

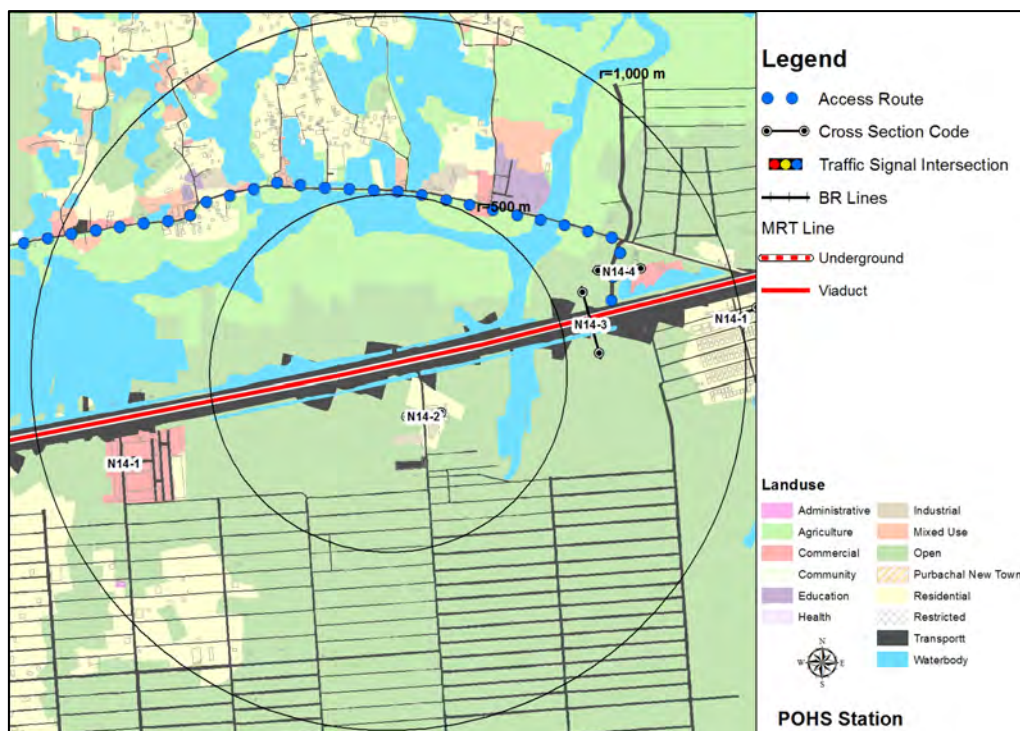
Source: JICA Study Team

Figure 3.3.68 Land use around POHS Station

(b) Traffic Situation of Catchment Area

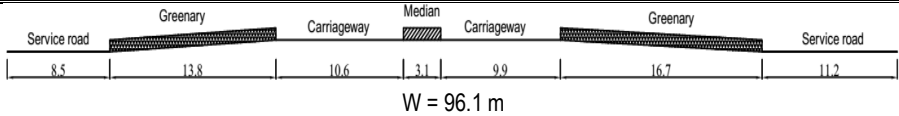
3.80 Features related to traffic conditions around the station include:

- (i) On the Purbachal express highway, a 4-lane and 2-service roads on both sides are planned. The number of access roads from Bashundhara residential area to the station is limited, and sidewalks are not well maintained.



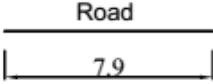
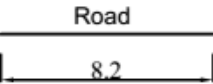
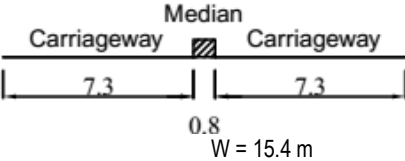
Source: JICA Study Team

Figure 3.3.69 Transportation Network around POHS Station POHS

Id	Cross-Section	Photo
N14-3	 <p style="text-align: center;">W = 96.1 m</p>	n/a

Source: JICA Study Team

Figure 3.3.70 Main Road Section around POHS Station

Id	Cross-Section	Photo
N14-1	 <p style="text-align: center;">7.9</p>	n/a
N14-2	 <p style="text-align: center;">8.2</p>	n/a
N14-4	 <p style="text-align: center;">W = 15.4 m</p>	n/a

Source: JICA Study Team

Figure 3.3.71 Minor Road Section around POHS Station

(c) MRT Impact on Urban Development

3.81 In terms of MRT impacts on the area, the following can be expected:

- (i) POHS, Bashundhara station area is mostly occupied by residential areas, the development demand will increase due to MRT development and the population will increase. (Night population: 2,600 to 87,700)
- (ii) The area along the main road is planned as a commercial area. As the area around the MRT development area is also a commercial area, commercial facilities will further develop around the station. (Daytime population: 2,300 to 57,300)

Table 3.3.14 Socio-economic Indicators around POHS Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	2.5	57.3
		Density (No/ha)	7.9	182.5
	Night	No.(000)	2.6	87.7
		Density (No/ha)	8.3	279.1
Daytime Population	Worker (000)	0.6	14.9	
	Student (000)	0.6	13.1	
	Total	1.2	28.0	
Nighttime Population	Worker (000)	0.7	40.1	
	Student (000)	0.6	18.3	
	Total	1.3	58.4	
Population Day/Night Ration (000)		1.0	0.7	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.82 There are already development plans in the north and south of POHS station and it will be developed as a residential area in the future. Even eastern development plans are progressing, and many MRT users are expected. Recommended TOD policies for POHS station are as follows:

- (i) **Development of station plazas:** The station area will be surrounded by POHS, Bashundhara residential area, Pink City. Both plans are in the land development

stage, and it is necessary to change land uses for station plazas and commercial facilities to maximize the impact of MRT.

- (ii) **Improvement of pedestrian network:** Although the station area includes the Bashundhara residential area, planned as a commercial area, pedestrian network to the station has not been considered. It is important to improve the access road to the station plaza.
- (iii) **Improvement of North-South access:** The Purbachal express highway, which is under construction, may divide the area between north and south. Therefore, pedestrian decks and underpasses shall be constructed to secure the access.
- (iv) **Development around the station by private companies and POHS:** It is necessary to integrate MRT plan into the development plan of POHS and Bashundhara residential area. The area in the southern side of the station and Bashundhara residential area are designated as commercial areas. On the one hand, there is a possibility that mixed-use development is promoted in the surrounding area. On the other hand, the detailed plan of POHS has not been approved and it is desirable to formulate an appropriate development plan for the station area.



Source: JICA Study Team

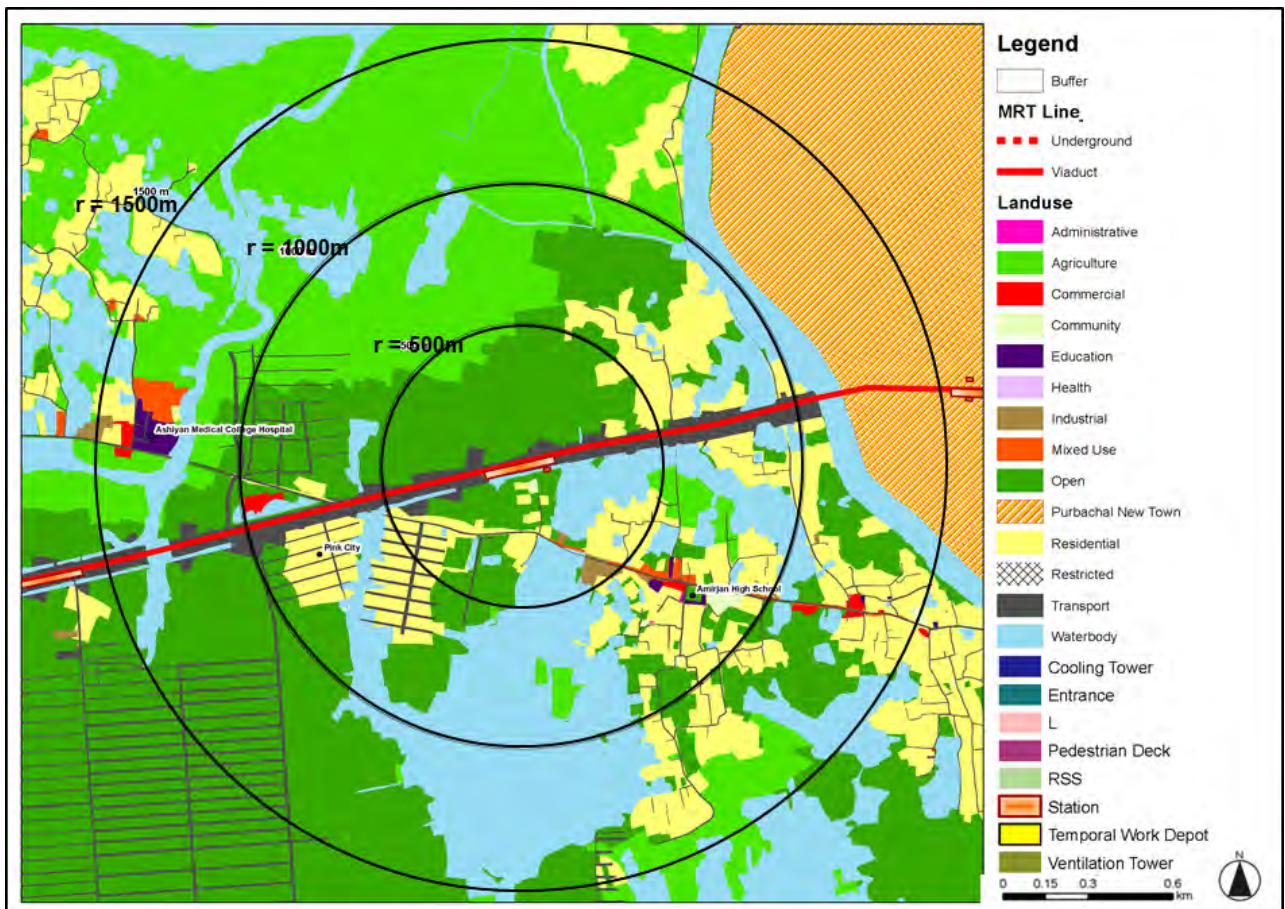
Figure 3.3.72 Concept Plan around POHS Station

15) Mastul Station

(a) Current Land Use of Catchment Area

3.83 The station is located near the entrance to Purbachal new town. Most of the surroundings are vacant as farmlands and wetlands, interspersed with some low-rise residences. Pink City model town is located in the southwest of the station, and middle-rise apartments are lined up. There are many wetlands and some sites are inappropriate for development, but landfills of wetlands have begun and there is a possibility that residential areas will be developed in the future.

3.84 Pink City model town is located about 500 m west of the station. There are many wetlands in the station area, and landfill and ground improvement are necessary before construction.



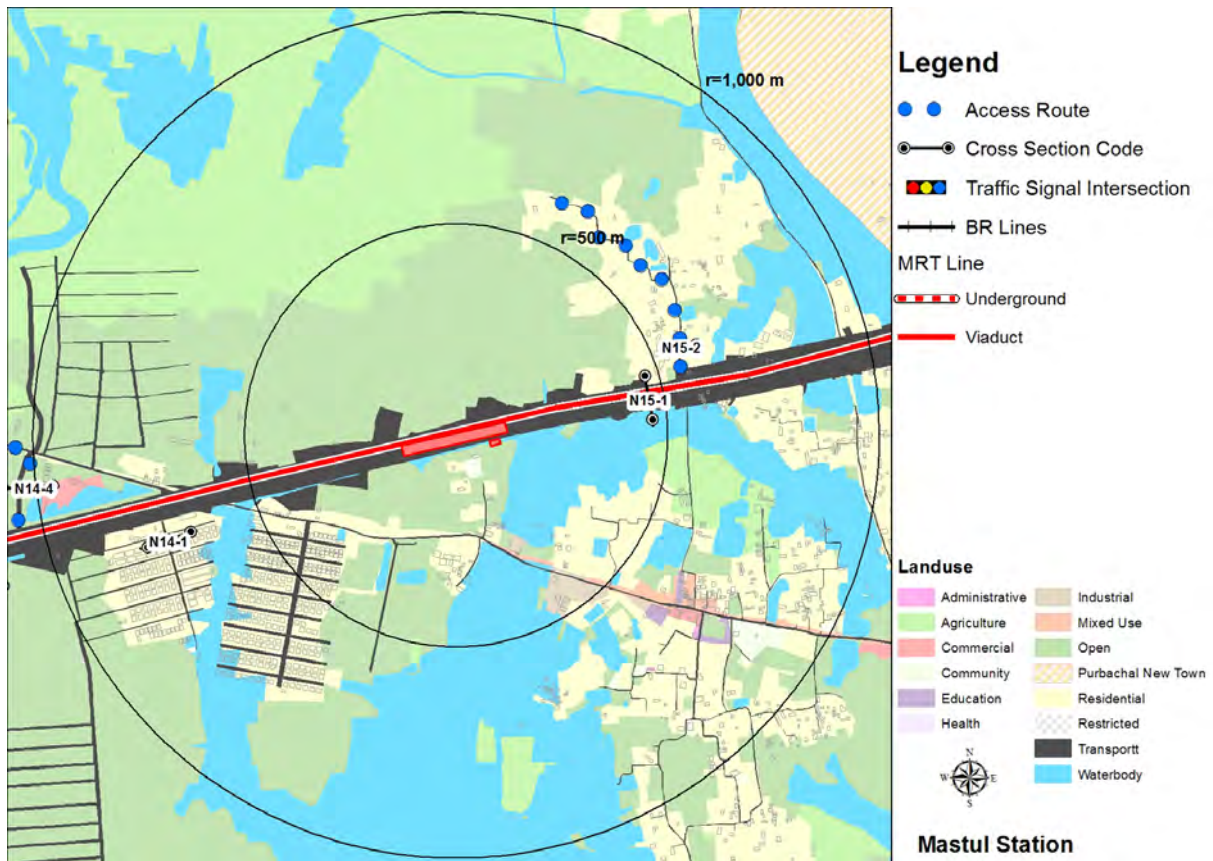
Source: JICA Study Team

Figure 3.3.73 Land use around Mastul Station

(b) Traffic Situation of Catchment Area

3.85 Features related to traffic conditions around the station are as follows:

- (i) On the Purbachal express highway, a 4-lane highway with two service roads on both sides are planned.
- (ii) The vicinity of the station include mostly wetlands, interspersed with some houses. Roads are unpaved, and sidewalks do not exist.



Source: JICA Study Team

Figure 3.3.74 Transportation Network around Mastul Station

Id	Cross-Section	Photo
N15-1		n/a

Source: JICA Study Team

Figure 3.3.75 Main Road Section around Mastul Station

Id	Cross-Section	Photo
N14-1		n/a
N15-2		n/a

Source: JICA Study Team

Figure 3.3.76 Minor Road Section around Mastul Station

(c) MRT Impact on Urban Development

3.86 In terms of MRT impacts on the area, the following can be expected:

- (i) Although development around the Mastul station has occurred yet, the construction of the Bashundhara residential area and Purbachal new town is proceeding in the vicinity, so an increase in population is expected.
- (ii) The construction of MRT will promote residential development, population will increase. (Night population: 2,600 to 97,100)
- (iii) Commercial facilities will also be further developed along with the population increase. (Daytime Population: 2,500 to 63,500)

Table 3.3.15 Socio-economic Indicators around Mastul Station (Radius 1 km area)

			2015	2035
Population	Day	No.(000)	2.5	63.5
		Density (No/ha)	7.9	202.1
	Night	No.(000)	2.6	97.1
		Density (No/ha)	8.3	309.1
Daytime Population	Worker (000)		0.6	16.5
	Student (000)		0.6	14.5
	Total		1.2	31.0
Nighttime Population	Worker (000)		0.7	44.4
	Student (000)		0.6	20.2
	Total		1.3	64.6
Population Day/Night Ration (000)			1.0	0.7

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.87 The Mastul station is located between Purbachal new town on the east side and Bashundhara residential area on the west side. It is an area where further development will further progress in the future. At present, there are no development plans for the station area, but it is necessary to develop one that aligns with the future population increase. Recommended TOD policies for Mastul station are as follows:

- (i) **Development of station plazas:** There us much wetland and undeveloped land in the station area. It is necessary to obtain undeveloped land and develop station plazas.
- (ii) **Improvement of access road:** If the situation were to remain the same, access to the station and to Purbachal express highway would be limited, the roads are narrow, and people could have to make a detour to access the station. It is important to widen the access road and secure access to the station.
- (iii) **Promotion of housing development for low-income people:** Purbachal new town and Bashundhara residential area are located in the vicinity of the station, and the Mastul station is located between large-scale development sites. Due to the location of the station, the demand for development will increase, it is possible that development will further progress, but since the shortage of housing for low-income people is a problem in Dhaka, the area should be used to supply affordable housing.



Source: JICA Study Team

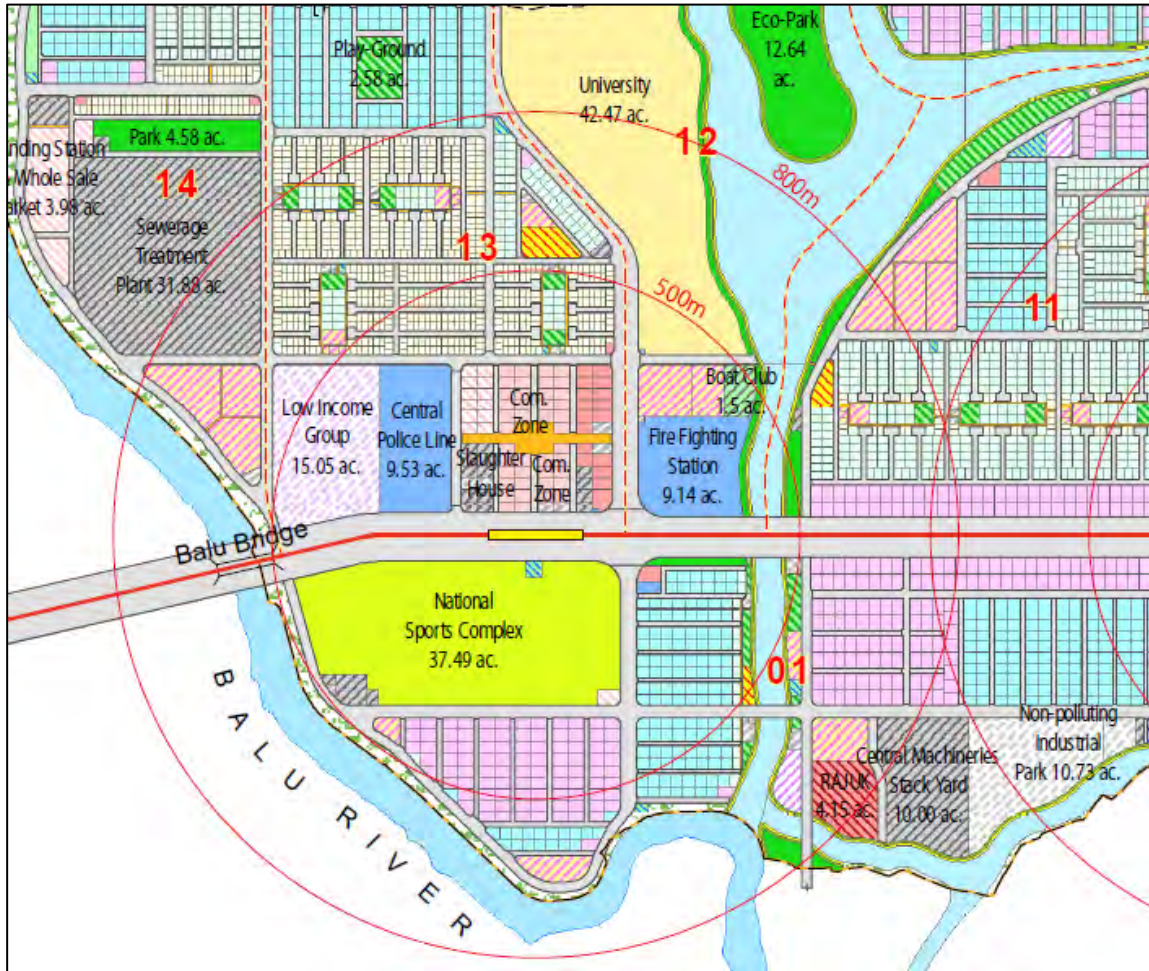
Figure 3.3.77 Concept Plan around Mastul Station

16) Purbachal West Station

3.88 Purbachal new town is a large-scale development in eastern Dhaka, planned by RAJUK. Residential plots have all been sold out, and the bid for commercial areas is ongoing. In order to secure the development site, it is necessary to reconsider the station location and the land use plan for the station area. It is necessary to change the land use for low-income people around the station and the public land and to change to an appropriate land use plan. Details are shown as case studies in Chapter 4.

(a) Current Land Use of Catchment Area

3.89 Elevated stations will be constructed in Purbachal new town planned by RAJUK. Currently under construction, the future sports complex will be located on the southern side of Purbachal express highway and commercial facilities on the northern side. In addition, there are university lots in the surrounding area. However, since the MRT impact was not included in Purbachal new town project, this site is at the edge of the new town project and large commercial area has not been considered around the station. For this reason, the management area of public facilities and the site for low-income people are located near the station.



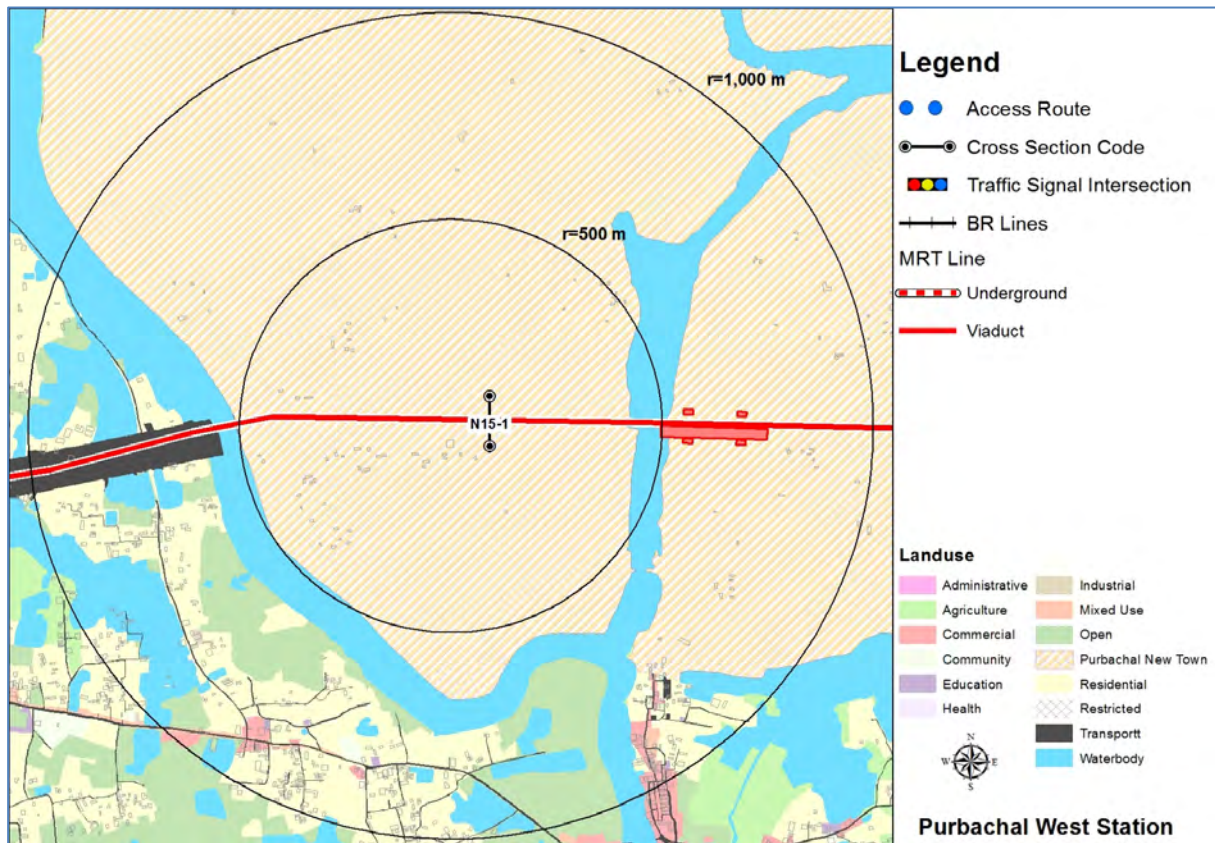
Source : RAJUK

Figure 3.3.78 Land use around Purbachal West Station

(b) Traffic Situation of Catchment Area

3.90 Features related to traffic conditions around the station are as follows:

- (i) On the Purbachal express highway, a 4-lane highway and 2 service roads on both sides are planned and passengers will get on and off a bus on the service roads.



Source: JICA Study Team

Figure 3.3.79 Transportation Network around Purbachal West Station

Id	Cross-Section	Photo
N15-1		n/a

Source: JICA Study Team

Figure 3.3.80 Main Road Section around Purbachal West Station

(c) MRT Impact on Urban Development

3.91 In terms of MRT impacts on the area, the following can be expected:

- (i) Currently the establishment of the new town is progressing, it takes much time to complete the new town. However, in the future, it is expected that 1 million residents will live around the station. (Night population 3,800 to 66,400)
- (ii) Administrative areas and commercial areas are planned around the station, and the working population will increase. (Daytime population of worker: 1,200 to 22,400)

Table 3.3.16 Socio-economic Indicators around Purbachal West Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	3.7	56.2
		Density (No/ha)	11.8	179.0
	Night	No.(000)	3.8	66.4
		Density (No/ha)	12.1	211.3
Daytime Population	Worker (000)		1.2	22.4
	Student (000)		0.9	11.7
	Total		2.1	34.1
Nighttime Population	Worker (000)		1.2	30.4
	Student (000)		1.0	13.8
	Total		2.2	44.2
Population Day/Night Ration (000)		1.0	0.8	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.92 An entrance of Purbachal new town is planned on the south side, as well as a large sports complex. Also, residential areas and commercial areas are planned in the surrounding area, but it is necessary to change the land use plan in order to integrate MRT into the plan. Recommended TOD policies for Purbachal West station are as follows:

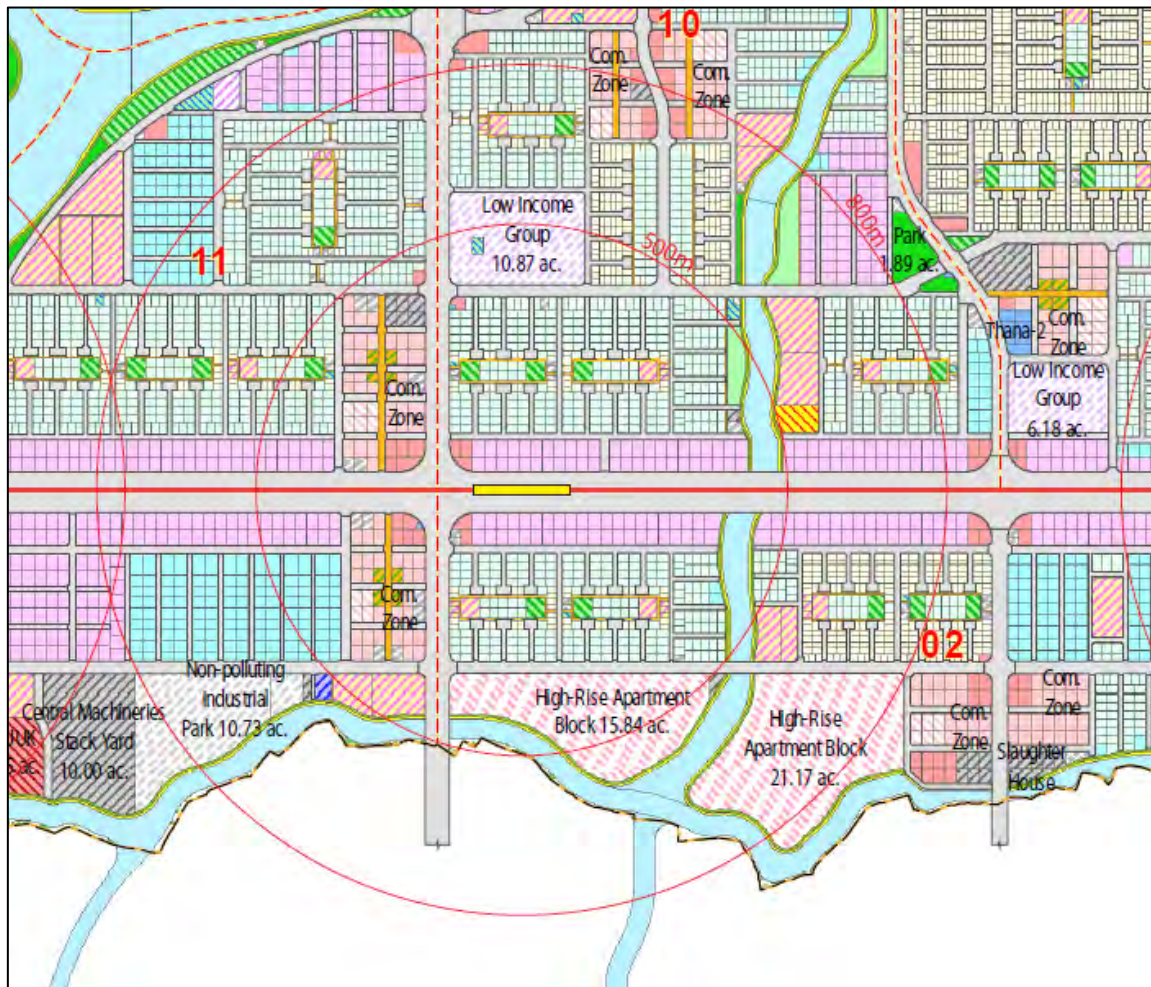
- (i) **Replotting around the station to implement TOD:** A police station and a low-income residential area are planned around the station. The station will be rather far from the CBD of Purbachal new town as this area has been considered the edge of Purbachal new town. Therefore, planned commercial development is limited around the station. However, as Purbachal new town and JA project will be developed in the future, the development potential around the station is high. It is necessary to review the concept plan and to change the land use as well as for other stations in Purbachal new town.

17) Purbachal Central Station

(a) Current Land Use of Catchment Area

3.93 There are many residential areas around Purbachal central station, and residential areas with 10 katha ($\approx 670 \text{ m}^2$) of land area are planned along MRT line. Commercial areas are located in the vicinity near major road intersections and in the south of the station, and high-rise apartment plots are planned on the southern side

3.94 Private residential development of high-rise apartment buildings can be expected along main roads as Purbachal express highway will benefit from a special permit, and FAR may be increased. Therefore, the area along main roads is expected to develop as a high-rise building area.



