used in vehicles and construction machinery may spill or leak on/into the ground hence into the soil or water system within the neighborhood. Soil erosion Earthworks during project construction usually influence soil erosion and it might be related to the project as well. Vegetation and flora The land development will need to clear vegetation (e.g. grassland/undershrub).	Involuntary Resettlement, and Loss of their Livelihoods There are affected persons in the site. In pre-construction stage, involuntary resettlement as well as loss of their livelihoods will occur. The other social impacts for this Alternative 1 are expected to be minimal. However, the anticipated social impacts are: Public health The on-site personnel may be exposed to health risks during the construction process. HIV/AIDS Labor influx during the construction activities may lead HIV/AIDS if proper measures are not undertaken. Exploitation of construction works Inadequate wage for the workers may lead economically exploitation. Gender Based Violence

Alternative	Environmental Impact	Social Impacts
	Water Quality The removal of vegetation will increase the runoff and therefore sedimentation will increase in these areas as well. Traffic Jam in front of station Traffic jam in front of station during the operation stage is anticipated to be high. Risk of accident Risk of accident during the operation phase is anticipated to be high	Gender based violence may happen among the construction workers if measures are not in place. Child labour Children under 18 may be deployed as construction workers if the contractors are not aware enough about the labour law.
2: In addition to the above Alternative 1, feeder bus services will be development to connect with Uttara Phase 1 and 2 developments to bring commuters. Bus stop will be along the road as the other bus stops in the city.	In addition to the impacts of Alternative 1, following impacts are anticipated. Better Air quality (Positive Impact) At the station areas, locally used vehicles are CNG, private cars etc. and those generate emissions. Extending the feeder bus service is anticipated to decrease the emission and improve the current ambient air quality though there will be less emission. However, mitigation measures like increasing green coverage (e.g., tree plantation), and fuel efficient and environmentally friendly services may reduce the air emission further. Decreased Noise (Positive Impact) Along with the current vehicles move at current situation, this feeder bus service is anticipated to reduce the ambient noise level compared to the current and Alternative 1 scenario. Mitigation measure, e.g., feeder bus that generate less noise can be used, may be undertaken to reduce the noise level even more. Traffic Jam in front of station Traffic jam in front of station during the operation stage is anticipated to be high. Risk of accident Risk of accident during the operation phase is anticipated to be middle (by design).	In addition to the impacts of Alternative 1, following impacts are anticipated. No land acquisition or resettlement will be required for the feeder bus service so no social negative impact is anticipated. However, the following positive socio-economic impacts are anticipated: • Easy access to the Metro Rail Station • Easy and comfortable mobility of the people • High demand among people for residing in the surrounded areas • Prospect of potential commercial activities at the surrounded areas • Increasing the intension of different stakeholders for infrastructural development • Increasing socio-economic status of the people of the area
3: Development with bus terminal	In addition to the impacts of Alternative 1, following impacts are anticipated. Air quality (Positive Impact) The air quality compared to Alternative 1 is anticipated to be better and same as alternative 2. Noise Though the numbers of buses compared to the Alternative 2 anticipated to be same, stopping of buses at same bus stop may cause a bit more noise than that of Alternative 2.	In addition to the positive social impacts of Alternatives 1 and 2, the following positive social impacts are anticipated for Alternative 3: • Easy access with less effort for transit • Increasing passengers' comfortability to transit • Quick transit to destination.

Alternative	Environmental Impact	Social Impacts
	Traffic Jam in front of station Traffic jam in front of station during the operation stage is anticipated to be low. Risk of accident Risk of accident during the operation phase is anticipated to be low (by design).	

6.2 Alternatives Analysis for Gabtoli TOD

The alternatives analysis has been carried out based on the following three scenarios:

Alternative 1: Development based on the land use plan as do-nothing case (see Figure 6.3).

Alternative 2: Redevelopment of south part and retrofitting of north part (See Figure 6.4) .

Alternative 3: Redevelopment of both south part and north part (See Figure 6.5).

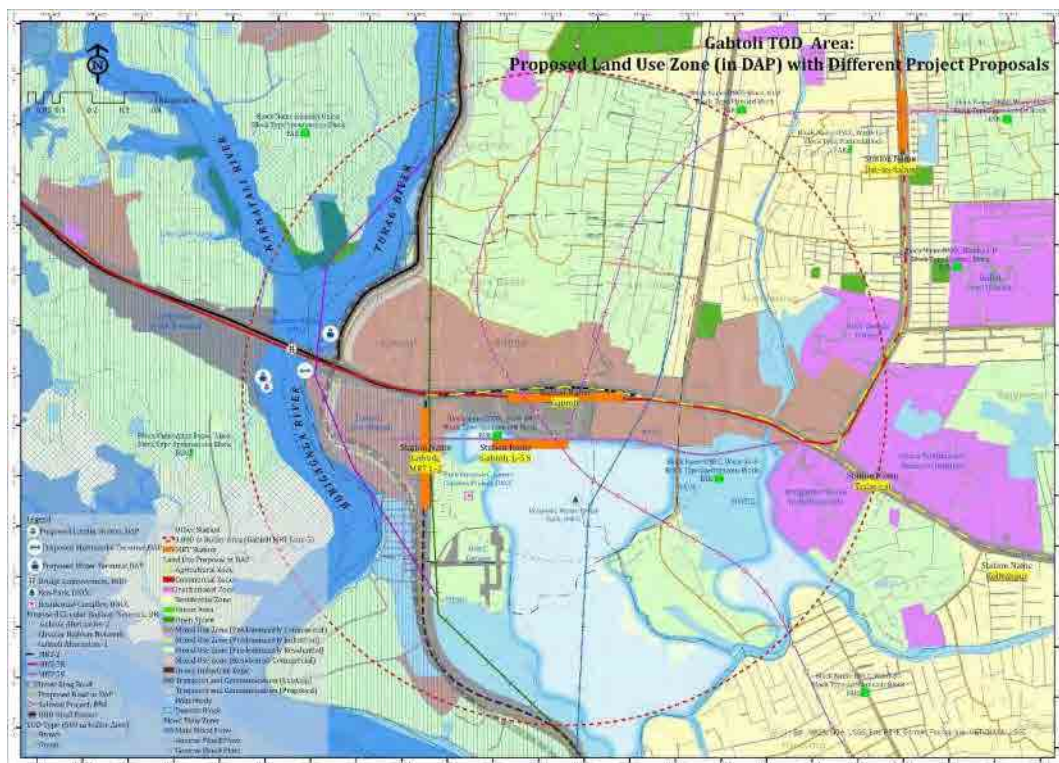


Figure 6-3: Alternative 1 (Tentative)

Source: JST

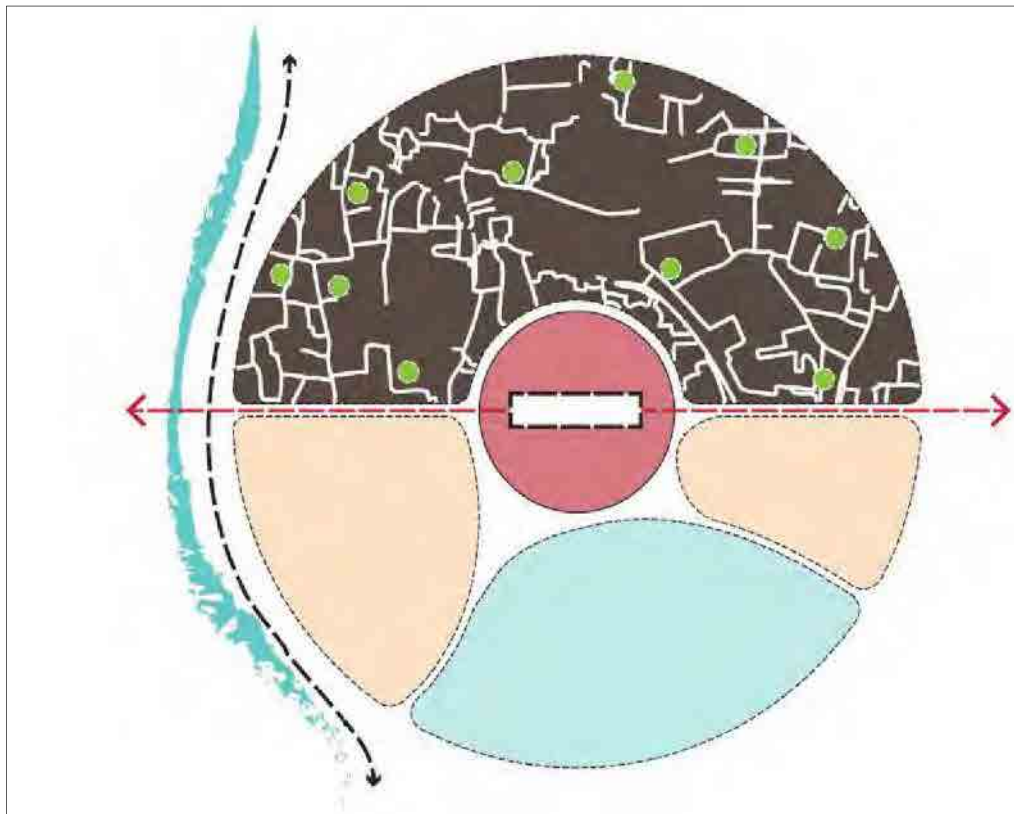


Figure 6-4: Alternative 2 (Tentative)

Source: JST

Under alternative 2 (presented in figure 6.3), the proposed interventions are: i. redevelopment of south part that includes redevelopment of under utilized land parcel such as bus terminus area, gorur haat (cattle market), constructing materials stocking areas, vegetable market area, settlement of squatter, BADC seed storage area; ii. retrofitting of north part (Kotbari, Bagbari areas) includes minimal disturbance to settlement, ensuring strategic interventions in terms of street improvement, public spaces, social amenities, suggesting alternative alignment for circular railway for not disturbing existing settlement

Some other feature of current land use and considerations under this alternative 2 are as follows:

- Address issues like lack of pedestrians' movement network, lack of adequate physical and social infrastructure.
- Incentive amalgamation of plots, and augmentation of built space.
- Improve street quality in terms of green coverage, lighting, underground utilities upgradation, paving and widening of critical streets.
- Improve access to local services, e.g., grocery shops, pharmacy, health care, primary school etc. and improve parks, playground, water management, wastewater treatment, solid waste management.
- Augment and incentivize affordable housing and create a variety of housing types/options. Upgradation of aged building stock.
- Preserve local business, economic activities, local products etc.
- Minimize displacement of current residents.

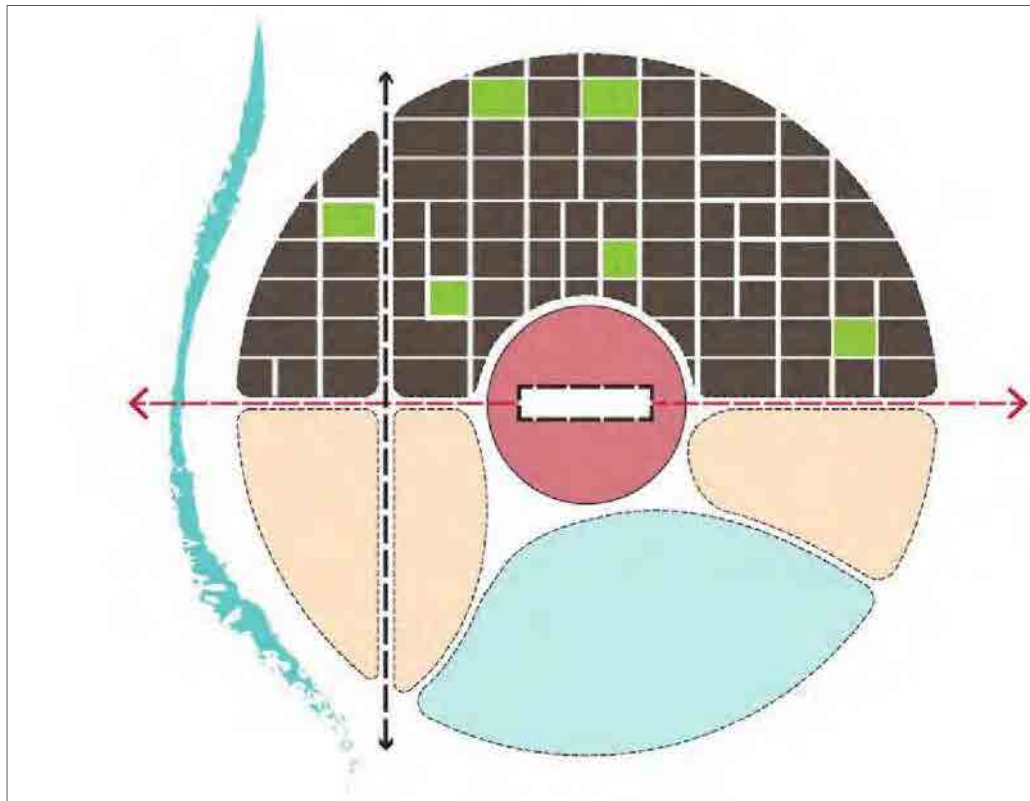


Figure 6-5: Alternative 3 (Tentative)

Source: JST

Under alternative 3 (presented in figure 6.5), the proposed interventions are: i. redevelopment of south part includes redevelopment of underutilized land parcel such as bus terminus area, gorur haat (cattle market), constructing materials stocking areas, vegetable market area, settlement of squatter, BADC seed storage area; and ii. redevelopment of north part (Kotbari, Bagbari areas) includes complete redevelopment with restructuring of the road structure, plots, define new public space infrastructure, circular railway cutting across the settlement, more strong physical connection to TOD on the south side of Gabtoli main road, complete land reconstitution, infrastructure development, complete urban restructuring in terms of scale of urban blocks, plots, landuse, open space structure, building forms and typologies etc.

Detailed initial environmental and social impacts for each of the options is presented in the relevant chapter. A summary analysis for the above alternatives in the operation stage is provided in below table.

Table 6-2: Alternative Analysis of TOD Options for Gabtoli

Alternative	Environmental Impact	Social Impacts
1: Development based on the land use plan as do nothing case	If the alternatives 2 or 3 are not implemented even though significant environmental and social impacts will be evolved from the implementation of different proposed projects which are MRT line 5 north, MRT line 5 south, MRT line 2, Inner circular road and circular railway line. The following are the anticipated impacts of these projects: Noise Level	Involuntary Resettlement, and Loss of their Livelihoods In pre-construction stage, involuntary resettlement as well as loss of their livelihoods (e.g., squatter and settlement in Kotbari areas will be impacted) are anticipated to be occurred for the implementation of the different projects.

Alternative	Environmental Impact	Social Impacts
	During the construction stage of the above-mentioned projects, construction vehicles, construction activities at particular sites and communication by workers may generate relative noise and vibration. During operation stage, noise level might be still significant due to lack of unplanned development. Air Quality During construction, dust and exhaust emission from the construction activities may pollute the ambient air. Due to lack of unplanned development and lack of adequate greenery the air quality during the operation stage would be worse. Water Quality The construction activities including transportation of construction materials and running of different construction machineries/ equipment may lead to pollution in the water bodies and Buriganga River due to spillage of hazardous materials like fuel oil. Due to unplanned development and lack of wastewater/ sewerage treatment system, pollution in nearby waterbody and Burigang River will also happen. Flora and Fauna The implementation of the above projects may require to clear the vegetation/ trees alongside the Right of Way that will lead to loss of habitats of terrestrial floral and faunal species. During operation stage, the floral and faunal biodiversity may be disturbed due to lack of implementation of tree replantation plan against the tree cutting that to be happened for the construction of TOD interventions. Oil contamination Petroleum oils and grease used in vehicles and construction machinery may spill or leak on/into the ground hence into the soil or water system within the neighborhood. Solid Wastes Construction debris, leftover of concrete cement brick mixers etc. may deteriorate the environmental condition of the project areas. Due to lack of planning for management, solid waste might be a burden for the ambient environment of the areas. Fisheries and Aquatic Biodiversity	The other social impacts for this Alternative 1 are expected to be significant. However, the anticipated social impacts are: Public health During the construction process, health threats may be exposed to the workers on site. Occupational Health and Safety The construction workers may face accidents, injuries etc. during the implementation of the projects. Community Health and Safety Community health and safety issues like miss, near miss etc. may happen due to construction activities of the projects. Traffic Congestion due to Construction The construction activities of the projects are anticipated to increase the traffic congestion that may lead to sufferings of the people. The traffic situation during the operation stage will be worse compare to alternative 2 and alternative 3 because more passengers and their activities will increase but width of the roads would be same. HIV/AIDS Labor influx during the construction activities may lead HIV/AIDS if proper measures are not undertaken. Exploitation of construction workers Inadequate wage for the workers may lead economic exploitation. Gender Based Violence Gender based violence may happen among the construction workers if measures are not in place. Child labour Children under 18 may be deployed as construction workers if the contractors are not aware enough about the labour law.

Alternative	Environmental Impact	Social Impacts
	Transportation of construction materials through waterway may disrupt fisheries and aquatic biodiversity of Buriganga River. Moreover, pollution from construction activities may disrupt the fisheries and aquatic biodiversity of surrounding waterbodies including the Buriganga River. Moreover, pollution burden for unplanned development may be increased and the water bodies may be polluted that will ultimately adversely impact the fisheries resources and aquatic biodiversity at operation stage too. Soil erosion Earthworks during project construction usually influence soil erosion and it might be related to the project as well. Inadequate measures may also occur during operation stage.	
2: Redevelopment of south part and retrofitting of north part and 3: Redevelopment of both south part and north part	In addition to the impacts of Alternative 1, following impacts are anticipated. Changes in Landscape Due to the activities under TOD, the landscape of the areas will be changed. It may be bad during construction but will be better during operation period. Better Management of Drainage During construction, the drainage might be problematic if proper measures are not taken but proper planning and TOD development works may improve the drainage system of the area during operation phase. Improved/ workable footpath Proper planning under TOD may improve the footpath leading to workable footpath for the pedestrians. Threat to local floral biodiversity If a project plans for the planting of trees but fails to make the appropriate species selections, the native species may be harmed by the introduction of exotic species.. Risks and impacts on occupational health and safety of workers, and community health and safety and environment Demolition of the existing buildings and structures may lead to occupational health and safety risks for the workers and community health and safety risks as well as deterioration of environment in case of lack of proper debris management. These impacts will be more for alternative 3 then alternative 2.	In addition to the impacts of Alternative 1, following impacts are anticipated: • Easy access to the Metro Rail Station because of widening of roads/ retrofitting facilities, provisioning of footpath etc. • Easy and comfortable mobility of the people because of all the facility to be considered in two of the alternatives. • High demand among people for residing in the surrounded areas because of planned development. • Prospect of potential commercial activities at the surrounded areas because of planned development under TOD. • Increasing the intension of different stakeholders for infrastructural development because of potentials development to be happened by TOD. A rise in the socioeconomic status of the local population as a result of planned development.

Chapter 7: Initial Findings on the Anticipated Environmental and Social Impacts

7.1 For Uttara Center TOD Activities

From the situation analysis, the following initial environment and social impacts for the TOD development have been identified.