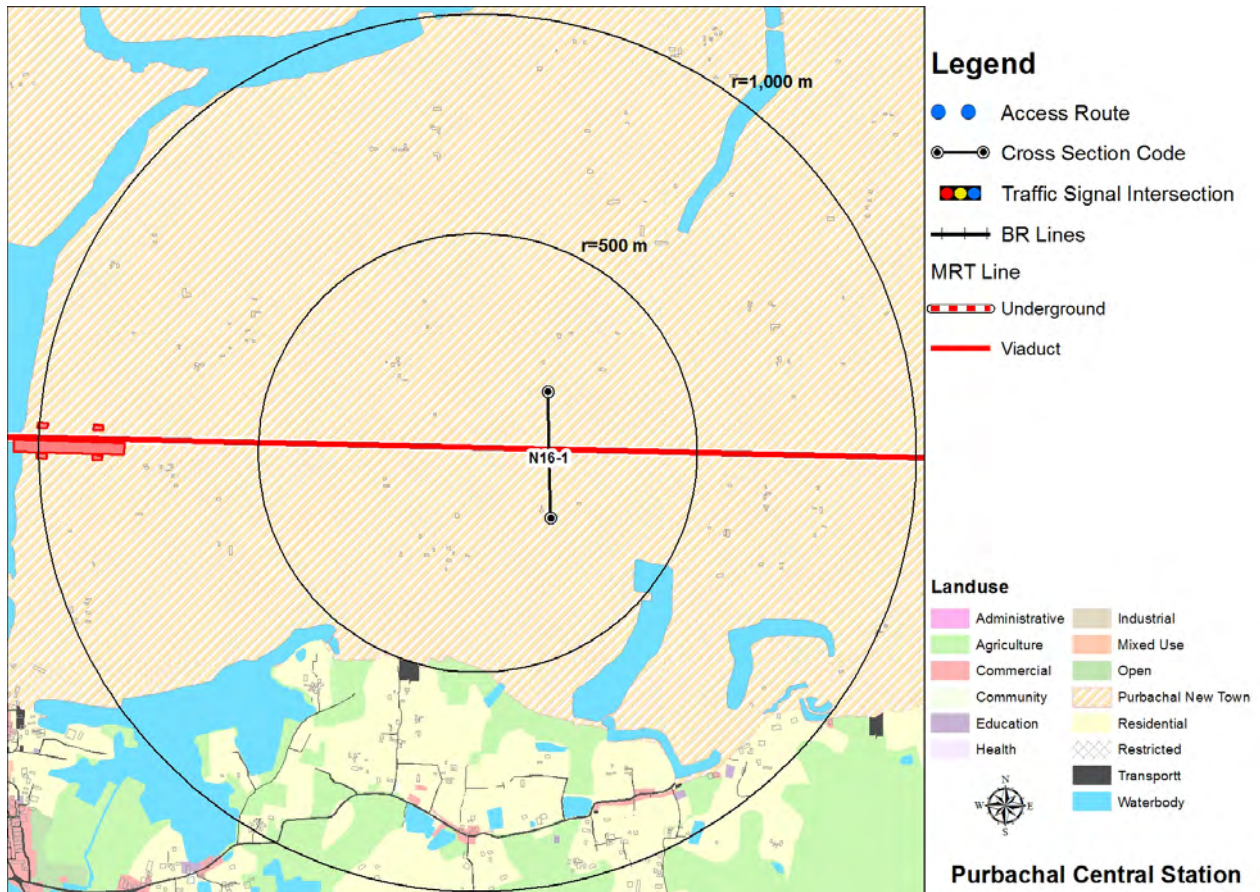
Source : RAJUK

Figure 3.3.81 Land use around Purbachal Central Station

(b) Traffic Situation of Catchment Area

3.95 Features related to traffic conditions around the station are as follows:

- (i) On the Purbachal express highway, a 4-lane highway with two service roads on both sides are planned and passengers will get on and off a bus on the service roads.



Source: JICA Study Team

Figure 3.3.82 Transportation Network around Purbachal Central Station

Id	Cross-Section	Photo
N16-1		n/a

Source: JICA Study Team

Figure 3.3.83 Main Road Section around Purbachal Central Station

(c) MRT Impact on Urban Development

3.96 In terms of MRT impacts on the area, the following can be expected:

- (i) The planned station will be close to the CBD area of Purbachal new town, and among the MRT stations in Purbachal new town the proportion of the commercial area is high in Central Station area. (Nighttime population of worker: 500 to 38,400)
- (ii) Some land will be allocated for education facilities, and the number of students who commute by MRT will increase. (15,000 students in 2035)

Table 3.3.17 Socio-economic Indicators around Purbachal Central Station (Radius 1 km area)

			2015	2035
Population	Day	No.(000)	1.3	77.7
		Density (No/ha)	4.2	247.2
	Night	No.(000)	1.3	72.9
		Density (No/ha)	4.2	232.0
Daytime Population	Worker (000)		0.5	38.4
	Student (000)		0.3	15.0
	Total		0.8	53.4
Nighttime Population	Worker (000)		0.5	33.5
	Student (000)		0.3	15.2
	Total		0.8	48.6
Population Day/Night Ration (000)			1.0	1.1

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.97 Purbachal Central Station is located about 1.0 km north of the CBD of Purbachal new town. Among the MRT stations located in Purbachal new town, the proportion of commercial areas is the largest, but Purbachal new town is planned mainly as residential areas along the railway, and MRT was not considered in the land use planning process. Recommended TOD policies for Purbachal central Station are as follows:

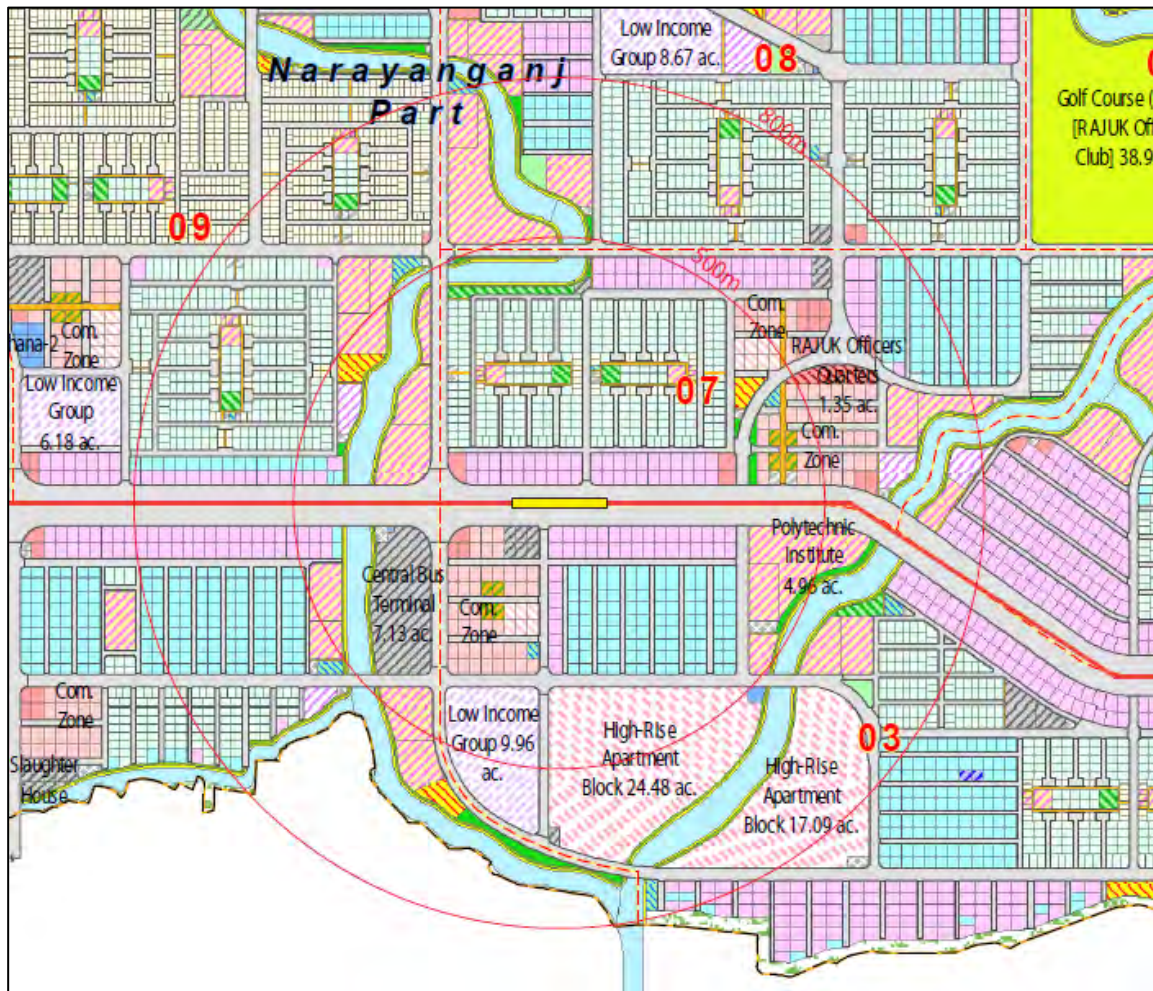
- (i) **Promotion of commercial area by relocation of the station:** In the current plan, since most of the area around the station is residential area, commercial area around the station are limited. For that reason, changing the land use to secure a commercial area or shift the station to the east about 300 m to secure access to the commercial facilities.
- (ii) **Improvement of North-South access:** The Purbachal express highway which is under may divide the area into the north and the south. Therefore, by pedestrian decks and underpasses shall be constructed to secure the access.

18) Purbachal East Station

(a) Current Land Use of Catchment Area

3.98 Residential areas, commercial areas, bus terminals, and educational facilities are planned to be located in the vicinity of Purbachal East Station. In addition, the CBD that is planned as the centre of Purbachal new town is located on the northern side of the station location.

3.99 Residential plots have been sold out, but the bidding process has not started yet for public lands, for uses such as educational, and bus terminals. Compared to other stations, much land for institutional uses is concentrated in the vicinity of Purbachal East station.



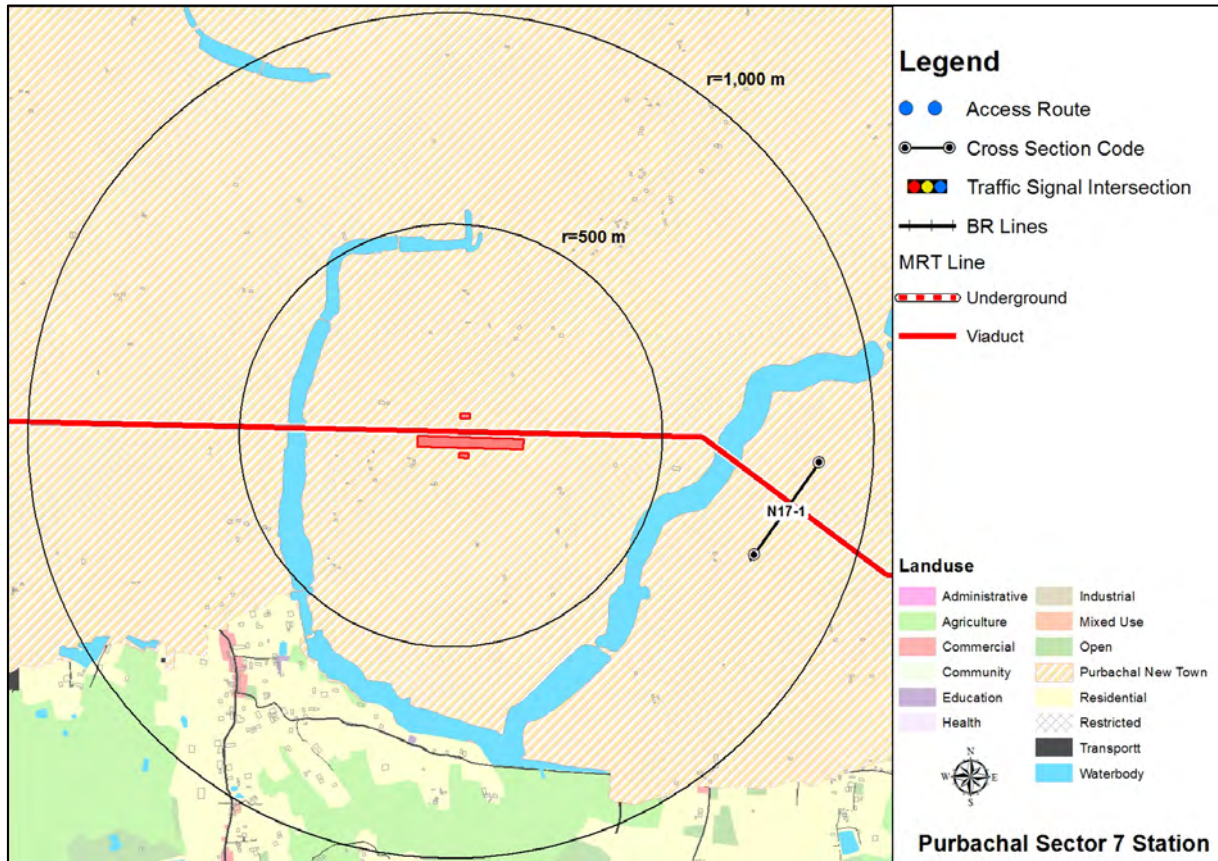
Source : RAJUK

Figure 3.3.84 Land use around Purbachal East Station

(b) Traffic Situation of Catchment Area

3.100 Features related to traffic conditions around the station are as follows:

- (i) On the Purbachal express highway, a 4-lane highway with 2 service roads on both sides is planned and passengers will get on and off a bus on the service roads.



Source: JICA Study Team

Figure 3.3.85 Transportation Network around Purbachal East Station

Id	Cross-Section	Photo
N17-1	<p style="text-align: center;">W = 23.9 m</p>	n.a

Source: JICA Study Team

Figure 3.3.86 Main Road Section around Purbachal East Station

(c) MRT Impact on Urban Development

3.101 In terms of MRT impacts on the area, the following can be expected:

- (i) Most land in the area around the station is dedicated to residential uses, and the number of commuters is expected to increase after completion of residential development. In addition, the commercial area will be also located in the catchment area, and the area has a high development demand. (Daytime population of employees: 600 to 39,400)
- (ii) Land for educational facilities is planned near the station, and the number of schoolchildren will increase. (Daytime population of students: 400 to 15,400)

Table 3.3.18 Socio-economic Indicators around Purbachal East Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	1.7	79.7
		Density (No/ha)	5.4	253.8
	Night	No.(000)	1.7	74.8
		Density (No/ha)	5.4	238.2
Daytime Population	Worker (000)		0.6	39.4
	Student (000)		0.4	15.4
	Total		1.0	54.8
Nighttime Population	Worker (000)		0.6	34.3
	Student (000)		0.4	15.6
	Total		1.0	49.9
Population Day/Night Ration (000)		1.0	1.1	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

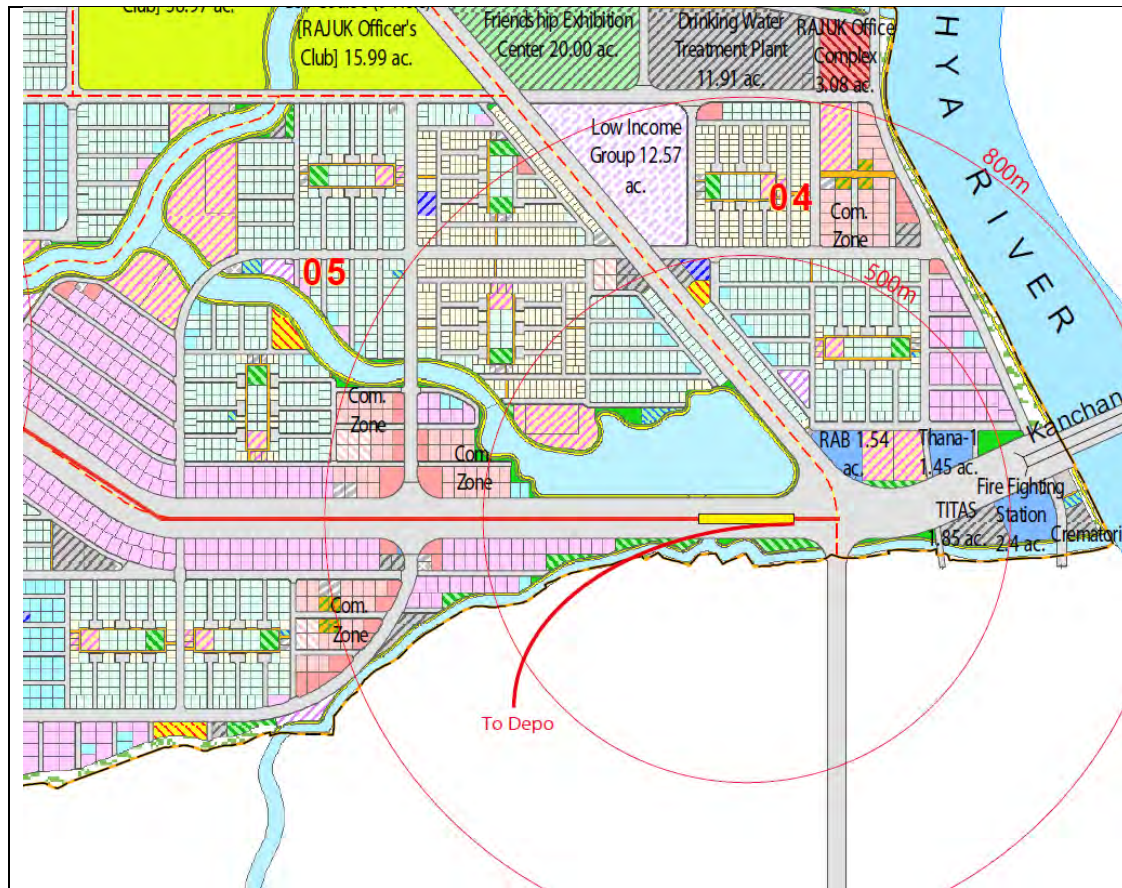
3.102 The planned CBD is located on the northern side of Purbachal East station. In order to access the CBD, specific planning of the transport node is important. Recommended TOD policies for Purbachal East station include:

- (i) **Development of transportation node by adjustment of station location:** Since there is a bus terminal near the station, it can be used as a transportation node. There is also a commercial area between the station and the bus terminal. It is effective to move the station position to the east.
- (ii) **Development of transportation system in Purbachal new town:** Purbachal Newtown is a large-scale project, and public transportation inside the new town is indispensable. Since the CBD is located on the northern side, it is important to consider development of the transportation node and the transportation system for transferring from the MRT to other transportation systems.

19) Purbachal Terminal Station

(a) Current Land Use of Catchment Area

3.103 Purbachal is the terminal station of Purbachal line. The artificial lake is located on the northern side and the depot is planned on the southern side. In addition, many private companies are currently considering development plans on the eastern side of Purbachal new town.



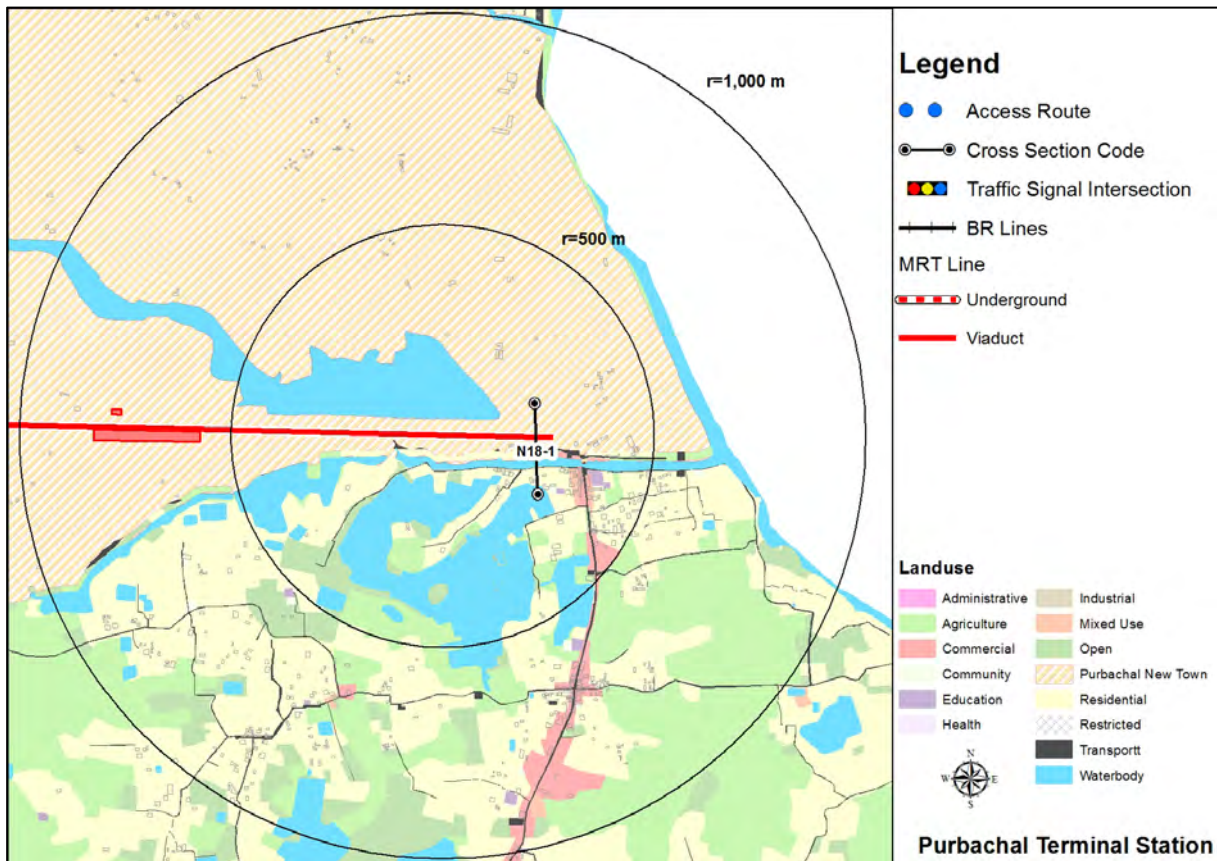
Source:RAJUK

Figure 3.3.87 Land use around Purbachal Terminal Station

(b) Traffic Situation of Catchment Area

3.104 Features related to traffic conditions around the station are as follows:

- (i) On the Purbachal express highway, a 4-lane highway with 2 service roads on both sides are planned and passengers will get on and off a bus on the service roads.
- (ii) There will be cross streets perpendicular to the main roads leading to JA project and eastern area of Purbachal new town.



Source: JICA Study Team

Figure 3.3.88 Transportation Network around Purbachal Terminal Station

Id	Cross-Section	Photo
N18-1		n/a

Source: JICA Study Team

Figure 3.3.89 Main Road Section around Purbachal Terminal Station

(c) MRT Impact on Urban Development

3.105 In terms of MRT impacts on the area, the following can be expected:

- (i) Purbachal terminal station will be the terminal station in the eastern part of Dhaka in the first phase of MRT project, but the development on the east side is expected to progress further, and it is expected that more passengers will use MRT to commute and access the station from the eastern parts of Purbachal.
- (ii) Administrative areas and maintenance facilities area will be located in the vicinity, and it is expected that administrative officials will use the station. Since commercial areas are also expected to develop there, the daytime population will increase. (Daytime population: 500 to 65,000)

Table 3.3.19 Socio-economic Indicators around Purbachal Terminal Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	4.9	68.8
		Density (No/ha)	15.7	219.0
	Night	No.(000)	5.0	64.6
		Density (No/ha)	15.8	205.5
Daytime Population	Worker (000)		1.7	34.0
	Student (000)		1.3	13.3
	Total		3.0	47.3
Nighttime Population	Worker (000)		1.7	29.6
	Student (000)		1.3	13.4
	Total		3.0	43.1
Population Day/Night Ration (000)		1.0	1.1	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.106 Purbachal terminal station is the terminal station of MRT line 1 and will function as a terminal station. It is an important station because it is anticipated that eastern development of Dhaka will further progress in the future. Recommended TOD policies for Purbachal terminal station include:

- (i) **Development of station plazas:** It is possible to secure the site of a station plaza using the reserved land and the land around railway to the construction site.
- (ii) **Development of parking lots and bicycle parking space:** Since the station is located near the intersection of major roads, various transportation systems such as cars and buses can access to the station. Furthermore, since it is more than 1 km away of the JA project located on the south side, development of parking lots and bicycle parking space is necessary.
- (iii) **Attractive Landscape:** By enriching the landscape around the artificial lake, an increase in the number of visitors and customers to commercial areas can be expected. On the one hand, by developing sidewalks and green spaces similar to Gulshan Lake, more people will gather on the waterfront. On the other hand, there is room for landscape improvements through urban design; it is necessary to design an attractive space.

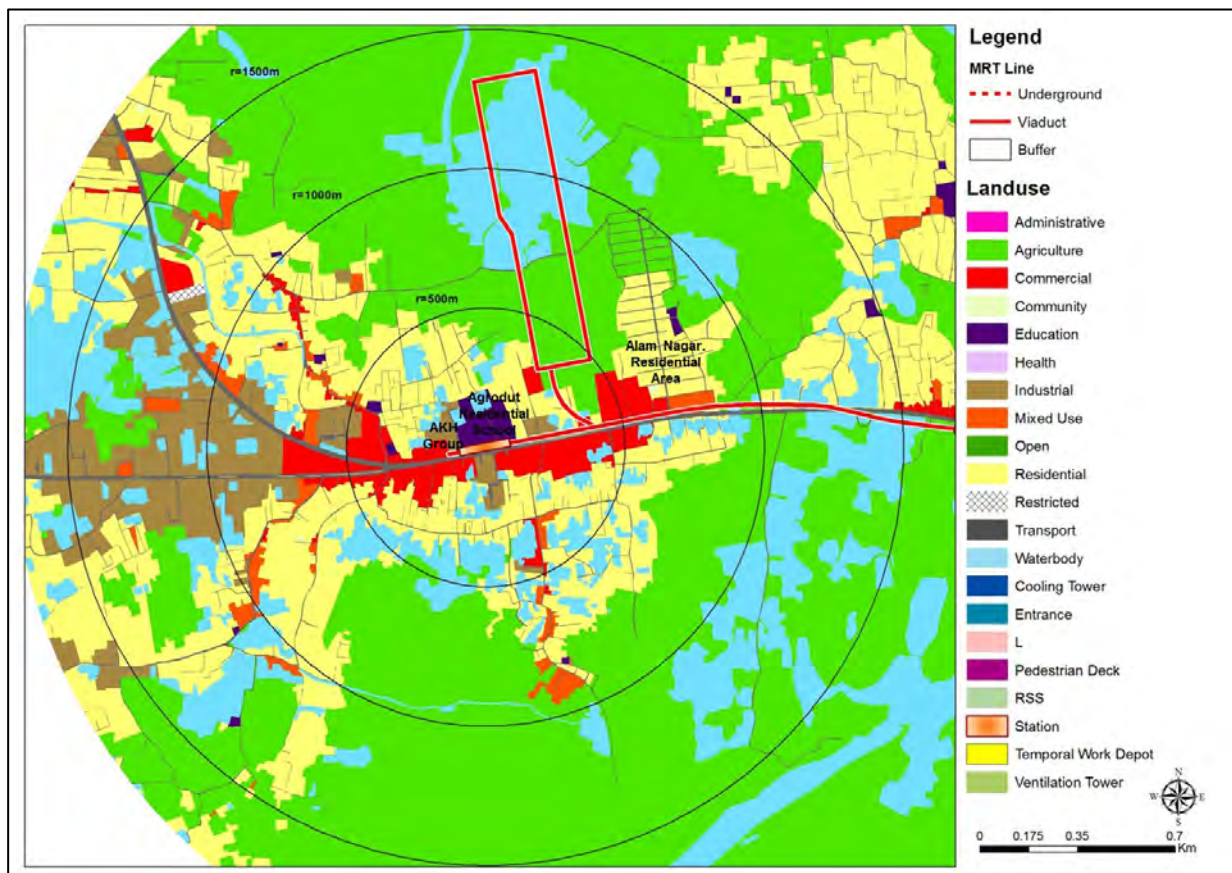
3.4 MRT Line 5

1) Hemayetpur Station

(a) Current Land Use of Catchment Area

3.107 Hemayetpur station is the western terminal station of Line 5, located at the midpoint between Savar and Dhaka City, an area that is expected to see an increase in population in the future. The surrounding area is designated as a commercial zone, which includes a market and shops for local residents as well as low and middle-income housing. In addition, the headquarters of AKH Group, a clothing manufacturer, is located in front of the station. Wetlands and agricultural fields stretch along the roadside, and are frequently inundated in the rainy season. Many new buildings are under construction and it is expected that this development trend will continue into the future. In the area between the station and the west side of Savar, there is situated a growing residential area to accommodate workers in the clothing industry.

3.108 While there are yet no large development projects under way in the vicinity, construction can be observed on a number of middle and high-rise residences. In addition, although the Alam Nogol Residential Area is located 700 m east of the station, all the land has not been occupied, and open space can still be seen there. The Alam Nogol Residential Area consists of middle-class residences, high schools, mosques, bus stops, and other regular neighbourhood features.



Source: JICA Study Team

Figure 3.4.1 Land Use around Hemayetpur Station

1	2	3
		
Commercial land use near station area	Residential Housing project within 1km of Station	Industrial area near station area
4	5	6
		
Traffic condition in station area	Bazaar (Market place) near station	Mixed Use building near station

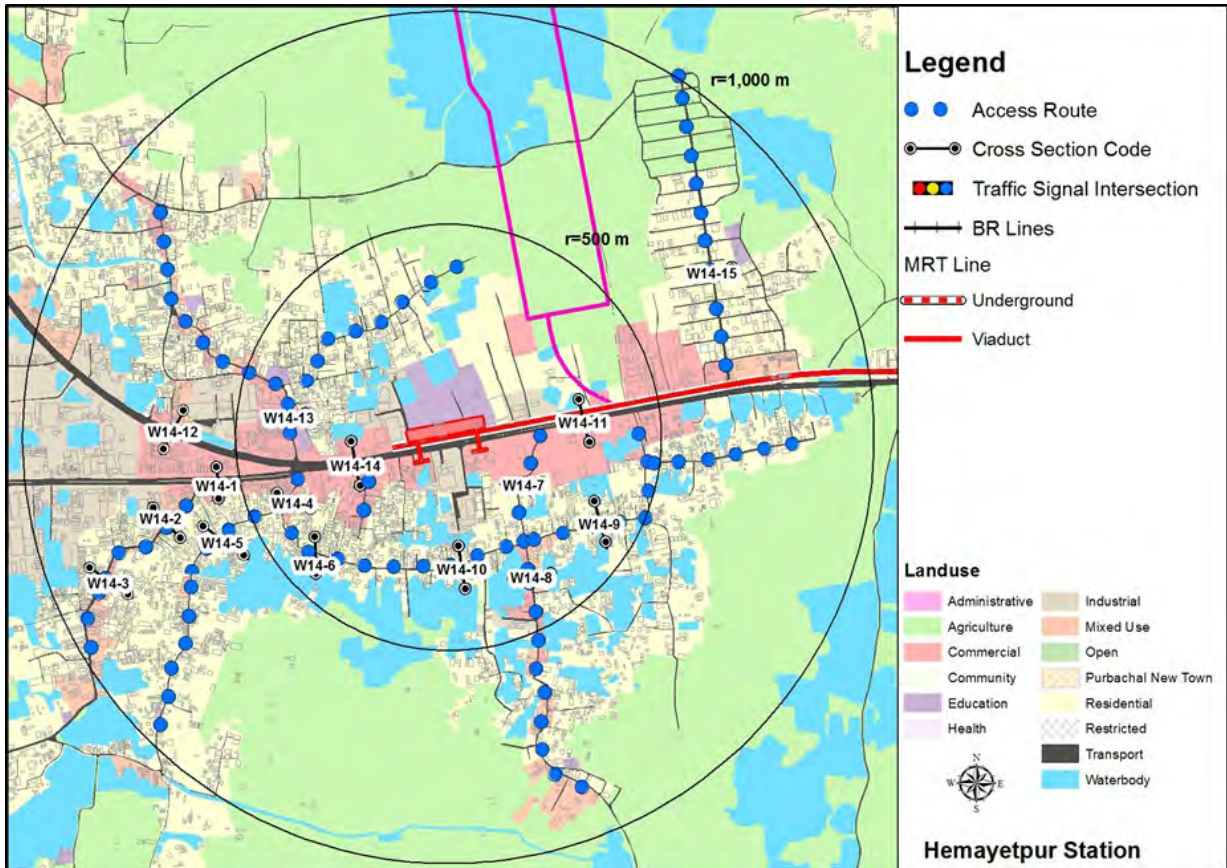
Source: JICA Study Team

Figure 3.4.2 Current Conditions around Hemayetpur Station

(b) Traffic Situation of Catchment Area

3.109 Features related to traffic conditions around the station include:

- (i) Dhaka-Aricha Highway, connecting Dhaka City and the suburbs, is a two-lane one-sided road with a median. The roadside is lined by markets, and some amount of traffic congestion occurs due to vehicles taking U-turns along the road.
- (ii) Dhaka-Aricha Highway has many intercity buses heading to southwest Bangladesh, and the traffic volume is large. Passengers get on / off buses at the shoulder. Most sidewalks are unpaved and disorganized.
- (iii) The minor roads to the residential area are unpaved and without sidewalks.