Table 7-1: Result of the Initial Environment and Social Impact Assessment (Alternative 1)

No.	Impacts	Rating	Brief Description
Preparation phase			
1	Flood Risk	B	Poor design/ plan of land development may lead to flood risk at the Uttara Center Station area.
2	Sustainability	B	Lack of coordination among the relevant government agencies may lead to unsustainable development at the area.
3	Vegetation loss	B	Land clearing may lead to vegetation loss (e.g. grass, undershrub).
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Construction phase)			
4	Involuntary Resettlement	A	Involuntary Resettlement will be required that will be a major social impact.
5	Local economy such as employment and livelihood, etc.	+	Opportunity of employment for the project related activities and livelihood of the people is anticipated to be improved which will have positive impact.
6	Land use and utilization of local resources	B	Land development may cause effective utilization of land and local resources.
7	The poor, indigenous and ethnic people	A	There used to be a village on the east and west sides of the Uttara center station. Due to the development, GOB acquired land and villagers were displaced. Yet, there are still settlements who are poor so difficult to move. Details needs to be studied.
8	Cultural heritage	A	There will be a Masjid and a Hindu temple in the old village in east and west sides of the Uttara center station.
9	Local conflict of interests	B	There may not be local conflict of interests.
10	Hazards (Risk) Infectious diseases such as HIV/AIDS	B	A lot of laborers and people concerned will come into the area around the site from outside.
11	Gender and children’s rights	B	Gender based violence among construction workers is anticipated to happen if proper measures are not taken. Children aged under 18 may be engaged as construction workers.
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Operation Phase), (Construction phase)			
12	Increased real estate potentials	+	The land development will increase the real estate potentials (positive impact)
13	Increased residential value	+	People will have newly developed area to reside rather than densely populated urban area
Natural Environment (Construction phase)			

No.	Impacts	Rating	Brief Description
14	Topography and Geographical features	B	Excavation of land may cause alteration of topography.
15	Groundwater	B	Some negative impact will be given on groundwater.
16	Soil Erosion	B	There may be soil erosion if proper measure will not be undertaken.
17	Hydrological Situation	B	Water logging may happen and contamination may also happen to the water of existing channels/ waterbodies.
18	Flora, Fauna and Biodiversity	B	This may be impacted to some extent if there is lack of adequate measures .
19	Meteorology	B	Temporarily air quality deterioration may impact on the local meteorology due creation of dusts and emission from the construction vehicles .
20	Landscape	B	Landscape would be change due project implementation.
21	Global Warming	B	Green trees/vegetation on the site will be lost.
Natural Environment (Operation phase)			
22	Reduced Green Coverage	B	Because of the land development use the green coverage will be reduced.
Pollution (Construction phase)			
23	Air Pollution	B	Air pollution may increase due to traffic of vehicles for construction as well as for associated services.
24	Water Pollution	B	Water quality may be deteriorated due to decrease of construction related discharge in the channels/ waterbodies.
25	Soil Contamination	B	Impact on soil contamination may be happened.
26	Waste	B	Some amount of waste will be discharged during construction.
27	Noise and Vibration	B	Noise and vibration may increase due to heavy machine and vehicles for construction as well operation of the developed facilities.
28	Ground Subsidence	B	Impact on ground subsidence will be minimal.
29	Offensive Odor	B	Impact on offensive odor will be minimal.
Pollution (Operation phase)			
30	Pollution load	B	Due to developed residential/ commercial area, pollution load (e.g. solid, liquid, domestic wastes) will be increased in absence of proper mitigation measures.
31	Accidents (during construction)	B	Accidents may occur due to construction.
32	Accidents (during operation)	B	Accidents risk will be high with do nothing scenario.
33	Traffic jam (during construction)	B	Due to construction related activities, traffic jam may be increased
34	Traffic jam in front of station(during operation)	B	With do nothing scenario the traffic jam in front of the station is anticipated to be high.

Rating:

A: Serious impact is expected.

B: Some impact is expected.

C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.)

D: No Impact is expected.

+: Positive impact

Table 7-2: Result of the Initial Environment and Social Impact Assessment (Alternative 2) in Addition to the Impacts of Alternative 1

No.	Impacts	Rating	Brief Description
Preparation phase			
1	Risk of accident	B	Lack of design consideration may lead to high risk of accidents during operation phase.
2	Sustainability	B	Lack of coordination among the relevant government agencies may lead to unsustainable development at the TOD area.
Construction phase			
* As providing feeder bus service will not associate with construction activities, there will be no construction phase for this alternative 2.			
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Operation phase)			
3	Easy access to station	+	Easy access to the Metro Rail Station will be ensured (positive impact).
4	Mobility	+	Feeder bus service will increase easy and comfortable mobility of the people (positive impact).
5	Demand for residing	+	High demand among people will be created for residing in the surrounded areas (positive impact).
6	Prospect of commercial activities	+	The prospect of potential commercial activities at the surrounded areas will be increased (positive impact).
7	Infrastructural development	+	Increasing the intension of different stakeholders for infrastructural development (positive impact).
8	Socio-economic status	+	Socio-economic status of the people of the area is anticipated to be increased (positive impact).
9	Gender based violence (GBV)	B	GBV at the bus service may happen and access point of the feeder bus service if it lacks proper arrangement (e.g. separate sits for women)..
10	Children’s rights	B	Lack of provision of arrangement for children with service may pose risk to children.
Pollution/ Pollution prevention (Operation phase)			
11	Air Quality	+	At the TOD areas, locally used vehicles are rickshaw, autorickshaw, CNG, private cars etc. and those generate emissions. Extending feeder bus service is anticipated to decrease the emission and improve the current ambient air quality though there will be less emission (Positive impact).
12	Noise	+	Along with the vehicles movement at current situation, this feeder bus service is anticipated to reduce the ambient noise level compared to the current and Alternative 1 scenario. (Positive impact)
13	Traffic Jam in front of Station	B	Traffic jam in front of station during the operation stage is anticipated to be high.
14	Risk of Accident	B	Risk of accident during the operation phase is anticipated to be middle (by design).

Table 7-3: Result of the Initial Environment and Social Impact Assessment (Alternative 3)

No.	Impacts	Rating	Brief Description
Preparation phase			
1	Risk of accident	B	Lack of design consideration may lead to high risk of accidents during operation phase.

No.	Impacts	Rating	Brief Description
2	Sustainability	B	Lack of coordination among the relevant government agencies may lead to unsustainable development at the TOD area.
Construction phase * This Alternative will not associate with construction activities, there will be no construction phase for this alternative 3.			
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Operation phase)			
3	Easy access to station	+	Easy access to the Metro Rail Station will be ensured (positive impact).
4	Less effort for transit	+	The passengers will have easy access with less effort for transit (positive impact).
5	Comfortability	+	Increased passengers’ comfortability to transit (positive impact).
6	Quick transit	+	Passengers will have quick transit to their destinations (positive impact).
7	Mobility	+	Feeder bus service will increase easy and comfortable mobility of the people (positive impact).
8	Demand for residing	+	High demand among people will be created for residing in the surrounded areas (positive impact).
9	Prospect of commercial activities	+	The prospect of potential commercial activities at the surrounded areas will be increased (positive impact).
10	Infrastructural development	+	Increasing the intension of different stakeholders for infrastructural development (positive impact).
11	Socio-economic status	+	Socio-economic status of the people of the area is anticipated to be increased (positive impact).
12	Gender based violence (GVB)	B	GVB at the bus stop may happen if proper measures are not in place.
13	Children’s rights	B	Lack of provision of arrangement for children with service may pose risk to children.
Pollution/ Pollution prevention (Operation phase)			
14	Air Quality	+	The air quality compared to Alternative 1 is anticipated to be better and the same as Alternative 2. (Positive impact).
15	Noise	B	Though the numbers of buses compared to the Alternative 2 anticipated to be same, stopping of buses at same bus stop may cause a bit more noise than that of Alternative 2.
15	Traffic Jam in front of Station	B	Traffic jam in front of station during the operation stage is anticipated to be low compared to Alternative 1 and Alternative 2.
16	Risk of Accident	B	Risk of accident during the operation phase is anticipated to be low (by design).

7.2 For Gabtoli TOD Activities

From the situation analysis, the following initial environment and social impacts for the Gabtoli TOD development have been identified.

Table 7-4: Result of the Initial Environment and Social Impact Assessment (Alternative 1)

No.	Impacts	Rating	Brief Description
Preparation phase			
1	Flood Risk	B	Poor design/ plan of different development projects (e.g., MRT Line 5, Line 2, Circular railway projects) may lead to flood risk at the Gabtoli and its surrounded areas.
2	Sustainability	B	Lack of coordination among the relevant government agencies for implementation of different development projects may lead to unsustainable development at Gabtoli and its surrounded areas.
3	Vegetation loss	B	Land clearing for different development projects like MRT Line5, MRT Line 2, Circular Railway projects may lead to vegetation loss (e.g., grass, undershrub).
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Construction phase)			
4	Involuntary Resettlement	B	Involuntary Resettlement will be required and that will be a major social impact. Squatters may also need to be relocated and may lose their livelihood opportunities in the place like Kutbari.
5	Local economy such as employment and livelihood, etc.	+	Opportunity of employment for the project related activities and livelihood of the people is anticipated to be improved which will be positive impact.
6	Land use and utilization of local resources (e.g., water, land, soil/ sand)	B	Proposed projects may cause utilization of land and local resources that would be a burden local resources .
7	The indigenous and ethnic people	D	No impacts on this item are anticipated.
8	The poor	B	The poor people may be impacted in terms of involuntary resettlement, loss of current business, livelihood opportunities etc.
9	Cultural heritage	A	There are religious institution e.g., Masjids and a Hindu temple, graveyard. Those may be impacted if different developments projects’ location, alignment etc. have not considered them.
10	Local conflict of interests	D	There may not be local conflict of interests.
11	Hazards (Risk) Infectious diseases such as HIV/AIDS	B	A lot of laborers and people concerned will come into the area around the site from outside.
12	Gender and children’s rights	B	Gender based violence among construction workers is anticipated to happen if proper measures are not taken. Children aged under 18 may be engaged as construction workers.
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Operation Phase), (Construction phase)			
13	Increasing real estate potentials	+	The land development will increase the real estate potentials (positive impact)

No.	Impacts	Rating	Brief Description
14	Increased property value	+	Due to rapid urban growth and implementation of different projects, property value may be increased, and the owners will be benefited.
Natural Environment, (Construction phase)			
15	Topography and Geographical features	B	Excavation of land may cause alteration of topography because of use of the current land and changing its pattern.
16	Groundwater	B	Some negative impact like pollution through liquid and solid wastes will be given on groundwater because of construction activities through use of fuel oil/ hazardous substances, inadequate sanitation facilities for workers etc.
17	Soil Erosion	B	There may be soil erosion because of lack of measures like proper compaction, turfing, tree plantation etc.
18	Hydrological Situation	B	Water logging may be happened, and contamination may also happen to the water of existing channels/ waterbodies if proper measures will not be undertaken by the construction companies.
19	Flora, Fauna and Biodiversity	B	This may be impacted to some extent if there is lack of adequate measures (e.g., tree replantation program, pollution prevention measures to protect aquatic biodiversity) because trees may need to be cut and pollution from construction activities may hamper the aquatic biodiversity.
20	Meteorology	B	Temporarily air quality deterioration may impact on the local meteorology .
21	Landscape	B	Some impact may be given on landscape (e.g., due to the construction of elevated structure, i.e. Line 2 and Circular Railway and Inner Ring Road in the west side of development area around Gabtoli, it will drastically change) .
22	Global Warming	B	Green trees/vegetation on the site will be lost due to preparing land and construction of development projects' (e.g., MRT Line 2, MRT Line 5, Circular Railway) activities along with roads..
Natural Environment (Operation phase)			
23	Reduced Green Coverage	B	Because of the land development use the green coverage will be reduced.
Pollution (Construction phase)			
24	Air Pollution	B	Air pollution may increase due to traffic of vehicles, construction activities as well as for associated services.
25	Water Pollution	B	Water quality may be deteriorated due to generation of wastes and wastewater from the construction activities of different projects particularly in the retention pond and Buriganga River.
26	Soil Contamination	B	Impact on soil contamination may be happened because of improper management construction wastes and wastewater. .

No.	Impacts	Rating	Brief Description
27	Waste	B	Large amount of construction related wastes will be generated (solid, construction debris, demolition debris, kitchen waste from labour camps, etc.) during construction.
28	Noise and Vibration	B	Noise and vibration may increase due to heavy machine and vehicles for construction as well operation of the facilities.
29	Ground Subsidence	B	Impact on ground subsidence will be minimal.
30	Offensive Odor	B	Impact on offensive odor will be minimal.
Pollution (Construction and Operation phases)			
31	Pollution load	B	Due to developed residential/ commercial area, pollution load (e.g. lack of proper management/ treatment of solid, liquid, domestic wastes including sewerage treatment) will be increased in absence of proper mitigation measures .
32	Accidents (during construction)	B	Accidents may increase due to increased numbers of construction related vehicles.
33	Accidents (during operation)	B	Accidents may occur due to operation of the facilities like closing of roads, moving of more construction vehicles , lack of following traffic safety rules, lack of awareness on rules and guidelines etc..
34	Traffic jam (during construction)	B	Due to construction related activities movement of more construction vehicles may lead to traffic jam.
35	Traffic jam in front of station(during operation)	A	With do nothing scenario the traffic jam in front of each station is anticipated to be high because numbers of passengers and vehicles will be increased.

Rating:

A: Serious impact is expected.

B: Some impact is expected.

C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.)

D: No Impact is expected.

+: Positive impact

Table 7-5: Result of the Initial Environment and Social Impact Assessment (Alternative 2)

No.	Impacts	Rating	Brief Description
Preparation phase			
1	Risk of accident	B	Lack of design consideration like adequate space for parking, footpath, traffic plan etc. may lead to high risk of accidents during operation phase.
2	Obstacle to get benefits of TOD	B	Lack of coordination (inter- organizational arrangement) among the relevant government agencies may lead to obstacle to get targeted benefit from TOD.
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Construction and Operation phase)			
3	Easy access to station	+	Multi modal hub enhances access among various transport facilities, such as bus, line 5, line 2.
4	Less effort for transit and comfortability	+	The passengers will have easy access with less effort for transit due to development of the transit hub and passengers’ comfortability to transit will be increased.
5	Mobility	+	Considerations with TOD like pedestrians’ movement networks, adequate physical and social infrastructures will increase easy and comfortable mobility of the people.

No.	Impacts	Rating	Brief Description
6	Demand for residing	+	High demand for residing among people will be created in the TOD and its surrounding area because of improvement of accessibility to the public transport and increasing of commercial activities.
7	Prospect of commercial activities	+	Prospect of potential commercial activities at the TOD and its surrounding areas will be increased because numbers of people gather to use the stations.
8	Infrastructural development	+	Increasing the intension of different stakeholders for infrastructural development (e.g., PPP for TOD interventions, investing in housing)
9	Socio-economic status	+	Socio-economic status of the people of the area is anticipated to be increased because of developed accessibility to different facilities like job places, commercial places, educational institution etc.
10	Involuntary Resettlement	A	Involuntary Resettlement may be required in the south side of TOD area for TOD mixed use interventions. Squatters may also need to be relocated and may lose their livelihood opportunities. This may happen in gorur haat (cattle market), constructing materials stocking areas, vegetable market area, settlement of squatter areas.
11	The poor, indigenous and ethnic people	A	Squatters living in the south side for TOD mixed use interventions may need to be relocated and lose their livelihood opportunities.
12	Gender based violence (GBV)	B	GBV at stations and access point of Gabtoli stations if it lacks proper arrangement (e.g. separate arrangements like toilets, women space)
13	Children's rights	B	Lack of provision of arrangement for children like lack of breast feeding corner, changing corner for baby, safety aspect like safety fencing/ safety signage around danger zone etc. at TOD area may lead to complying with children rights.
14	Occupational Health and safety of the workers, community health and safety and environmental degradation	B	Demolition of current structures at gorur haat (cattle market), constructing materials stocking areas, vegetable market area, BADC's seed storage will impose risks on occupational health and safety of the workers, community health and safety as well as environmental degradation in case of management of demolition debris.
15	Traffic jam due construction activities	B	Construction activities and movement of construction vehicles may increase the traffic jam.
Pollution/ Pollution prevention (Operation phase)			
16	Air Quality	+	At the TOD areas, locally used vehicles are rickshaw, autorickshaw, CNG, bus, private cars etc. and those generate emissions. public mass transport modes may discourage use of these and is expected to reduce emissions (Positive impact). Open space development with tree plantation under TOD may contribute enhancement of air circulation.
17	Noise	+	Along with the vehicles move at current situation, TOD development is expected to reduce noise level due to reduced private vehicles at the areas. (Positive impact)
18	Traffic Jam	+	TOD will reduce traffic jam, create a transport hub to enhance access to public transport and encourage to use it, and introduce other measures, such as managed parking.

No.	Impacts	Rating	Brief Description
19	Risk of Accident	+	Risk of accident during the operation phase is anticipated to be reduced for TOD development. People will only transfer to vehicle in the transport hub area and people are not required to cross roads for transfer.

Table 7-6: Result of the Initial Environment and Social Impact Assessment (Alternative 3)

No.	Impacts	Rating	Brief Description
Preparation phase			
1	Risk of accident	B	Lack of design consideration may lead to high risk of accidents during operation phase.
2	Obstacle to get benefits of TOD	B	Lack of coordination (inter- organizational arrangement) among the relevant government agencies may lead to obstacle to get benefit from TOD .
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment. (Impacts in Construction and Operation phase)			
3	Easy access to station	+	Easy access to the Metro Rail Station will be ensured (positive impact).
4	Quick transit	+	Passengers will have quick transit to their destinations because of TOD provisioned facilities
5	Mobility	+	TOD interventions like pedestrians’ movement networks, adequate physical and social infrastructures will increase easy and comfortable mobility of the people.
6	Demand for residing	+	High demand among people will be created for residing in the surrounded areas.
7	Prospect of commercial activities	+	Prospect of potential commercial activities at the surrounded areas will be increased.
8	Infrastructural development	+	Increasing the intension of different stakeholders for infrastructural development.
9	Socio-economic status	+	Socio-economic status of the people of the area is anticipated to be increased because of developed accessibility to different facilities like job places, commercial places, educational institution etc.
10	Gender based violence (GVB)	B	GVB at the bus stop may happen if proper measures are not in place (e.g., separate necessary arrangement for women).
11	Children’s rights	B	Lack of provision of arrangement for children like lack of breast feeding corner, changing corner for baby, safety aspect like safety fencing/ safety signage around danger zone etc. at TOD area may lead to complying with children rights.
	Occupational Health and safety of the workers, community health and safety and environmental degradation	A	Demolition of current structures at both south and north part will be required. Mentionable at south part are gorur haat (cattle market), constructing materials stocking areas, vegetable market area, BADC’s seed storage etc. will impose risks on occupational health and safety of the workers, community health and safety as well as environmental degradation in case management of demolition debris. However, along with this at north part, a lot of residential and commercial building will need to be demolished that will create huge occupational health and safety risks, community health

No.	Impacts	Rating	Brief Description
			and safety risks and environmental degradation. These impacts are assessed to be much for alternative 3 compare to alternative 2.
12	Resettlement		Demolition for many buildings will be required and the current residents might have a chance to get the housing rights if the regulation is formulated If the regulation is not set, resettlement might be held.
13	Changes from traditional housing	B	The residents of current building will need to shift from their traditional structures to modern structures that is minor but can make feel upset for rare case to shift from traditional one.
14	Traffic jam due construction activities	B	Construction activities and movement of construction vehicles may increase the traffic jam.
Pollution/ Pollution prevention (Operation phase)			
15	Air Quality	+	The air quality compared to Alternative 1 is anticipated to be better and same as Alternative 2 as this alternative will also have measures like increased greenery at TOD areas.
16	Noise	+	Redevelopment of both south part and north part is anticipated to reduce the noise level that is expected to be less than that of Alternative 2 as once both parts are redeveloped that will be well planned way. .
17	Risk of Accident	+	TOD will reduce traffic jam, create a transport hub to enhance access to public transport and encourage to use it, and introduce other measures, such as managed parking.
18	Amount of water use	A	Due to construction of high rise building as part of redevelopment, large population will be accommodated in the building who will need huge volume of water to fulfill their demand.