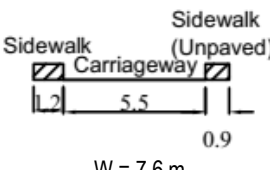

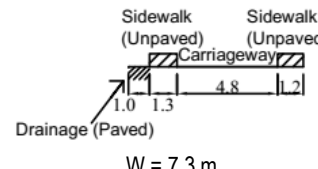

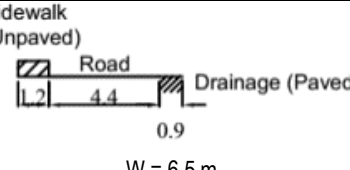

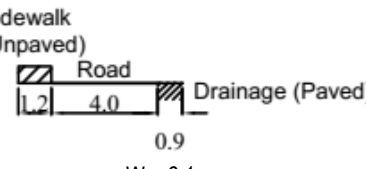

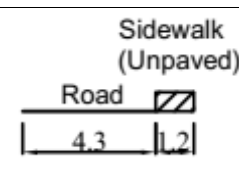

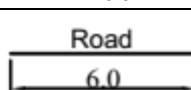

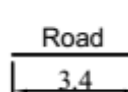

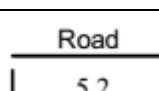

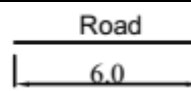

Source: JICA Study Team

Figure 3.4.3 Transportation Network around Hemayetpur Station

Id	Cross-Section	Photo
W14-1 Dhaka Manikganj Highway	<p>W = 17.8 m</p>	
W14-11 Dhaka-Aricha Highway	<p>W = 16.9 m</p>	
W14-12 Dhaka-Aricha Highway	<p>W = 39.9 m</p>	
W14-14 Dhaka-Aricha Highway	<p>W = 53.1 m</p>	

Source: JICA Study Team

Figure 3.4.4 Main Road Section around Hemayetpur Station

Id	Cross-Section	Photo
W14-2 Natun Bazar, Purba Hati road	 <p style="text-align: center;">W = 7.6 m</p>	
W14-3 Natun Bazar, Purba Hati road	 <p style="text-align: center;">W = 7.3 m</p>	
W14-4 Hemayetpur Boro Masjid Road	 <p style="text-align: center;">W = 6.5 m</p>	
W14-5 Hemayetpur Boro Masjid Road	 <p style="text-align: center;">W = 6.1 m</p>	
W14-7 Madrasa Road	 <p style="text-align: center;">W = 5.5 m</p>	
W14-8 Jadurchar Chowrasta	 <p style="text-align: center;">W = 6.0 m</p>	
W14-9 Jadurchar Chowrasta	 <p style="text-align: center;">W = 3.4 m</p>	
W14-10 Jadurchar Chowrasta	 <p style="text-align: center;">W = 5.2 m</p>	
W14-13 Joyna Bari Road	 <p style="text-align: center;">W = 6.0 m</p>	

Source: JICA Study Team

Figure 3.4.5 Minor Road Section around Hemayetpur Station

(c) MRT Impact on Urban Development

3.110 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) Many factories are located around the station and in the northwestern part of Savar. MRT is expected to shorten commuting times to neighboring areas and to Dhaka City. It is expected that this area will continue to develop mainly as a residential area. (Night population 36,500 to 75,900)
- (ii) Houses and factories are located along Dhaka-Aricha Highway, but wetlands and dense residential areas are located at some distance off the main road. MRT development promotes the reorganization of existing urban areas and the development of residential areas.

Table 3.4.1 Socio-economic Indicators around Hemayetpur Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	32.8	64.3
		Density (No/ha)	104.6	204.6
	Night	No.(000)	36.5	75.9
		Density (No/ha)	116.2	241.5
Daytime Population	Worker (000)		11.7	28.5
	Student (000)		5.7	10.6
	Total		17.3	39.1
Night Population	Worker (000)		15.0	34.9
	Student (000)		6.0	15.8
	Total		21.0	50.7
Population Day/Night Ration (000)		0.9	0.8	

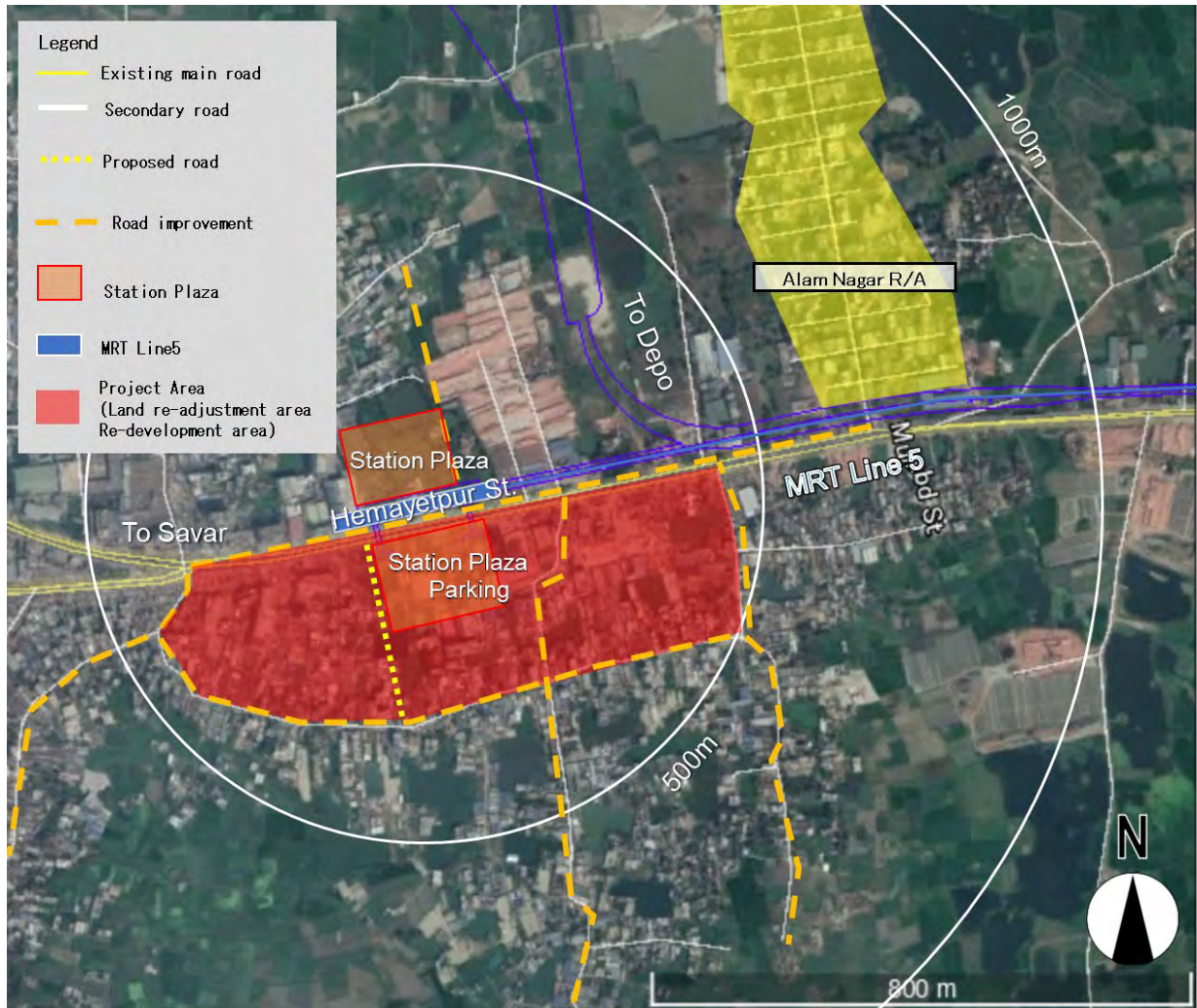
Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.111 In the future, when MRT Line 5 is extended to Savar, Hemayetpur station will be in between Dhaka City and Savar. Garment factories are located in the adjacent areas, but development of the station area as a residential area is expected to continue, and it is conceivable that these residences might also serve employees commuting to Dhaka City and Savar industrial areas. Recommended TOD policies for Hemayetpur station include:

- (i) **Development of station plazas and parking space:** Hemayetpur station will be the terminal station of MRT Line 5 until the extension is carried out in the future. It is necessary to establish connection with other transportation systems, and it is necessary to develop station plazas and sufficient parking space. Also, on the front road there currently are intercity buses to Dhaka-Aricha Highway offering transportation to the southwestern parts of Bangladesh. Congestion has occurred because passengers often get on and off the bus directly on the street. Improving the station plazas is expected to alleviate congestion. Also, the terminal is expected to bring visitors from the suburbs; therefore it is necessary to develop a parking lot.
- (ii) **Improvement of pedestrian network:** Dhaka Aricha Highway has many sections where sidewalks are not well maintained, and the sidewalks from the existing urban area are narrow and unpaved. Therefore, it is necessary to develop a pedestrian network to improve access to the station.
- (iii) **Development as residential areas:** Hemayetpur station is located in the middle of Dhaka and Savar, and development potential as a residential area is expected to be higher from the convenience of access to both cities. Currently, since residential

areas and small markets are intermingled on the southern side of the station, it is necessary to improve the living environment in the station area though land re-adjustment.



Source: JICA Study Team

Figure 3.4.6 Concept Plan around Hemayetpur Station

2) Baliapur Station

(a) Current Land Use of Catchment Area

3.112 There are large agricultural lands and wetlands in the station area, and residential uses are limited. In addition, there are brick factories, a mine bazar garbage disposal site, CNGs and many buses waiting for passengers. During the rainy season, most of the southern side of the station is under water. Nevertheless, brick factories are located on embankments on relatively high ground, and park and housing developments are taking place. DAP has designated the area as wetland, and it cannot be expected that development will progress if the present situation prevails, as projects by private companies can be stopped and cannot be unapproved.

3.113 There is a plan to widen the National Highway No. 5, which has not been implemented yet. In case development is promoted in the future, it is necessary to change the land use in DAP, but this area plays an important role as a retention pond for Dhaka, and enormous expenses for embankment and ground reinforcement are required for development.

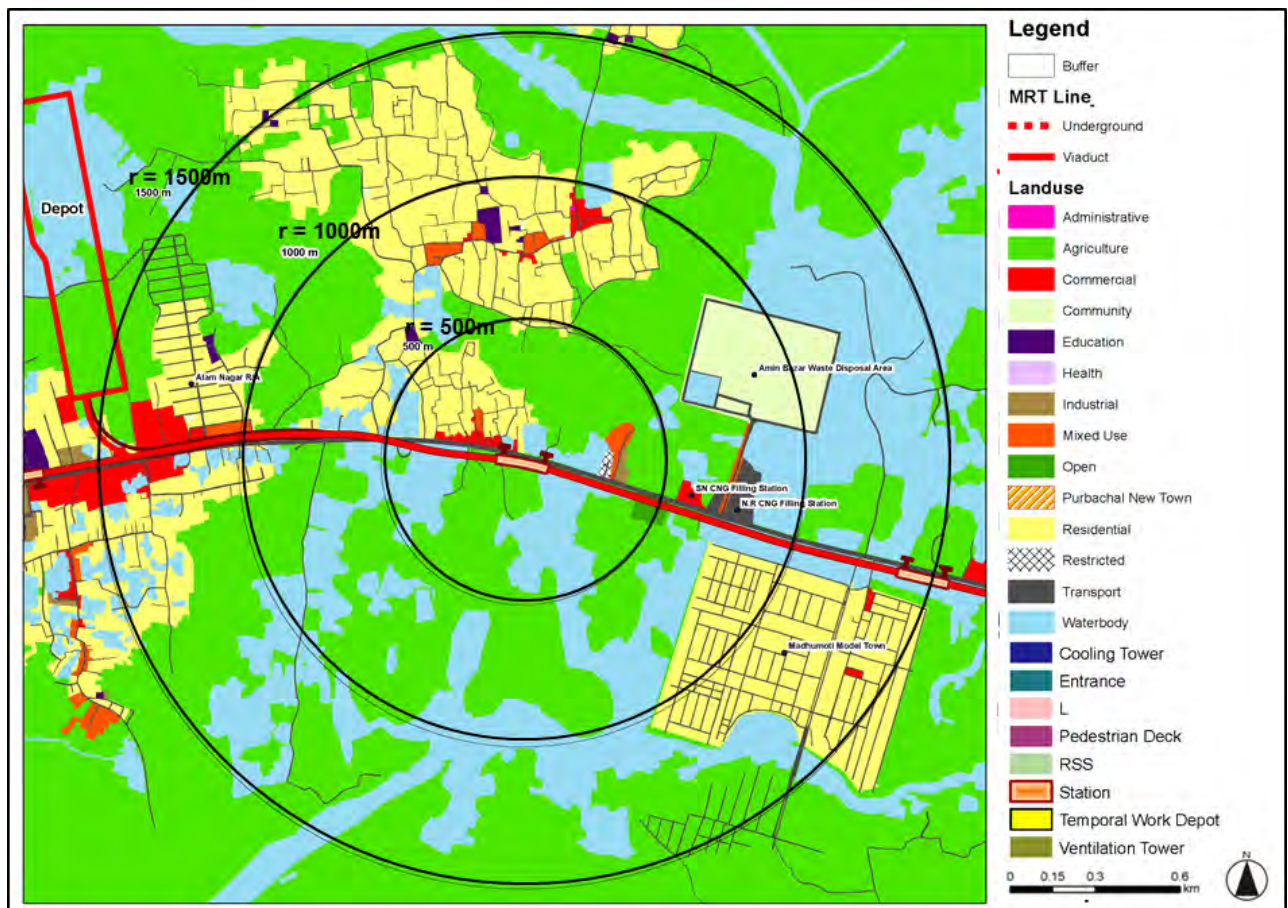


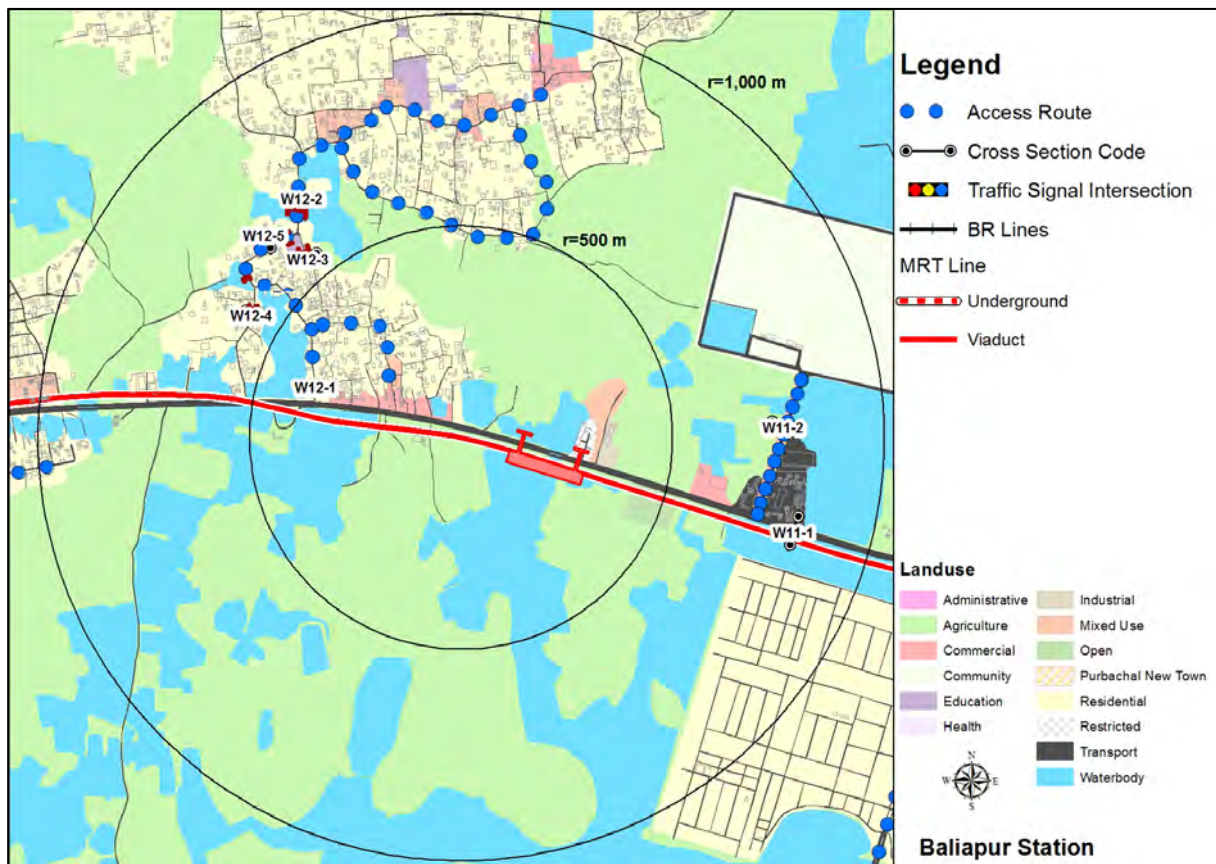
Figure 3.4.7 Land Use around Baliapur Station

(b) Traffic Situation of Catchment Area

3.114 Features related to traffic conditions around the station include:

- (i) Dhaka Aricha Highway is the main road leading to the outskirts of Bangladesh, but sidewalks are not well maintained. The traffic volume of intercity buses and trucks is high, and it is dangerous to move on foot.

- (ii) There is a residential area in the northwestern part of the station, but since the sidewalk is not well maintained at all and the width of the roadway is also narrow, it is difficult for the pedestrian and the car to pass each other. Houses are dense, and the road widening is also difficult.



Source: JICA Study Team

Figure 3.4.8 Transportation Network around Baliapur Station

Id	Cross-Section	Photo
W11-1		n/a

Source: JICA Study Team

Figure 3.4.9 Main Road Section around Baliapur Station

Id	Cross-Section	Photo
W11-2		n/a
W12-1		n/a
W12-2		n/a
W12-4		n/a
W12-5		n/a

Source: JICA Study Team

Figure 3.4.10 Minor Road Section around Baliapur Station

(c) MRT Impact on Urban Development

3.115 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) There is no housing development visibly occurring in the station area, and development plans by private companies are also stopped. Development is regulated by DAP, MRT development will cause an increase in demand for development, and if DAP is revised, large-scale developments should be carried out.
- (ii) Because wetlands in the station area have an important function as retention pond, it is necessary to examine the drainage function of alternative sites and entire cities when DAP is revised.

Table 3.4.2 Socio-economic Indicators around Baliapur Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	11.6	24.5
		Density (No/ha)	37.1	78.0
	Night	No.(000)	13.2	28.0
		Density (No/ha)	42.0	89.2
Daytime Population	Worker (000)		3.9	11.5
	Student (000)		2.1	3.7
	Total		6.0	15.2
Night Population	Worker (000)		5.2	12.9
	Student (000)		2.3	5.8
	Total		7.5	18.7
Population Day/Night Ration (000)		0.9	0.9	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.116 Baliapur is an area where development is currently regulated by DAP. However, when the development demand increases due to the location of the station, it is possible that the development will occur rapidly because all the areas around the station are vacant. TOD policy recommendations for Baliapur station include:

- (i) **Development of station plazas:** Currently, the area around the station is an open space due to a regulation of DPA. However, there is a possibility that development of the neighborhood may occur by locating the station. Therefore, it is necessary to secure the open space for development of station plazas in advance.
- (ii) **Improvement of pedestrian network:** The sidewalk is not well maintained from Amin Bazar Station to Hemayetpur station. As a result, the movement in the east and west direction by walking is hindered, and sidewalks is necessary for Dhaka Aricha Highway, and when future development is implemented, the improvement of sidewalks from residential areas is indispensable.
- (iii) **Implementation of a development plan coexisting with wetlands:** Wetlands in the section from the Baliapur to Amin Bazar station have important functions of city a retention pond, and it is difficult to promote development easily because of the causes of urban floods in Dhaka. Therefore, in the case of promoting development, it is necessary to formulate a development plan together with green space and wetland preservation.



Source: JICA Study Team

Figure 3.4.11 Concept Plan around Baliapur Station

3) Bilamaria Station

(a) Current Land Use of Catchment Area

3.117 Most of the station area is composed of wetlands, and is submerged during the rainy season. Residential development is currently occurring on a site with higher-level ground, and garbage disposal sites are also located nearby. CNGs are scattered around because of the proximity with the Gabtoli Bus Terminal.

3.118 The residential area was planned, but a court decision made it illegal prior to approval, and now development has stopped. As the surroundings are designated as wetlands in DAP, possibilities are limited for development. A garbage disposal site and brick factories are located in the surroundings, which may affect residential land prices. Furthermore, since a large amount of embankment and ground improvement are required in order to advance future development, there are various problems such as change of DAP, construction of residential land, transfer of garbage disposal site.

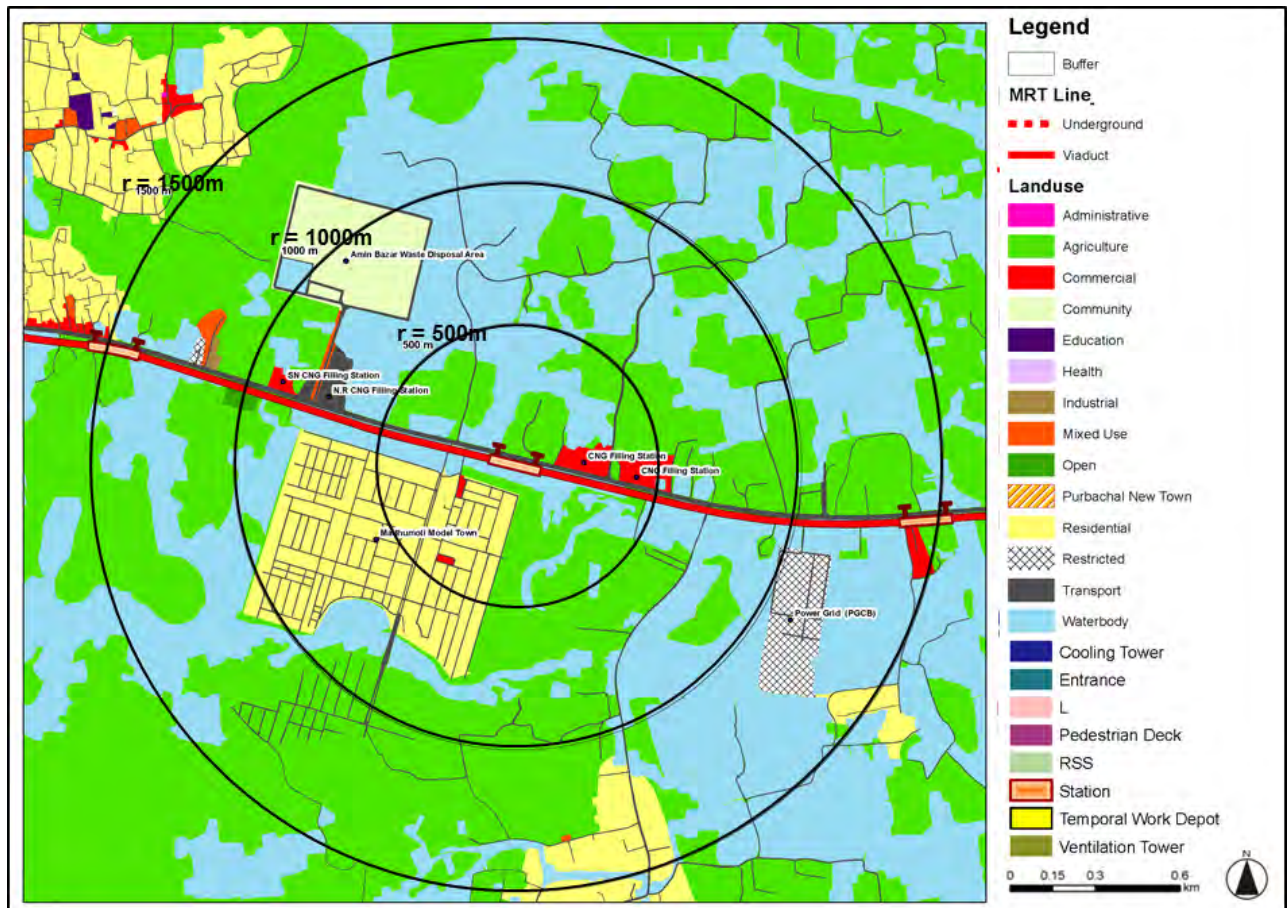
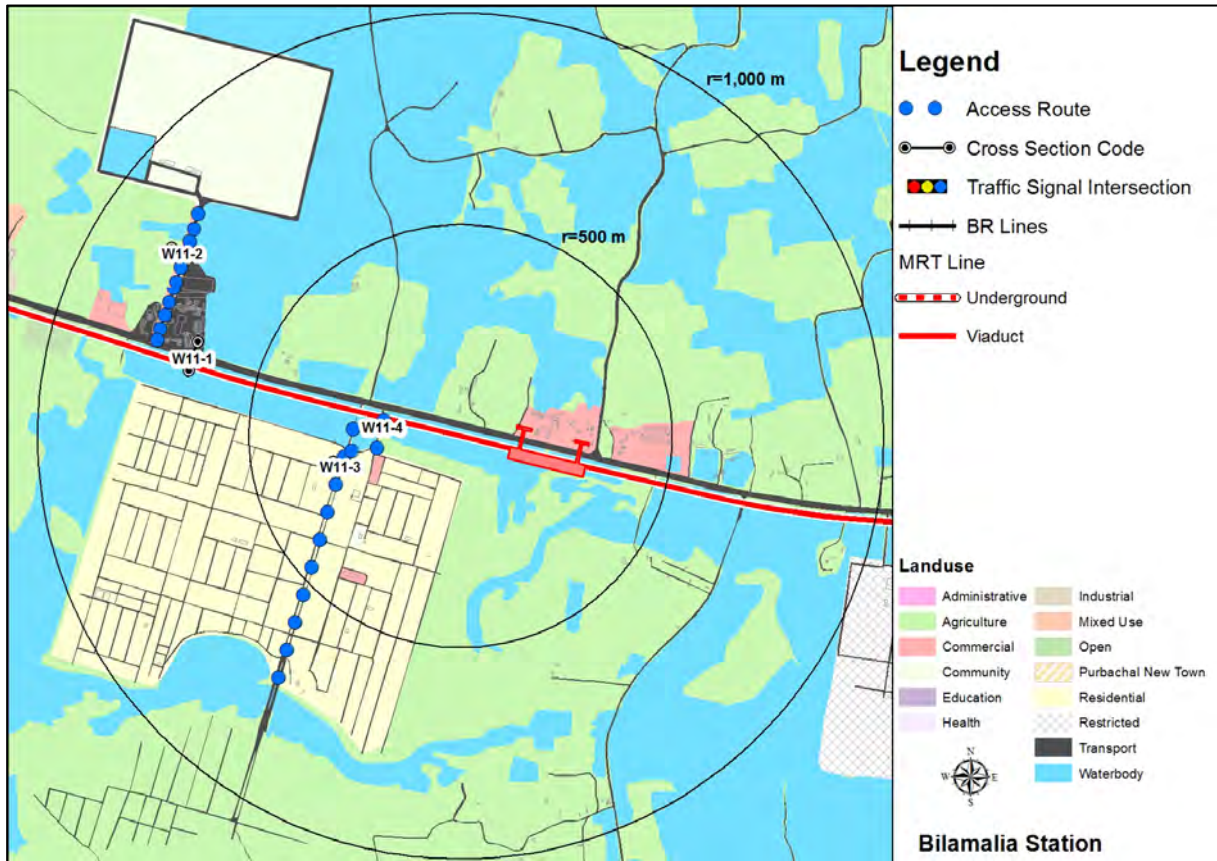


Figure 3.4.12 Land Use around Bilamaria Station

(b) Traffic Situation of Catchment Area

3.119 Features related to traffic conditions around the station include:

- (i) Dhaka Aricha Highway is the main road to the outskirts of Bangladesh, but sidewalks are not well maintained. The traffic volume of intercity buses and trucks is high, and it is dangerous to move on foot.



Source: JICA Study Team

Figure 3.4.13 Transportation Network around Bilamaria Station

Id	Cross-Section	Photo
W11-1	<p style="text-align: center;">W=17.9 m</p>	

Source: JICA Study Team

Figure 3.4.14 Main Road Section around Bilamaria Station

Id	Cross-Section	Photo
W11-2		
W11-3		
W11-4		

Source: JICA Study Team

Figure 3.4.15 Minor Road Section around Bilamaria Station

(c) MRT Impact on Urban Development

3.120 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) MRT construction will induce an increase in development demand. Therefore, if the DAP were to be modified and housing development permitted, there would be a possibility for large-scale developments.
- (ii) After construction of MRT, access from Dhaka City will be improved, and development as a residential area should further progress.