Chapter 8: Mitigation and Monitoring for the Assessed Initial Environmental and Social Impacts

8.1 Mitigation for the Uttara Center TOD Activities

This section on mitigation and monitoring has been prepared considering the assessed environmental and social impacts depicted in section 14 for Uttara Center TOD. This section provides indicative environmental and social mitigation measures that will need to be considered in different stages (pre-construction, construction and operation) for three alternatives of Uttara Center TOD project. This section also spells out the indicative environmental and social monitoring requirements. As initial environmental and social impacts have been assessed considering the nature of the assignment, a detail Environmental and Social Impact Assessment (ESIA) for Uttara Center TOD is required to carry out before implementation of the project that will also include site-specific detailed Environmental and Social Management Plan (ESMP) and Environmental and Social Monitoring Plan (ESMoP). However, this report will give a good background and array to proceed in good order for carrying out ESIA including development of ESMP and ESMoP.

Following Table from 8.1 to 8.3 represent indicative mitigation measures for alternatives from 1 to 3 respectively, considering the identified initial environmental and social impacts.

Table 8-1: Initial Environment and Social Mitigations (Alternative 1)

No.	Area of Concern	Mitigation Measures
Preparation/pre-construction phase		
1	Flood Risk	The design, plan and construction of different projects (e.g., MRT, housing/real estate) should consider avoidance/ reduction of flood risk by undertaking measures, e.g., highest flood level with infilling of land, proper drainage system.
2	Sustainability	Strengthened coordination among the relevant government agencies in the implementation of different development projects needs to be ensured.
3	Vegetation loss	Different development projects need to implement revegetation/tree replantation plan against the clearing of vegetation or removal of trees that may need for implementations.
Social Environment		
Construction phase		
4	Involuntary Resettlement	For the implementation of various projects, it may be necessary to prepare and implement a Resettlement Action Plan (RAP), as well as a Relocation Plan for the displacement of people.
5	Land use and utilization of local resources (e.g., water, land, soil/sand)	Planning is required by other various projects in order to prevent using local resources as much as possible, and land usage should be done in an allowed way.
6	Cultural heritage	Preservations of masjids, hindu temples and graveyard need to be ensured by different development projects.
7	The poor	Livelihood restoration and employment of local people by different projects need to be considered.
8	Hazards (Risk) Infectious diseases such as HIV/AIDS	Awareness program among the workers on infectious diseases will need to be carried out by different development projects (e.g., MRT, housing/real estate).
9	Gender and children's rights	Awareness program among the construction workers on gender based violence needs to be carried out on a regular basis by different development projects. The labour laws and rules need to be strictly followed to ensure that children aged under 18 are not engaged as construction workers. Other requirements of Bangladesh labour laws need to be complied.
Natural Environment		

No.	Area of Concern	Mitigation Measures
(Construction phase)		
10	Topography and Geographical features	Proper measures need to be in place to commensurate alteration of topography based on proper investigation by different development projects. To mitigate the impacts on topography and geographical features, measures will need to be undertaken based on the investigation. Typically, those might be relandscaping, retaining the waterbodies, replantation of trees.
11	Groundwater	Proper wastewater management system and waste management plan need to be developed and implemented by different projects. Moreover, proper sanitation facilities need to be ensured in the construction workers' camp to mitigate ground water pollution.
12	Soil Erosion	Soil erosion measures (e.g., adequate compaction, turfing) need to be undertaken by different projects.
13	Hydrological Situation	Adequate drainage system needs to be in place to mitigate water logging, and proper pollution control measures need to be undertaken by different projects to mitigate contamination to the water of existing channels/ waterbodies.
14	Flora, Fauna and Biodiversity	Construction activities of different projects need to be carried with consideration of avoiding/ mitigating negative impacts on flora, fauna and biodiversity.
15	Meteorology	Temporarily air quality deterioration should be mitigated by undertaking proper mitigation measures (e.g., use construction machineries, equipment with good condition to reduce the emission level, water sprinkling to suppress dusts).
16	Landscape	Proper landscaping plan needs to be in place as well as implemented by different projects.
17	Global Warming	To commensurate the vegetation/ tree clearing, revegetation/ tree replantation program will need to be implemented by different projects.
Natural Environment (Operation phase)		
18	Reduced Green Coverage	Adequate tree plantation needs to be ensured.
Pollution (Construction phase)		
19	Air Pollution	Proper traffic management plan and air pollution control measures need to be in place by different projects.
20	Water Pollution	Proper wastewater and waste management plan need to be in place by different projects .
21	Soil Contamination	Proper wastewater management plan and waste management plan need to be in place by different projects.
22	Waste	Waste management plan needs to be developed and implemented and awareness program among the construction workers on waste management needs to be carried out by different projects.
23	Noise and Vibration	Adequate measures to mitigate the noise and vibrations needs to be undertaken by different projects.
24	Ground subsidence and offensive odor	Adequate measures (e.g., tolerable load and adequate pilling, avoiding over extraction of natural resource/water, proper waste management) need to be ensured by different projects.
Pollution (Construction & Operation phase)		
25	Pollution load	For the operation of different projects, proper mitigation measures for mitigating pollution load (e.g., solid, liquid, domestic wastes) will be required.
26	Accidents (during construction)	Awareness among people and workers on traffic management plan and traffic rules and regulations needs to be carried out.
27	Accidents (during operation)	Awareness among people and workers on traffic management plan and traffic rules and regulations needs to be carried out.
28	Traffic jam (during construction)	Awareness among people and workers on traffic management plan and traffic rules and regulations needs to be carried out.

No.	Area of Concern	Mitigation Measures
29	Traffic jam in front of station (during operation)	Proper planning needs to be in place.

Table 8-2: Initial Environment and Social Mitigations (Alternative 2) in Addition to the Mitigations of Alternative 2

No.	Area of Concern	Mitigation Measures
Preparation/pre-construction phase		
1	Risk of accident	Proper design considerations needs to be ensured to mitigate high risk of accidents during operation phase.
2	Sustainability	Feeder bus authority should ensure proper coordination (e.g., regular meetings, sharing of information, regular consultation) among the relevant government agencies.
Construction phase * As providing feeder bus service will not associate with construction activities, there will be no construction phase for this alternative 2.		
Social Environment (Operation phase)		
3	Gender based violence (GBV)	Proper arrangement (e.g., separate sits for women) at bus and access point to feeder bus service needs to be ensured.
4	Children's rights	There should be provision of arrangement for children with feeder bus service.
5	Traffic Jam in front of Station	Traffic jam in front of station during the operation phase needs to be mitigated by undertaking proper planning and measures (e.g., preparation and implementation Traffic Management Plan, enforcement of traffic rules and regulations)
6	Risk of Accident	Risk of accident during the operation phase needs to be addressed by design (e.g., parking, passages, enforcement of regulations by relevant authority).
7	Noise	Feeder bus considering that generate less noise may be used.

Table 8-3: Initial Environment and Social Mitigations (Alternative 1&2) in Addition to the Mitigations of Alternative 3

No.	Area of Concern	Mitigation Measures
Preparation/pre-construction phase		
1	Risk of accident	Proper design considerations will need to be ensured to mitigate high risk of accidents during operation phase.
2	Sustainability	TOD project authority should ensure proper coordination (e.g., regular meetings, sharing of information, regular consultation) among the relevant government agencies.
Construction phase * As providing feeder bus service will not associate with construction activities, there will be no construction phase for this alternative 2.		
Operation phase		
3	Gender based violence (GBV)	Proper arrangement (e.g., separate sits for women) at bus and access point to feeder bus service will need to be ensured and TOD need to ensure separate women spaces as applicable
4	Children's rights	There should be provision of arrangement for children with feeder bus service and TOD needs to keep provision for children like breast feeding corner, play zone as applicable
5	Noise	Feeder bus considering that generate less noise may be used and TOD development will need to consider adequate noise control measures

6	Traffic Jam in front of Station	Traffic jam in front of station during the operation will need to be mitigated by undertaking proper planning and measures.
7	Risk of Accident	Risk of accident during the operation phase needs to be addressed by design (e.g., parking, passages, enforcement of regulations by relevant authority).

8.2 Mitigation for the Gabtoli TOD Activities

This section on mitigation and monitoring has been prepared considering the assessed environmental and social impacts depicted in section 15 for Gabtoli TOD activities. It also provides indicative environmental and social mitigation measures that will need to be considered in different stages (pre-construction, construction and operation) for three alternatives of Gabtoli TOD activities for the impacts mentioned in section 15. Following Tables from 16.4 to 16.6 represent indicative mitigation measures for alternatives from 1 and 3 respectively, considering the identified initial environmental and social impacts.

Table 8-4: Initial Environment and Social Mitigations (Alternative 1)

No.	Area of Concern	Mitigation Measures
Preparation/pre-construction phase		
1	Flood Risk	The design and plan, construction by different projects (e.g., MRT Line 5, Line 2, Circular railway projects) should consider avoidance/ reduction of flood risk by undertaking measures, e.g., highest flood level with infilling of land, proper drainage system.
2	Sustainability	Different projects as indicated above should ensure proper coordination (e.g., regular meetings, sharing of information, regular consultation) among the relevant government agencies.
3	Vegetation loss	While removing vegetation or trees, various projects will need to adopt a plan for revegetation and tree replanting.
Social Environment		
Construction phase		
4	Involuntary Resettlement	For the displacement of people due to various projects, a RAP will need to be developed and implemented.
5	The poor, indigenous and ethnic people	Along with the RAP, relocation and livelihood restoration plan should be in place and implemented.
6	Land use and utilization of local resources	Different projects will need plan to avoid utilization of local resources as much as possible and land used should be in authorized manner.
7	Cultural heritage	There will be different Masjid and Hindu Temples in the area where different projects will be implemented. These Masjid and Hindu temples will need to be preserved by different projects.
8	Hazards (Risk) Infectious diseases such as HIV/AIDS	Awareness program among the workers on infectious diseases will need to be carried out.
9	Gender and children's rights	Awareness program among the construction workers on gender based violence will need to be carried out on a regular basis. The labour laws and rules will need to be strictly followed to ensure that children aged under 18 are not engaged as construction workers.
Natural Environment (Construction phase)		
10	Topography and Geographical features	Proper measures (e.g., relandscaping, retaining the waterbodies, replantation of trees) will need to be in place to commensurate alteration of topography and geographical features.
11	Groundwater	Proper wastewater management system and waste management plan will need to be developed and implemented. Moreover, proper sanitation facilities will need to be ensured with the construction workers' camp to mitigate ground water pollution.
12	Soil Erosion	Soil erosion measures (e.g., adequate compaction, turfing) will need to be undertaken as applicable.

No.	Area of Concern	Mitigation Measures
13	Hydrological Situation	Adequate drainage system will need to be in place to mitigate water logging, and proper pollution control measures will need to be undertaken to mitigate contamination to the water of existing channels/ waterbodies.
14	Flora, Fauna and Biodiversity	Construction activities will need to be carried with consideration of avoiding/ mitigating negative impacts on flora, fauna and biodiversity.
15	Meteorology	Temporarily air quality deterioration should be mitigated by undertaking proper mitigation measures (e.g., use construction machineries, equipment with good condition to reduce the emission level, water sprinkling to suppress dusts).
16	Landscape	To mitigate the impacts on landscape, proper landscaping plan needs to be in place as well as implemented.
17	Global Warming	To commensurate the vegetation/ tree clearing, revegetation/ tree replantation program will need to be implemented.
Natural Environment (Operation phase)		
18	Reduced Green Coverage	Adequate tree plantation will need to be ensured.
Pollution (Construction phase)		
19	Air Pollution	Traffic management plan and air pollution control measures will need to be in place.
20	Water Pollution	Proper wastewater and waste management plan will need to be in place.
21	Soil Contamination	Proper wastewater management plan and waste management plan will need to be in place.
22	Waste	Waste management plan will need to be developed and implemented and awareness program among the construction workers on waste management will need to be carried out.
23	Noise and Vibration	Adequate measures to mitigate the noise and vibrations will need to be undertaken.
24	Ground subsidence and offensive odor	Adequate measures (e.g., tolerable load and adequate pilling, avoiding over extraction of natural resource/water, proper waste management) will need to be ensured.
Pollution (Operation phase)		
25	Pollution load	With the developed residential/ commercial area, proper mitigation measures for mitigating pollution load (e.g., solid, liquid, domestic wastes) will be required.
26	Accidents (during construction)	Awareness among people and workers on traffic management plan and traffic rules and regulations will need to be carried out
27	Accidents (during operation)	Awareness among people and workers on traffic management plan and traffic rules and regulations will need to be carried out
28	Traffic jam (during construction)	Awareness among people and workers on traffic management plan and traffic rules and regulations will need to be carried out
29	Traffic jam in front of station (during operation)	Proper planning will need to be in place.

Table 8-5: Initial Environment and Social Mitigations (Alternative 2) in Addition to the Mitigations of Alternative 2

No.	Area of Concern	Mitigation Measures
Preparation/pre-construction phase		
1	Risk of accident	Proper design and planning considerations (e.g., adequate space for parking, footpath, traffic plan) will need to be ensured to mitigate high risk of accidents during operation phase.
2	Obstacle to get benefits of TOD	Inter-organizational coordination arrangements (e.g., regular meetings, sharing of information, regular consultation) among the relevant government agencies will need to be ensured.
Construction phase and Operation Phase		

* As providing feeder bus service will not be associated with construction activities, there will be no construction phase for this alternative 2.		
3	Involuntary Resettlement	RAP will need to be developed and implemented for the south side of TOD area for TOD mixed use interventions. Relocation and livelihood restoration plan may also need to be implemented for the squatters and for relocation of gorur haat (cattle market), constructing materials stocking areas, and vegetable market areas.
3	Gender based violence (GBV)	Proper arrangement (e.g., separate toilet for women, women space) at stations and access point to Gabtoli stations will need to be ensured.
4	Children's rights	Arrangement for children like breast feeding corner, changing corner for baby, safety aspect like safety fencing/ safety signage around danger zone etc. will need to be ensured.
5	Occupational Health and safety of the workers, community health and safety and environmental degradation	Proper demolition management plan will need to be implemented. Furthermore, Occupational Health and Safety Plan as well as Community Health and Safety Plan by following acceptable guidelines (e.g., World Bank Environmental Social Standards) for the demolition works will need to be developed and implemented vigilantly.

Table 8-6: Initial Environment and Social Mitigations (Alternative 1&2) in Addition to the Mitigations of Alternative 3

No.	Area of Concern	Mitigation Measures
Preparation/pre-construction phase		
1	Risk of accident	Proper design and planning considerations (e.g., adequate space for parking, footpath, traffic plan) will need to be ensured to mitigate high risk of accidents during operation phase.
2	Obstacle to get benefits of TOD	Inter-organizational coordination arrangements (e.g., regular meetings, sharing of information, regular consultation) among the relevant government agencies will need to be ensured.
Construction phase and Operation Phase		
* As providing feeder bus service will not be associated with construction activities, there will be no construction phase for this alternative 2.		
3	Gender based violence (GBV)	Proper arrangement (e.g., separate toilet for women, women space) at stations and access point to Gabtoli stations will need to be ensured.
4	Children's rights	Arrangement for children like breast feeding corner, changing corner for baby, safety aspect like safety fencing/ safety signage around danger zone etc. will need to be ensured.
5	Occupational Health and safety of the workers, community health and safety and environmental degradation	Proper demolition management plan will need to be implemented. Furthermore, Occupational Health and Safety Plan as well as Community Health and Safety Plan by following acceptable guidelines (e.g., World Bank Environmental Social Standards) for the demolition works will need to be developed and implemented vigilantly.
6	Involuntary Resettlement	Make sure regulations are created to protect residents' housing rights. If not, RAP will need to be developed and implemented for resettlement.
7	Changes from traditional housing	Continue awareness among the residents on the benefits of using modern structures.
8	Noise in Operation Phase	The redevelopment activities will need to adopt reduced noise level feature.

8.3 Monitoring

Monitoring will require to be carried out for all the indicative mitigation measures included with the above tables. That will require documents review, field visits, testing (air, noise, water) etc. on regular basis. However, detail monitoring plan considering different phases of project (pre-construction, construction and operation) will need to be in place as part of ESIA / ESMP in next stage. The monitoring plan will need to cover the following issues:

- Environmental and social parameters to be monitored
- Means/ method of monitoring/ verification
- Monitoring indicators
- Frequency of monitoring and reporting and Responsible for monitoring and reporting.

Chapter 9: Conclusions and Recommendations

9.1 Based on Scoping Study

The Scoping study was carried out by the consultant's team following blend of methodologies. To do this Scoping study, review of related national policies, regulations and guidelines were reviewed and analyzed. As well, field works like conducting FGDs, photo surveys and direct observations from the fields were also part of this study and findings from these field works also analyzed. The analysis gives the existing scenario of policies, regulations and guidelines for environmental and social considerations for TOD as well as the features/ facilities those might be part of TOD along with key issues of environmental and social considerations need to account for construction and operation of TOD facilities. The recommendations focusing both the policy and practice levels are presented below.

9.1.1. Recommendations for Environmental and Social Considerations Relating Policy, Guideline, Study for the Target Project

The key recommendations for TOD project are:

- There are need of ensuring developed tools or guidelines to be followed for environmental and social assessment of TOD
- The specific interventions to be part of TOD activities need to be defined to categorize the projects in line with ECR, 1997 of GoB and to carry out the next level study for TOD. However, based on the meeting held with DoE officials, it was anticipated that this TOD may fall under the red category as per ECR, 1997.

9.1.2. Recommendations for Environmental and Social Considerations Needed to Consider Relating to Ground/ Practice Level for the Target TOD Projects.

The key recommendation for the TOD are:

- The features or facilities mentioned in section 5 have been suggested from ranges of stakeholders participated in FGDs. These need to be included in TOD.
- The environmental and social considerations' issues identified in section 6 need to be covered under environmental and social impact assessment and mitigation plans.

9.2 Based on Situation Analysis

The situation analysis has been performed based on the secondary data mostly and primary data (e.g., consultation, FGDs, and field observation). As there was no scope under the contract of BETS to carry out detailed field level baseline survey, the baseline condition depicted in this report is presented from the secondary sources. The relevant data with the secondary sources are not available adequately, and the baseline condition in this report may not reflect the complete baseline environmental and social scenario TOD specific area. It provides indication of the current scenario of the area. So, detail baseline study is suggested to be carried out in next level of studies (e.g., ESIA). Based on the situation analysis, the following recommendations are made to consider:

To carry out a detailed environmental and social baseline survey during next steps as part of other related study (e.g., ESIA)

To be complied with the national regulatory framework, define the next step study (e.g., ESIA), allocate resources and carry out the studies before implementation of pilot project.

To develop the initial mitigation measures and monitoring plan for the Uttara Center TOD based on the initial impacts identified by this situation analysis report.

9.3 Based in the Environmental and Social Mitigations and Monitoring

This report only gives indicative mitigations and monitoring requirements for the Uttara Center TOD and Gabtoli TOD. However, detail assessment (ESIAs) needs to be carried out that will also include TOD specific ESMP and ESMoP.