Table 3.4.3 Socio-economic Indicators around Bilamaria Station (Radius 1 km area)

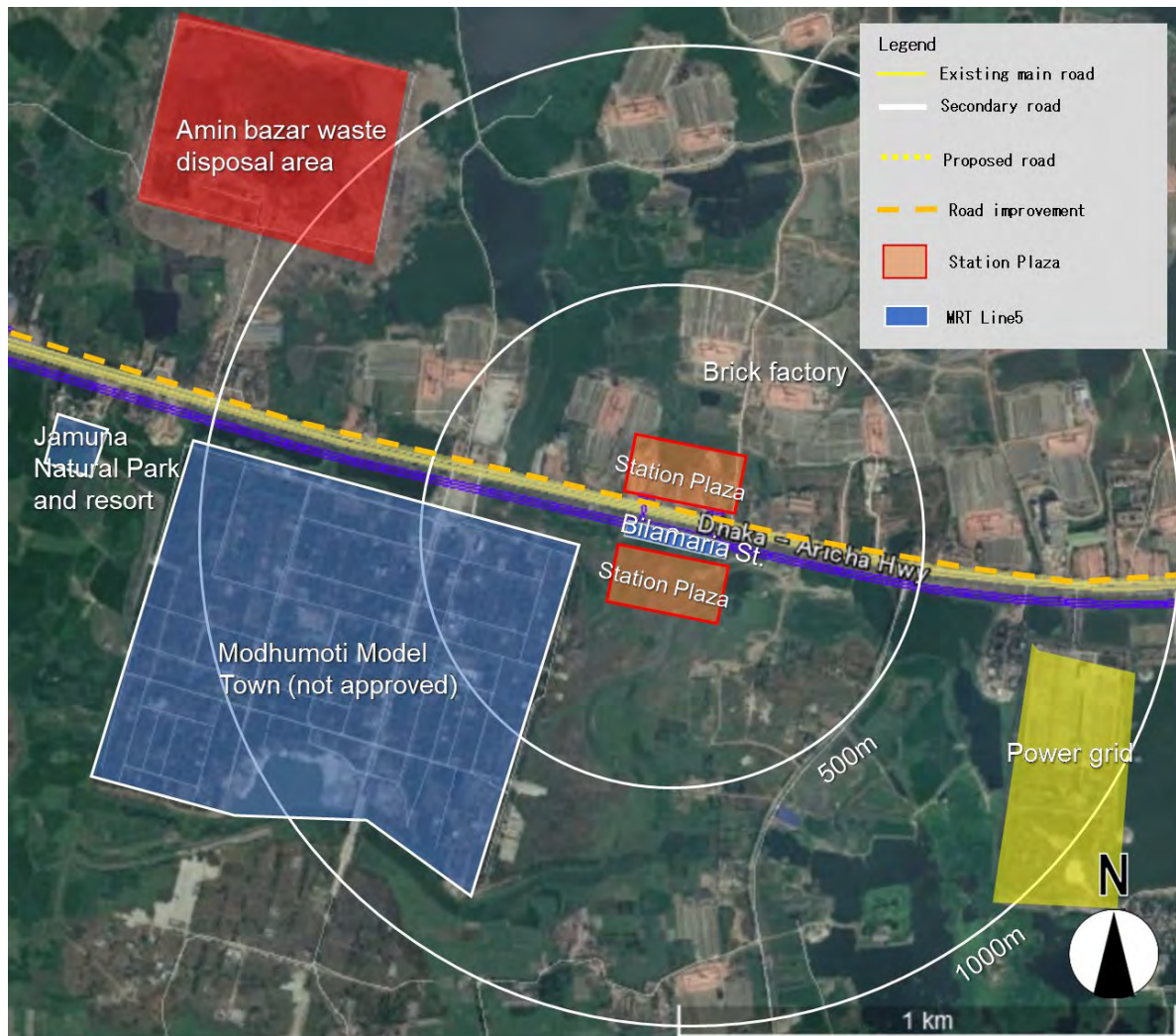
			2015	2035
Population	Day	No.(000)	1.1	6.9
		Density (No/ha)	3.5	22.1
	Night	No.(000)	1.2	8.4
		Density (No/ha)	3.9	26.6
Daytime Population	Worker (000)		0.4	3.0
	Student (000)		0.2	1.2
	Total		0.6	4.2
Night Population	Worker (000)		0.5	3.8
	Student (000)		0.2	1.7
	Total		0.7	5.6
Population Day/Night Ration (000)			0.9	0.8

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.121 Bilamaria is an area where development is currently regulated by DAP. However, when development demand will increase due to proximity to the station, development could possibly occur rapidly because all the areas around the station are vacant. TOD policy recommendations for Baliapur station include:

- (i) **Development of station plazas:** Currently, the station area is an open space as per DPA. However, there is a possibility that the station will induce development of the neighborhood. Therefore, it is necessary to secure some open space in advance for the development of a station plaza.
- (ii) **Improvement of pedestrian network:** Sidewalks are not well maintained between Amin Bazar Station to Hemayetpur station. As a result, the movement in the east and west direction by walking is hindered, and sidewalks are necessary for Dhaka Aricha Highway, and when future development is implemented, the improvement of sidewalks from residential areas is indispensable.
- (iii) **Implementation of a development plan coexisting with wetlands:** Wetlands in the section from the Baliapur to Amin Bazar station have important functions for the city as retention pond, and it is difficult to promote development because of urban floods in Dhaka. Therefore, in case of development promotion, it is necessary that the development plan includes green space and wetland preservation.



Source: JICA Study Team

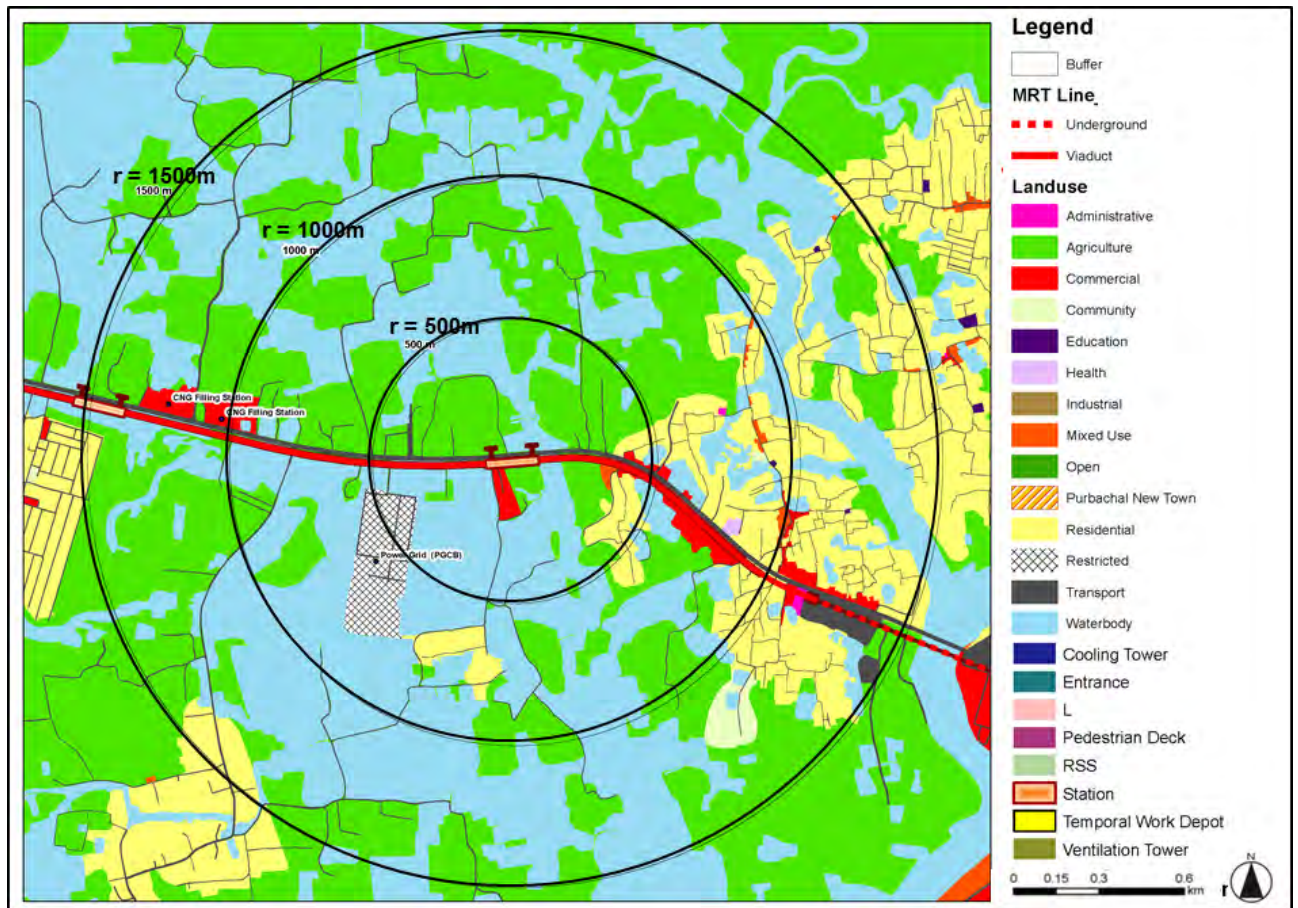
Figure 3.4.16 Concept Plan around Bilamaria Station

4) Amin Bazar Station

(a) Current Land Use of Catchment Area

3.122 Wetlands occupy most of Amin bazar station area, where some brick factories and power plants are located. Many brick factories are located on large sites, and cars brought in the area by the factories are parked along the roads. Also, the residential area of Amin Bazar, located on the east side of the station, was planned long ago and originally as a high-income residential area. Therefore, many workers commute to the centre of Dhaka. A truck terminal and a ferry terminal are located in the vicinity of the station area.

3.123 Although there is no urban development plan being implemented around the station, the population is concentrated around the existing urban area in the east, and many buildings are rather old.



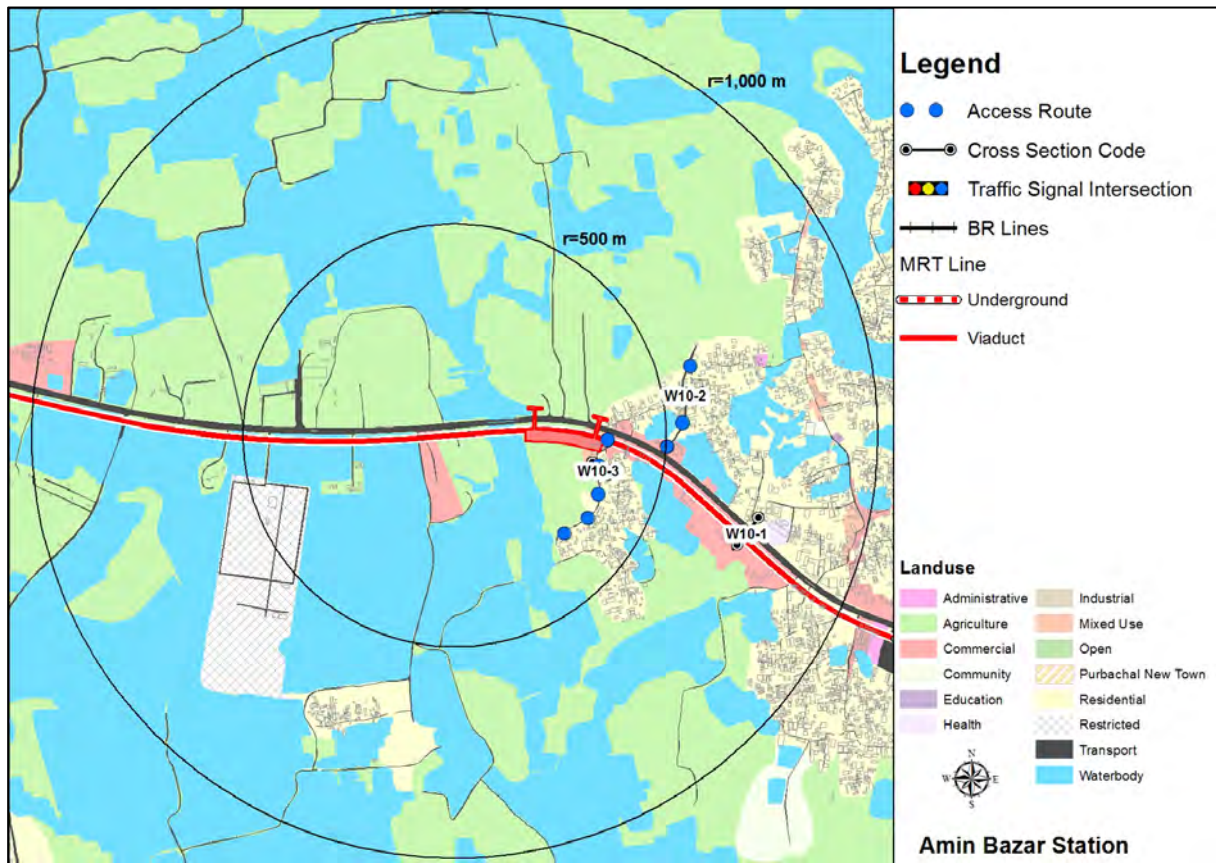
Source: JICA Study Team

Figure 3.4.17 Land Use around Amin Bazar Station

(b) Traffic Situation of Catchment Area

3.124 Features related to traffic conditions around the station include:

- (i) Walking access from the eastern residential area is important, but there is no sidewalk from Dhaka City to the suburbs at Dhaka Aricha Highway, and sidewalks are not well maintained around the station.
- (ii) Minor roads do not have sidewalks and are very narrow.



Source: JICA Study Team

Figure 3.4.18 Transportation Network around Amin Bazar Station

Id	Cross-Section	Photo
W10-1	<p style="text-align: center;">W = 23.4 m</p>	

Source: JICA Study Team

Figure 3.4.19 Main Road Section around Amin Bazar Station

Id	Cross-Section	Photo
W10-2		
W10-3		

Source: JICA Study Team

Figure 3.4.20 Minor Road Section around Amin Bazar Station

(c) MRT Impact on Urban Development

3.125 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) Amin Bazar Station has been a residential area since long ago, and many residents living in the area commuter to Dhaka city center every day. Due to access improvement to Dhaka City, MRT will attract an increasing number of residents working in Dhaka City, possibly leading to housing development in the future. The existing urban area is old, therefore it can be expected that the MRT station will promote redevelopment and higher-density development. (Nighttime population 8,800 to 18,700)
- (ii) The construction of MRT will induce development demand in the neighborhood, which should improve environmental conditions in existing urban areas

Table 3.4.4 Socio-economic Indicators around Amin Bazar Station (Radius 1 km area)

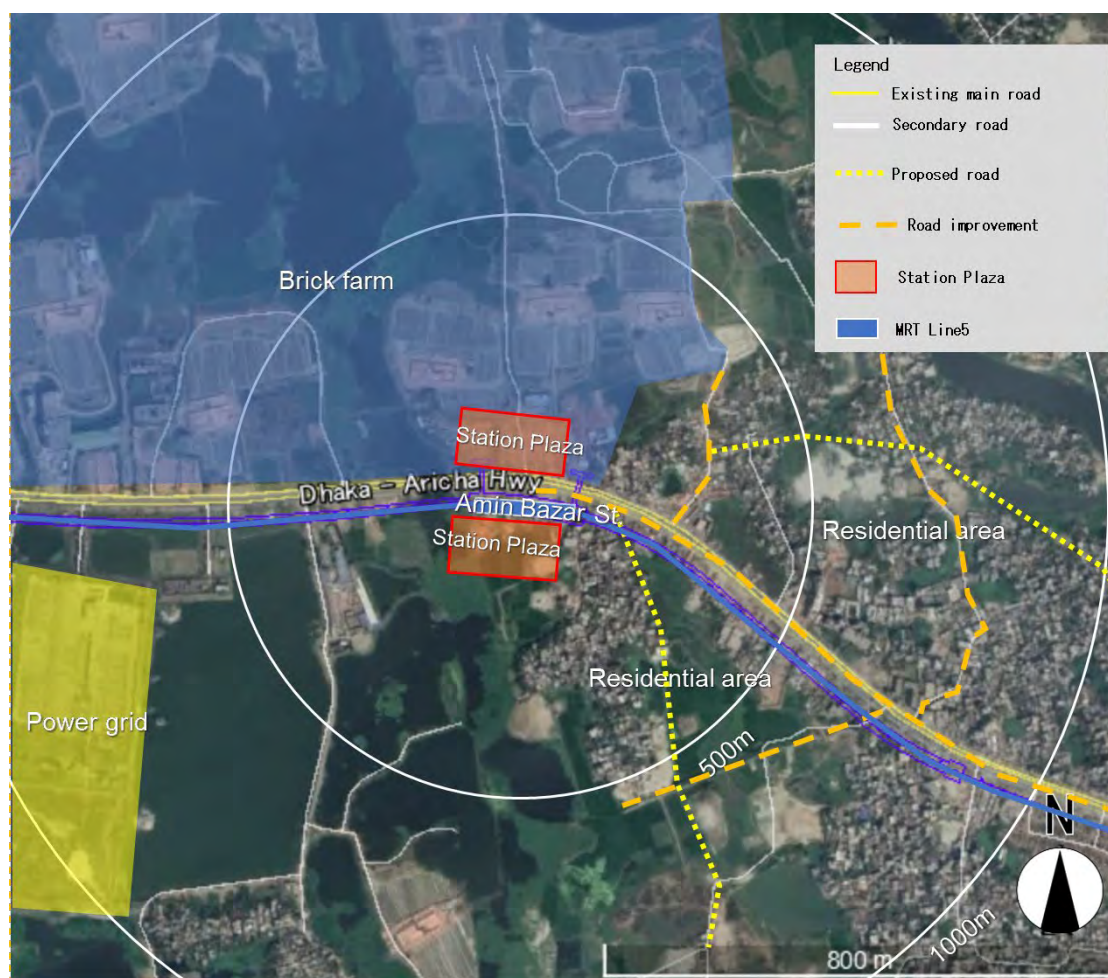
			2015	2035
Population	Day	No.(000)	7.9	13.9
		Density (No/ha)	25.0	44.4
	Night	No.(000)	8.8	18.7
		Density (No/ha)	27.9	59.6
Daytime Population	Worker (000)		2.6	5.0
	Student (000)		1.6	2.7
	Total		4.2	7.7
Night Population	Worker (000)		3.4	8.6
	Student (000)		1.7	3.9
	Total		5.1	12.5
Population Day/Night Ration (000)			0.9	0.7

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.126 TOD policy recommendations for Amin Bazar station include:

- (i) **Development of station plazas:** The residential area spreads east of Amin Bazar Station, the west side has not been developed yet. It is possible to use the open space for a station plaza and space shall be secured in advance.
- (ii) **Improvement of pedestrian network:** The sidewalk is not well maintained from Amin Bazar Station to Hemayetpur Station. As a result, east-west movement is hindered, and sidewalk improvements are necessary along the Dhaka Aricha Highway.
- (iii) **Improvement of living environment of existing urban area:** The existing urban area were developed long years ago, and the street network is complicated. Therefore, pedestrian access is not secured. Redevelopment will be promoted, and the living environment will be improved after MRT construction.
- (iv) **Implementation of a development plan coexisting with wetlands:** Wetlands in the section from the Baliapur to Amin Bazar station have important functions for the urban environment, as a retention pond, and it is difficult to promote development because of the high risk of urban floods in Dhaka. Therefore, in case of promoting development, it is necessary to formulate a development plan together with green space and wetland preservation.



Source: JICA Study Team

Figure 3.4.21 Concept Plan around Amin Bazar Station

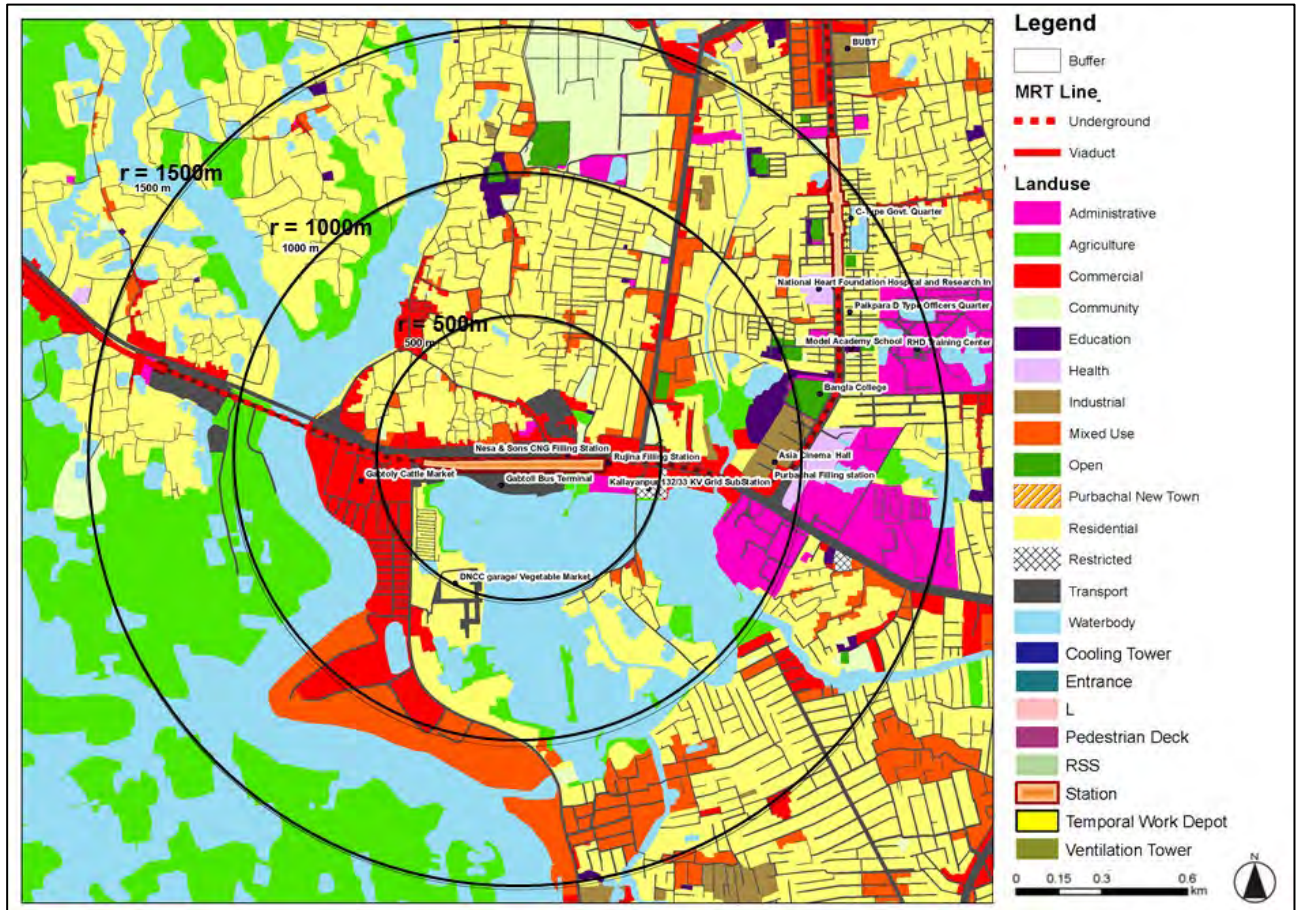
5) Gabtoli Station

(a) Current Land Use of Catchment Area

3.127 Gabtoli bus terminal is located above Gabtoli station and it is an important transportation terminal to the outskirts of Dhaka. A cattle market, a bazar, and CNG stands are located in the station area. Urban development is currently occurring near the ferry terminal on Buriganga river. It is also a place for transportation and stock of bricks produced near Amin bazar and Bilamaria. A dense urban area spreads to the north, and wetlands spread to the south of the bus terminal; the terminal falls under the jurisdiction of the Ministry of Agriculture.

3.128 There are bus operator offices along the National Highway No. 5, so it is a remarkably crowded area because of people waiting to buy tickets and passengers getting on and off the bus along the road. Because the Amin Bazar bridge is narrow, buses and trucks cause traffic jams. In addition, intercity buses coming from the suburbs make a U-turn near the Gabtoli Bus Terminal before entering the terminal, thus contributing to traffic congestion at nearby intersections

3.129 Gabtoli Ferry Terminal was developed in 2013. Original time estimate to Sadar Ghat was 30 minutes, but in fact it takes 75 minutes. In the vicinity of the ferry terminal, medium-sized ships carrying coal and construction materials come and go, but the river is narrow, and overall the surroundings are rather unsafe.



Source: JICA Study Team

Figure 3.4.22 Land Use around Gabtoli Station



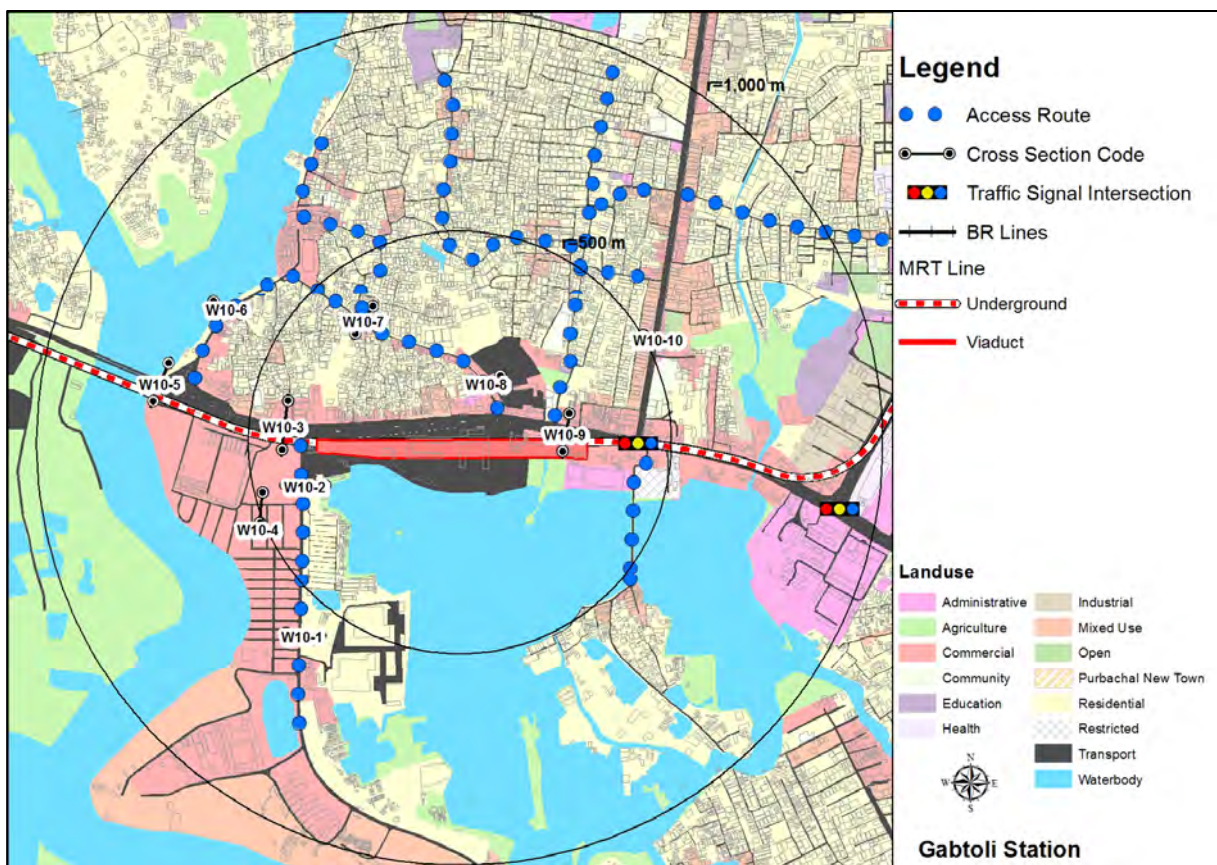
Source: JICA Study Team

Figure 3.4.23 Current Conditions around Gabtoli Station

(b) Traffic Situation of Catchment Area

3.130 Features related to traffic conditions around the station include:

- (i) Ensuring access from the northern residential area is important. An underpass exists for crossing of Dhaka Aricha Highway, but it is not used much and pedestrians prefer to cross at grade although it is very dangerous.
- (ii) Secondary roads in residential areas are too narrow and do not have sidewalks .
- (iii) On the Dhaka Aricha Highway in front of the station, the sidewalk is about 3.0-m wide, but the pavement is in poor condition and small stores occupy sidewalks.
- (iv) The Gabtoli Bus Terminal, which is the main terminal of the bus to the southwestern part of Bangladesh, is located in the future station area, which is also planned to become a station area for the Phase 2 section of MRT Line 5.



Source: JICA Study Team

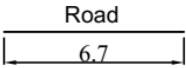

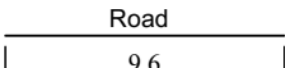

Figure 3.4.24 Transportation Network around Gabtoli Station

Id	Cross-Section	Photo
W10-3 Gabtoli Main Road	<p>W = 43.1 m</p>	
W10-5 Dhaka-Aricha Highway	<p>W = 23.3 m</p>	
W10-9 Mirpur Road	<p>W = 41.4 m</p>	
W10-10	<p>W = 19.1 m</p>	n/a

Source: JICA Study Team

Figure 3.4.25 Main Road Section around Gabtoli Station

Id	Cross-Section	Photo
W10-1 Dipnagar, Beribadh	<p>Road 5.8</p>	
W10-2 Gabtoli- Sadarghat Road (Beribadh)	<p>Median Carriageway Carriageway 0.8 W = 8.8 m</p>	
W10-4 Gorur Hat Road	<p>Road 8.9</p>	
W10-6 Dhour Road	<p>Road 9.15</p>	

Id	Cross-Section	Photo
W10-7 Kotbari Road		
W10-8 Karmicheal Road		

Source: JICA Study Team

Figure 3.4.26 Minor Road Section around Gabtoli Station

(c) MRT Impact on Urban Development

3.131 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) The existing urban area near the station is densely populated with low-rise residences. With the development of the MRT station, redevelopment of the residential area is promoted, from low-rise high-rise buildings. Open space will be secured around the station, thus the living environment can be expected to improve:
- (ii) Since there is no big commercial area outside Dhaka City, development as commercial area can be expected to attract customers. There is a possibility to develop a commercial area integrated with the station, and amusement parks such as Bashundhara city and Jamuna Future Park located in the western part of Dhaka. (Daytime population of worker: 29,600 to 41,000)

Table 3.4.5 Socio-economic Indicators around Gabtoli Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	87.2	103.7
		Density (No/ha)	277.7	330.0
	Night	No.(000)	115.7	126.4
		Density (No/ha)	368.1	402.5
Daytime Population	Worker (000)		29.6	41.0
	Student (000)		18.0	20.4
	Total		47.6	61.4
Night Population	Worker (000)		40.6	57.9
	Student (000)		35.4	26.3
	Total		76.0	84.2
Population Day/Night Ration (000)		0.8	0.8	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.132 Gabtoli station will be built under the Gabtoli bus terminal which is also one of the main bus terminals in Bangladesh, and in the future, it will become an important station as a connecting node with MRT Line 5. Recommended TOD policies for Gabtoli station include:

- (i) **Reorganization of the bus terminal function:** Currently, the Gabtoli bus terminal functions inefficiently; the site is used as a bus depo, passengers get on and off not in the terminal but along the main road. For this reason, it is important to improve

the existing bus terminal and to consolidate space for all bus companies' ticket booths. Furthermore, after construction of MRT, it is necessary to consider the relocation of the bus terminal to the suburbs in order to take full advantage of the development potential around the station, and to secure development land around the station.

- (ii) **Promotion of development around the bus terminal:** Many bus operators' offices and CNG stands are located in the vicinity of Gabtoli station, but it is used as a bus depo and a platform and the site is not used efficiently. By consolidating these uses, it is possible to secure some land for future development.
- (iii) **Improvement of access from the northern residential area:** Access from the existing urban area on the north side of the Gabtoli bus terminal is not secured, and the pavement and the width of the sidewalk of Dhaka Aricha Highway are insufficient. Buses, rickshaws, CNGs are stationary on sidewalks. It is necessary to combine reformulation of existing urban areas and improvement of pedestrian access and development of pedestrian bridges or underpasses. It is necessary to improve access between the north and south of the station.
- (iv) **Land re-adjustment for existing residential area:** The offices, ticket offices, and hotels line up along the roadside, and roads in residential area are narrow and unpaved. The sidewalks are not developed and densely built areas are vulnerable to natural disasters. It is necessary to improve the living environment.
- (v) **Utilization of open space:** Currently, the banks of the Buriganga river are used as a brick yard for construction materials, coal transportation, and a cattle market. It is important to improve access to the station and develop commercial facilities in the station area in order to maximize the development potential around the station.