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Annexure

**For Development of Policy and Guidelines for Transit Oriented
Development (TOD)**

of

MRT-6, MRT-1 and MRT-5 North Lines

**“The Survey on Environmental and Social Consideration Policy-Making
Assistance Project for Public Transport-Oriented Development along
Bangladesh Mass Rapid Transit (MRT)”**



March 2022



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ABBREVIATIONS

AP	-	Affected person
DC	-	Deputy Commissioner
DMTCL	-	Dhaka Mass Transit Company Limited
DNCC	-	Dhaka North City Corporation
EMP	-	Environmental Management Plan
FGD	-	Focus Group Discussion
PWD	-	Persons With Disability
JICA	-	Japan International Cooperation Agency
LIC	-	Low Income Community
MRT	-	Mass Rapid Transit
PPE	-	Personal Protective Equipment
RoW	-	Right of Way
RF	-	Resettlement Framework
RP	-	Resettlement Plan
SEA	-	Strategic Environmental Assessment
TOD	-	Transit Oriented Development
ToR	-	Terms of Reference

GLOSSARY OF BANGLADESHI TERMS

Muktijodha	– Freedom Fighter
Ghat	– Boat landing area along a river
Sangsad	– Association

This social and environmental considerations survey document owned by the borrower. The views expressed herein do not necessarily represent those of Consultant Team/Bets Consulting Ltd, Management, or staff, and may be preliminary in nature. All the views, opinions and expressions are of the participants of the five (5) Focus Group Discussions Meetings (FGDs) held during 23-24 February, 2022, within Dhaka city, Bangladesh.

In preparing any country program or strategy, financing any Project, or by making any designation of or reference to a particular territory or geographic area in this document, the Japan International Cooperation Agency (JICA) does not intend to make any judgments as to the legal or other status of any territory or area.

PREFACE

The premises of this Focus Group Discussion (FGD) Report is the BETS Consultancy services Ltd., presentation of an analysis of data and conclusions, together with its annexures/ appendices. While BETS Consulting Services LTD- consultants team has been deputed to conduct five Focus group Discussion Meetings within Dhaka City by JICA to assist finding the existing status of the natural, social environmental, including land use, natural environmental, and economic and social conditions, based on the reviews of existing data and information collected from FGDs held in Dhaka City.

The key issues and concerns /elements of this FGD report focus on: FGD checklist/protocol/BETS and Terms of Reference (TOR) of Transit Oriented Development (TOD)/JICA (Compliance Guidelines of Social Safeguards according to JICA and GoB policy).

DISCLAIMER

This Report is for the Focus Group Discussions (FGDs) held in Dhaka city.

All the data used to prepare this Report have been collected from the discussion meetings of FGDs held within Dhaka city. The Recommendation have been presented based on the findings of the FGDs' discussions of the participants, some information's have been collected by the respective experts /consultant through field visit which have been used in writing this report. If any information or data or any other things coincide with other Project documents that are beyond our knowledge and fully coincidental event and we express apology for that.

1. Situation Analysis of the Environmental and Social Conditions of the SEA Target Sites

FOCUS GROUP DISCUSSION MEETING

1.1 Background of the Project

- a. As part of JICA project for Development of policy and Guidelines for Transit Oriented Development along the Mass Transit Corridors contributes to the promotion of appropriate urban development based on the plan by creating TOD policies and guidelines along the MRT line and establishing and operating a coordination mechanism, in Dhaka capital city, Bangladesh, BETS consultants team as per the TOR of TOD has conducted five Focus Group Discussions (FGDs) with five groups. Based on the last meeting decisions held with JICA Study Team (JST) via ZOOM on 16-02-2022 (BD Time-2.00pm), the following protocols were developed and approved by the JST: 1. Guideline for Focus Group Discussion; 2. Checklist/Protocols of the FGD; 3. Five groups chosen; and, 4. Locations of the FGD conduction.(Attached annex)
- b. This report is prepared as the Situation Analysis of the environmental and social conditions of the targeted two pilot sites. In particular, the current situation as a base for analyzing the impact on vulnerable groups, and issues related to safety, convenience, and comfort in public spaces that should be gender -disability-friendly, have been interviewed through FGDs.
- c. Accordingly, the following five groups have been chosen for the FGDs in Dhaka City at different location: a. Person with Disabilities (PWD), b. Vulnerable peoples, c. Local Representatives, d. Women Groups, and, e. Senior Citizens. The locations were surrounded to Gabtoli and Uttara Center.
- d. These five FGDs were held in 23 and 24 February 2022. The opinion and comments that were recorded in the FGDs are solely of the participants attended in the FGDs. The key issues of discussions were covered from the FGD Protocols/Checklist (Attached annex).

2. Findings from FGDs:

The data obtained from the FGDs and views as well as concerns from five stakeholders groups and each of the locations of FGD conducted are given below:

2.1 Focus Group Discussions (FGD)

- a. As part of the Situation Analysis on the environmental and social conditions of the two pilot sites, the consultants conducted FGDs with selected groups. FGDs are very much useful in obtaining a particular information that would normally be difficult to obtain using other methodologies. The FGDs provided the opportunity to stimulate discussions and interaction between small groups of people from a selected similar socio-cultural background and implicated by the proposed infrastructure development (TOD interventions).
- b. At the beginning of the FGDs, the project objectives were appraised the stakeholders about the current progress of the MRT and to reiterate environmental and social impacts of the proposed TOD-MRT and safeguards to mitigate the same. Comments, opinions or questions raised by the group were discussed until they were satisfied with the level of information provided.
- c. Key issues discussed were:

3. Socio, Environmental and Economic Impact:

- advantages and disadvantages when people from other localities come for construction work of the project
- community benefits realized as a result of the project
- environmental and social considerations and mitigation measures according to guideline of JICA and Bangladesh government for the project
- participation of local community during the implementation phase
- roles and responsibilities of the selected stakeholders for realizing desired outcome and
- potential social, economic and economic impacts of the proposed project that may be under consideration.

4. Summary of Discussions

- a. Participants of the five different organized FGDs expressed their deep interest for development of the existing conditions of the MRT project and appreciated JICA's concern for development of the future of TOD for vulnerable, disable, senior citizen including civil society group in the Dhaka city as a whole.
- b. It was finally revealed that the TOD project will improve socio-environment and economic conditions of the Dhaka city through creating more opportunity of income and employment including travel facilities of the disabled, vulnerable, women, senior citizens including civil society representatives, as well as exploring local resources for boosting local products. Nonetheless, environmental quality will be improved if proper measures are undertaken by the project.

Annex-1: Focus Group Discussion (FGD)

Annex-1 : Focus Group Discussion (FGD)

Annexure - A: 1st Round FGD

A.1 Key Issues of Five (5) FGDs

Focus Group Discussion 1:

Targeted community - Persons with disability (PWD)

Date & time- 23rd February 2022. 03:00 pm

Location: Muktijoddha Tower, College gate, Mirpur Road. Near Gabtoli, Dhaka.

No. of participate: 10 (All male)

This is an organization of physically disabled freedom fighters of Bangladesh, under Muktijodha Sangsad, a welfare trusty board under Ministry of Liberation war affairs. Generally, it provides support for the physically disabled freedom fighter and martyr families. This is the central organization for the

disabled freedom fighter in Bangladesh. The president of the organization Mr. Md. Amir Hosen Mollah presided over the participant. The detail of the discussion is described below:

Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
1	Persons with disability Group	College Gate Mirpur Road, Dhaka, 23-02-2022	Purpose of the FGD consultation Meeting	The end result of TOD project of JICA is expected to bring a dimensional change as the challenges of the proposed project within Dhaka city for the PWD travelers/ passengers of MRT lines.	FGD held at selected area-: Muktijoddha Tower, College gate Gabtoli, Dhaka
			Future plan of MRT/ TOD in picture	Participants expressed on: Reserved seats for PWD in train/ waiting room (separate for male and female) in TOD premises.	
			Benefits for the disable people by the better facilities of the MRT lines in the future that will bring better scope s for the disabled community	Facilities of entrance /exiting to/from TOD area (lift/escalator/auto door system etc. also modern facilities they want)	
			Disabled Community's willingness to support JICA's new venture TOD project	- Ensure assistance for PWDs who use the wheel chairs facilities of entrance /exiting (lift/escalator/auto door system etc. also modern facilities they want) - In FGD, PWDs as a whole expressed their greater interest for the development of the existing transport system and easy access for them to use MRT lines in their daily life as well as the TOD development.	

Focus Group Discussion 2:

Targeted community - Vulnerable/Low-income community

Date & time- 23 February 2022. 05:00 pm

Location: Near Existing bus Terminal, Gabtoli, Dhaka

No. of participate: 12 (All male)

This FGD focused with the low-income community (LIC) at Gabtoli existing Bus terminal area. FGD team arranged this meeting with an engagement of local bus drivers' community and people associated with local bus services. The participants were also mainly from different livelihood, some of them are bus helper, small shop owners, mechanics of workshops, hotel workers etc. They comfortably shared their opinions and suggestions with future interest. The detail of the discussion is described below:

Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
2	Vulnerable / Low Income Community	Gabtoli, Dhaka, 23-02-2022	Purpose of the FGD consultation Meeting	TOD project is expected to bring positive changes among the participants if proper measures(by compensating them, create opportunities for work inside the TOD premises etc.) are taken for the affected people and environment along with planned development.	FGD held at selected area- Gabtoli, Dhaka
			Future plan of MRT/ TOD in picture,	- To provide job opportunities according to qualifications among affected people (AP)poor people - Select a hawker committee by authority/TOD for the surrounded areas of TOD to maintain discipline as well as provide insurance facilities for TOD workers.	

			• ° Benefits for the vulnerable people by the better facilities of the TOD in the future that will bring better scope s for vulnerable community	• Job opportunities according to qualifications among AP/poor people • Special stairs for old people/disable/(wheel chair provision) • Schedule time table for trains that will save people's time • Maintain schedule time to target location . Local people will be benefited by buying goods in the time of their travelling if shopping facilities are provisioned. If park is established then recreation scope will be enhanced • If people are affected; they want compensation as job against loss of job • Bus and private vehicles will be reduced that will reduce traffic jam and accidents • New job opportunity will be created in TOD area • Provision of security to avoid the thief/crime/eve teasing etc. will be required • Waste management/ Waste bin on each corners to keep TOD area clean, hygienic and healthy • Attention to environment required: provision of wider footpath, tree plantation along the footpath, spacious waiting place to avoid collision of more people' gathering etc. • Waiting room facility and waiting space along with other TOD premises will need to have firefighting /extinguisher system/sand bucket/ no smoking zone/ tree plantation/selected posters on COVID-19/ health/ station specification/ next destination names and km/ route map with km. and station names etc. • Drinking water provision at required places • Ensure workers' safety during the construction works • Specific place for hawkers/labors in the station, Hawker committee should be selected by the authority • Ensure first Aid /health services for vulnerable /PWDs/ women at specific spots • Ensure women corner/ sperate toilet/ breast feeding corner where applicable • Spacious parking system for private/public transports, child care rooms and prayer room provision. • Proper waste/ debris management during construction works for TOD in a way that no land or surrounded waterbody is polluted • Proper management of wastewater to avoid any kind of pollution to land or water body • Proper noise control measures during construction works of TOD	
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Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
				• Use of equipment with good condition and spraying of dusts to mitigate deteriorated air quality during the construction works of TOD • The FGD revealed that the community people expressing their greater interest (As this is an improved system and people will get modern facilities)for the TOD system and easy access for them to use MRT lines in their daily life.	
			• Vulnerable Community's willingness to support JICA's new venture TOD project	• Ensures assistance/ attendant for PWD who use the wheel chairs facilities for entrance /exiting (lift/escalator/auto door system etc. also modern facilities they want)	

Focus Group Discussion 3:

Targeted community – Local representatives

Date & time- 23 February 2022. 07:00 pm

Location: Office of the Local Counselor, Ward no.-09 DNCC, Mirpur, Dhaka

No. of participate: 10 (All male)

This FGD considered as participation of local people with their representative. The discussion was held on at the Local Counselor's office. The secretary of the ward counselor office presided over the meeting due to absent of the counselor. The proposed Gabtoli MRT station is under this ward. Local people participated willingly and expressed their opinion regarding the subject matter. The details of the discussion is described below:

SI. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
3	Local Representatives	Ward no. 9, DNCC, Gulaptek, Mirpur, Dhaka, 23-02-2022	Purpose of the FGD consultation Meeting	Consultant team shared the purpose of the FGD in detail	

			• Future plan of MRT/ TOD in picture	• A continuous monitoring on maintenance system to be established • Escalator will need to be with easy entrance system • Good walkway in park t is suggested to include • Ensure recreational items/rides in park for children • Make job opportunities for local people during the project construction and operation phase • Local bus transports need to be reduced at MRT line except connecting buses for women, PWDs and vulnerable passengers at day/nighttime, • Ensure service charges for washrooms/bathroom/toilet use (also ensure a cleaner for maintaining the hygiene) • Security to be continued (male/female guards employment needed) • Flower plants / fruit trees/ medicinal trees plantation in park and footpath • Ensure the 24-hour Lighting system in TOD areas • Security guards in station/park and required places of TOD areas • CCTV system in park/station and required places of TOD areas • Recreational facilities for old people in TOD areas • Control/minimize the sound pollution during the construction works • If possible, make bus services for MRT passengers specially for women/seniors/vulnerable security, during nighttime good management will be needed for strong security t by MRT/TOD authority • Mobile charge system in park suggested to be provisioned • Compensation for affected people suggested to be ensured • Ensure the waste-bin in TOD areas • Ensure the cleaning system in whole TOD area • Resting areas for people, day labor etc. in the TOD areas • Establish parking system with trees and sitting arrangement along the bank of the river near the Gabtoli station may increase environmental quality and people's recreational facility • MRT works will disrupt some of the people's current profession and they may be deployed in TOD oriented jobs (e.g. in markets, park management, small shops etc.) • The construction of facilities with TOD may temporarily or permanently disrupt livelihood of some people who will need to be compensated • Waste water may be generated but that will need to be managed in such a way that this is not polluting or increasing pollution burden to nearby river or land • For construction of TOD facilities, noise will be created that will need to be managed by proper mitigation measures (e.g. noise barrier, works only in	
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Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
				day time, use of Personal Protective Equipment (PPE) by the workers, use of demarcation) Air quality may be deteriorated, to mitigate the air pollution, water spraying, use of good quality construction equipment and machineries will need to ensured	
			Benefits for the Local Representatives/ persons by the better facilities of the MRT lines and TOD in the future that will bring better scope s for the Local Representatives community	- A continuous monitoring system of maintenance must be established after completion of the project and starting of the operation of MRT lines - Establish a limited type of shops in the station(in a specific places) - Control/minimize the sound pollution during the construction works - Mini shopping center in underground can be established - If possible, bus services for transit of MRT passengers and specially women's security at night time to be ensured - Building affordable parking places of public/private transports and waiting place along bank of the river near the Gabtoli station - MRT works will disrupt some of the people's current professions and they may be deployed in TOD oriented jobs (e.g. in markets, park management, small shops etc.) - The construction of facilities with TOD may temporarily or permanently disrupt livelihood of some people who will need to be compensated - Waste water may be generated that needed to be managed efficiently avoiding pollution of the area, - For construction of TOD facilities, noise will be created that need be managed through proper mitigation measures (e.g. noise barrier, works only in day time, use of PPE by the workers, safety sign/posts use of demarcation) - Air quality may be deteriorated, that to be mitigate /avoid air pollution, water spraying, use of good quality construction equipment and machineries will need to ensured.	
			Local Representatives Community's' willingness to support JICA's new venture TOD project	All the participants expressed that based on the facilities and possible improvements of the venture of TOD, whole community will eager to support the implementation of the TOD project readiness to try out new venture of JICA.	

Focus Group Discussion 4:

Targeted community – Women community

Date & time- 24 February 2022. 12:00 pm

Location: The Senior Citizen Society, Sector-11, Uttara, Dhaka

No. of participate: 15 (All Female)

This society works for senior citizen. They also provide voluntary support to the women community for their livelihood development, social security and other basic requirements. Representative from service holder, street bagger, housemaid, unemployed senior citizen (women) participated in the discussion. The details of the discussion is described below:

Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
4	Women Community	The Senior Citizen Society, Sector -11, Uttara, Dhaka, 24 -02-2022	• Purpose of the FGD consultation Meeting with women groups	• The TOD project of JICA is expected to bring a dimensional change (e.g. women friendly and easy accessible, comfortable. modern) as the challenges of the proposed project within Dhaka city for the women travelers/ passengers of MRT lines.	FGD held at selected area- Uttara, DNCC, Dhaka
			• Future plan of MRT/ TOD in picture,	• Affordable paid transport parking /toll system suggested to be established • Separate ticket counter for women suggested to be established • Adequate facilities for the environment (e.g. proper ventilation) • Ensured security in TOD area • Continuous cleaning, moping, childcare rooms, drinking water provision and washrooms at required places and separate washroom/ toilet facilities for women and men to be ensured • Ensure enough lighting system for day/night, prayer room, • Emergency ambulance facilities suggested to be ensured • Free WIFI system at specific places in the TOD area (ensure the open password) • Ensure waiting room with TV/WIFI/ newspaper/ more mobile charging spots/table/chairs/ train time tables etc. • Ensure waste management/ dustbin at different corner with sand -bucket, • Declare “No smoking Zone” at all MRT line area by specified by length and width of the MRT lines and stations, and TOD areas where applicable.	

			• Benefits for the women group/disabled women by the better facilities of the MRT lines in the future that will bring better scopes for the women community	• Ensure job opportunity for women as police/guard/ attendants for women's security • Ensure first aid /health services for vulnerable /disabled/ women at specific spots in TOD area, medical team/doctor (different for females and males) • Prepare the different routes in the same footpath for disable/blind and women • Facilities of wheelchair for disable women in park/station	
			• Women Community's' willingness to support JICA's new venture TOD project	• The participants opined and proposed to employ poor women for special work opportunities such as cleaner/women security etc. positions to keep clean the MRT line, stations and TOD areas. • Ensure the wages ratio of the women workers as same as men workers • Health insurance/ use of PPE by TOD workers during construction phase. • Most women participants suggested that payment if they are involved in construction or other related activities of TOD should be transferred through worker's own specific account to avoid adulation/broker • Participants also opined for health compensation for unusual accidents during implementation work in the station/TOD area.	

Focus Group Discussion 5:

Targeted community – Senior Citizen

Date & time- 24 February 2022. 03:00 pm

Location: The Senior Citizen Society, Sector-11, Uttara, Dhaka

No. of participate: 11 (02 female & 09 male)

This society works for senior citizen. This organization is working for the wellness of the senior community, regular health camp and to establish right for unprivileged senior community. The secretary of the society presided over the discussion. Among the participants, some were retired Government officer, businessperson, social worker etc. The details of the discussion is described below:

Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
5	Senior Citizen Community	The Senior Citizen Society, Sector -11, Uttara, Dhaka, 24 -02-2022	Purpose of the FGD consultation Meeting with senior citizen group	TOD project of JICA is expected to bring a dimensional (e.g. modern facilities, easy access, friendly to elderly persons) change as the challenges of the proposed project within Dhaka city for the senior travelers/ passengers of MRT .lines	FGD held at selected area- Uttara, DNCC, Dhaka
			Future plan of MRT/ TOD in picture,	- Local people will be benefited in terms of time saving, buying goods easily, enjoying good environment in park area if established, reaching to target location quickly etc. - Other district level travelers/ passenger will be benefited (they will freely travel day/night, will quickly reach to target locations) - TOD environment will be improved if prepare the park and tree plantation is done there (with flower tree, medicinal trees etc.) - Prepare the railing around footpath for avoiding the thief/hawker, and the PWDs and elderly persons will also be able to use the railing - Separate waiting room for senior citizens with following items- TV/WIFI/ newspaper/ more mobile charging ports etc. and also other modern facilities - Receiving public opinion through mobile application. - Car parking facilities - Footpaths needs to be wider - Escalator/lift to ensure easy entrance for disable/senior citizen/old peoples - Help desk need in station/TOD area - Digital ticket facilities will need to be provisioned - Awareness raising related messages or signage should be in Bangla language	

Sl. No	Selected Groups	Location & Date	Key Issues discussed	Major Findings mainly derived from the views, opinions and suggestions of the FGD Participants	Remarks
				• Prepare the prayer room, separate for males and females • Women feeding room for children (hot-cool water facilities /micro oven facilities etc.) • Ensure the safety of the zone • Flyover need near the station for reducing the jam • 50% discount on rail tickets for senior citizens • Security facilities for night traveler • Stop throwing of wastes in the river/pond/lake or other waterbody	
			• Benefits for the Senior citizen group/disabled persons by the better facilities of the MRT lines in the future that will bring better scope s for the Senior Citizen community	• Follow the other modernized countries' facilities for easy and smooth connectivity with other modes of transport and apply them in this project	
			• Senior Citizen Community's' willingness to support JICA's new venture TOD project	• ° Local people will participate and extend cooperation for any kinds of development of the proposed TOD issue.	

Negative Views: A few Participants commented as follows: (However, these were mitigated by other participants giving good benefits for the future generation)

- A few (2 /3) participants (aged over 73) opined that they don't want **MRT in city area** because of its sounds, that is not environmentally friendly and may impact to environment/Health/ and that may lead to gradual hearing problems and domestic animal/ birds will be affected by MRT
- Facilities of entrance /exiting (lift/escalator/auto door system etc. also modern facilities they want) need to be included
- Current status of safety and security issues- The proposed area is **not safe and this is insecure area**. Footpath is not walkable for PWD, also it is so narrow
- Propose safety and security issues **for TOD- ensure the good** light facilities in **day/night** to avoid the thieves attempts
- They opined to minimize the MRT sound through the modernized soundproof system (as soundproof glass etc.) and control of increased air pollution
- Possibility of handicapped newborn birth will increase (as for MRT sound etc.)
- All project has some bad effect, (such as sound pollution will increase, MRT lines are through the city so residential environments will effected, adjacent roads scarcity etc.) so feasibility study is vital for the future outcome of the project
- Many large/heavy vehicles will be needed to use for construction works, proper safety measures will need to be taken

A.2 Recommendation from Consultant Team:

A series of recommendations were addressed herein, which were depicted from five focus group discussions within Dhaka city, Bangladesh.

Important findings of the FGDs in connection to social and environmental issues are:

- Reserved seats for PWDs in train/ waiting room (separate for male and female) and facilities of entrance /exiting (Lift/escalator/auto door system etc. wheelchairs, also modern facilities (such as toilet facilities, breast feeding corner, prayer room facilities, separate waiting room for male & female etc.) for the passenger.
- Given job opportunities according to qualifications among AP/poor people, and select a hawker committee by authority at surrounded area of TOD to maintain discipline.
- Maintain schedule timetable to save traveler's time

c. The participants are requested provision of followings:

- Security to avoid the stealing/crime/eve teasing
- Waste management service, (day to day waste transfer, cleaning facilities for station area and toilet, provide waste bin etc.)
- Waiting room/ Should have specific and sufficient place facility for firefighting /extinguisher system/sand pot/bucket setup, selected posters on COVID-19/ health/ station specification/ next destination names and km/ route map with km. and station names etc.
- Drinking water provision
- Specific rest room for hawkers/labors in the station and TOD area
- Affordable paid transport parking /toll system
- Separate ticket counter for women
- Adequate environmental friendly facilities (e.g. proper ventilation/ air circulation, waste management, greening)

c. The participants are also requested to ensure followings:

- Worker' safety during the construction
- Security in TOD area
- First aid /health services for vulnerable /disabled/ women etc. at specific spots in station/ TOD areas

d. For specifically women, following are specifically requested:

- Continuous cleaning, moping of the area. Child care and breast feeding rooms with drinking water facility.
- Ensure enough lighting system for day/night, prayer room,
- Emergency ambulance facilities
- Free WIFI system at specific places in the station/ parking area (ensure the open password to avoid harassment
- Ensure waiting room with (TV/WIFI/ newspaper/ more mobile charging spots/table/chairs/ train time tables etc.
- Ensure job opportunity for women like police/guard/ attendants for women's security
- Prepare different routes in the same footpath for disable/blind people and women
- Facilities of wheelchair for PWDs in park/station
- For TOD, environment will be improved if the park is established and tree

- plantation is done (with flower plants, fruits and medicinal trees etc.)
 - Opportunities for advancement (quickly communication etc.)
 - Prepare the railing around in footpath for people safety from the thief/hawker and that can be used by the PWDs as well
 - Separate waiting room for senior citizens with following items (TV/WIFI/ newspaper/ more mobile charging ports etc. also modern facilities)
 - Receiving public opinion through the APP
 - Car parking facilities
 - Footpaths need to be wider
 - Escalator/lift required for easy entrance system for PWDs/senior citizen/elderly persons
 - A continuous monitoring on maintenance system to be established
 - Ensure service charges for washrooms/bathroom/toilet use (also ensure a cleaner for the hygienic environment)
 - MRT works will disrupt some of the people's current profession and they may be deployed in TOD oriented jobs (e.g. in markets, park management, small shops etc.)
- e. The construction of facilities with TOD may temporarily or permanently disrupt livelihood of some people, so those are needed to be compensated.
- a. If there is any involuntary resettlement involved or may be raised in the future endeavor, then a Resettlement Plan (RP) may be required to prepare in the future as per JICA Resettlement Policy Requirement.

Any claims or complaints are submitted during the construction period, an effective and efficient Grievance Redress Mechanism (GRM) have to be established, (for future project to be added in IEE/ESIA etc.). This will enhance provision of timely and sensible hearings and facilitate solutions.

Annexure B- 2nd Round FGD



B.1 FGD Checklist

Development of Policy And Guidelines for Transit Oriented Development (TOD) of MRT-6, MRT-1 and MRT-5 North Lines

2nd Round Focus Group Discussion (FGD) Checklists

Respected Community:..... Number of Participants:.....

Place of FGDs: Location:..... Date:.....

To facilitator: Introduces yourself and take the Introduction of the participants and description of the project objectives by the convener. Later open discussion by the participants to express their views/ opinion /constructive suggestions/ focusing the benefits and facilities of the poor/disables/women.

Preparation is the most important element to a successful focus group; there are, however, tips that can be utilized to help make the focus group more successful.

- *Pause: When someone says something, wait approximately five seconds to see if that person has more to say or if another participant wants to add feedback. Give participants the opportunity to finish their thoughts.*
- *Probe: If something is important to explore, ask questions like “Can you tell me more about that?” or “Can you give me an example?”*
- *Avoid head nods or responses like “yes,” “I agree,” “OK”: The facilitator is there to get the feedback from the participants. These kinds of responses are messages to the group on what is acceptable to say and can limit the discoveries that are made during the group.*
- *Reflect: When a topic appears complete, review the notes taken to verify that important information was captured. If the note taker is displaying the notes on an easel pad, the facilitator can use this as a guide with the group.*
- *If someone has something to say, acknowledge them with a hand signal to let him/her know that you will give them an opportunity to contribute.*
- *If someone interrupts when someone else is speaking, signal them to wait and that they will be given an opportunity to speak.*
- *Eye contact is important. Establish eye contact with those that are speaking but also with those that are not participating to encourage their engagement in the conversation.)*

A: Socio-economic Impact

1. Major Occupations of the TOD project in percentage

2. Earning member of HH avg in this project area and income (monthly)	Avg of Male: Avg income range:	Avg of Female: Avg income range:
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3. Wage Rate:-----with food and without food-----
4. What are the advantages and disadvantages when people from other localities come for construction work of the project?
- a. Advantages-----
- b. Disadvantages-----
5. Do you think that income will be changed after construction of project?
- c. Reasons for enhancement :------(%) -----
- d. Reasons for decrease-----(-%-)-----

6. Name and number of localities and Slum in project area

Type of Localities (Name and Numbers)	Slum
	Non-Slum

B. Affect on Health/education/utility/ social infrastructure/ Impact on Road and Access / migrant

7. What are the possible diseases that may arise due to construction of the project?
8. Gas connection as utility to the project. What will be its effect on local people?
9. What are the effects on educational intuitions due to construction of project? -----
11. Heavy and light vehicle will pass through the local roads .Will there be any damage to the local roads or damage at all -----
12. What problems may arise in this locality if there is no sufficient accommodation for migrant workers in this project?

13. Mitigation of Impact

- i. Proper Compensation ii. Land for land iii. Avoid iv. Income restoration training v. Minimize Adverse Impacts vi. Re design/ Alternative Proposal
- vii. Alternative suggestion describe-----

14. Who will be the main beneficiary of the project?

C. Environment related

If there is any Historical place/structure or Archeological structure/Eco park /Antic trees in the project area (please mention in below):

Sl. No.	Name and Location	Distance from the alignment (m)	Project impact specify

If there is any Mosque/Temple/Pagoda/Church/Graveyard/Playground/Hat/bazar/ slum in the project area (please mention in below):

Sl. No.	Name	Location and distance from the alignment (m)	Project impact specify
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D. Type of affected /Resettlement Issues

1) Squatter on government land	2) Squatter on Private Land	3) Only Agriculture Land loss
4) Only Homestead loss	5) Both agriculture and homestead loss	6) Homestead and tree loss
7) Homestead, tree and agriculture loss	8) Only Business structure loss,	9) Only housing structure loss,
10)Housing Structure and Homestead loss,	11) Only tree loss,	12)Sharecroppers
13) Employee of business structure,	14) Livelihood loser	15. homestead and business loss
16) Loss of Residential Structure	17) Loss of Business	18. Loss of factory
18.Displacement of vulnerable groups	19. Others	

E. PROJECT RELATED:

1	Do you know about the TOD/project?	1=Yes; 2 = No.	
2	What positive impacts do you expect from the project?	1= Quick journey and fare save 2= Easy Communication 3 = Time save 4 = Pleasure travel & tour 5 = Improvement of transportation 6=Easy to connect existing institution 7= Others(specify)-----	
3	What negative impacts do you expect from the project?	1= Land loss; 2= Home loss 3= Business loss;4= Crops loss 5= Income loss ; 6= Environmental loss;7= Unemployment 8= noise pollution 9.= Disease outbreak e.g. Dengue fever 10. Traffic Jam; 11. Mud , dust pollution 12. Accident 13.Others(specify)-----	
4	Do you need any resettlement support from the project?	1=Yes; 2 = No.	
5	Please choose the compensation method	1=Land; 2= Cash; 3= Don't know	
6	Do you want to cooperate to the project?	1=Yes; 2 = No.	
7	What are your concerns in terms of resettlement?	1 =Cash Compensation 2= Livelihood after resettlement 2. Livelihood after resettlement 3 = Dev. of Resettlement site 4 = Payment method	

		5 = Others	
8	Do you expect resettlement site? Any proposal of Resettlement site(RS) please specify with name of area and location:-----	1= Land for Land 2= Cash compensation 3= RS site in case of Housing loss	
9	Do you want to suggest income restoration program (IRP) for the project?	1 = Yes 2=No	
10	What kind of assistance do you think appropriate for the income restoration program (IRP)?	2= Technical advice 3=Extra money 4=Assistance for getting other Land 5=Managerial advice 6=Materials 7=Build the building 8=Skill training 9= Interest Free capital for start business 10=Banking loan Facilities 11=NGO Loan Facilities 12=Others(mention)	
11	If Livelihood training support expected what are the priority training choices?	1=Fish culture 2 =Fish breeding 3 =Fish Processing 4=Poultry rearing, 5=Beef fattening; 6=Rickshaw mechanics 7=Repairing of mechanized van (auto rickshaw) 8=Electrician Mechanics 9=Carpentry 10=Computer training for educated youths 11=Computer hardware training 12=TV freeze servicing 13=Garment sewing operator/ other garment training 14=Lathe machine operating 15=Small business 16=Driving 17=Mobile Servicing 18.health hygienic mobile food selling 19.Nursery business 20= Arabic training for willing to going abroad/English Speaking/ Language learning 21. Automobile servicing 22. Food business 23.Others (mention)	
12	Is the affected of primary source of income?	Yes/ No (Range)	

F. Impact on natural resources:

What will be the impact on natural resources of the proposed TOD project in your locality?

- (i) Fisheries ----- (ii) Cultivated land -----
(iii) Drinking water----- (iv) others-----

G. Part Impact on lifestyle

What could be the impact on your cultural, moral lifestyle due to the construction of TOD by a multinational company/ International Contractor

H. Part Impact on cultural resources

There may occur a vibration due to the construction activities if it occurs, will there be any impact on local mosque, temple, church or other religious place. And archeological sites if any(mention)

- i. Yes ii. No

I. Impact on Vulnerable People

Note: How these categories vulnerable people, Squatter/ Slum Dwellers(Bustee people/ Women/ Child and child labour/ Floating people/ Women headed household/ Households and People Below Poverty line/ Handicapped/ Homeless)

could get benefit from the project regarding construction activities, livelihood training/ skill training, social security, to get rid of income inequality, Sexually transmitted disease(STD), child and women trafficking, wage rate discrimination, sanitation and shelter etc.

1. Do any floating/ homeless people reside in the area- please quantify them Approx No-----
-----, what is the potentiality and scope of this people.-----

2. Is there any slum in this area, mention name :-----; approx Households:-----
-----; Major Occupation of the
slum people-----;

3. How could they be engaged in the project activities-----

-----;
4. How vulnerable child/women can get benefit (employment, education, shelter, drinking water facilities, health benefits, safety from the project?-----



B.2 FGD Attendance Sheet

Attendance Sheet
for
Focus Group Discussion (FGD)

Venue:.....

Date:.....

Sl	Name and Address	Representing Area Name	Sex	Occupation	Mobile	Signature
1						
2						
3						
4						
5						
6						
7						

B.3 FGD Preplan & Step

Development of Policy and Guidelines for Transit Oriented Development (TOD) of MRT-6, MRT-1 and MRT-5 North Lines

FGD Preplan and Step

Preparing the FGD tools/Equipment

The tools will be covered the project aspects. In the development stage the researcher should brainstorm to develop a list of questions and then prioritize which questions are of most importance. The questions should be open-ended because the intent of the focus group is to promote discussion.

Select the FGD Quantities

Focus groups do not use probability or random samples. Focus groups generally utilize convenience sampling. The sample for a focus group has individuals with characteristics of the overall population and can contribute to helping the research gain a greater understanding of the topic.

Hire the facilitators /Investigators

Should be hired the intelligent Investigators who has experience in field/FGD

Arrange the training facilities for facilitator also Logistics for FGD purposes

It is also important to organize the materials early. It can impact focus group discussion if the facilitator is anxious because materials are missing or purchased at the last minute. If the facilitator is anxious, this may make the participants uncomfortable and limit discussion.

Materials will need for both training session and during the FGD: Notebooks/ Clipboard/Pencil/ Eraser/ Sharpener etc.

Select the FGD Location

Mention the specific FGD places; it will be better select the location before contact with peoples

Contact with FGD participants person

Make a forwarding letter for participants before Fixed the date and ensured. A focus group is most effective with 7-12 participants. This is the optimal size to promote discussion and enable the facilitator to keep the group on task.

Fixed the Date/Time

Prepare the FGD plan

B.4 2nd Round FGD Outcome

**FGD Outcome
(Second Round)
of
Development of Policy and Guidelines for Transit Oriented Development (TOD)
of MRT-6, MRT-1 and MRT-5 north lines Project**

FGD Outcome of TOD Project

BETS has arranged 5 FGDs in Gabtoli Area for the TOD project and a diverse range of participants were present, including women, low-income communities, physically disabled senior freedom fighters, local representatives, and senior citizens. It is important to include the perspectives of different groups of people in the discussion of the TOD project to ensure that the project meets the needs of the community as a whole. It would be helpful to know more about the outcomes of these FGDs and how the feedback received will be incorporated into the planning and implementation of the TOD project.

Table 1: FGD Schedule

Type of FGD	Location of FGD in Gabtoli Zone	Date
1. Women Community	Gabtoli Bus Terminal	15 Feb, 2023
2. Low Income Community (LIC)	Gabtoli Bus Terminal	15 Feb, 2023
3. Physically Challenged Peoples	Muktijuddah Tower, Mirpur Road	15 Feb, 2023
4. Local Representative	9 No. Ward Councilor Office	16 Feb, 2023
5. Senior Citizens	9 No. Ward Councilor Office	16 Feb, 2023

Some Key Summary of FGDs are given below:

- Women participants said that they do not want the present bus terminal to be shifted to another location. If it is shifted, they will lose their jobs.
- If the TOD project is implemented, new job opportunities will open up.
- Create a daycare for children in the TOD area so that we can drop off the children in the morning and pick them up after work. Also, ensure that the daycare provides educational facilities for children.
- Provide separate toilet and bathroom facilities for women.
- Provide drinking water facilities in the TOD.
- When land acquisition is required, will you provide land at the government rate? They said no.
- The government sets the price of land considering Mouza Rate which is currently very low that the market rate of the same land. They agree to give the land if the price is twice the local market price.
- Prepare restrooms for transport drivers/bus helpers, etc., in the TOD zone.
- If they lose their jobs, they want compensation in the form of a job under the TOD zone.
- It will be better to place all the infrastructure of the TOD on the top of the soil. The lower areas can be used for other purposes.

- Provide a doctor in each TOD place for free treatment. Also, ensure that first aid is available.
- A medicine shop should be created in the TOD zone.
- Arrange for tree planting throughout the TOD zone; it will be good for the environment.
- Prepare a world-class design for this TOD project in Bangladesh.
- Implement a free rideshare (bicycle) system in the TOD zone.
- Keep the footpaths clean and ensure that they are wide.
- Systematically plant trees around the TOD area to improve the environment.
- Do not dump construction waste in the river; it will have a negative impact on the environment.
- Any problems that may occur between the start and end of the work should be well managed, such as the construction of boundaries on the sides of the walkways and structures. In case of damage to any house, shop, market, or any other kind, compensation should be given to the extent possible.
- The cost of land in Dhaka city is high, so the structure design should be made well to avoid improper use of the land.
- The proper maintenance of TOD should be contracted with the private sector to ensure good upkeep.
- During the construction of TOD, apply international types of machinery (ready-mix, etc.).
- Keep in mind that TOD travelers stay for a short time when planning.
- Deodorize river water to encourage people to use waterways.