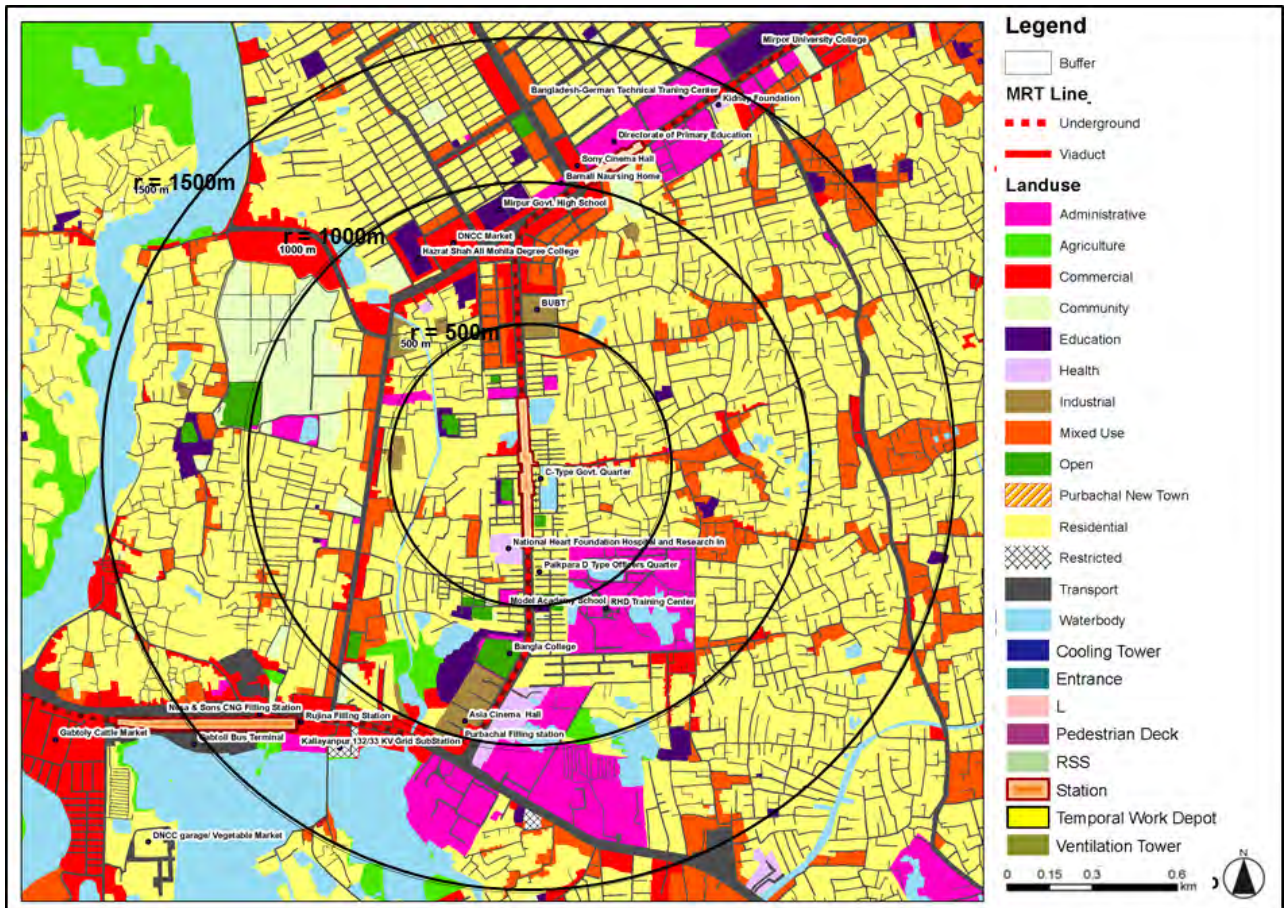
Source: JICA Study Team

Figure 3.4.27 Concept Plan around Gabtoli Station

6) Dar-us-Salam Station

(a) Current Land Use of Catchment Area

3.133 University hospitals, housing for public officials, and universities are located in the station area, which is located along the main road heading to Mirpur in the north-western part of Dhaka. The traffic volume is high. As there are many educational facilities in the surroundings, middle-income housing is expanding, and partial redevelopment of old buildings is occurring. The population density is extremely high.



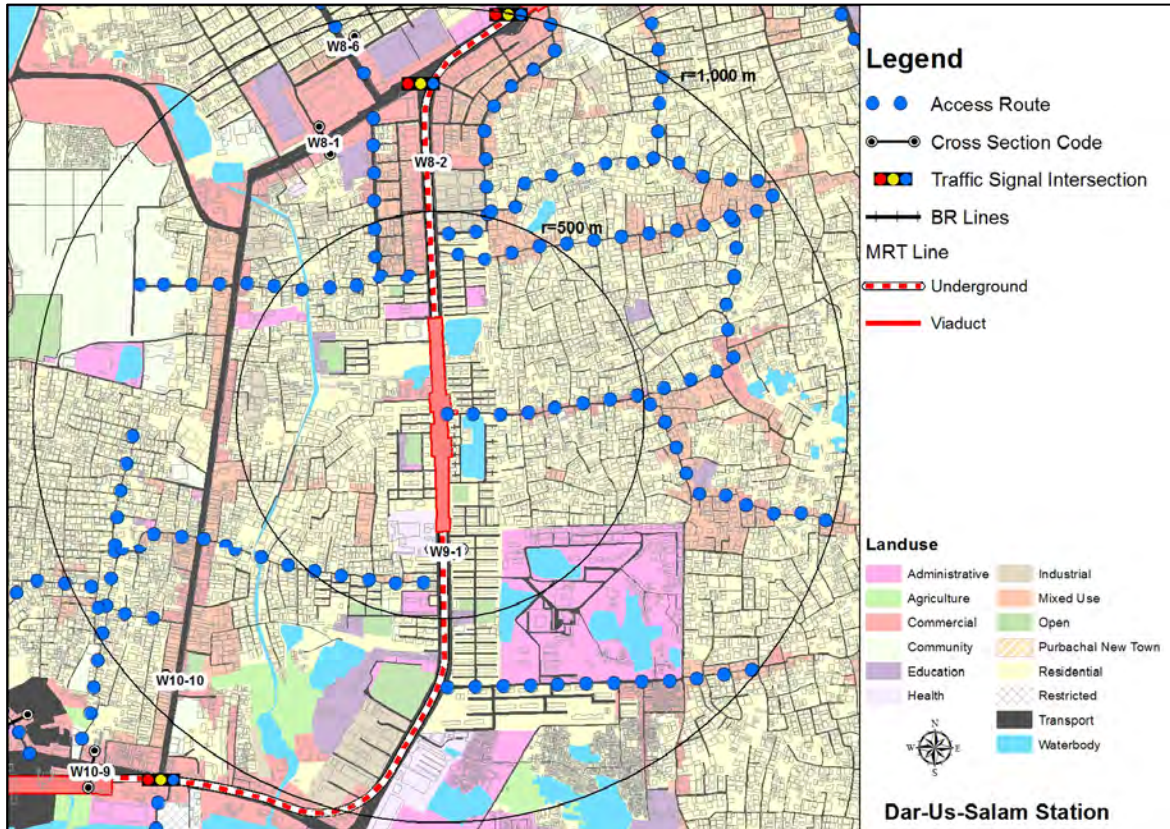
Source: JICA Study Team

Figure 3.4.28 Land Use around Dar-us Salam Station

(b) Traffic Situation of Catchment Area

3.134 Features related to traffic conditions around the station include:

- (i) A sidewalk of 3 m or more in width is maintained on the road in front of the Dar-us-Salam station, but it is used as a market the moment and the roads are not functioning actually. In addition, it is an obstacle to pedestrian access, such as construction soil left.
- (ii) Access from the residential area on the west side of the station is very complicated.



Source: JICA Study Team

Figure 3.4.29 Transportation Network around Dar-us-Salam Station

Id	Cross-Section	Photo
W8-1	<p>W = 22.5 m</p>	
W8-2	<p>W = 37.4 m</p>	
W10-9 Mirpur Road	<p>W = 41.4 m</p>	
W10-10	<p>W = 19.1 m</p>	n/a

Source: JICA Study Team

Figure 3.4.30 Main Road Section around Dar-us-Salam Station

Id	Cross-Section	Photo
W8-6	<p style="text-align: center;">W = 21.5 m</p>	n/a

Source: JICA Study Team

Figure 3.4.31 Minor Road Section around Dar-us-Salam Station

(c) MRT Impact on Urban Development

3.135 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) There is no space available for large-scale development in the vicinity of the station, but due to development of MRT, development demand will increase, redevelopment of existing urban areas will be promoted, and high-rise buildings should be constructed. (Night population 237,000 to 241,500)
- (ii) Many workers commute to Mirpur, Gulshan, Banani and southern Dhaka, and commercial areas such as Mirpur are located in the vicinity; therefore, the development of the station area as a residential area should occur.

Table 3.4.6 Socio-economic Indicators around Dar-us-Salam Station (Radius 1 km area)

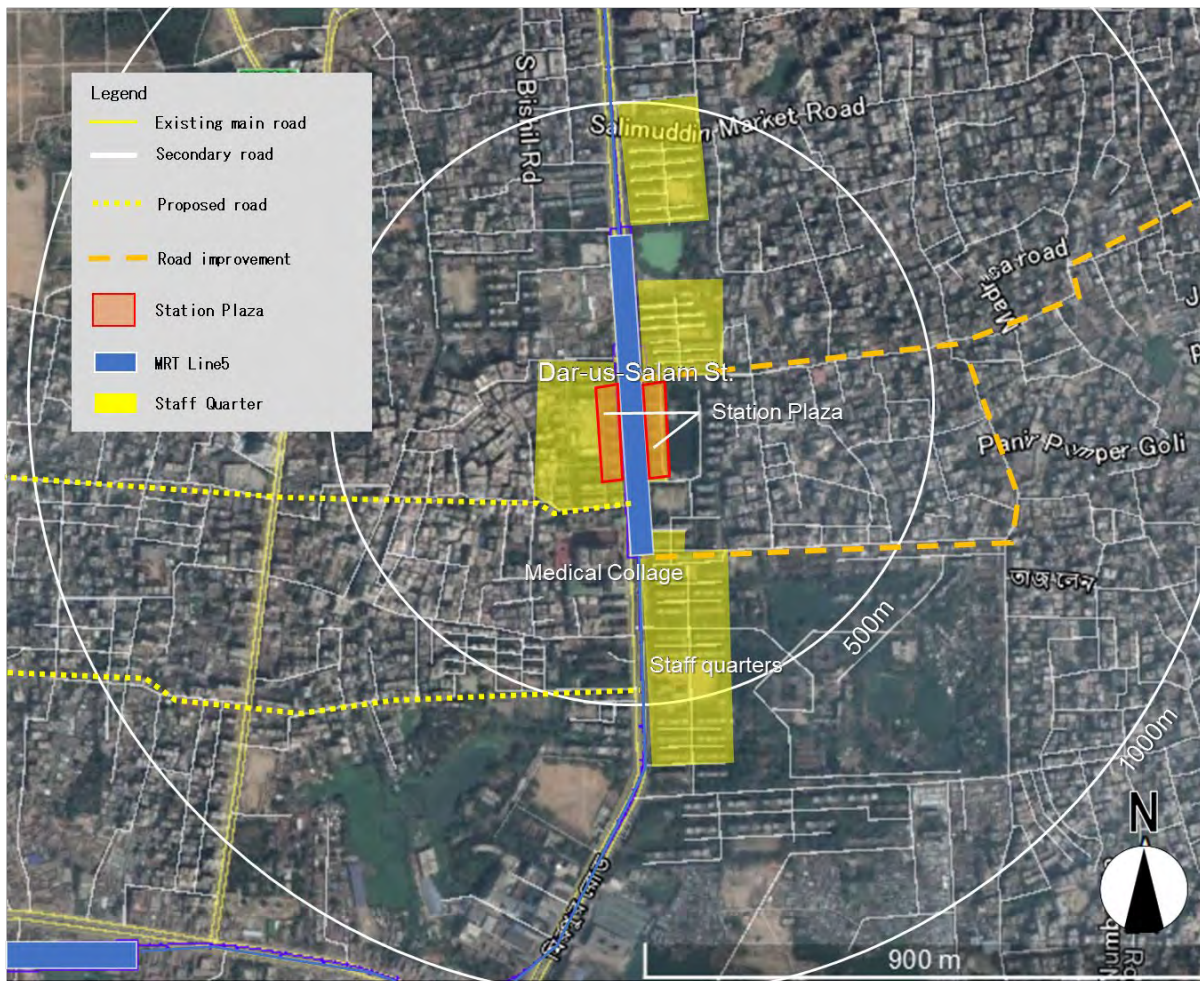
		2015	2035	
Population	Day	No.(000)	160.3	193.8
		Density (No/ha)	510.1	616.8
	Night	No.(000)	237.0	241.5
		Density (No/ha)	754.3	768.6
Daytime Population	Worker (000)		32.7	56.4
	Student (000)		50.9	56.7
	Total		83.6	113.1
Night Population	Worker (000)		84.1	110.5
	Student (000)		76.3	50.3
	Total		160.3	160.8
Population Day/Night Ration (000)		0.7	0.8	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.136 There are many public places in the vicinity of Dar-us-Salam station. Old urban areas are also spreading, and redevelopment is underway. TOD policy recommendations for Darussalam station include:

- (i) **Development of station plazas:** The station area currently encompasses old residential developments for public officials' housing. Therefore, the land for a station plaza should be secured through the redevelopment of existing buildings.
- (ii) **Improvement of walking environment:** There are many roads without adequate sidewalks and pavement. Moreover, construction materials and waste materials are placed on the side of the main road, which hinders pedestrian access. It is necessary to thoroughly manage and pave sidewalks.
- (iii) **Promotion of development around the station:** If the relocation of hoses for public officers around the station occurs, a large-scale development site can be secured around the station. It is possible to promote urban development to relocate or use public lands and the low-rise housing should be converted into commercial and high-rise buildings.



Source: JICA Study Team

Figure 3.4.32 Concept Plan around Dar-us-Salam Station

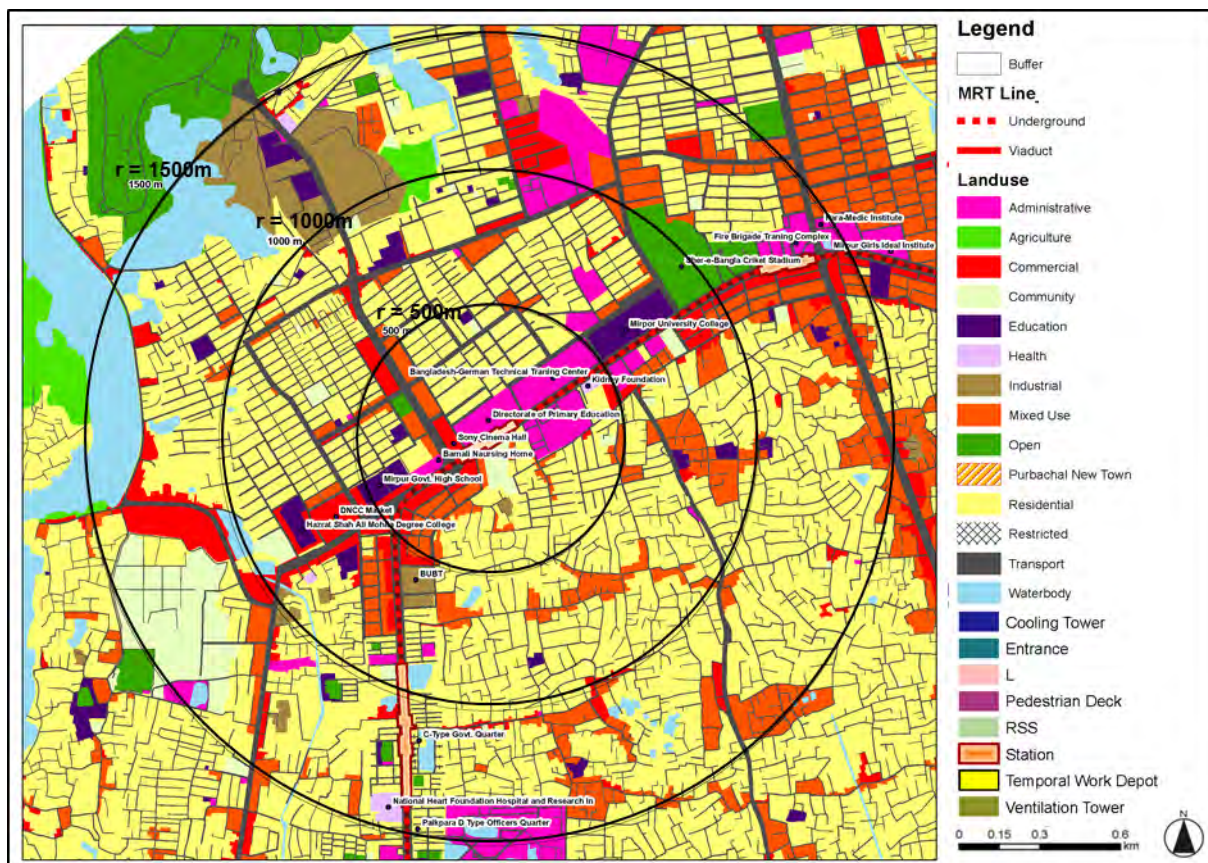
7) Mirpur 1 Station

(a) Current Land Use of Catchment Area

3.137 The area spreading from Mirpur 1 to 10 is a commercial, institutional (educational facilities in particular) and administrative sub-center located in the north-western part of Dhaka. The Grameen Bank, a post office, and a university are located along Mirpur road for example. High-rise building occupy most of the roadside, and redevelopment is occurring in many places.

3.138 The residential area occupies most of the catchment area and the residential area of the northern side of the station is well planned, while the residential area of the southern side is densely populated, and roads are narrow and the network complicated. Construction of mixed-use buildings has been promoted in areas where development demand is high. In recent years, the construction of high-rise buildings along the Mirpur road has increased dramatically.

3.139 There is no open space in the station area, and mixed-use buildings have been built. Administrative organizations such as the directorate of primary education, are located in the area, as well as a mosque.



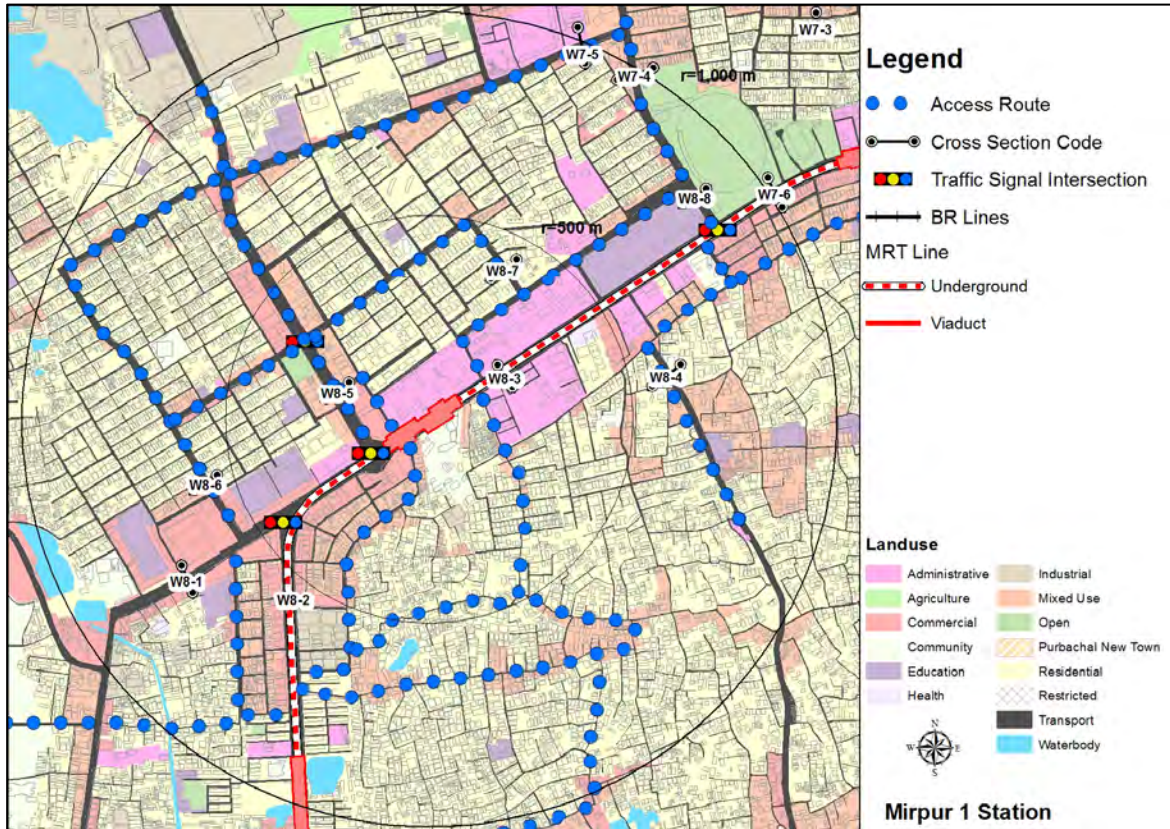
Source: JICA Study Team

Figure 3.4.33 Land Use around Mirpur 1 Station

(b) Traffic Situation of Catchment Area

3.140 Features related to traffic conditions around the station include:

- (i) The station area is located within the Dhaka's northwester sub-center. It encompasses administrative agencies, universities and commercial facilities. Sidewalks along the main road are wide, and the residential area in the northern part of the station area is well developed already, with unpaved sidewalks along the roads. Sidewalks need to be paved to facilitate pedestrian access.
- (ii) There are no access routes from the souther side of the sataion, and secondary roads are unpaved and narrow.



Source: JICA Study Team

Figure 3.4.34 Transportation Network around Mirpur 1 Station

Id	Cross-Section	Photo
W8-1	<p>W = 32.5 m</p>	n/a
W8-2	<p>W = 37.4 m</p>	n/a
W8-3	<p>W = 36.6 m</p>	n/a
W8-4	<p>W = 20.7 m</p>	n/a
W8-5	<p>W = 33.9 m</p>	n/a
W8-6	<p>W = 21.5 m</p>	n/a

Id	Cross-Section	Photo
W8-7	<p>W = 19.2 m</p>	n/a
W8-8	<p>W = 22.5 m</p>	n/a
W7-4	<p>W = 22.5 m</p>	n/a
W7-5	<p>W = 21.9 m</p>	n/a
W7-6	<p>W = 35.2 m</p>	n/a

Source: JICA Study Team

Figure 3.4.35 Main Road Section around Mirpur 1 Station

(c) MRT Impact on Urban Development

3.141 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) Commercial facilities and public facilities are located along the Mirpur road and it is the northwestern sub-center of the Dhaka region. The construction of MRT is expected to further attract commercial uses. (Daytime population: 229,500 to 280,900)
- (ii) Although many high-rise buildings have already been built, MRT will further promote redevelopment along Mirpur road, and the number of high-rise buildings is likely to increase. (Night time population 294,200 to 329,300 people)

Table 3.4.7 Socio-economic Indicators around Mirpur 1 Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	229.5	280.9
		Density (No/ha)	730.5	894.2
	Night	No.(000)	294.2	329.3
		Density (No/ha)	936.4	1048.2
Daytime Population	Worker (000)	60.4	98.4	
	Student (000)	70.0	72.6	
	Total	130.5	171.0	
Night Population	Worker (000)	103.2	150.8	
	Student (000)	92.0	68.6	
	Total	195.1	219.3	
Population Day/Night Ration (000)		0.8	0.9	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.142 Mirpur 1 plays the role of a sub-center in the northern part of Dhaka, and commercial areas are densely populated in the station area. Redevelopment into high-rise buildings

has occurred. On the other hand, the southern side of the station encompasses a dense residential area. Recommended TOD policies for Mirpur 1 station include.

- (i) **Development of station plazas:** Commercial facilities, administrative and educational institutions are concentrated around the future station location, and it can be assumed that many people will use the station. However, the surroundings are well developed, and high-rise mixed-use buildings are located in the station area. It is necessary to develop transportation nodes using public land around the station.
- (ii) **Improvement of walking environment:** Since the existing urban area on the southern side of the station is densely populated and the road network complicated, it is particularly important to improve station access.



Source: JICA Study Team

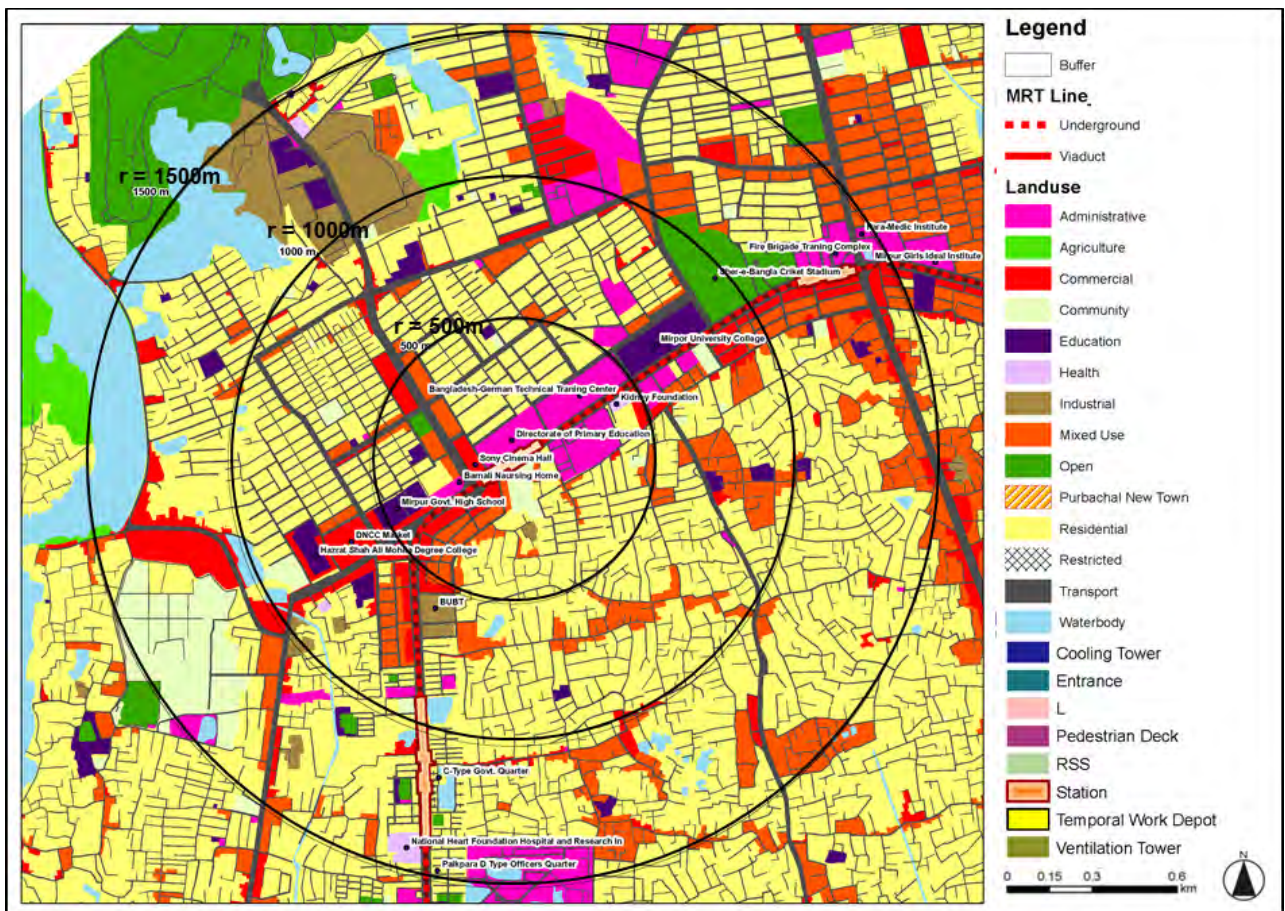
Figure 3.4.36 Concept Plan around Mirpur 1 Station

8) Mirpur 10 Station

(a) Current Land Use of Catchment Area




3.143 Mirpur 10 station will be a transfer station connecting MRT 5 and MRT 6. It will be located near the intersection of major roads, where congestion occurs on a daily basis at the moment. In addition to commercial facilities and governmental agencies, a firefighters' training school and the National Cricket Stadium are located in the surrounding area. Commercial areas are located around intersections, as well as dense residential areas. The area also is part of the sub-center located in the northwest of Dhaka.

3.144 The demand for development is high in Mirpur 1 station area, and there is no vacant land available. Much redevelopment has already occurred along the main road, and remaining low-rise residential buildings are expected to undergo redevelopment into high-rise buildings in the near future.



Source: JICA Study Team

Figure 3.4.37 Land Use around Mirpur 10 Station

1	2	3
		
<p>High Rise Residential Buildings</p>	<p>Institutional High Rise Building (Proshika NGO Building)</p>	<p>Sher-e-Bangla National Stadium</p>

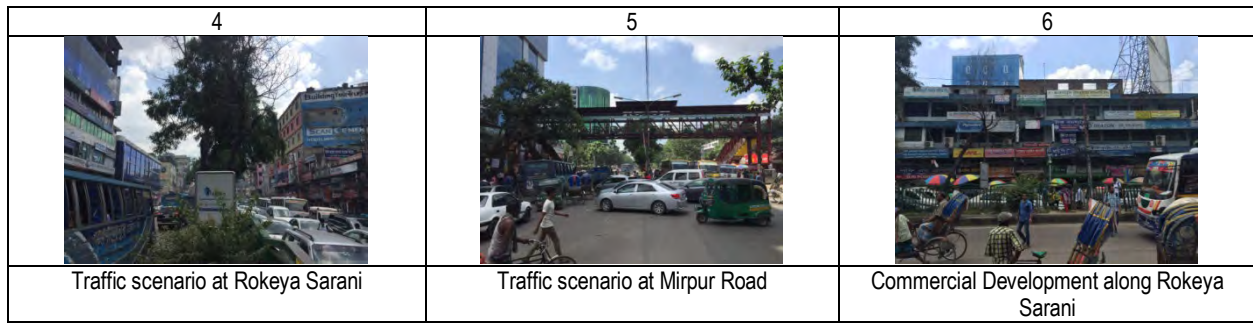
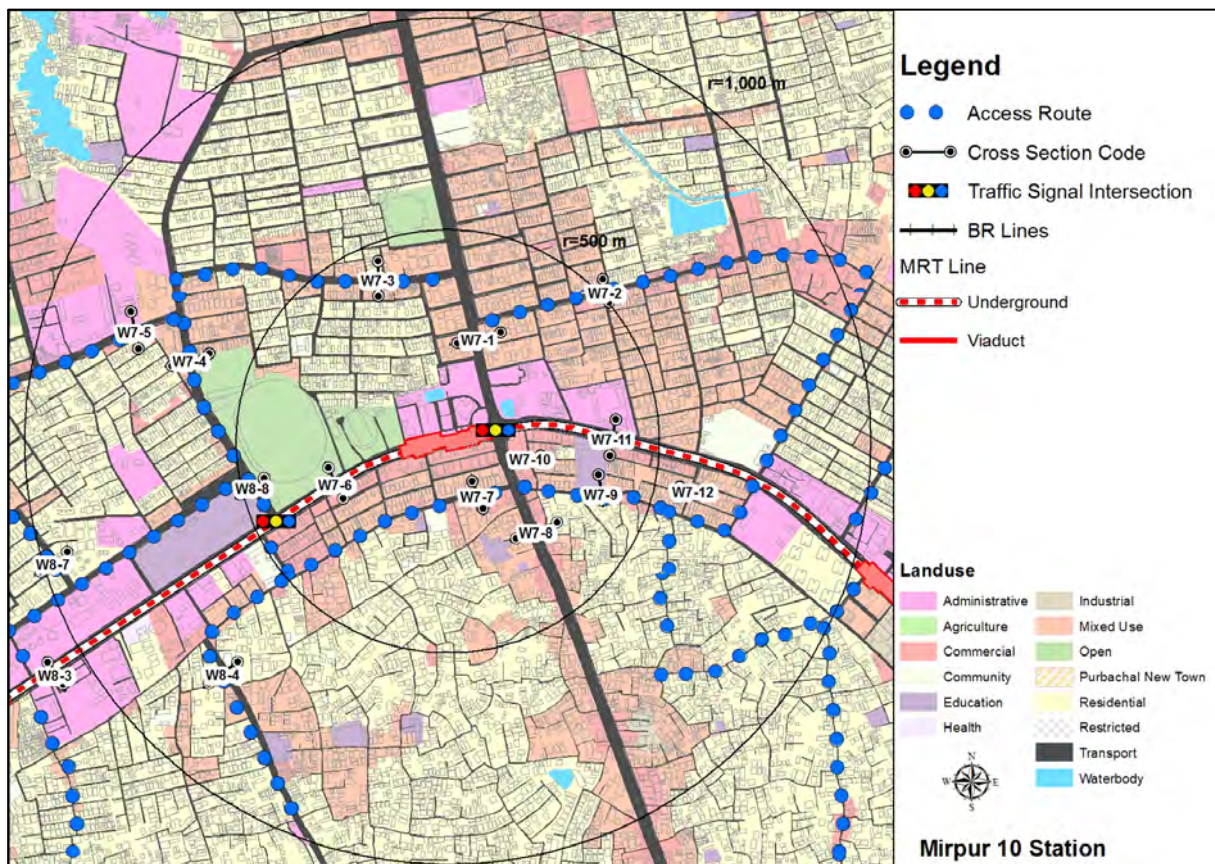


Figure 3.4.38 Current Conditions around Mirpur 10 Station

(b) Traffic Situation of Catchment Area

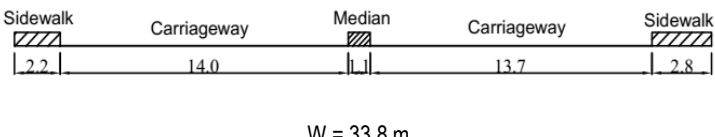

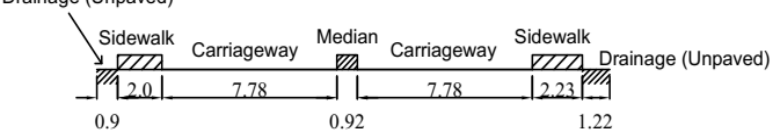

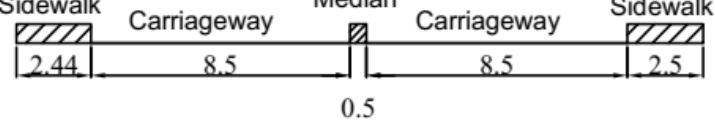

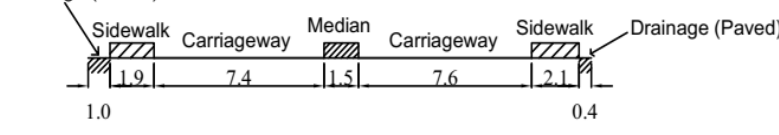

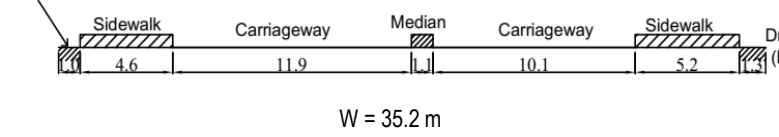

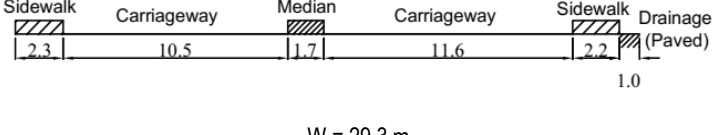

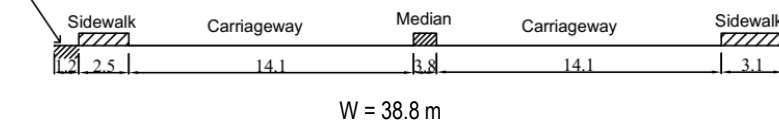

3.145 Features related to traffic conditions around the station include:

- (i) Since the cricket stadium is located at Mirpur 10, relatively wide sidewalks already exist along the main road. However, when many visitors come to the stadium for cricket games, many people are walking in the roadway which causes a gridlock.
- (ii) It is an area where buses concentrate and passengers get on and off near the intersection, therefore causing heavy traffic congestion.
- (iii) Other than main roads, not all secondary roads have sidewalks and when they do, they are too narrow.



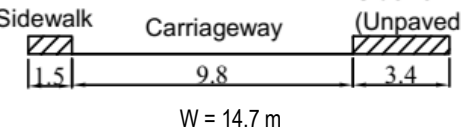

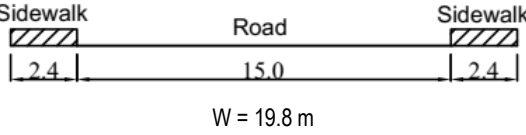

Source: JICA Study Team

Figure 3.4.39 Transportation Network around Mirpur 10 Station

Id	Cross-Section	Photo
W7-1 Mirpur Main Road (Begum Rokeya Sarani)	 <p style="text-align: center;">W = 33.8 m</p>	
W7-3 Avenue-5, section-6	 <p style="text-align: center;">W = 22.7 m</p>	
W7-4 Nurani masjid East Side Road (Milk Vita Road)	 <p style="text-align: center;">W = 22.5 m</p>	
W7-5 Avenue-3, Block-2 Road (Hazi Road)	 <p style="text-align: center;">W = 21.9 m</p>	
W7-6 1 No. Main Road (Thana Road)	 <p style="text-align: center;">W = 35.2 m</p>	
W7-8 Begum Rokeya Sarani	 <p style="text-align: center;">W = 29.3 m</p>	
W7-11 Mipur Road-13 Road	 <p style="text-align: center;">W = 38.8 m</p>	

Source: JICA Study Team

Figure 3.4.40 Main Road Section around Mirpur 10 Station

Id	Cross-Section	Photo
W7-2 Benarashee Palli Road	 <p style="text-align: center;">W = 14.7 m</p>	
W7-7 Senpara Parbata Road	 <p style="text-align: center;">W = 19.8 m</p>	

Id	Cross-Section	Photo
W7-9 Senpara Road-5	<p style="text-align: center;">W = 12.3 m</p>	
W7-10 Shah Ali Road	<p style="text-align: center;">7.3</p>	
W7-12 Opposite of Water Tank Road, section 10	<p style="text-align: center;">W = 11.6 m</p>	

Source: JICA Study Team

Figure 3.4.41 Minor Road Section around Mirpur 10 Station

(c) MRT Impact on Urban Development

3.146 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) On the northern side of Mirpur road, there are many residential areas that are well-organized, but on the southern side, there are many alleys and low-rise houses. It is expected that redevelopment of the southern area will be promoted by the development of MRT.

Table 3.4.8 Socio-economic Indicators around Mirpur 10 Station (Radius 1 km area)

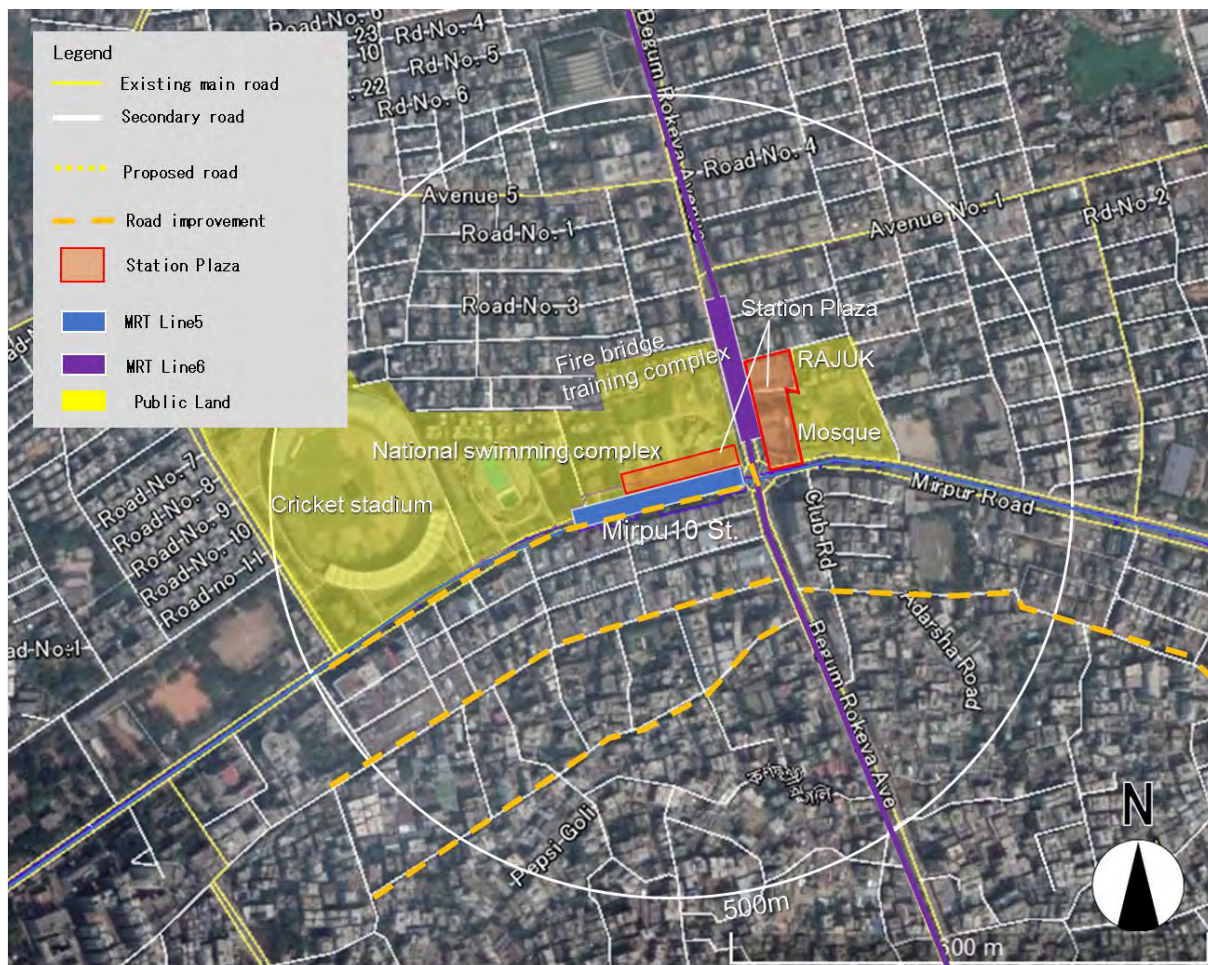
		2015	2035
Population	Day	No.(000)	295.3
		Density (No/ha)	939.9
	Night	No.(000)	329.5
		Density (No/ha)	1048.7
Daytime Population	Worker (000)	88.7	122.4
	Student (000)	94.9	72.1
	Total	183.6	194.5
Night Population	Worker (000)	120.6	153.5
	Student (000)	97.2	69.7
	Total	217.8	223.2
Population Day/Night Ration (000)		0.9	0.9

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.147 Recommended TOD policies for Mirpur 10 station include:

- (i) **Development of station plazas:** The station will be a transfer station between MRT 5 and 6, and the bus stops in front of the station are expected to generate high transit demand. For solving the current traffic congestion, it is necessary to use public land such as RAJUK's car parking area and land of sports facilities such as the swimming center to develop a station plaza.
- (ii) **Improvement of access to the station:** A cricket stadium is located in the station area, and tens of thousands of people visit the stadium in times of cricket matches. It is important to improve access between the cricket stadium and the station.



Source: JICA Study Team

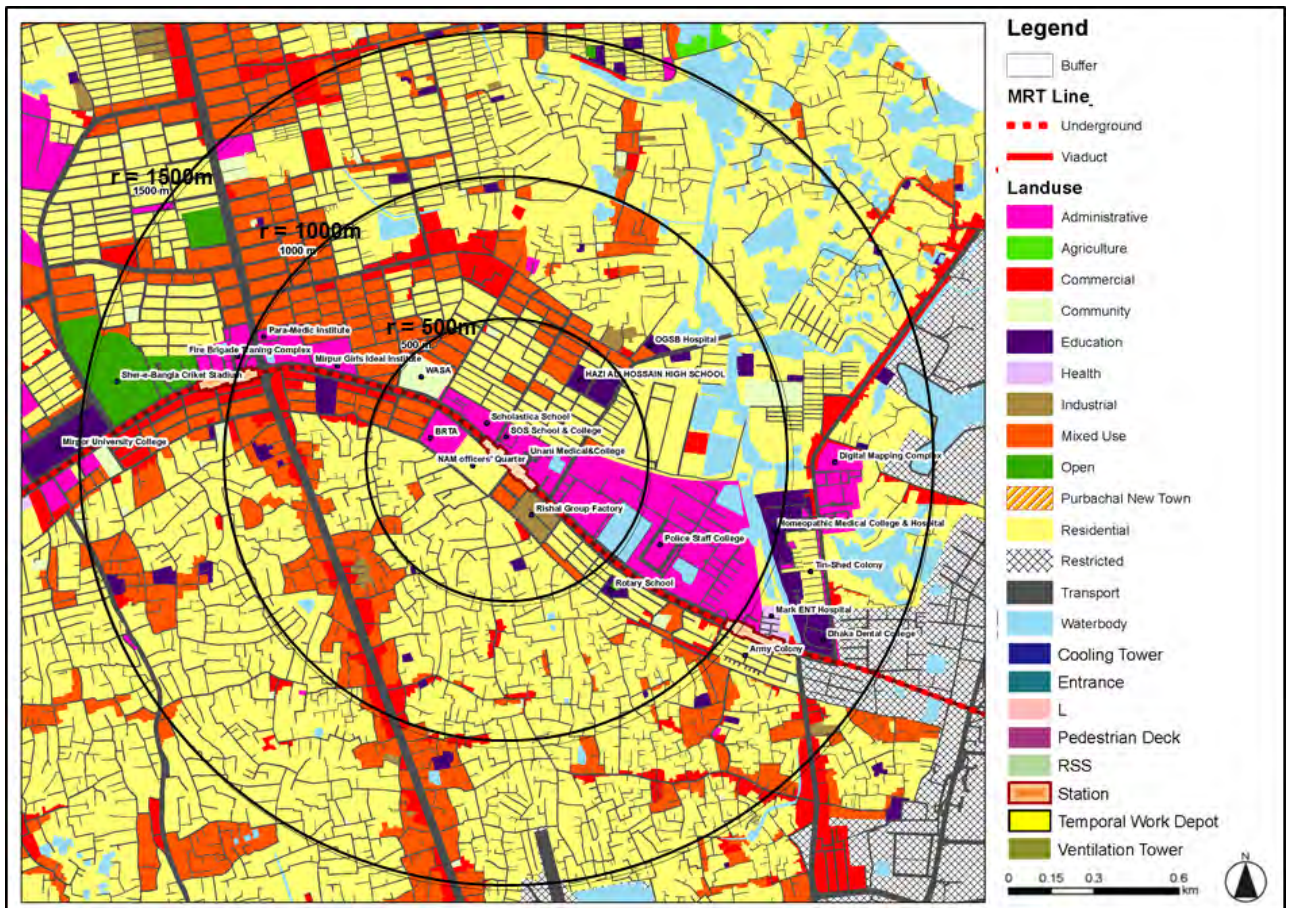
Figure 3.4.42 Concept Plan around Mirpur 10 Station

9) Mirpur 14 Station

(a) Current Land Use of Catchment Area

3.148 Universities and many administrative institutions (police schools and educational institutions especially) are located in Mirpur 14 station area. On the southern side of Mirpur road, there are some commercial facilities, factories and residential areas for public workers. It is expected that many army officials will use the MRT system.

3.149 Public facilities and hospitals are located in the vicinity of the station, and collective houses such as Bijoy Rakeen City are also built. Buildings along the Mirpur road have been redeveloped into high-rise buildings.



Source: JICA Study Team

Figure 3.4.43 Land Use around Mirpur 14 Station

(b) Traffic Situation of Catchment Area

3.150 Features related to traffic conditions around the station include:

- (i) Police schools and educational institutions occupy a large area on the northern side of Mirpur 14 station. Furthermore, access to the residential area on the northern side has been secured, and access roads have sidewalks that are at least 3.0-meter wide.
- (ii) However, sidewalks along Mirpur road—the main road in the area—are rather narrow (less than 2.0-meter wide).
- (iii) Access to the western side of the station is permitted by narrow roads. Access to the station is rather limited and needs to be improved.

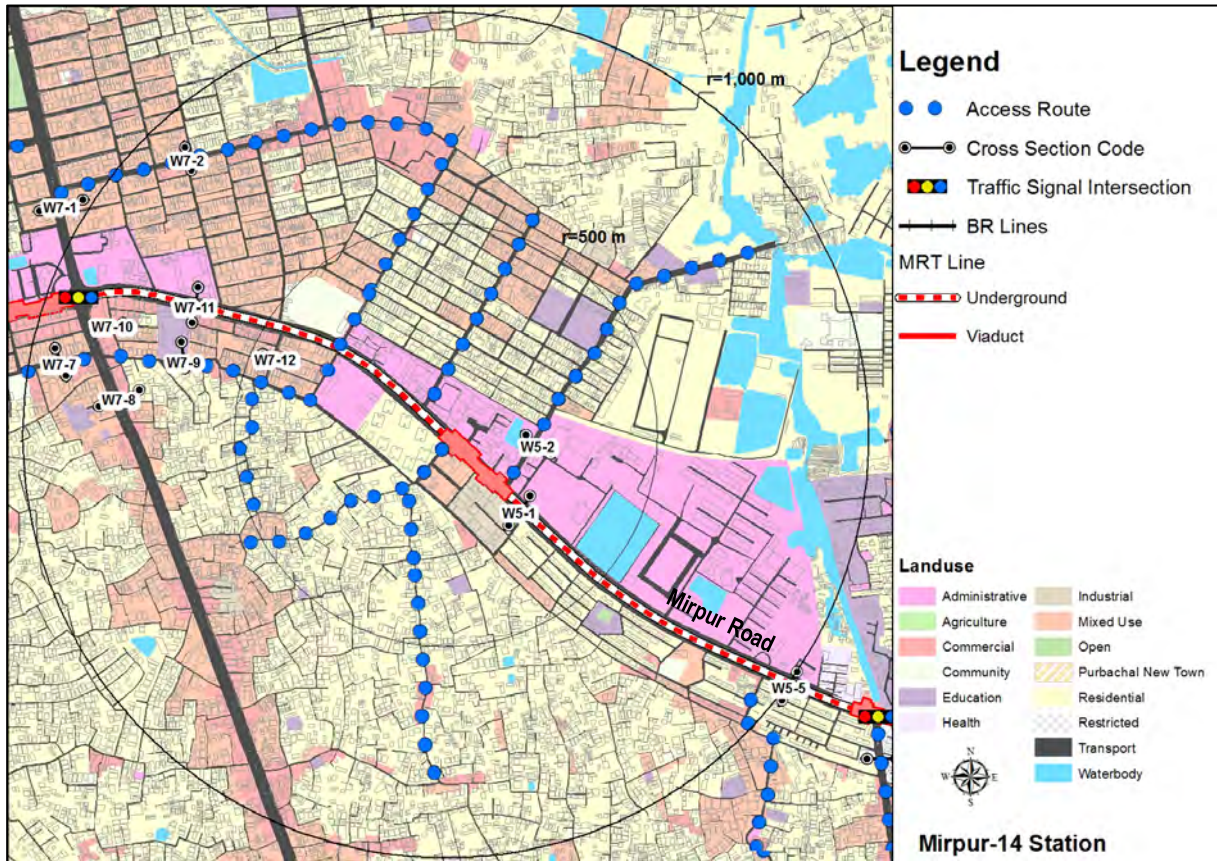


Figure 3.4.44 Transportation Network around Mirpur 14 Station

Id	Cross-Section	Photo
W7-1 Mirpur Main Road (Begum Rokeya Sarani)	<p>W = 33.8 m</p>	
W7-3 Avenue-5, section-6	<p>W = 22.8 m</p>	
W7-4 Nurani masjid East Side Road (Milk Vita Road)	<p>W = 22.5 m</p>	
W7-5 Avenue-3, Block-2 Road (Hazi Road)	<p>W = 21.9 m</p>	

Id	Cross-Section	Photo
W5-1	<p>W = 34.8 m</p>	n/a
W7-8 Begum Rokeya Sarani	<p>W = 29.3 m</p>	
W7-11 Mipur Road- 13 Road	<p>W = 38.8 m</p>	

Source: JICA Study Team

Figure 3.4.45 Main Road Section around Mirpur 14 Station

Id	Cross-Section	Photo
W5-2	<p>W = 18.4 m</p>	
W7-2 Benarashee Palli Road	<p>W = 14.7 m</p>	
W7-7 Senpara Parbata Road	<p>W = 19.8 m</p>	
W7-9 Senpara Road-5	<p>W = 12.3 m</p>	
W7-10 Shah Ali Road	<p>W = 7.3 m</p>	
W7-12 Opposite of Water Tank Road, section 10	<p>W = 11.6 m</p>	

Source: JICA Study Team

Figure 3.4.46 Minor Road Section around Mirpur 14 Station

(c) MRT Impact on Urban Development

3.151 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) Development of existing urban areas and high-rise buildings will be further promoted by the construction of MRT. (Nighttime population 80,800 to 269,400)
- (ii) There are public facilities in the station area attracting many commuters from outer areas every day, while many residents have to commute to outer areas. Therefore, the day/night population ratio is low. (Population day/night ratio 0.7 to 0.8)

Table 3.4.9 Socio-economic Indicators around Mirpur 14 Station (Radius 1 km area)

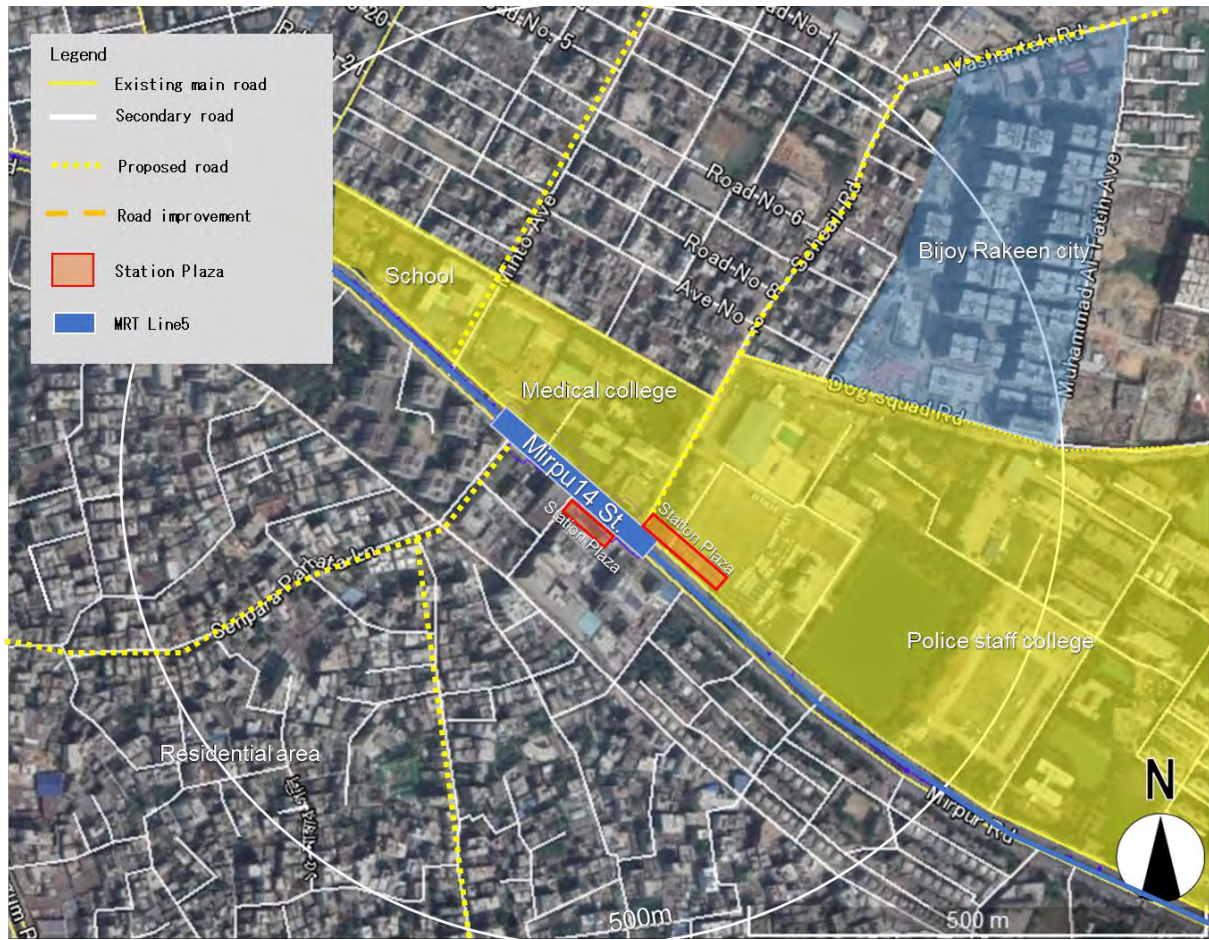
		2015	2035	
Population	Day	No.(000)	58.1	211.7
		Density (No/ha)	185.1	674.0
	Night	No.(000)	80.8	269.4
		Density (No/ha)	257.3	857.4
Daytime Population	Worker (000)		15.0	77.5
	Student (000)		14.3	44.3
	Total		29.3	121.8
Night Population	Worker (000)		29.9	123.4
	Student (000)		22.0	56.1
	Total		52.0	179.4
Population Day/Night Ratio (000)		0.7	0.8	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.152 Recommended TOD policies for Mirpur 14 station include.

- (i) **Development of station plazas:** A station plaza should be developed using public land such as the playground of the existing police school. The western side of the planned station does not have sufficient land at the moment, yet it is necessary to secure some land to develop at least a bus bay.
- (ii) **Improvement of walking environment:** Hospitals and schools are located near the station. Sidewalks exist but they are too narrow; they should be expanded and paved.



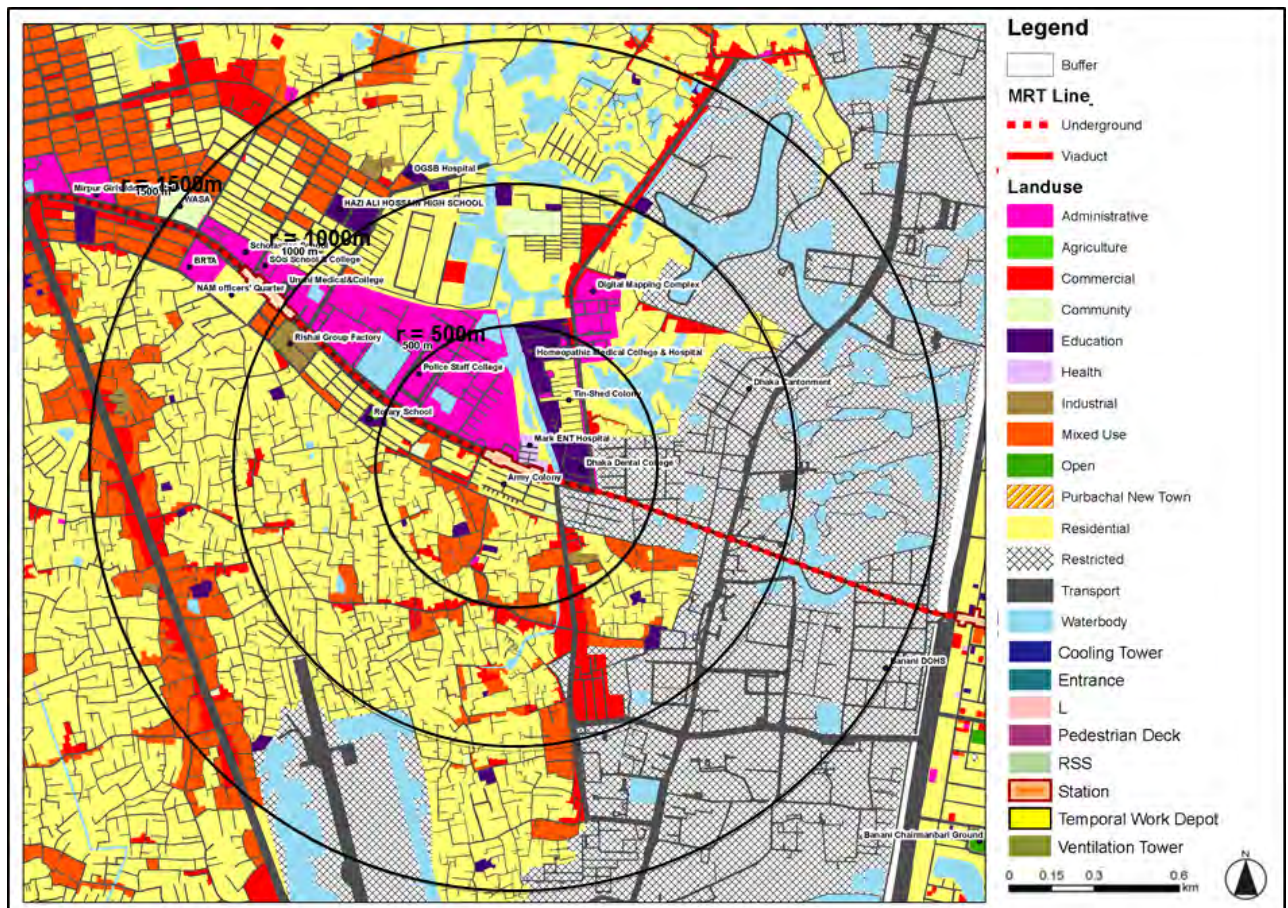
Source: JICA Study Team

Figure 3.4.47 Concept Plan around Mirpur 14 Station

10) Kochunkhet Station

(a) Current Land Use of Catchment Area

3.153 Kochunkhet is close to army land. The station area includes mostly institutional and administrative land for Dhaka dental college and a medical university in particular. Along Mirpur road, there are middle- and high-rise commercial buildings, where stores selling electric appliances and automobile parts are located on the first floors. Most of the eastern side of the station area is military land, well-equipped with sidewalks and other infrastructures. Moreover, on the northern side of the station, low-income people live around the lake and wetlands, and they are running small stores selling automobile parts and repair stores.