Details outcomes of FGDs are given below:

1. FGD Targeted Community: Women

Table 2: Outcome from the FGD with Women Community

Type of FGD	Location of FGD	Date
Women Community	Gabtoli Bus Terminal	15 Feb, 2023
➤ Women participants said that they do not want the present bus terminal to be shifted to another location because they will lose their jobs if it does. ➤ If the TOD project is implemented, new job opportunities will open up. ➤ Ensure the security system throughout the area under CCTV surveillance. ➤ Ensure women's security in the TOD project. ➤ Ensure sufficient lighting at night. ➤ Create a daycare for children in the TOD area, so that they can be dropped off in the morning and picked up after work. Also, ensure educational facilities for the children in the daycare. ➤ Build a park for children and ensure modern facilities in the TOD zone. ➤ Do not dispose of construction material waste in the river. ➤ Medicine shop in the TOD zone. ➤ Provide masks for free as a safety measure. ➤ Create job opportunities for women during the construction work in the TOD zone. ➤ Ensure a feeding room for women in the TOD zone. ➤ Provide separate toilet and bathroom facilities for male and female. ➤ Provide drinking water facilities in the TOD zone. ➤ Control the floating population in the TOD area. ➤ Ensure proper dustbin facilities.		

- Provide first aid facilities.
- Provide compensation facilities for accidents that occur during work in the station/TOD area.
- Ensure women's wages are fair during TOD work.
- Travel time will be saved.
- Ensure a clinic/hospital in the TOD zone.
- Accidents will be reduced in the TOD zone.
- Distance to be traveled from one place to another will be reduced and education/establishment services will be extended.

2. FGD Targeted Community: Low-Income Community (LIC)

Table 3: Outcome from the FGD with Low Income Community

Type of FGD	Location of FGD	Date
Low Income Community (LIC)	Gabtoli Bus Terminal	15 Feb, 2023
➤ Concerns were raised by some bus workers about the potential loss of livelihood if passengers shift to using the TOD. They want to know what will happen to them if this happens. ➤ Participants emphasized the need to ensure that traffic does not become congested during the construction and operation of the TOD. ➤ Day laborers and rental house owners expressed concerns about potential job losses if the bus terminal is moved or demolished. ➤ Participants suggested that if the fare for the MRT is lower than that for buses, more passengers will use the MRT. ➤ The need for systematic parking facilities was emphasized. ➤ Participants suggested establishing a general shop and creating job opportunities in the TOD zone based on qualifications. ➤ Specific facilities should be provided for different types of shed stores in the TOD zone. ➤ Compensation should be provided to workers who suffer accidents during the construction of the TOD infrastructure. ➤ Safety issues during the construction and operation of the TOD should be ensured. ➤ Drinking water facilities should be provided in the TOD zone. ➤ Measures to mitigate air pollution, such as water spraying, should be implemented during construction work. ➤ Footpaths should be widened and made accessible to all. ➤ Participants agreed that if land acquisition is required, the government should provide land at market rate rather than government rate. ➤ Restrooms should be provided for transport drivers and bus helpers in the TOD zone. ➤ A workshop for car servicing should be established in the TOD zone. ➤ Participants suggested ensuring the availability of mobile charging ports in the TOD zone. ➤ Participants want compensation in the form of a job under the TOD zone if they lose their current jobs.		

3. FGD Targeted Community: Physically Challenged Peoples

Table 4: Outcome from the FGD with PWD

Type of FGD	Location of FGD	Date
Physically Challenged Peoples	Muktijuddah Tower, Mirpur Road	15 Feb, 2023
➤ Proper management of MRT can help reduce the use of private vehicles. ➤ Community friendly structures should be in the TOD. ➤ Emergency Medical facilities should be adopted. ➤ Medicine shops should be within the TOD zone. ➤ Ambulance services should be provided for emergency transportation of sick or injured people to and from the hospital. ➤ Establishing hyper market within the TOD zone. ➤ Implementation of MRT can help reduce traffic jams, travel time, and distance. ➤ Separate roads should be created for vehicles and rickshaws. ➤ Trees should be planted along the footpath, and medicinal trees can be used for environmental benefits. ➤ Entry of hawkers should be restricted, and the environment should be kept clean and beautiful while observing all social welfare rules. ➤ The footpath should be made wide enough for safe and convenient pedestrian movement. ➤ A prayer room should be provided within the TOD zone. ➤ Assistance should be provided to disabled people who use wheelchairs. ➤ Worker safety during the construction of TOD should be ensured through the use of modern equipment. ➤ Seating arrangements should be made by maintaining a safe distance. ➤ Adequate car parking facilities should be provided. ➤ All environmental rules should be followed during the construction of TOD. ➤ A seating system should be established within the park of TOD for people's convenience. ➤ Tree plantation should be arranged in the whole TOD zone for environmental benefits. ➤ Social issues during the construction work should be avoided. ➤ A world-class design should be prepared for this TOD project in Bangladesh.		

4. FGD Targeted Community: Local Representative

Table 5: Outcome from the FGD with Local Representative

Type of FGD	Location of FGD	Date
Local Representative	Councilor Office (Ward No. 9)	16 Feb, 2023
➤ Build book libraries, super shops, medicine corners, clothes corners, etc. at separate places within the TOD zone. ➤ Ensure proper utilization of acquired land in the TOD zone. ➤ Implement a free rideshare (bicycle) system in the TOD zone. ➤ Keep footpaths clean and ensure they are wide enough. ➤ Systematically plant trees around the TOD zone to improve the environment. ➤ Provide modern facilities in the waiting room of the TOD zone, such as seating arrangements, drinking water facilities, Wi-Fi, toilets, AC, etc. ➤ Implement the TOD project without breaking houses or other structures. ➤ Build the TOD project in empty places. ➤ Implement a continuous maintenance system in the TOD zone. ➤ Avoid dumping construction waste in the river to prevent water pollution and disturbance to aquatic ecosystem. ➤ Ensure that beneficiaries benefit from the project through timesaving, easy access to goods, park facilities, quick reach to target locations, etc. ➤ Follow safety measures during the construction period. ➤ Include a prayer room in the TOD zone. ➤ Set up a super shop within the TOD zone. ➤ Manage any problems that may arise during the construction period, such as damage to houses, shops, markets, or other structures by providing compensation where possible. ➤ Follow environmental policies during the construction work. ➤ Maintain a continuous security system in the TOD zone. ➤ Create new job opportunities within the TOD zone. ➤ Provide adequate facilities for the environment, such as free air passing. ➤ Address any issues related to land requisition/acquisition in accordance with the proper law. ➤ Ensure first aid facilities are available in the TOD zone. ➤ Implement a strong/continuous maintenance plan in the TOD zone. ➤ Ensure the presence of dustbins near the TOD zone and ensure their regular clearance. ➤ Provide multi-storied car parking in the TOD zone. ➤ Include schools/colleges/universities/hospitals, etc. in the TOD project, as it would be socially beneficial.		

5. FGD Targeted Community: Senior Citizens

Table 6: Outcome from the FGD with Senior Citizens

Type of FGD	Location of FGD	Date
Senior Citizens	Councilor Office (Ward No. 9)	16- Feb, 2023
➤ The design of the structure should indeed be made very well to ensure the optimal use of land and resources, and to avoid any negative impacts on the environment and local communities. ➤ Contracting maintenance to the private sector can be a good solution to ensure that the TOD is well-maintained and managed. ➤ While the main concept of TOD is indeed to encourage walking, it is also important to provide other modes of transportation such as biking, public transit, and car-sharing to accommodate the needs of all users. ➤ Ensuring waste bins and free Wi-Fi can indeed improve the experience and convenience of TOD users. ➤ Fish and agricultural production can be a valuable addition to the TOD, as long as it is done sustainably and does not cause any negative impacts on the environment and surrounding communities. ➤ Charging a small fee for bathroom use can help ensure that the facilities are well-maintained and clean. ➤ The government should follow fair and transparent land acquisition processes that do not disadvantage local residents. ➤ The use of international-standard machinery during construction can help ensure efficiency and quality. ➤ Proper planning for road access is essential for ensuring the safe and convenient movement of all users in the TOD area. ➤ Providing first aid facilities can help ensure the safety and well-being of TOD users. ➤ Encouraging the use of public transportation and waterways can help reduce traffic congestion and improve the environment. ➤ Providing a VIP sleeping/rest room can improve the experience and convenience of travelers. ➤ Proper waste management is important to maintain cleanliness and hygiene in the TOD area. ➤ Efforts should be made to minimize the inconvenience and negative impacts on the public during construction work. ➤ Widening other roads from the station can help ensure efficient and safe movement of all users. ➤ Ensuring that no construction waste is thrown into the river is important to protect the environment and maintain water quality. ➤ Developing a modern shopping mall can improve the retail experience for TOD users. ➤ It is important to ensure that any relocation of existing structures or businesses is done fairly and transparently, with adequate compensation provided to affected parties. ➤ Efforts should be made to mitigate the noise generated during construction to minimize disruptions to the surrounding community. ➤ Deodorizing river water can help encourage its use as a viable transportation option.		

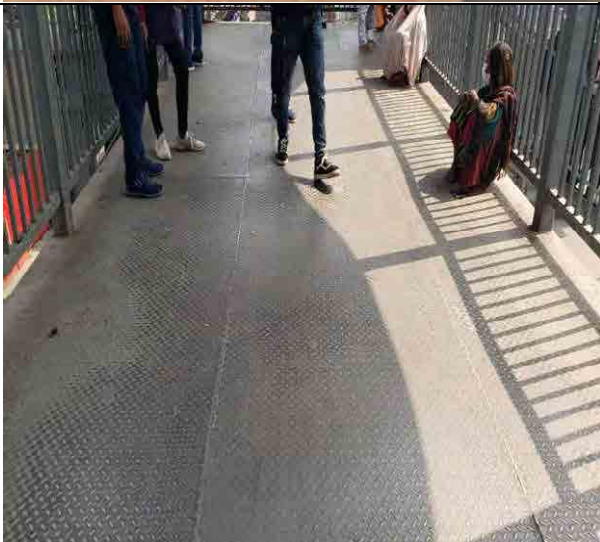
Annex-2: Photo Survey Report

Annex-2: Photo Survey Report

Photo Survey on Women and Disable Friendly Examples in Public Spaces

Conducted by: BETS Consulting Services Limited for TOD Project

SL #	Location	Photographs	Observation/Current Situation:	Further Recommendation could be considered /suggestion for such structures
1. Jamuna Future park and its premises				
1.1	Foot over bridge in front of Jamuna future park (Biggest shopping Mal in Dhaka City)		People use the foot over bridge to pass the road. In the photo, it is found that the entry of the foot over bridge is foot stair based and from the middle, the escalator started. This mixed technology to use the foot over bridge is not suitable for physically challenged people, passengers with heavy bags/trolley, Children, senior citizens, and women. Some of the PWDs and aged people use the foot over bridge as their begging place due to huge movement of the people. Also, lack of maintenance and cleanliness are observed.	It would be good to start the escalator from the footpath level and this structure could be user friendly for PWD. Cleanliness, proper maintenance should under consideration.

SL #	Location	Photographs	Observation/Current Situation:	Further Recommendation could be considered /suggestion for such structures
1.2	Footpath around Jamuna future park		It's a modern urban footpath with Tactile paving (detectable warning surfaces) to assist pedestrians who are vision impaired (blind) also good for other communities. It seems quite wider but remains dirty and the maximum part of this footpath remains occupied by hawkers.	Such facility could be wider in future with proper cleanliness and obstacle free measures.
1.3	Top of foot bridge in front of Jamuna future park		On top of foot over bridge: Seems to be user friendly for people	Top of such foot over bridge could be wider
1.4	Footpath at Jamuna future park premises		Clean and disabled community friendly walkway in Jamuna Future Park Shopping Mall Area though it is quite narrow and slow maintenance is seen. No Hawkers found in this shopping mall area.	If possible this type of footpath can be wider.

SL #	Location	Photographs	Observation/Current Situation:	Further Recommendation could be considered /suggestion for such structures
1.5	Secure Entry in Jamuna Future Park Shopping Mall		This system looks friendly and safe to people of different categories. Separate entry for Male and Female ensure hassle-free movement for the women	This type of facility/ system may be considered with future development as well
1.6	Physically Challenged & Vulnerable Community Movement in Jamuna future park		User friendly walkway, plain stair and escalator are available through the shopping mall. Physically challenged, vulnerable communities get the facilities here if they need that assistance.	Could consider the wide/ plain stairs and escalator for future construction

SL #	Location	Photographs	Observation/Current Situation:	Further Recommendation could be considered /suggestion for such structures
1.7	Jamuna future park premises other premises		The footpath is surfaced well with proper sloping (e.g. easy to operate wheel chairs). This footpath seems to be friendly PWD.	This feature may be considered in other relevant such facilities

2. Chef's table (A restaurant)			
2.1	Chef's table 100 fit (A restaurant)- random view		An integrated restaurant that considers food corner, nursing, feeding, prayer, proper greening (trees) with toilet facilities (male and female toilets separately) the same premises It will save the land size also can tree plant will be eco-friendly
	Chef's table 100 fit- random view		
	Chef's table 100 fit- random view		

2.2	Chef's table 100 fit- entry and exit point		This entry/exit sloped well that friendly for PWD.	Could consider this for future construction
2.3	Chef's table 100 fit- waste management		Well established waste bin	Such good practice can be included in public spaces
2.4	Chef's table 100 fit- accessibility		It is seen that, inside the Chef's Table, every type of people like physically challenged, senior citizens can easily access to the restaurants.	Could consider this for future construction

2.5	Chef's table , 100 fit- walkway and its surrounded view		"Chef's Table court side" is one of the trendy restaurants and country yard place which is very much clean and environmentall y reach. Wide walkway, enough parking space, security are available here. Children friendly area with a mini park.	Could consider this wide/tree planting etc. facilities in future
2.6	Chef's table , 100 fit- view with colourfull stuff that is attractive to children		Well established premises with good aesthetic views and attractive to children.	Could consider this wide for future construction
2.7	Chef's table , 100 fit- parking		Separate parking place	This parking seems to be eco- friendly, etc., could consider this for future parking

2.8	Chef's table , 100 fit- food counter		Foods zone in organized manner	Well maintained food zone
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3. Bashundhara Shopping Mall				
3.1	Bashundhara shopping center (Another big shopping mall in Dhaka City)- escalator		This upper/downer escalator seems to be friendly etc., because at a glance many peoples can move	Could consider this type of escalator for future such public spaces
3.2	Bashundhara shopping center- lift		Current Situation/Obser vations on lift area: The lifts look to be friendly for women and PWD.	Such facility can be considered for future public spaces

3.3	Bashundhara shopping center- Firefighting equipment		Emergency fire fighting equipment setting.	Such fire system with proper alarming can be considered for safety
3.4	Bashundhara shopping center-urinals		Urinal facility for male and sperate toilets are also there for women.	This type of facility may not be friendly to all type of PWD

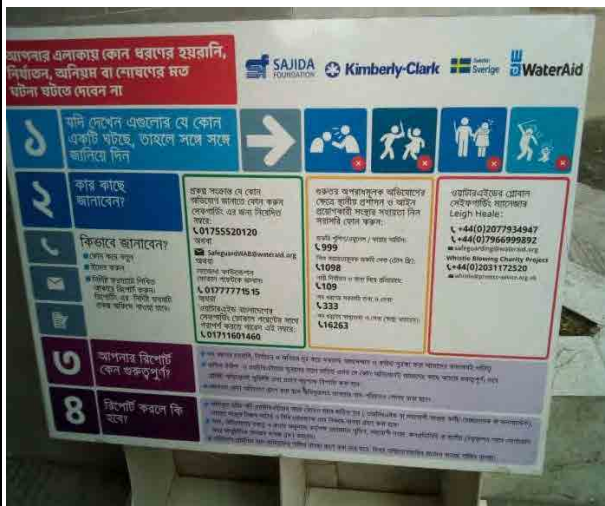
4. Walkway on the bank of river at Gabtoli area				
4.1	Gabtoli walkway on the bank of river- view of walk way		This walkway seems narrow and very much dirty (full of wastes alongside). Not eco-friendly and lack of maintenance. No security available and occurs hijacking sometimes.	This walkway is narrow for pedestrians. Not environment friendly because of lac k of maintenance . Tree plantation will be good to enhance the good quality local environment

4.2	Gabtoli walk way of river- stairs from walkway to river		Stairs from river bank to river that is used by the people for going to take bath as well as for washing purpose (e.g. cloths, others)	There is no consideration s for women or PWD with this stairs and bathing facility.
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5. Gabtoli Bus Terminal				
5.1	Gabtoli bus terminal- outside scenario		The surrounding spaces/ terminal premises are occupied by the hawkers.	To keep the area organized and user friendly operation and management systems need to be strong
5.2	Gabtoli bus terminal- waiting area		Waiting arealack wheelchair facilities for PWD was observed.	Waiting place lacks wheelchair facility for the PWD

5.3	Gabtol bus terminal-underground road crossing		The underground pedestrians' passage with adequate space.	Way of underground passage, stairs facilities are not friendly to women (security concern) and PWD. Could develop it with modern technology that is friendly to PWD and women
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6. Kamalapur Railway Station

6.1	Kamalapur Railway Station-emergency messages and signage		The following awareness board in the Kamalapur Railway Station is newly adopted and an appreciated work as per the statement of the passengers. The awareness board also containing some information about different security agencies and instructing to contact by any of the people who faces harassment or any other emergency incident in the area. But unfortunately it is seen in one place of the Station which could be increased.	This is very new in Bangladesh specially in the public transit/transport system. It can be considered in TOD in everywhere of the developed area.
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6.2	Kamalapur Railway Station-passengers' check-in gates		Gate of Check-in for passengers, no separate gates for men, women or PWD, not with adequate space.	The Check-in corridor is not friendly for women, PWD and the gates are too narrow Gate space needs to be wider
6.3	Kamalapur Railway Station-mosque in its premises		The mosque in rail station premises and the view of it's entry/ exit gate.	The entry/exit is not friendly for PWD. Could make plain stairs for PWD through which they can move easily
7. Bangabandhu Sheikh Mujib Medical University Hospital				
7.1	BSMMU (Bangabandhu Sheikh Mujib Medical University Hospital), Shahabag- toilet facility		The view of toilet facility	The toilet facility system seems to be hygienic and friendly.

7.2	BSMMU (Bangabandhu Sheikh Mujib Medical University Hospital), Shahabag- entry gate		Gate system at BSMMU	Along with large gate, a small separate gate could be considered for PWD.
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8. Sayedabad Bus Terminal				
8.1	Sayedabad bus terminal- drinking water supply		Provision of safe drinking water system	The drinking water system seems to be hygienic and friendly. Such facility needs to be considered for such public spaces.
8.2	Sayedabad bus terminal- baby care corner		Clean and user-friendly Baby Care Corner and Practicing newly in our country specially in Public Places like Bus/Train Station.	This needs to be established in public spaces where required.

Annex-3: Minutes of three Stakeholder Consultation Meetings

Annex -3: Minutes of three Stakeholder Consultation Meetings

Minutes

1st Stakeholder Consultation Meeting (Uttara Center TOD and Gabtoli TOD Focused)

Subject : Environmental and Social Considerations in Transit Oriented Development (TOD)
Project Name : Project for Development of Policy and Guidelines for Transit Oriented Development (TOD) along Mass Transit Corridors

Date: - 24th March 2022

Venue - Emmanuelle's Convention Hall

Attendance/Participant's list: Attached at the end

Welcome Speech:

Project Director Mrs. Mahfuja took the chair along with Mr. Rassel, Mr. Yushimora and Mr. Towfiq. She welcomed all the participants and instructed Mr. Towfiq to conduct the program. Mr. Towfiq appreciated the participants and requested to the Team Leader (SEA part) to share something about the project. Team Leader Dr. Latif mentioned that we are working for preparing Environmental and Social Guidelines for the TOD. As TOD is new in Bangladesh, and there is no defined guidelines for the TOD, it will be a challenge but hopeful to make it successful.