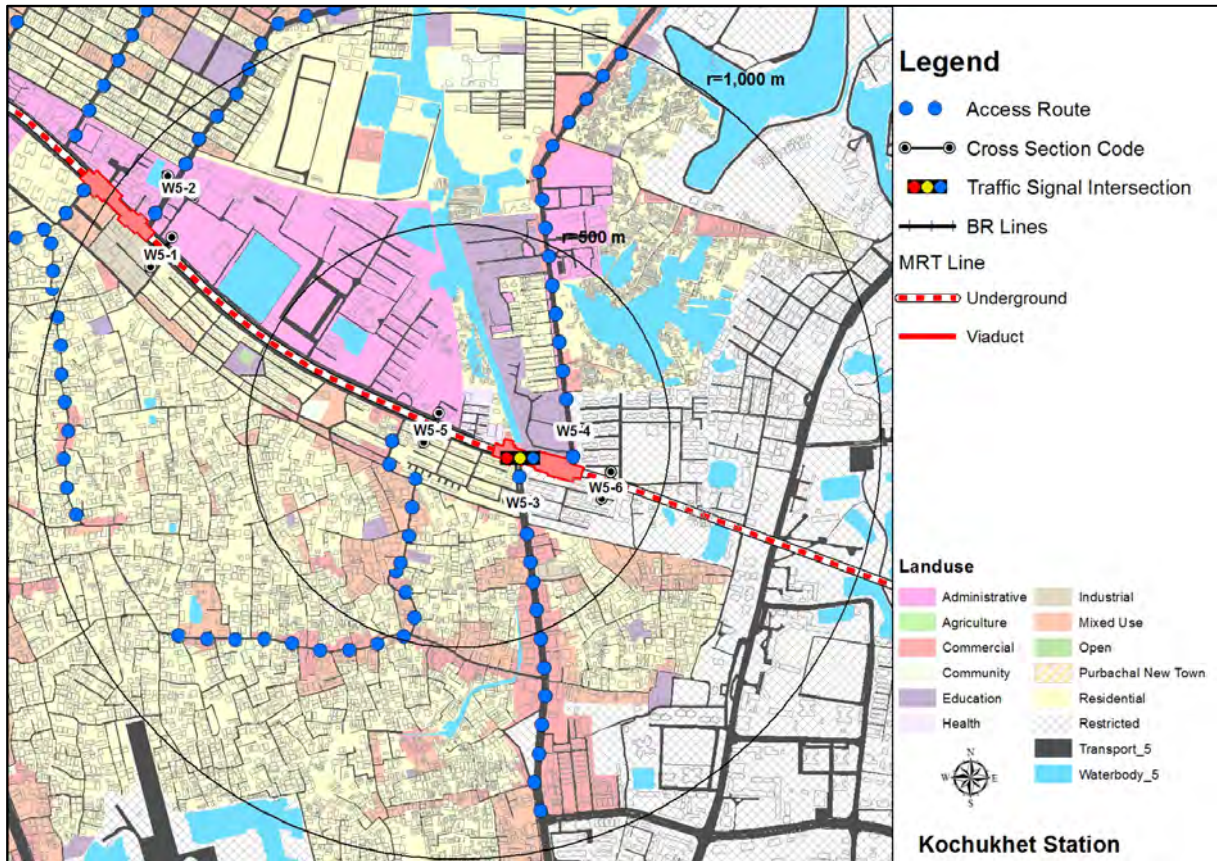
Source: JICA Study Team

Figure 3.4.48 Land Use around Kochunkhet Station

(b) Traffic Situation of Catchment Area

3.154 Features related to traffic conditions around the station include:

- (i) Roads around Kochunkhet station are wide and sidewalks are secured as Cantonment is located closely, access roads are also developed.
- (ii) The dense residential area on the southern side of the station has narrow roads organized in a complex network that is in adequate for walking.



Source: JICA Study Team

Figure 3.4.49 Transportation Network around Kochukhet Station

Id	Cross-Section	Photo
W5-1	<p>W = 37.8 m</p>	n/a
W5-3	<p>W = 36.7 m</p>	n/a
W5-4	<p>W = 21.7 m</p>	n/a
W5-5	<p>W = 36.5 m</p>	n/a

Source: JICA Study Team

Figure 3.4.50 Main Road Section around Kochukhet Station

Id	Cross-Section	Photo
W5-2	<p style="text-align: center;">W = 18.4 m</p>	n/a
W5-6	<p style="text-align: center;">W = 10.1 m</p>	n/a

Source: JICA Study Team

Figure 3.4.51 Minor Road Section around Kochunkhet Station

(c) MRT Impact on Urban Development

3.155 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) The residential area on the southern side of the station has not been fully developed yet, and old buildings remain along narrow roads. The construction of MRT will surely improve access to sub-centers such as Banani and Gulshan; therefore it is expected that residential population will increase in the future. (Night time population: 186,800 to 206,900)
- (ii) Low-income households live in the northern wetlands, where automotive shops are located. The living environment is not good, and roads are unpaved and narrow. However, development demand will most likely increase in relation with the construction of MRT.

Table 3.4.10 Socio-economic Indicators around Kochunkhet Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	134.5	154.6
		Density (No/ha)	428.1	492.0
	Night	No.(000)	186.8	206.9
		Density (No/ha)	594.6	658.7
Daytime Population	Worker (000)		34.0	50.6
	Student (000)		34.3	34.9
	Total		68.4	85.4
Night Population	Worker (000)		66.3	94.7
	Student (000)		54.4	43.1
	Total		120.7	137.8
Population Day/Night Ration (000)		0.7	0.7	

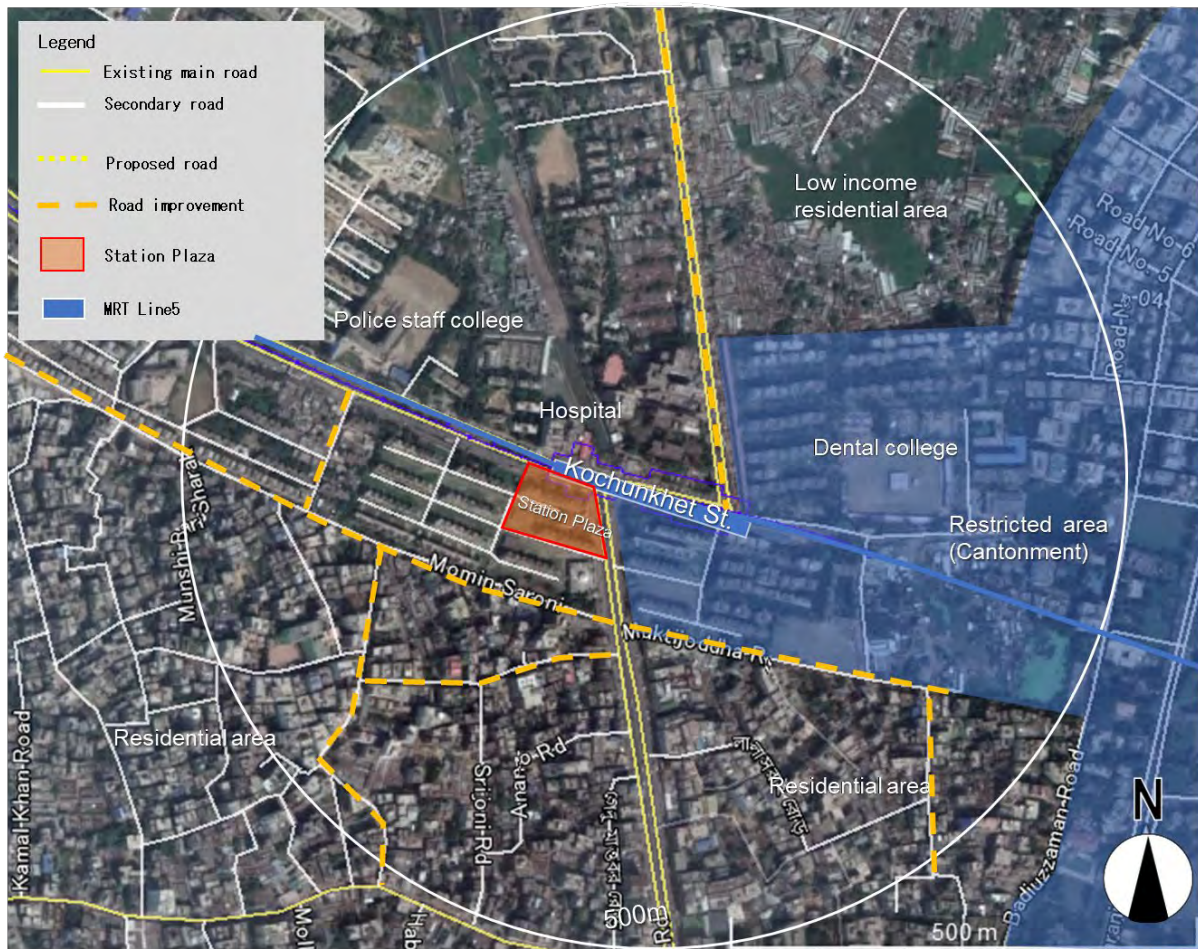
Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.156 Recommended TOD policies for Kochunkhet station include.

- (i) **Development of station plazas:** A station plaza should be developed using the land currently occupied by houses in the intersection between Kochunkhet and Mirpur roads.
- (ii) **Improvement of access by walking:** The residential area on the southern side of the station area is particularly dense, and access to the station is not secured. Moreover, the roads are unpaved and narrow; they need to be improved.
- (iii) **Improvement of the residential area for low-income people:** Considering that there is residential area located on the northern side of the station, close to the

station, the demand for urban development will increase. Therefore, the area will further develop and the living environment will also improve.



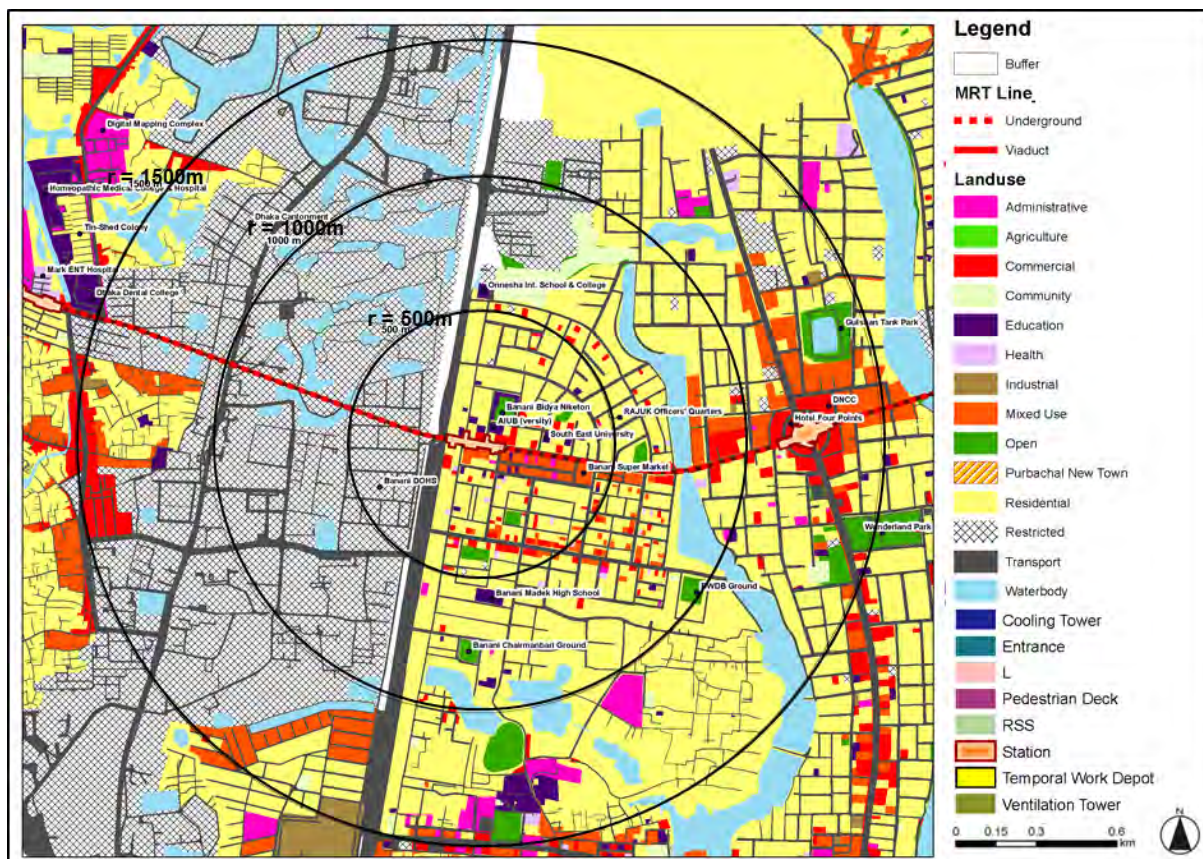
Source: JICA Study Team

Figure 3.4.52 Concept Plan around Kochunkhet Station

11) Banani Station

(a) Current Land Use of Catchment Area

3.157 Banani is one of residential areas planned by RAJUK in the 1960s. The site and residential plots are well organised, and infrastructure well maintained. Land prices are high. Many commercial facilities, offices, and residences are located in the area. The station will be at the intersection between the entrance of Banani district and the Dhaka-Mymensingh highway, at a location where traffic congestion currently is high due to a large number of cars. Banani BR station also shares the same location. In Banani, there are some universities attracting many young people in the area. In addition, Cantonment spreads to the western side of the station area, across the Dhaka-Mymensingh Highway, mostly occupied by golf courses and residential areas. The construction of high-rise buildings has occurred in Banani area where development demand is very high.



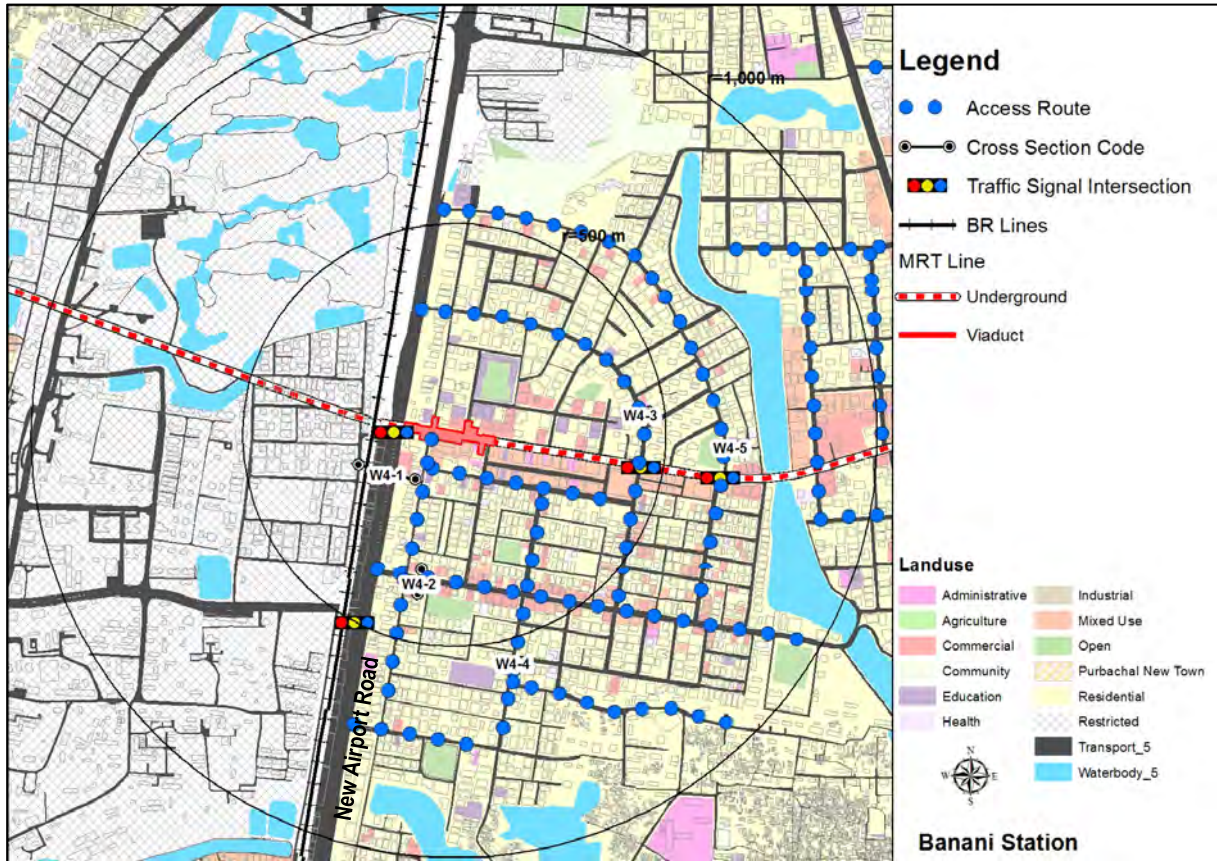
Source: JICA Study Team

Figure 3.4.53 Land Use around Banani Station

(b) Traffic Situation of Catchment Area

3.158 Features related to traffic conditions around the station include:

- (i) Banani is an area that has been planned by RAJUK. Yet, sidewalks are too narrow and unpaved.
- (ii) MRT 5's Banani station area crosses the Airport Road, and encompasses Banani BR station. Pedestrian access from the western side of the station would be limited if the current conditions were to remain the same, despite an existing pedestrian bridge. Crossing the new airport road would be very difficult when transferring from the MRT to BR or buses.



Source: JICA Study Team

Figure 3.4.54 Transportation Network around Banani Station

Id	Cross-Section	Photo
W4-1	<p>W = 36.7 m</p>	n/a
W4-2	<p>W = 18.9 m</p>	n/a

Source: JICA Study Team

Figure 3.4.55 Main Road Section around Banani Station

Id	Cross-Section	Photo
W4-3	<p>W = 15.2 m</p>	n/a
W4-4	<p>W = 15.2 m</p>	n/a
W4-5	<p>W = 12.6 m</p>	n/a

Source: JICA Study Team

Figure 3.4.56 Minor Road Section around Banani Station

(c) MRT Impact on Urban Development

3.159 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) Many commercial facilities are located in the vicinity of future Banani Station, and the construction of high-rise buildings has been progressing. There are also many offices, and it is expected that many office workers will commute by MRT, and the commercial area is expanding. (Daytime population of workers: 94,600 to 148,800)
- (ii) The Banani station area encompasses large schools such as the BRAC University and stores for young people; therefore, the student population is expected to increase and MRT patronage is expected to be high in this area. (Daytime population of students 45,900 to 67,200)

Table 3.4.11 Socio-economic Indicators around Banani Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	166.2	267.6
		Density (No/ha)	529.1	851.9
	Night	No.(000)	83.3	154.8
		Density (No/ha)	265.1	492.9
Daytime Population	Worker (000)		94.6	148.8
	Student (000)		45.9	67.2
	Total		140.5	216.0
Night Population	Worker (000)		34.8	71.0
	Student (000)		22.7	32.2
	Total		57.5	103.2
Population Day/Night Ration (000)		2.0	1.7	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.160 Banani is one of Dhaka's sub-centers like Gulshan or Baridhara. It will encompass both the new airport road and Banani BR station. Recommended TOD policies for Banani MRT station include.

- (i) **Development of station plazas:** The Dhaka-Mymensingh highway around Banani MRT station currently functions as an access road to sub-centers such as Gulshan and Baridhara, and traffic congestion is intense. It is also an area where various transportation systems intersect such as BR, bus and pedestrian networks. A station plaza should be developed using open space along the Dhaka-Mymensingh highway. On the western side of the station, the carriage space in front of BR Banani Station should be turned into a bus bay.
- (ii) **Improvement of pedestrian network:** The Dhaka-Mymensingh highway divides the area along the east-west axis. There is a pedestrian bridge, but it is too narrow at the moment; it is necessary to improve the access between the BR station and the MRT station. It is necessary to improve the pedestrian access as well, potentially with pedestrian bridges or underpasses.



Source: JICA Study Team

Figure 3.4.57 Concept Plan around Banani Station

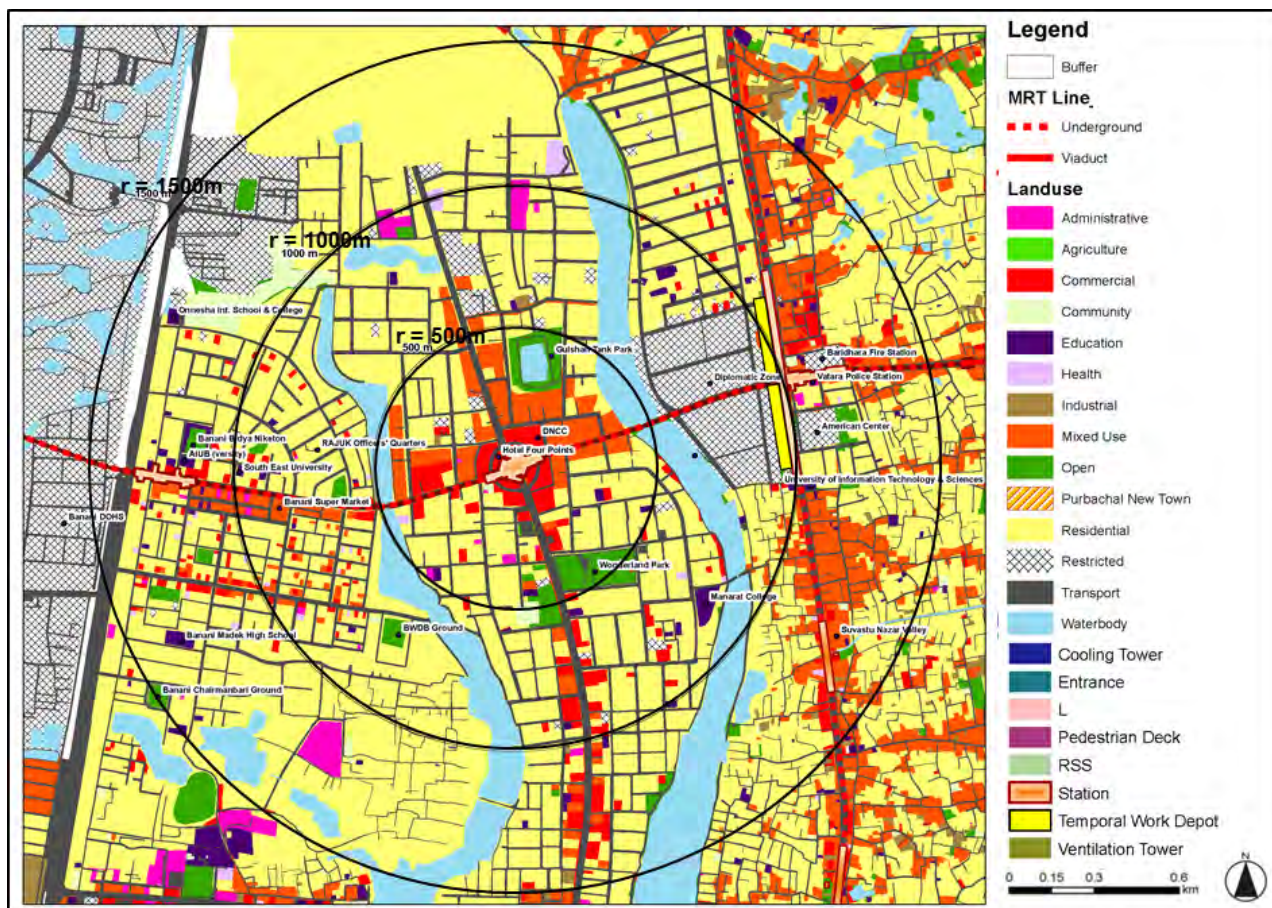
12) Gulshan 2 Station

(a) Current Land Use of Catchment Area

3.161 Gulshan is an important commercial and business sub-center of Dhaka, and many high-rise buildings have been built in Gulshan 1 and Gulshan 2. It is one of the residential areas planned by RAJUK in the 1960s, and in recent years it has functioned not only as a residential but also as a commercial area. DNCC, mixed-used buildings with supermarkets, and banks are located in the vicinity of the Gulshan 2 circle, and redevelopment around Gulshan 2 circle has also occurred.

3.162 Commercial facilities are located around the Gulshan 2 circle, and residential areas are located far away from main roads. Gulshan is one of the areas with the highest land prices in Dhaka.

3.163 Rickshaws have restricted access to the area (they need a special permit), and only buses operated by DNCC can enter the area. Although traffic jams caused by buses and CNG have been alleviated, congestion occurs when many workers and cars come and go.



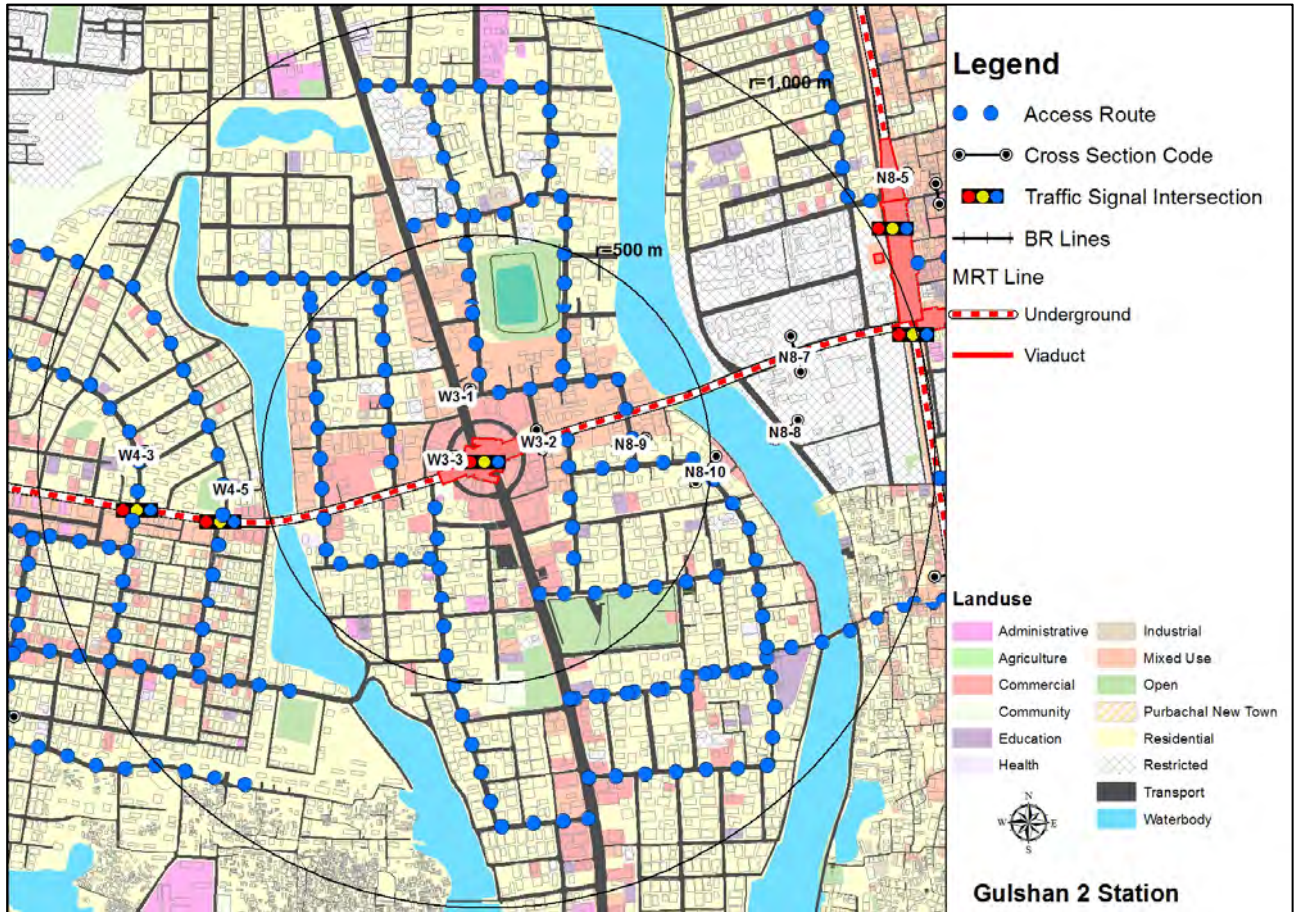
Source: JICA Study Team

Figure 3.4.58 Land Use around Gulshan 2 Station

(b) Traffic Situation of Catchment Area

3.164 Features related to traffic conditions around the station include:

- (i) The surroundings of Gulshan MRT station have been planned by RAJUK, roads and sidewalks are well maintained. However, signboards are located on sidewalks, and pavement is inadequate.
- (ii) Although the guide panel for visual disabled person are paved, it is not effective as sidewalks are collapsed.
- (iii) DNCC buses and walking are the two primary transportation modes in Gulshan, because rickshaws are restricted.



Source: JICA Study Team

Figure 3.4.59 Transportation Network around Gulshan 2 Station

Id	Cross-Section	Photo
W3-1	<p>W = 29.8 m</p>	n/a
W3-2	<p>W = 27.7 m</p>	n/a
N8-7	<p>W = 22.8 m</p>	n/a

Source: JICA Study Team

Figure 3.4.60 Main Road Section around Gulshan 2 Station

Id	Cross-Section	Photo
W3-3	<p>W = 18.7 m</p>	n/a

Id	Cross-Section	Photo
W4-3	<p style="text-align: center;">W = 15.2 m</p>	n/a
W4-5	<p style="text-align: center;">W = 12.6 m</p>	n/a
N8-8	<p style="text-align: center;">W = 12.7 m</p>	n/a
N8-9	<p style="text-align: center;">W = 20.5 m</p>	n/a
N8-10	<p style="text-align: center;">W = 15.2 m</p>	n/a

Source: JICA Study Team

Figure 3.4.61 Minor Road Section around Gulshan 2 Station

(c) MRT Impact on Urban Development

3.165 In terms of MRT impacts on the station area, the following can be expected:

- (i) Redevelopment has already been carried out around the station, and construction of high-rise buildings reaching the upper FAR limit is going on everywhere. MRT users will be able to avoid traffic congestion in Gulshan, so MRT should further enhance the development demand. (Night population 87,700 to 137,400)
- (ii) The neighborhood of the Gulshan 2 circle already functions as a sub-center, but further development will be advanced through redevelopment, and the characteristic of the area as a business town will be further emphasized. Also, some local markets are located near the Gulshan 2 circle, but redevelopment will occur as development demand will increase in the future. (Daytime population 163,000 to 299,300)

Table 3.4.12 Socio-economic Indicators around Gulshan 2 Station (Radius 1 km area)

		2015	2035	
Population	Day	No.(000)	163.0	299.3
		Density (No/ha)	518.7	952.8
	Night	No.(000)	87.7	137.4
		Density (No/ha)	279.2	437.5
Daytime Population	Worker (000)		91.9	179.9
	Student (000)		43.9	73.7
	Total		135.8	253.6
Night Population	Worker (000)		36.5	63.1
	Student (000)		24.1	28.6
	Total		60.6	91.7
Population Day/Night Ration (000)		1.9	2.2	

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.166 Recommended TOD policies for Gulshan 2 station include.

- (i) **Development of station plazas:** Urban development has already been implemented, but traffic nodes and efficient transportation systems have not been introduced. In order to improve the situation, it is necessary to better organize land uses around Gulshan 2 circle. Currently only the bus operated by DNCC is running in the district and it is necessary to adjust the exit of the station and the position of bus stops. Therefore, it is necessary to use the land around the circle as a transportation node.
- (ii) **Improvement of pedestrian network:** There are many people heading from Natun Bazar towards Gulshan by walking as buses are restricted to access the Gulshan area. However, the sidewalks insufficiently wide and paved. It is necessary to secure enough pedestrian space.
- (iii) **Planning of subway entrance:** MRT users boarding and alighting at Gulshan 2 station will include many commuters to surrounding office buildings. Many users will be walking to the four sides of the circle. Therefore, the subway entrances should be planned in the four directions.