Presentation:

Mr. Md. Abdul Motaleb (Urban Planner- TOD): Presentation on TOD Concept and BD-TOD

He started presenting on TOD Concept. He described TOD and the TOD in Bangladesh with some graphical illustration to make it easier for the participants. He completed his session wishing the implementation of TOD soon in Bangladesh which may be a helping hand for mitigating the traffic jam.

Mr. Mir Towfiq Hussain (Environment Specialist): Presentation on Environmental and Social Considerations

Mr. Towfiq started his presentation on Environmental and Social Considerations in TOD for the future policies and guidelines for TOD. In the presentation, he emphasized on the major purpose of the project, and mentioned that as the project is not implemented yet, TOD based policies and guidelines will be formulated from this project. As TOD is new in Bangladesh, he sought attention and requested audience for attending an open discussion session after the presentation which may help for the guidelines. Mr. Towfiq completed his session by welcoming all participants to the next open Q&A Session.

Open Discussion and Question and Answer (Q&A)

Mr. Mohiuzzaman Quazi (Urban Transport Expert):

Mr. Quazi appreciated RAJUK for stepping ahead to the TOD in Bangladesh though its late he said. He emphasized on Paratransit, Feeder Bus Service to other transport modal and to consider all the components of TOD like cycling and walking facilities.

He also mentioned to have the proper integration with other transport-oriented projects nearby the TOD facility area.

Mr. Quazi also talked about cost recovery modality in TOD. He also said that, as we are expecting that the MRT will bring positive impact in traffic system but perspective of our country is different, that's why TOD should be customized.

The most importantly, passenger arrival and departure facility must be in organized transport services and if there is a need to consider any possible measures, we should study and define the impacts before implementation of TOD.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated Mr. Quazi for his valuable opinion as a senior expert in transportation sector. She requested JICA Study Team to consider paratransit, feeder transport with other modal integration, recovery cost, bus route rationalization and the other components of TOD in this study.

11:49 AM

Md. Farid Ahmed (Councilor DNCC Ward 52):

Mr. Farid suggested to consider all required development related to TOD in Uttara Central MRT Station as the land is acquired by the MRT Authority because, if once the development is started then the modification is quite impossible. He shared that people's sufferings due to water logging need to be minimized and requested to consider the waterlogged area in Ward 52 during any development plan by RAJUK which may bring positive changes for the area. Drinking water crisis are still a problem in the areas he mentioned too.

He wishes as an elected local peoples' representative that any development plan should be beneficial for the mass people.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja said, water logging is a big problem and will be addressed in any development and requested to JPT to reflect people's considerations as per Mr. Farid and considerations understood from the FGD in that area.

11:55 AM

Mohammad Kamruzzaman (XEN- DESCO):

Mr. Kamruzzaman said, there are different utilities lines in the TOD areas. He requested to have the common utility duct to be provisioned to reduce government costs for the relocation. He also mentioned that the roads are dug often and if we can consider it in TOD, it will reduce people's sufferings. Construction works have the influences to increase traffic jam which need to be considered, he also said.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja said that the coordination with different organizations and the projects is a big problem in Dhaka City which increase the sufferings in the field level. She also agreed that the common utility duct needs to be considered and requested JPT to consider in TOD.

11:58 AM

Nurunnahar Mili (Architect and Urban Planner):

Mrs. Nurunnahar expressed her opinion on the 500m influence area of TOD and asked which planning will encourage people/passenger for a walk for 10 minutes to roam to other facilities. She said that this may not work for always and questioned to BD-TOD that how they will minimize it.

She also mentioned that all the development should not be on grounds level, some may be elevated or underground.

She emphasized on elderly persons' need who are not always able to move easily in public spaces and it is an important issue that needs to be considered and modern facilities for elderly persons need to be implemented. She talked about lack of seating arrangement along the walkway where people are walking for a while but can't avail a seating space which is important specially for the senior citizens. She suggested to consider these issues in TOD along with other two issues like bins setup, and consideration for the beggars at the same time.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja requested JICA Study Team (JST) to take notes about all the important points addressed by Mrs. Nurunnahar and asked to consider these in the design phase of TOD.

12:05 PM

Atiar Rahman (Executive Member- SCS):

Mr. Atiar said that some problems may be raised from any development, and it can be compromised. Environment and social issues arise always which makes sufferings (??), and it must be consider for any development project like TOD.

He suggested to consider the smooth access, transit and separate seating arrangement for the elderly persons in public transport.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated and agreed to consider these issues in TOD.

12:08 PM

Sultan Ahmed (SE- BADC):

Mr. Sultan suggested to consider TOD in the available under developed areas where there is opportunity to implement it with balanced plan like Purbachal. He also addressed the traffic jam and the traffic control in any intersection like Mohammadpur Bus Stand intersection. He emphasized on developing not only at ground but also for the elevated and underground development to ensure less disturbance on cultivated (??) lands.

Most importantly he talked on lack of integration among all stakeholders, and he requested the close cooperation among them to avoid people's suffering which we are facing sometimes from different projects.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja requested to the stakeholders to be cooperative and asked JST to address the issues in the TOD; though all problems can not be solved from this project, she added.

12:15 PM

Md. Moshir Rahman (Joint Secretary- DMTCL):

Mr. Moshir said that the increasing number of private cars uses will be decreased if we can have the better and quality public transport services which will help to decrease the traffic jam. He

mentioned that, if the TOD is planned and guided by the BD Government policies, TOD will bring blessings in transport system.

Mirajul Moin Joy (International Secretary- NISCHA):

Mr. Joy raised the Rickshaw issue whether he requested to consider the need for provision of Rickshaw. He also questioned cycling in TOD areas and proper management of public transport as well.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja said, Rickshaw is part of our culture and we have to consider them in our plan with proper management. Besides, cycling is encouraged all over the world due to its health benefit as well. She added traffic management is part of TOD in TOD influence Area.

12:22 PM

Ilias Kanchan (Chairman- NISCHA):

Mr. Ilias mentioned that no development project authority gives public awareness on the projects which make the mass people confused and it remains until the operation level. That's why people becoming more pessimistic about any development projects. He said that project details must be presented with positive and negative effects at least in the project area so that people are aware and can plan on the basis of it. He also emphasized on increasing coordination among the stakeholders and project implementation authority concerned department. Due to this sometimes the project is hampered with increased cost.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja said, that's why we are arranging this kind of seminar is to share our idea about the project and know the stakeholders' perspective. We highly encourage the stakeholders to join the program.

12:31 PM

Md. Farid Ahmed (Councilor DNCC Ward 52):

Mr. Farid requested to consider any circular transportation system along with the MRT stations in Uttara.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja said, a feeder bus system is under consideration in Uttara centre station.

12:33 PM

Md. Rafiqul Islam (SE & PO- DWASA):

Mr. Rafiqul mentioned about lack of coordination among the departments and as TOD is a big issue, the continuous stakeholder communication should be under consideration. FGD or stakeholders' consultation are different and stakeholder selection is important in consultation he added. He also said that the environmental, social, technical, institutionalization, planning, policies and guidelines, fund accommodation, implementation, monitoring and evaluation issues and any other related issues should be integrated properly in TOD. Though TOD would have before the MRT, he expressed his hope that Dhaka city people will be benefited. He finished his speech mentioning the importance of utility in any project and he said, without considering this, nothing can be sustainable.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated Mr. Rafiqul for mentioning the important issues and agreed to talk with every segment of stakeholders for a sustainable solution.

Md. Masud Alam (Deputy Director- BRTA):

Mr. Masud said that the people are used to adopt the new mode of transport and set the example of Mishuk which is no more in service in Dhaka city after the introduction of CNG as an alternative of it considering the environmental aspects. He mentioned that if we can arrange a sustainable TOD development and the development of existing road transport infrastructures availing clean footpaths, cycle lane, creating green space along the roads people will except the environment friendly public transport system.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated and agreed to consider these issues in TOD.

12:44 PM

Major Jahangir (GM- BRTC):

Mr. Jahangir informed that the BRTC is also approaching to update the bus services as well as they are also ready to cooperate BD-TOD if required. He was also interested to know the if there is any example of TOD development in similar countries like India to ensure about the reality and success in terms of objectives.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated Mr. Jahangir for showing interest of cooperation. She mentioned about Delhi TOD of India, they have developed the guidelines but yet to check the results implemented and RAJUK is also trying to check their experiences in this project.

12:47 PM

Mohd. Nasiruzzaman (FOA RAJUK Uttara)

Mr. Nasiruzzaman said that the maximum density needs to be defined and for the development also needs to consider the City's capacity.

Md. Kamrul Islam (Director- Dept. of Social Service):

Mr. Kamrul mentioned that the DSS is already started working with beggars to rehabilitate them. DSS can be a helping hand to have information and suggestion about PWDs and their required facility as DSS working on it from the beginning. He requested to consider social aspects accordingly in TOD in TOD's policies.

Mrs. Mahfuja Aktar (Project Director- TOD):

Project Director Mrs. Mahfuja said, pictorial information on exit, entry, project on people, PWDs track etc. for awareness will be in the TOD areas.

Closing Speech:

At the end of the stakeholders meeting, Project Director Mrs. Mahfuja thanked the participants and expressed her expectation for continuous cooperation in future in the TOD project. She also requested to keep in touch and cooperate like this and invited cordially for the next stakeholders meeting.

Participants List

SL NO.	Name	Designation	Name of Company
1	Md Joynal Abedin	Assistant Engineer	DESCO (Shah Ali zone)
2	Rakibul Islam	Assistant Engineer	DESCO (Uttara West Zone)
3	Mohammad Kamruzzaman	Executive Engineer	DESCO (Khilkhet, Nikunja-2)
4	Md. Rafiqul Islam	Additional Chief Engineer	(DWASA) Dhaka Water Supply & Sewerage Authority
5	Most. Jesmin Aktar	Assistant Director	(DOE) Department of Environment
6	Sultan Ahmed	Deputy Chief Engineer	(BADC) Bangladesh Agriculture Development Corporation.
7	Md Mizanur Rahman	Deputy Urban Planner	(DTCA) Dhaka Transport Coordination Authority
8	Md Moshir Rahman	Joint Secretary	(DMTCL) Dhaka Mass Transit Company Limited
9	A.B.M Zakir	ADC Traffic Police	Gulshan Thana
10	Md Saiful Islam	Assistant Engineer	(DNCC) Dhaka North City Corporation
11	Md. Masud Alam	Deputy Director	(BRTA) Bangladesh Road Transport Authority
12	Md. Kamrul Islam	Director	(DSS) Department of Social Services
13	MAG Jahangir	GN (Technical)	BRTC
14	AKM Rezaul	Environment and Social Expert	JST NKB
15	Mr. Elias Kanchan	Chairman	Nirapad Sarak Chai (NISCHA)
16	Mirajul Moin Joy	International Secretary	Nirapad Sarak Chai (NISCHA)
17	Md Farid Ahmed	General Councilor	Councilor- DNCC Ward No 52
18	Nurunnahar Mili	Senior Urban Planner/ Architect (Female)	Urban Planner/ Architect
19	Mohiuzzaman Quazi	Transport Specialist	Ex-World Bank Staff
20	Mohd. Nasiruzzaman	President	Flat Owner Association, RAJUK, Uttara
21	Md. Atiar Rahman Chowdhuri	Executive Member	The Senior Citizens Society, Uttara
22	Mr. Samsuddin Sentu	Founder Bazar Samiti	Mirpur Bara Bazar Baboshahi Multipurpose Cooperative Society
23	Maleka Rahman	Resettlement Specialist	BETS
24	Syed M Latif	Team Leader	BETS
25	Mahfuja Aktar	PD, TOD	RAJUK
26	Rawnak jahan	PM, TOD	RAJUK
27	Md. Abdul Motallib	Urban Planner	Nippon Koei Bangladesh Ltd.
28	Taichi Yoshimura	Architect and Station Facility Expert	BD-TOD
29	Rieko Sasaki	JICA TOD	BD-TOD

Photo 1: Before Starting the Seminar



Photo 2: &A Session





Photo 3: Q&A Session



Photo 4: Project Director Sharing and Answering in Q&A Session

Minutes
2nd Stakeholder Consultation Meeting (Uttara Center Station TOD Focused)

June 2, 2022 10:00-12:00

Moderator: Mir Towfiq Hussain

Mr. Towfiq welcomed all the participants as a moderator. He requested The Project Director (PD), TOD Project, RAJUK to take her sit as chair of the second Stakeholder Consultation Meeting (SCM) and requested the Team Leader (TL) of TOD Project of JICA Study Team (JST) J and TL of TOD Project (Environment and Social Considerations Survey Team) of BETS and Sr. Urban Planner of JST to take their sits in front desk. After that, Mr. Towfiq also took his sit in front desk and requested to the PD to give her welcome speech.

Welcome Speech:

As chair of the second SCM, the PD gave opening remarks and a brief on the project to the participants. Later, she requested to start the session as scheduled.

Mr. Md. Abdul Motallib (Urban Planner- TOD): Presentation on TOD Concept and TOD in MRT Uttara Center Station

He started presenting on TOD and its establishment in Bangladesh. He described about the possibility and challenges of BD TOD in MRT Uttara Center Station. He requested to the stakeholder for their best suggestions to success this project.

Mr. Mir Towfiq Hussain (Environment Specialist): Presentation on Environmental and Social Considerations on TOD in MRT Uttara Center Station

Mr. Towfiq started his presentation on Environmental and Social Considerations in TOD for the future policies and guidelines for TOD in MRT Uttara Center Station. In the presentation, it As part of the findings of situation analysis, baseline environmental and social conditions of MRT Uttara center TOD area was shared. All the possible environmental and social impacts were discussed in detail for the TOD construction and implementation in MRT Uttara Center TOD areas. Environmental and Social impacts were discussed showing 3 alternatives where 3 different level of influences were shown.

After completion of the presentation, moderator requested to the participants to give opinion in open Question and Answer (Q&A) session on TOD in MRT Uttara Center Station which may help for the development of TOD guidelines and policies.

Question and Answer (Q&A)

Mr. Mohiuzzaman Quazi (Urban Transport Expert):

Mr. Quazi appreciated RAJUK for stepping ahead to the TOD in Bangladesh though RAJUK is not the right authority to initiate this development. He suggested to form a steering committee as soon as possible. He thinks that private sector will be involved as well in this project soon and this is high time to make policy for them from the Government so that it will be under control. He also requested to consider which stations will be under TOD and if it is not decided yet, it is must to take decision early. TOD based stations are special and need proper planning for the passenger's entry-exit as per the

demand. Mr. Quazi stated that there is a doubt if we can meet the demand of the passengers in Motijheel during morning and evening.

He also mentioned that the multi-modal hubs need to be identified among all the stations. He also requested the Project Director to involve Bus Owners Association in this project.

Mrs. Mahfuja Akter (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated Mr. Quazi for his opinion. She assured that, there is a committee where different government organization representatives are the members of that committee. Private sector engagement and such issues are needed to be coordinated by DMTCL as they are the authority for MRT related issues.

Md. Abu Baker Siddique (Secretary General: The Senior Citizens Society):

Mr. Siddique requested to consider the following issues for the different age groups and conditioned group of people.

- Separate sitting facilities for Senior Citizen in Mass Transport
- Separate sitting facilities for Pregnant women
- Separate sitting facilities for the Mother with Baby
- And other sitting arrangements keep as well
- Separate lift and ticketing counter services for senior citizen and women

Mrs. Mahfuja Akter (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated Mr. Siddique for thinking facilities for the Pregnant women and Mother with baby as no one think earlier. She requested to JST for adding in the policy if possible.

Mohd. Nasiruzzaman (President: Flat Owner Association, RAJUK, Uttara):

Mr. Nasiruzzaman requested to connect Uttara 3rd Phase residential area and the Uttara Center station with a shuttle bus service.

Nahmul Haque (Urban Planer: DTCA):

Mr. Nahmul agreed with Mr. Nasiruzzaman's statement and he shared some examples on extra options to connect the TOD-based MRT station with the surrounding residential groups. He stated that, Monorail, LRT, Shuttle Bus can be added to transport the nearest residents to the stations. He said, it is not mandatory to connect only the Uttara Center station, it can be done for the Uttara North and Uttara South stations to satisfy the passengers' demand of the MRT which will be helpful for smooth the operation in TOD station.

Mrs. Mahfuja Akter (Project Director- TOD):

Project Director Mrs. Mahfuja agreed to set this kind of facility for seamless movement to/from the TOD station. She also appreciated Mr. Nasiruzzaman and Mr. Nahmul for their valuable suggestions.

Md. Akramul Islam (Superintendent Engineer: DESCO):

Mr. Akramul pointed some issues as following which can be taken under considerations for the policy making of TOD.

- Planning needed from now to reduce traffic jam in the TOD area
- Space for sub-station must be occupied if it is not done yet because allocated space is not adequate
- Electricity is very important for any project but if land is not available, how DESCO will facilitate to the concerned authority is a matter to think
- It's needed to make easier land allocation for Power

Mrs. Mahfuja Akter (Project Director- TOD):

The PD Mrs. Mahfuja appreciated Mr. Akramul for his suggestions and The PD requested him to contact RAJUK for any further requirements regarding this issue.

Md Saiful Haque (Deputy Commissioner of Police: DMP Uttara)

Mr. Saiful suggested followings to take under considerations:

- Multi-storied parking facilities due to scarcity of land and to reduce traffic jam
- Shuttle Bus Services among different important location like Airport
- Considerations on Safety and Security during construction and operation

Mrs. Mahfuja Akter (Project Director- TOD):

The PD, Mrs. Mahfuja appreciated Mr. Saiful for his suggestions and PD requested DMP to attend all the regular meeting association with this. As an important stakeholder, suggestions from DMP are necessary.

Mohammad Saifuddin (Superintendent Engineer: RHD)

Mr. Saifuddin mentioned some good points on TOD in MRT Uttara Center. He gave emphasis on to consider environmental and social issues in TOD area as well as on connectivity. Points raised by him are:

- Planning should consider that how traffic jam can be controlled here as it is the center station
- What will be the environmental impact, mitigation policy and social issues like passenger movement, facilities throughout the area
- Connectivity with other Mass Transit like BRT, Inner Ring Road, DEE, DAEE etc. need to be considered
- Traffic flow from adjacent area will be a challenge to monitor properly to reduce traffic jam.

Mrs. Mahfuja Akter (Project Director- TOD):

The PD Mrs. Mahfuja agreed to the points stated by Mr. Saifuddin and the PD requested JST to take these points under considerations in the policy.

Nozomi Hishida (Team Leader: TOD JST):

Ms. Nozomi Hishida, Team Leader, TOD Project6, JST, thanked to all the participants for making the 2nd SCM successful. She also requested to join the upcoming SCM as well to share the participants' views on TOD.

Closing Speech:

At the end of the stakeholders meeting, The PD Mrs. Mahfuja thanked to the participants and hoped for the cooperation in future for the TOD project. She also requested to keep cooperate like this and invited cordially for the 3rd SCM. She believes that if the participation is done lively then many ideas, views can be shared and it will be beneficial for the policy development.