Source: JICA Study Team

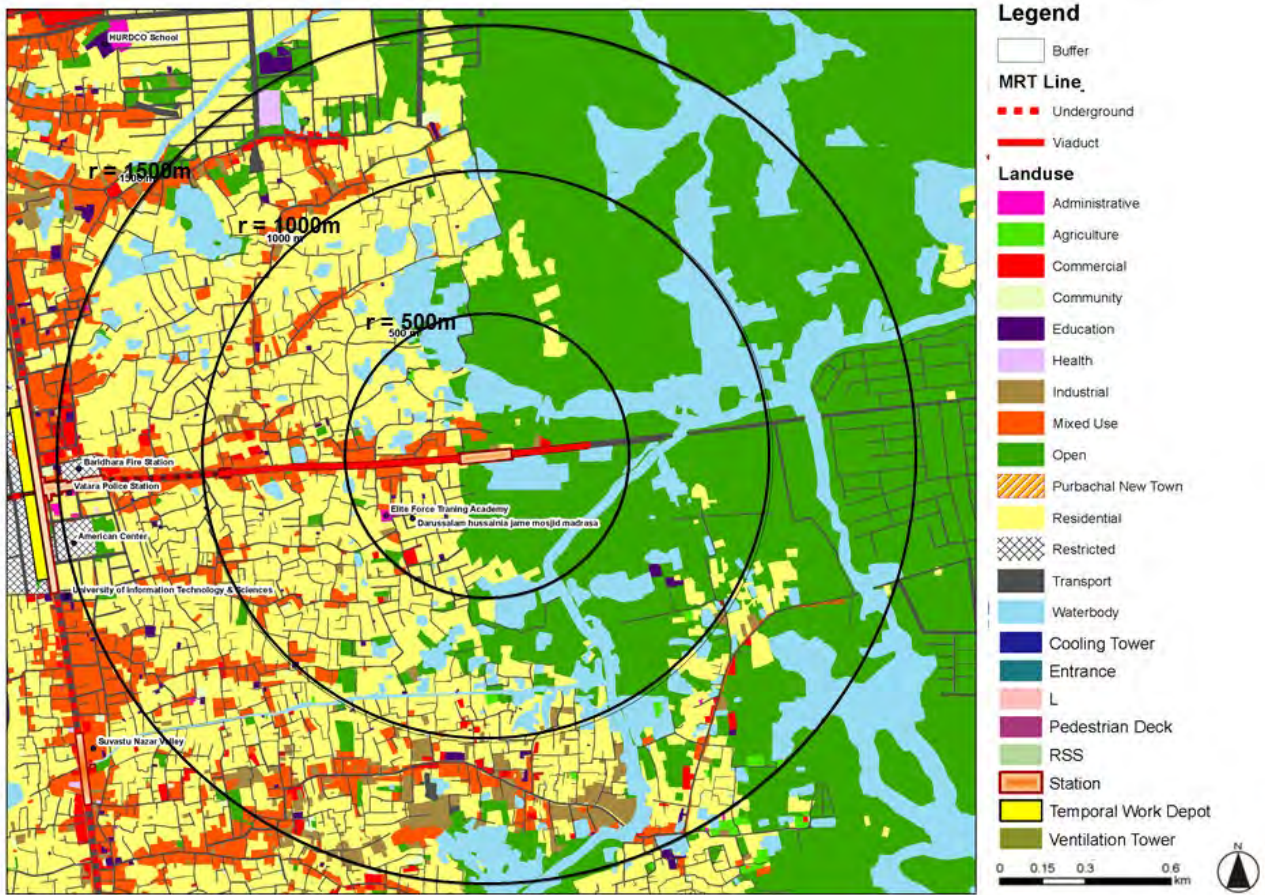
Figure 3.4.62 Concept Plan around Gulshan 2 Station

13) Vatara Station

(a) Current Land Use of Catchment Area

3.167 The station will be the terminal station of MRT 5. Currently, a commercial area is located along Madani Avenue. Many middle-rise residential buildings are located within the station area (about 5 to 10 stories) and road access to the western side has been ensured. The road will become the main corridor to access the eastern parts of Dhaka. Currently, large projects are under development, such as the JA project by the army and the Bashundhara residential area project by the Bashundhara group. The development demand is expected to further increase in the future.

3.168 Although road and building construction has been occurring, there are not many high-rise buildings in the station area and there is no open space available.



Source: JICA Study Team

Figure 3.4.63 Land Use around Vatara Station



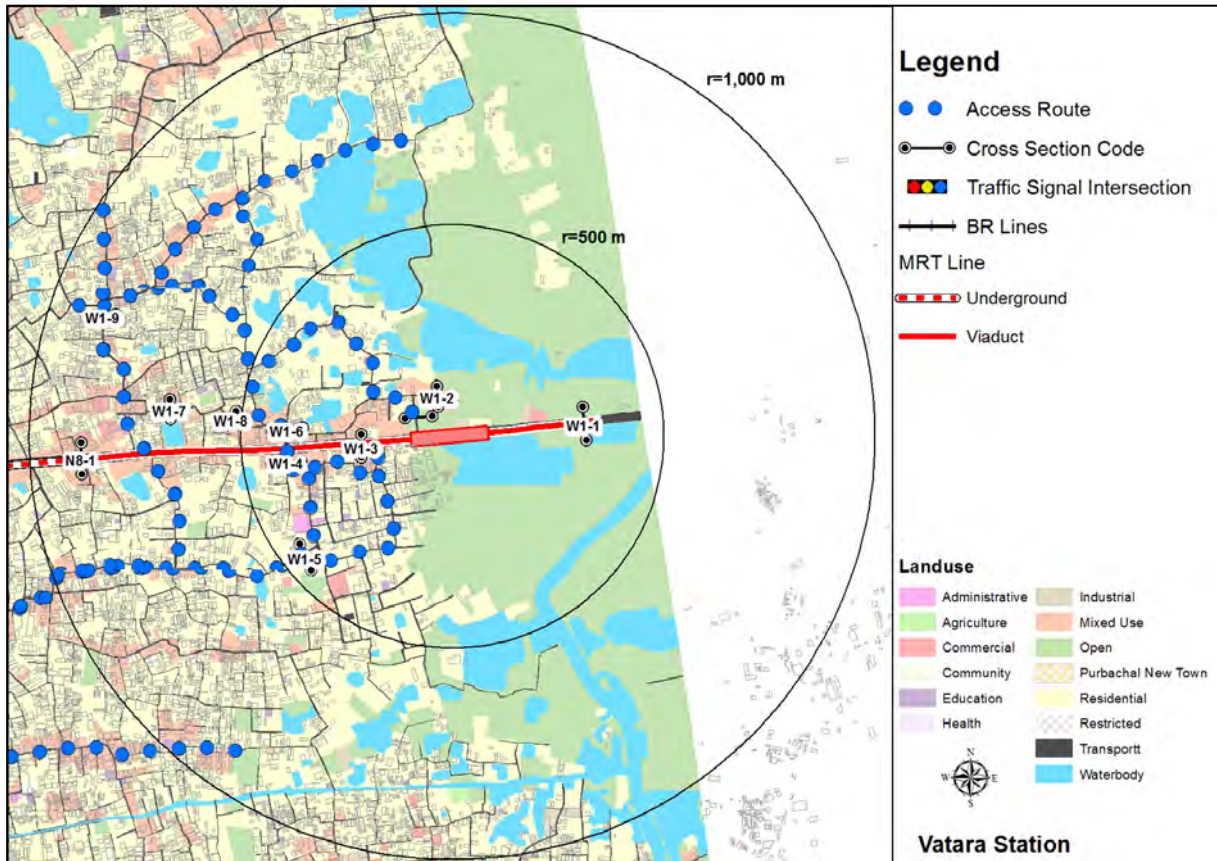
Source: JICA Study Team

Figure 3.4.64 Current Conditions around Vatara Station

(b) Traffic Situation of Catchment Area

3.169 Features related to traffic conditions around the station include:

- (i) The road from Natun Bazar to Vatara has been built and will be extended to the east. It currently has no wide sidewalks.
- (ii) Access roads from the future station location to residential areas in the vicinity currently are unpaved and narrow.



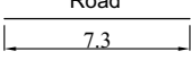

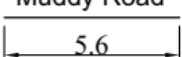

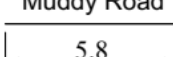

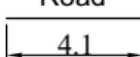

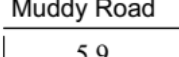

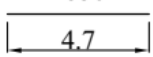

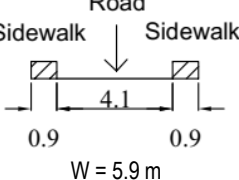

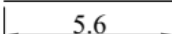

Source: JICA Study Team

Figure 3.4.65 Transportation Network around Vatara Station

Id	Cross-Section	Photo
W1-4 Madani Avenue	<p style="text-align: center;">W = 30.0 m</p>	
N8-1 Madani Avenue	<p style="text-align: center;">W = 29.2 m</p>	

Source: JICA Study Team

Figure 3.4.66 Main Road Section around Vatara Station

Id	Cross-Section	Photo
W1-1 Madani Avenue (100feet Road)	<p style="text-align: center;">Road</p> 	
W1-2 100 feet Mukti Joddha Road	<p style="text-align: center;">Muddy Road</p> 	
W1-3 100 feet Mukti joddha Road	<p style="text-align: center;">Muddy Road</p> 	
W1-5 10 No. Masjid Road	<p style="text-align: center;">Road</p> 	
W1-6 Doulot khan Road	<p style="text-align: center;">Muddy Road</p> 	
W1-7 Solmaid High School Road	<p style="text-align: center;">Road</p> 	
W1-8 Solmaid High School Road	<p style="text-align: center;">Road</p>  <p style="text-align: center;">W = 5.9 m</p>	
W1-9 Solmaid High School Road (in front of School)	<p style="text-align: center;">Road</p> 	

Source: JICA Study Team

Figure 3.4.67 Minor Road Section around Vatara Station

(c) MRT Impact on Urban Development

3.170 In terms of MRT impacts on the area around the station, the following can be expected:

- (i) Bashundhara residential area has developed around the future station location, and the population will increase dramatically in the near future. Due to the presence of a commercial area, many workers are expected to commute to Gulshan and Baridhara area every day. (Population day/night ration 0.7)
- (ii) The area is located near sub-centers such as Gulshan and Baridhara, so the residential demand will increase after construction of MRT. Many workers will live in the area. (Night time population: 78,000 to 134,900)

Table 3.4.13 Socio-economic Indicators around Vatara Station (Radius 1 km area)

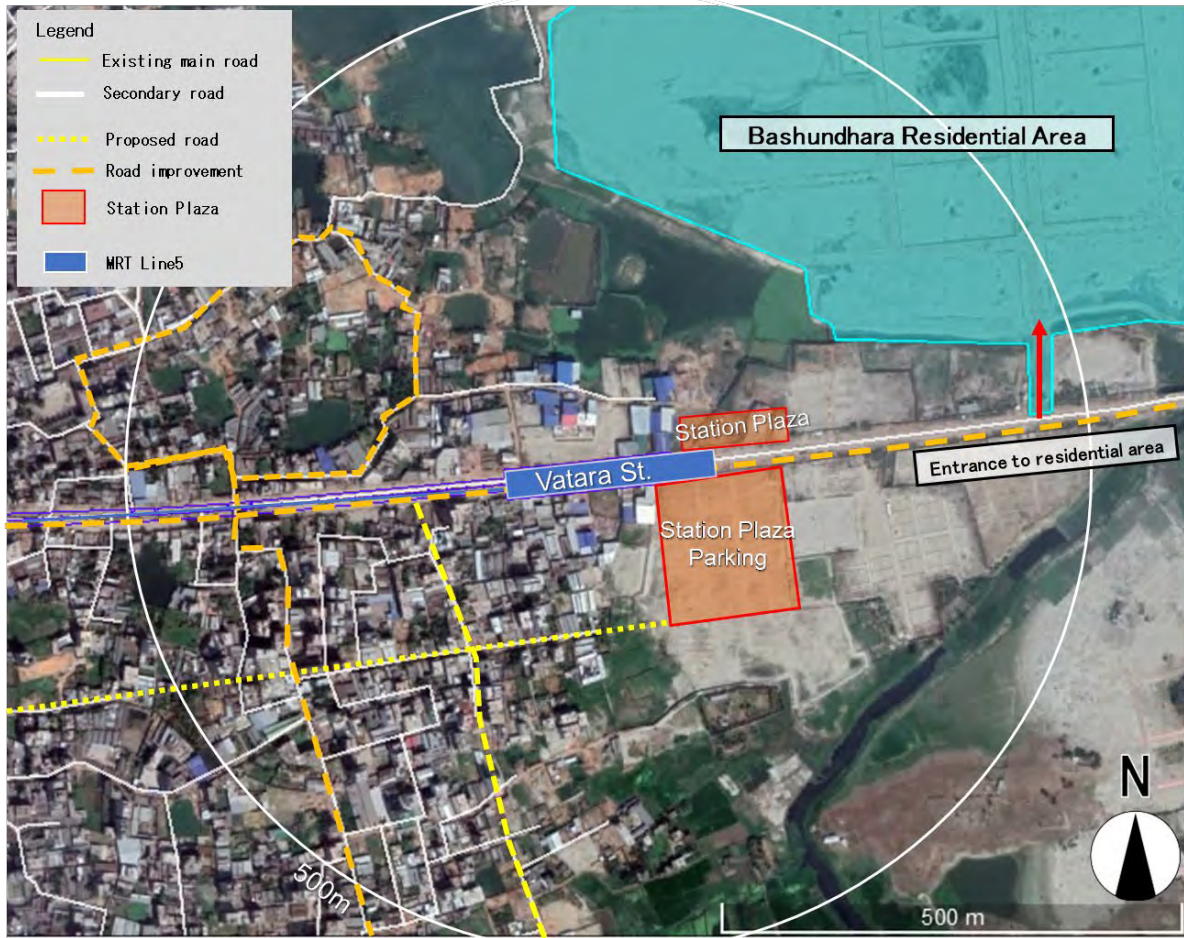
			2015	2035
Population	Day	No.(000)	55.7	100.9
		Density (No/ha)	177.4	321.1
	Night	No.(000)	78.0	134.9
		Density (No/ha)	248.2	429.4
Daytime Population	Worker (000)		13.4	34.3
	Student (000)		13.6	21.5
	Total		27.1	55.8
Night Population	Worker (000)		27.7	61.7
	Student (000)		21.6	28.1
	Total		49.3	89.8
Population Day/Night Ration (000)			0.7	0.7

Source: JICA Study Team (Using RSTP Database)

(d) Policies and Directions of TOD

3.171 The station will be the terminal station until MRT Line 5 further expands to the east. Urban development has already occurred in the station area. Since the future station location is near Bashundhara residential area, the population will increase dramatically in the station area. Recommended TOD policies for Vatara station include.

- (i) **Development of station plazas and parking lots:** There is open space and unused land still available around the station. The area was originally composed of wetlands. Landfills have been implemented around Bashundhara residential area. It is necessary to secure the land for station plazas and parking lots in advance. Development of parking lots will lead to increase ridership from eastern parts of the station.
- (ii) **Improvement of access from residential area:** There is no sidewalk in residential areas at the moment, roads are too narrow and the network too complex. Therefore, access and walking environment need to be improved.



Source: JICA Study Team

Figure 3.4.68 Concept Plan around Vatarra Station

3.5 TOD Policies in Dhaka

1) Summary by station

3.172 This section provides a summary of the previous sections of this chapter, which described in detail the current situation and expected MRT impacts for each station area and provided some general TOD guidelines station by station. (see Table 3.5.1). Overall, the most important TOD recommendations include: (i) improve access roads to station, (ii) develop a station plaza, and (iii) plan for intermodal facilities. These components would facilitate urban development, and promote *ekimae-kaihatsu* and *ensen-kaihatsu*. As all infrastructures, the MRT system will have a long-lasting effect on the urban form, urban communities, and various socio-economic aspects of urban life. Above all, MRT will influence urban development and land use patterns, which in turn will influence how the community functions. The key summary points are the following:

- (i) Access environment to MRT: Mainly current traffic situation in catchment area (radius 800 to 1,000m)
 - Improvement of walking environment
 - Connection to MRT/BRT/BR
 - Connection to road based public transports and water transports
- (ii) Development of station plaza: Off-road transportation node with adequate scale
- (iii) Opportunities of integrated development
 - Improvement of living environment of existing urban area (community development)
 - Promotion of integrated development using private land
 - Promotion of integrated development using public land
 - Coordinated development of new towns (public and private)
- (iv) Revise MRT station location: From the viewpoint of development of station plazas and importance of integrated development, the location of certain stations as per the current plan should be re-considered.

2) Methodology to Provide Station Plazas

3.173 In addition, importance of station plaza, possibility of land acquisition and development procedure of station plaza are shown in Table 3.5.2. Although land acquisition is not easy for each station, it is possible by considering current urban planning and land use sufficiently. The method for development of station plazas are as follows.

- (i) **Use of construction site:** For the development of station plazas, land near station is necessary. Given the current situation in Dhaka, very little land is available. However, as some construction sites are planned near stations, they should be used to develop station plazas. If the land for station plazas is not secured, development of station plazas will have not been implemented for a long time due to real estate development by the private sector. The number of MRT passengers and MRT-related benefits will not be at their maximum. Therefore, it is necessary to secure the land for development of station plazas in advance.
- (ii) **Use of public land:** There is some publicly-owned land around some stations. The use of public land has lower risks than the use of private land. Therefore, negotiation with public sector agencies to which the land belong should start as soon as possible. Development of station plazas contribute to improving access and comfort of public transportation users, and the public sector should be willing to make land available for the development of station plazas. It is necessary to negotiate with public agencies continuously.
- (iii) **Change plan of large-scale development by private company:** Some private companies like Bashundhara group, can benefit from MRT construction, and the expansion to eastern part of Dhaka will affect the profitability of private companies that plan development projects in the eastern area. The minimum land size for each land use, such as parks and educational land, are designated under the Private Residential Land Development Rules. Therefore, the land for station plazas should be designated in the rules.
- (iv) **Change of land use by RAJUK:** RAJUK's large-scale development projects, such as Purbachal new town, will be planned and carried out in the future. Therefore, it is necessary that RAJUK considers the MRT plan to implement integrated development. The land for station plazas should be ensured in accordance with the MRT future line 1 under RSTP. The land can be used as parks before construction of the station, and later be developed as station plazas.
- (v) **Restrictions on redevelopment of the area around the station and securing land for station plazas:** Real estate development in Dhaka has been occurring fast, especially along main roads. Moreover, the old buildings and low-rise buildings below maximum allowed FARs have been redeveloped into high-rise buildings, the construction of the residence and the complex facilities in the vicinity of the Badda station are completed and securing the site around the station is difficult. As many old buildings are located around Rampura and Malibagh station, the land of station plazas should be decided, and some redevelopment restrictions should apply on existing old buildings to secure the site.
- (vi) **Use road space:** Depending on the station, it is impossible to secure the space for station plazas which is necessary. Even in such a case, transportation nodes with

public transportation systems is necessary, and for this reason it is necessary to reconfigure the road space to ensure access to the MRT.

Table 3.5.1 Possibility of TOD for each station

Line	Station	MRT accessibility			Station Plaza	Opportunity of integrated development				Adjustment MRT station location
		Improvement of walking environment in catchment area	Connection to MRT / BRT/BR	Connection to road based public transportation and water transportation		Improvement of living environment	Integrated development of private land	Integrated development of public land	Coordinated development of new towns (public and private)	
MRT 1 Airport Line	Kamlapur	⊙	○	○	⊙	○	○	○	—	—
	Rajarbagh	○	—	○	○	○	○	○	—	—
	Malibagh	○	—	○	△	○	○	—	—	—
	Rampura	○	—	○	△	○	○	—	—	—
	Hatir jheel	○	—	⊙	⊙	○	—	—	—	○
	Badda	○	—	○	△	○	○	—	—	—
	Uttar Badda	○	—	○	△	○	○	—	—	—
	Natun Bazar	⊙	○	○	⊙	○	—	—	—	—
	Future Park	○	—	○	○	○	○	—	○	—
	Khilkhet	○	—	○	⊙	○	—	○	—	—
	Airport Terminal 3	○	—	○	○	○	—	○	—	—
	Airport	⊙	○	⊙	⊙	○	—	○	—	—
MRT1 Purbachal Line	Bashundhara	○	—	△	○	○	—	—	○	—
	POHS	○	—	△	○	○	—	○	○	—
	Mastul	○	—	△	⊙	○	—	—	○	—
	Purbachal West	○	—	△	⊙	○	—	—	○	—
	Purbachal Central	○	—	△	⊙	○	—	—	○	○
	Purbachal East	○	—	△	⊙	○	—	—	○	○
	Purbachal Terminal	○	—	△	⊙	○	—	—	○	—
MRT 5	Hemayetpur	○	—	○	○	○	○	—	—	—
	Baliapur	○	—	△	⊙	○	—	—	—	—
	Bilamaria	○	—	△	⊙	○	—	—	—	—
	Amin Bazar	○	—	○	⊙	○	○	—	—	—
	Gabtolli	⊙	○	⊙	⊙	○	○	○	—	—
	Dar-Us-Salam	○	—	○	○	○	—	○	—	—
	Mirpur 1	⊙	—	○	○	○	—	○	—	—
	Mirpur 10	⊙	○	⊙	⊙	○	—	○	—	—
	Mirpur 14	○	—	○	○	○	—	○	—	—
	Kochukhet	○	—	○	△	○	—	○	—	—
	Banani	⊙	○	⊙	⊙	○	—	○	—	—
	Gulshan 2	⊙	—	○	⊙	○	○	—	—	—
Vatara	○	—	△	⊙	○	○	—	○	—	

⊙ : Very important
○ : Important
△ : Limited

Source: JICA Study Team

Table 3.5.2 Method for development of station plazas and integrated development

	Ekimae Kaihatsu			Opportunity for integrated development
	Necessity of Station Plaza	Possibility of land acquisition	Proposed land and Development procedure	
Kamalapur	A	A	Use of construction yard and ICD	B
Rajarbagh	B	A	Use of Public land (police)	C
Malibagh	B	C	Land re-adjustment project	C
Rampura	B	C	Land re-adjustment project	C
Hatir Jheel	A	A	Use of construction yard	C
Badda	B	C	Land re-adjustment project	C
Uttar Badda	B	C	Land re-adjustment project	C
Natun Bazar	A	A	Use of construction yard	C
Future Park	A	B	Use of private land (Jamuna future park)	C
Khilkhet	B	A	Use of construction yard	C
Airport Terminal 3	B	B	Use of private land (DEE) Ekinaka-kaihatsu (underpass to airport)	B
Airport	A	A	Development Multi modal hub	C
Bashundhara	B	B	Use of construction yard Use of private land (Bashundhara residential area)	A
POHS	B	B	Use of public land (POHS and Bashundhara residential area)	A
Mastul	B	A	Use of open space	A
Purbachal West	A	A	Change of new town plan by RAJUK	A
Purbachal Central	A	A	Change of new town plan by RAJUK	A
Purbachal East	A	A	Change of new town plan by RAJUK	A
Purbachal Terminal	A	A	Change of new town plan by RAJUK	A
Hemayetpur	B	B	Land re-adjustment project	B
Baliapur	C	A	Use of open space	A
Bilamalia	C	A	Use of open space	A
Amin Bazar	B	A	Use of open space	B
Gabtohi	A	A	Use of the land of bus terminal	B
Dar-us-Salam	B	B	Use of public land (residential area for staffs)	C
Mirpur 1	A	A	Use of public land (Directorate of primary education)	C
Mirpur 10	A	A	Use of public land (RAJUK and Fire bridge training complex)	C
Mirpur 14	B	A	Use of public and private land (police staff college)	C
Kochunkhet	B	C	Use of army land Use of public land	C
Banani	A	A	Use of open space along main road Use of public land (BR)	C
Gulshan 2	A	A	Use of public land (DNCC) Reformation of Gulshan 2 circle	C
Vatara	B	A	Use of open space	A

A:Very Important B:Importatn C:Limited

Source: JICA Study Team

3.174 As the result from Table 3.5.1 and Table 3.5.2, 7 stations of Purbachal line will be located in vacant lands, and the possibility of station plaza development and urban development will be high. In order to enhance the potential of urban development, the integration of current urban development project, such as Purubachal new-town project and Bashundhara residential area, and MRT is indispensable. In addition, the intermodal facilities will be developed at Kamalapur station utilizing the land of construction yard. If the connectivity of BR Kamalapur station and MRT Kamalapur station is secured, the possibility of urban development around the station will be higher. In MRT lien5, as western part of Gabtohi station and Vatara station have vacant land in the vicinity of the stations, the feasibility of urban development will be enhanced by an appropriate urban planning.

3) Examples of Station Plaza Development in Japan

3.176 In the station development / railway catchment area development, the most important component is transport intermodal facility. It has been recognized that the railway development without this facility may reduce the original function of urban railway, and the role sharing between railway side and urban side has been discussed. Japan has a long history of station plaza development. Based on this background, understanding about the examples of Japanese TOD is important. The main issues are as follows:

- (i) **Basic Directions of Station Plaza Development:** In the post-war reconstruction period, “Directions to develop station plaza as the integrated facilities among the street and railway lands” were issued in 1946. The land and the cost were split by urban side and railway side. Although the share of the burden by both sides has been modified, this direction is still effective. In other words, the station development had been principally implemented by the Urban Development Division and Road Administrator. Through the financial deterioration and prioritization of Japan National Railway (Currently JR), “Agreement on the Development of Station Plaza in Urban Planning” was prepared by JR East, JR Central and JR West in 2022. However, the characteristics of station area development projects are varied by the station.
- (ii) **The Scale of Station Plaza:** As the formulation of required area of station plaza, the Station Area Research Committee provided in 1953 (from the issued year, the formula was called as 1953 Method or Showa 28 Method). The new agreement on station area development between Ministry of Construction and National Railway contracted in 1972, the share of the burden by urban side was changed from 1/2 to 3/4. The estimation methods of required station plaza, more rational methods, such as Konami Method (1968) and 1973 Method (or Showa 48 Method) were proposed. Because of the agreement to share the burden by urban side and railway side, the station areas were developed in many stations. However, since prioritization of Japan National Railway, the station area development is by urban side and considered as urban facility.
- (iii) **Various Functions varied by the Location:** For the suburban stations, developments as merely intermodal facilities to ensure connectivity with bus and taxi can be seen. On the other hand, integrated development with urban renewal project in the nearby blocks can be seen in the station with the potential as the regional hub.

3.177 In this way, the development of station plaza has been considered as the duty in Japan and corporately implemented by railway side and urban side. And some station plazas were developed under urban planning. In general, station plaza development has been led by public.

3.178 For the development of station plaza, one of the most important components is the function as intermodal facility: to ensure the connectivity between station and other road based transport system. On the other hand, the urban functions such as communication between citizens and urban landscape are also necessary.

3.179 The main functions of station plaza are as follows:

- (i) **Measurement for Changeable Transport Situation:** Through the development of public transport, various transport characteristics have been seen. Development of

station plaza needs to ensure adequate land to accommodate the forecasted future traffic volume and transport characteristics.

- (ii) **Planning as Urban Growth Hub:** In Japan, urbanization has mostly occurred around stations. Commercial / business functions concentrate around stations. However, some station plazas are not commensurate with the growth of the city, which causes congestion at/around the stations. It is necessary to plan carefully for station plazas according to future urban development potential.
- (iii) **Consideration on Urban Landscape:** Station Plaza is referred to as the “face of the city, that visitors see first and based on which they develop their image of the city. Therefore, considerations for the amenity / landscape and symbolic spatial design are necessary.
- (iv) **Utilization of Urban Space:** Station plaza is important public space in the city with intensive development at/around station. From the viewpoints of lighting, traffic management and safety, the station plaza was generally at ground in Japan. Hereafter, development of elevated station plaza considering landscape and traffic flow according to the conditions of the land and surrounding buildings can be proposed to provide the required various functions with limited space in the urban area.
- (v) **Consideration on Welfare:** The station plaza is one of the facilities with a lot of opportunities to be used in the various lifestyles of the people. Therefore, introduce of universal design, for every people including PwD and elderly people is a minimum requirement. The planning of station plaza should be considered to ensure the comfort of every people by integrated development among station and local pedestrian network.

3.180 Although there are various examples in Japan, they are summarized by the scale and development method as shown in Table 3.5.3. The examples referential for Dhaka will be introduced.

3.181 Basta-shinjuku is an example of multi-layer station plazas, and it is beneficial for Dhaka which does not have enough space for station plaza development. In addition, as the station plaza of JR Kanazawa station has parking & ride facility and enough space to transfer to other public transportation, it is useful for terminal stations.

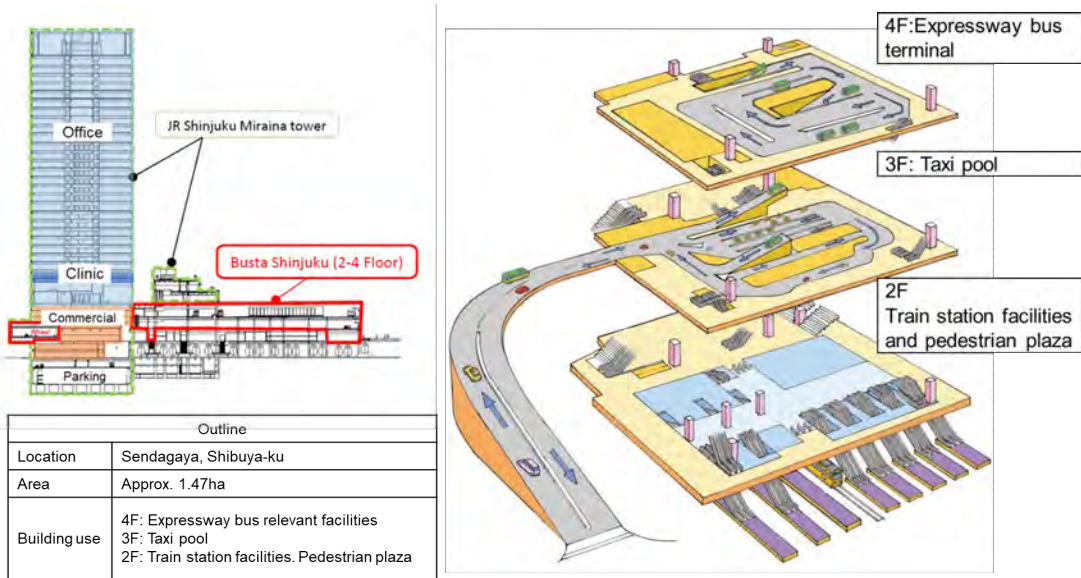
Table 3.5.3 Station Area Development Cases in Japan

Scale	Characteristics	Station / Facility
Large (More than 10,000 m ² of land area)	Developed on ground	JR Kanazawa Station (West) JR Asahikawa Station
	Elevated Development with Road Expansion	Busta Shinjuku
	Elevated Development with Urban Renewal	JR Asahibashi Station
	Elevated Development with Land Exchange	Oasis 21, Nagoya City
Middle or Small (Less than 10,000 m ²)	Elevated Development with Urban Renewal	JR Musashi Koganei Station (South) JR/Tokyu Musashi Kosugi Station (South)
	Development of small station plaza at densely residential / commercial area	Tokyu Jiyugaoka Station JR Asagaya Station
	Planning and Implementation of Station Area Development since Post WWII ~ High Economic Growth Period	Stations of JR Yamanote Line

Source: JICA Study Team

(a) Busta Sinjuku

3.182 Busta Sinjuku is a multi-function transport terminal that includes a railway station, an intercity bus terminal, and some taxi stops located in JR Shinjuku Station at the level of the south entrance. Because of land limitations, artificial ground was constructed to layout a pedestrian plaza, a taxi pool and an expressway bus terminal sterically. The commercial complex named JR Shinjuku Miraina Tower was constructed beside Busta Shinjuku.