Participants List:

SL NO.	Name	Designation	Name of Company
1	Mahfuja Aktar	Project Director, TOD Project	RAJUK
2	Rawnak Jahan	Project Manager, TOD Project	RAJUK
3	Nozomi Hishida	Team Leader, TOD Project, (JST)	Nippon Koei Ltd.
4	Md. Abdul Motallib	Sr. Urban Planner , TOD Project, (JST)	Nippon Koei Bangladesh Ltd.
5	A. K. M. Rezaul Haque Khan	Environmental and Social Considerations Expert , TOD Project, (JST)	Nippon Koei Bangladesh Ltd.
6	Syed M Latif	Team Leader (BETS Part)	BETS
7	Mir Towfiq Hussain	Environmental Specialist	BETS
8	Maleka Rahman	Resettlement Specialist	BETS
9	Husni Mobarak Prince	Geospatial Analyst	BETS
10	Most. Jesmin Aktar	Assistant Director	Department of Environment (DoE)
11	Engr. Sukhdev Dhali	Deputy General Manager (Operation)	BRTC
12	Md. Mohammad Monzur Morshed	Additional Deputy Commissioner	Uttara DMP
13	Mohammad Saifuddin	Superintendent Engineer	RHD
14	Md. Masud Alam	Deputy Director	BRTA
15	Md Moshir Rahman	Additional Secretary	Dhaka Mass Transit Company Limited (DMTCL)
16	Md. Mosarraf Hossain	Social Services Officer	Department of Social Services
17	Md. Nayeab Ali	Deputy General Manager	BRTC
18	Md. Abdul Khaleque	Superintendent	Nayanagar Nesaria Dakhil Madrasah
19	Md Saiful Haque	Deputy Police Commissioner	Dhaka Metro Politon Police
20	Md. Harun or Rashid	Assistant Engineer	DNCC
21	Md. Akramul Islam	Superintendent Engineer	DESCO
22	Md. Abu Baker Siddique	Secretary General	The Senior Citizens Society
23	Md. Nahmudul Haque	Urban Planer	DTCA
24	Mohiuzzaman Quazi	Transport Specialist	Ex-Wolrd Bank Staff
25	Md. Rezaul Alam	Environment and Social Expert	JST NKB
26	Md. Tanvir Ahmed	Lecturer	World University
27	Rokshana Parvin	Lecturer	World University
28	Mohd. Nasiruzzaman	President	Flat Owner Association, RAJUK, Uttara
29	Annesha Das	Executive Engineer	RHD
30	Rakibul Islam	Assistant Engineer	DESCO

Some Photographs:









Minutes
3rd Stakeholder Meeting (Gabtoli TOD Focused)
31st January 2023
(Start: 10:30 A.M. End: 01:10 P.M.)

11:00 AM

Mir Towfiq Hussain (Moderator)

Mr. Towfiq welcomed all the participants as a moderator. He requested The Project Director (PD), TOD Project, RAJUK to take her sit as chair of the second Stakeholder Consultation Meeting (SCM) and requested the Team Leader (TL) of TOD Project of JICA Study Team (JST) J and TL of TOD Project (Environment and Social Considerations Survey Team) of BETS and Sr. Urban Planner of JST to take their sits in front desk. After that, Mr. Towfiq also took his sit in front desk and requested to the PD to give her welcome speech.

11:05 AM

Welcome Speech:

As chair of the 3rd Stakeholder Communication Meeting (SCM) and Project Director, Mrs. Mahfuja Akter welcomed all the guests as well as given opening remarks. All the participants introduced each other before starting the presentation. Later on, PD given a brief on the project to the participants and requested to start the session as scheduled.

11:15 AM

Mr. Mir Towfiq Hussain (Environment Specialist)

Before starting the formal presentation, Mr. Towfiq requested to Mr. Abdul Motallib to say some key observations on three alternatives of Gabtoli TOD to the participants.

11:17 AM

Mr. Md. Abdul Motallib (Urban Planner- TOD): Described on options of Gabtoli TOD

He started by thanking all the participants and informed that the JICA Study Team (JST) has been working on Gabtoli for the past six months. We have done the exiting landuse analysis on Gabtoli North and South parts and the North side has very congested compared to South of the Gabtoli Bus Terminal. We usually do this analysis within 500 meters of the MRT station. For Gabtoli TOD, alternatives analysis has been carried out based on the following three options:

Alternative 1: Development based on the land use plan as do-nothing case.

Alternative 2: In addition to the above Alternative 1, feeder bus services will be developed to connect with Uttara Phase 1 and 2 developments to bring commuters. Bus stop will be along the road as the other bus stops in the city.

Alternative 3: Instead of Alternative 2 of feeder bus stops along the roads, a station plaza will be developed in front of Uttara Center Station.

11:25 AM

Mr. Mir Towfiq Hussain (Environment Specialist)

Before starting the presentation, Mr. Towfiq invited Team Leader (BETS Part) of this project to give his speeches on the progress of the project.

11:27 AM

Syed M. Latif (Team Leader)

He stated that the options for Gabtoli TOD are considered and three have been mentioned, two of which have been analyzed. The environment and social team noted all the potential difficulties and issues during their observation. To address these, he invited Mr. Towfiq to start the presentation.

11:30 AM

Mr. Mir Towfiq Hussain (Environment Specialist)

Mr. Towfiq started his presentation on Environmental and Social Considerations in Gabtoli TOD for the future policies and guidelines for TOD in Bangladesh. He presented the three alternatives of TOD development in Gabtoli and all the possible environmental and social impacts in Gabtoli TOD area. He ended the presentation thanking to the participants.

11:40 AM

Mrs. Mahfuja Akter (Project Director)

She expressed her gratitude towards Mr. Towfiq once more for his impressive presentation. She mentioned that the policy making is in the very early stages and most of the stakeholders are the members of the policy making committee. She also stated about the importance of Kallyanpur retention pond and keep this as it is in the development of the project. She given a clear concept about the existing landuse and the future plan in Gabtoli area where the north side of the Gabtoli is a challenge to make the sustainable project development. The South part requires integrating existing and upcoming projects, which poses a significant challenge in coordinating the different project plans of various organizations and government departments. She then moved to the importance of sharing opinions and experiences from various experts and stakeholders.

Question and Answer (Q&A)

11:50 AM

Mr. SM Saleh Uddin (Transport Expert & Consultant):

Mr. Saleh Uddin thanked to JICA Study Team (JST) and BETS for organizing such a productive discussion on TOD. He mentioned that while many good promises had been made in the past, most of them had not been fulfilled. In regard to TOD, he pointed out that not only the station will be closed to the residents, but various amenities will also be accessible in the vicinity. He also emphasized on pedestrian facilities improvement, car control, green space and open space allocation along stations and TOD area. He ended his speech by hoping that the bus route rationalization will be under consideration and this TOD project would not suffer the same fate as other important projects that were supposed to be started but never were.

12:00 PM

Mr. Md. Mujahidur Rahman (Deputy Director, DoE):

Referring to Mr. Saleh's speech, he stated that Dhaka is frequently ranked as the most polluted city in the world. Therefore, the implementation of TOD must consider environmental development. The 28% water bodies in the proposed area must be kept as it is to save the environment. There are some definitions for the heavily polluted Buriganga River in the ECA, that must be addressed. The problem of noise pollution must also be addressed in the TOD process. He emphasized the importance of balancing development with environmental preservation and ended his speech.

12:05 PM

Mrs. Mahfuja Akter (Project Director- TOD):

Project Director Mrs. Mahfuja appreciated Mr. Saleh and representative of DoE for sharing their valuable information. She requested to JICA study team to address the possible important points those are described by Mr. Saleh and Mr. Mujahidur.

12:07 PM

Mr. Moshir Rahman (DMTCL):

He gave his opinion in two parts.

Firstly, he emphasized studying the environmental and social baseline situation, during the construction and post-construction stages. He believes that this will bring the actual scenario of the environment and social condition that will help to make a sustainable policy guideline for TOD otherwise the presented data may hamper the situation in the future during and post-construction period for the area that is proposed here.

Secondly, the unplanned development in the north side of Gabtoli must be controlled from today and if RAJUK as an authority cannot make it possible, they should give the charge to DNCC that may bring the desired results. Also, it can be considered in the future while arranging this kind of program near the proposed facility area where the guests can reach to the venue using public transport.

At the end of his speech, he requested to consider the upcoming traffic congestion during the construction period and make a plan for it to cope.

12:12 AM

Mr. Mohiuzzaman Quazi (Urban Transport Expert):

He started emphasizing an integrated multi-modal transport system along with the TOD if it is needed to make the TOD successful in Bangladesh. This system also can be part of the plan and can be considered under the TOD policy in Bangladesh. He also agreed with Mr. Saleh's statement and requested to emphasize pedestrian facilities and low car allocation in the TOD area. He added that the very popular skywalk can be adopted in the MRT stations and in the proposed TOD areas to avoid congestion. He also stated that this is not a criticism but a suggestion that the current passenger movement system along the MRT stations will increase the congestions and accidental cases which can be mitigated by planning skywalks in those places.

12:15 PM

Syed M. Latif (Team Leader)

He agreed with Mr. Quazi that he emphasized the need for an integrated approach and a clear basic concept for TOD. He acknowledged that there is a lack of coordination among various government institutions and that this needs to be improved. He also highlighted the importance of considering the territorial impact of the concept. He gave the example of how department stores are linked to stations in cities like Bangkok and Singapore. However, he stressed the importance of honesty and highlighted the need to address the mindset of the Ministry of Education and the DNCC in order to achieve this vision.

12:18 PM

Nurunnahar Mili (Architect and Urban Planner)

She mentioned that large water bodies and medium-sized water bodies should be incorporated into the project as they can help solve other fire-related issues. She stressed the importance of a total

planning process, including consultation, for the successful implementation of a project. She also suggested that development should be done around the level sources and emphasized the need for green spaces, including green layers, variation in color, and flowers.

She suggested emphasizing vibration as a part of pollution and requested the addition of water moisturizer technology to mitigate air pollution in the design.

12:22 PM

Mrs. Mahfuja Akter (Project Director- TOD)

She agreed to the skywalk development in TOD along the station areas. PD stated that, TOD in Uttara Center, they have a skywalk in the design as well they have the proposal for Gabtoli TOD. She also said that all the waterbodies and the retention pond area will be kept as well in the planning though there are other development plans by RAJUK to make it sustainable. She also suggested to the consultant to consider vibration as a pollution. She agreed to Mrs. Mili about the use of moisturizer technology and requested to JST to study on it further for Gabtoli TOD.

12:25 PM

Md. Mijanur Rahman (ADC Traffic Mirpur, DMP)

Traffic diversion plan during construction must be considered. Development of pedestrian facility. Local people sufferings should be under study and must be addressed the mitigation plan. Please, do plan considering the well safety and security measures to avoid unwanted accidental issues. It is difficult to plan in the city's entry and exit point and as we have to continue this important development project, we must do a well traffic circulation plan in that area considering the primary and feeder roads to avoid the severe traffic jam during the construction period. He requested to plan to emphasize on pedestrian facility so that people can walk freely to reach their destination within a short distance. It is not desired to plan like MRT 6 Mirpur 10 station where station stairs are on the footpaths as a result is no accessibility on footpaths for the people. Please, also consider the construction dust which severely impacting to the local people which can be mitigate by spraying water in the project area. He ended his speech requesting to keep the police box under the planning and design.

12:29 PM

Nurunnahar Mili (Architect and Urban Planner)

She added with ADC DMP Mirpur, that the police box is part of basic needs, and it is obvious to consider in the planning as important structures under utility and essential structures. As far as I remember that I kept police box with all the required facilities in the Bus Terminals design under the bus terminal project.

12:31 PM

Mrs. Mahfuja Akter (Project Director- TOD)

She requested to the JST to consider the valuable suggestions which from the field level experience that is highly appreciated.

12:32 PM

Md. Tariquzzaman (Academician- BUET)

He stated that the development project is praised for its inclusive approach, taking into account the opinions of various stakeholders to ensure positive changes. Prioritizing pedestrian safety with effective footpaths, promoting diversity in literature programs, and considering the impact of

industrial development are all important factors to be considered. Careful planning and consideration of all factors, including the impact on the people and businesses in the area, is crucial to make the best decision for the community and modernize the city while addressing the challenges.

He also agreed that the traffic management is an important aspect of urban planning and transportation systems and must be considered in the development of the MRT network. The MRT should provide a reliable, safe, and convenient transportation option for commuters, reducing traffic congestion and improving overall mobility in the city. High quality service should be a priority to ensure the success and acceptance of the MRT system by the public.

12:36 PM

Mrs. Shamim Ara Begum (Superintendent Engineer - DPDC)

She wanted to know about the utility relocation plan for this project.

12:38 PM

Mrs. Mahfuja Akter (Project Director- TOD)

She thanked to the SE, DPDC and said that the utility component is project-specific and will be discussed separately. This approach ensures that the different aspects of the project are properly addressed and accounted for.

She also appreciated the academicians for participating in the 3rd Stakeholder Communication Meeting and providing his important speech. She said that it is important to prioritize pedestrian safety and comfort in the development of MRT stations. Allocating a sufficient width for footpaths, ideally 8 feet or more, is crucial for pedestrians to feel safe and comfortable. Balancing the need for cars and pedestrians is important, but it's also important to prioritize pedestrian needs especially in densely populated areas. The two city corporations can work together to ensure that the MRT station design includes sufficient space for pedestrians and provides high-quality service.

12:42 PM

Md. Motiul Islam (Superintendent Engineer- DPDC)

He said that he has some observations from the Bangladesh Inland Water Transport Authority (BIWTA) development plans in the Gabtoli area. There are two projects from the BIWTA being implemented along the riverbanks. However, the 500-meter radius considered for the project may not provide enough benefits to the public. It is suggested to increase the radius towards the Mazar road and extend the development plans to the river site. The Turag River should be considered while planning any development along the riverside. The Gabtali and Aminbazar bridges are important points for two important projects like cargo and passenger traffic projects and their impact on the outer circular road should be evaluated. At the end of the Turag River in Gazipur there is a waterway project announced and its effects on the that associated areas should be studied. The discussion today focuses on Environment and Social Issues, which are often neglected in implementation even though they are written in the documents. The project area will likely experience dust issues, which should be prevented by regular water sprays. It is important to ensure that the construction does not contribute to the problem of waste and dirt in the area.

12:45 PM

Mrs. Mahfuja Akter (Project Director- TOD)

She said that the team will talk to you about the details or will collect information about the details of other projects. I hope to have cooperation from your side.

12:47 PM

Abdullah Al Mamun (Assistant Director- Mirpur BRTA)

It sounds like we are discussing the development of Gabtoli in the context of transportation. It is mentioned that the high traffic in the area is a challenge and suggest relocating the Gabtoli bus terminal to reduce the traffic load. Also, the benefit of the Metrorail is mentioned, and how it could reduce travel time and encourage people to use it instead of their own cars. Additionally, it is emphasized the importance of ensuring that the sidewalks are not occupied by hawkers and shopkeepers, in order to ensure the effectiveness of the Metrorail implementation.

12:50 PM

Mrs. Mahfuja Akter (Project Director- TOD)

Temporary relocation of Gabtoli bus terminal is under processing and DNCC and DMTCL working together on this. Hawker issue is also under discussion with DNCC.

11:52 AM

Mr. SM Saleh Uddin (Transport Expert & Consultant):

The method of construction, whether it be cut and cover or tunneling, will have an impact on the traffic flow during construction. If cut and cover is used, it may temporarily disrupt traffic flow. If tunneling is used, there will likely be minimal disruption to traffic flow. It's important for the project plan to consider traffic management measures to reduce the impact on regular traffic as much as possible. This can include rerouting traffic, using alternative modes of transportation, or implementing temporary traffic lights or diversions. It's important to strike a balance between minimizing disruption to traffic and ensuring the safety of construction workers and the public during the construction phase.

12:55 PM

Mrs. Mahfuja Akter (Project Director- TOD)

She thanked to SM Saleh Uddin for his comments and informed him that the DMTCL is obviously working under expert opinion which will make safe construction for this project.

12:57 PM

Sultan Ahmed (Chief Engineer- BADC)

He addressed to consider the impact of the metro rail development on the surrounding area and ensure that it benefits the local community. The seed production farm and lab in Gabtoli should be protected and preserved during the development process. Steps should be taken to reduce traffic congestion and make the footpaths accessible to the public. The development should prioritize the convenience of the people and encourage reliance on public transport by providing more benefits. The concerns and issues related to the development should be discussed with BADC to ensure that the good initiative is implemented effectively.

01:05 PM

Mrs. Mahfuja Akter (Project Director- TOD)

The retention pond in Gabtoli is a critical component in ensuring the sustainability of the city, so it's essential to consider its proper use and management in the development plans. It's important to consider long-term consequences and ensure that the development meets the needs of the community while also preserving the environment. The plans should be discussed with relevant institutions like BADC to ensure they align with the overall development goals and meet all relevant regulations and standards. It's also important to ensure that the development projects are carried out

according to proper planning and considering the potential impact on the environment and surrounding communities.

Closing Speech:

She emphasized the importance of stakeholder engagement and collaboration for the success of the TOD project and expressed her hope for continued support and participation from the local representatives in future meetings. She also requested the organizers to ensure the presence of these important stakeholders in future meetings to make the planning and implementation process more effective. Overall, Mrs. Mahfuja expressed her gratitude to all participants and hoped for continued collaboration in making the TOD project successful.

Participants List

SL NO.	Name	Designation	Name of Company
1	Mahfuja Akther	Project Director	RAJUK
2	Rawnak Jahan	Deputy Transport Planner and Project Manager	RAJUK
3	Taichi Yoshimura	Architect	JICA TOD TEAM
4	Md Abdul Motaleb	Senior Urban Planner	JICA TOD Team
5	Md. Mehedi Hassan	Urban Planner	JICA TOD Team
6	Tonmoy Panl Joyanth	Transport Engineer	JICA TOD Team
7	Shamim Ara Begam	Superintendent Engineer, Distribution Planning	Dhaka Power Distribution Company
8	Md.Mozahidur Rahman	Deputy Director	Department of Environment
9	Dr. SM Saleh Uddin	Transport Expert and Consultant	BETS Consulting Services Limited
10	Mohiuzzaman Quazi	Ex-Transport Specialist	World Bank
11	Md. Nasir Uddin	Deputy Director	Bangladesh Agricultural Development Corporation
12	Md. Motiul Islam	Executive Engineer	Bangladesh Inland Water Transport Authority
13	Md. Mazharul Islam	Executive Engineer	Dhaka WASA
14	Jubairia Sabuh	Assistant PP MRT L5 North	Dhaka Mass Transit Company Limited
15	Md. Mohiur Rahman	APD Civil Engineer	Dhaka Mass Transit Company Limited
16	Md Tariquzzaman	Assistant Professor	Bangladesh University of Engineering and Technology
17	Nurunnahar Mili	Urban Planner	BETS Consulting Services Limited
18	Syed M. Latif	Team Leader	BETS Consulting Services Limited
19	Md. Gias Uddin Chow.	Superintendent Engineer	National Housing Authority
20	Sultan Ahmed	Chief Engineer	Bangladesh Agricultural Development Corporation

SL NO.	Name	Designation	Name of Company
21	Md. Altamas Rahman	Sub-divisional Engineer	Dhaka Power Distribution Company
22	Md. Alamgir	Sub-divisional Engineer	Roads and Highways Department
23	Md. Mizanur Rahman	ADC Traffic, Mirpur	Dhaka Metropolitan Police
24	Jesmin Akther	Assistant Director	Department of Environment
25	Md. Mafuzur Islam Tauhid	Senior Assistant Secretary	Road Transport and Highways Division
26	Md. Abdullah Al Mamun	Assistant Director	Bangladesh Road Transport Authority
27	Sumon Chandra Saha	Assistant Engineer	Dhaka Electric Supply Company Limited
28	Mir Towfiq Hussain	Environmental Specialist	BETS Consulting Services Limited
29	Husni Mobarak Prince	Technical Coordinator	BETS Consulting Services Limited

Some Photographs:





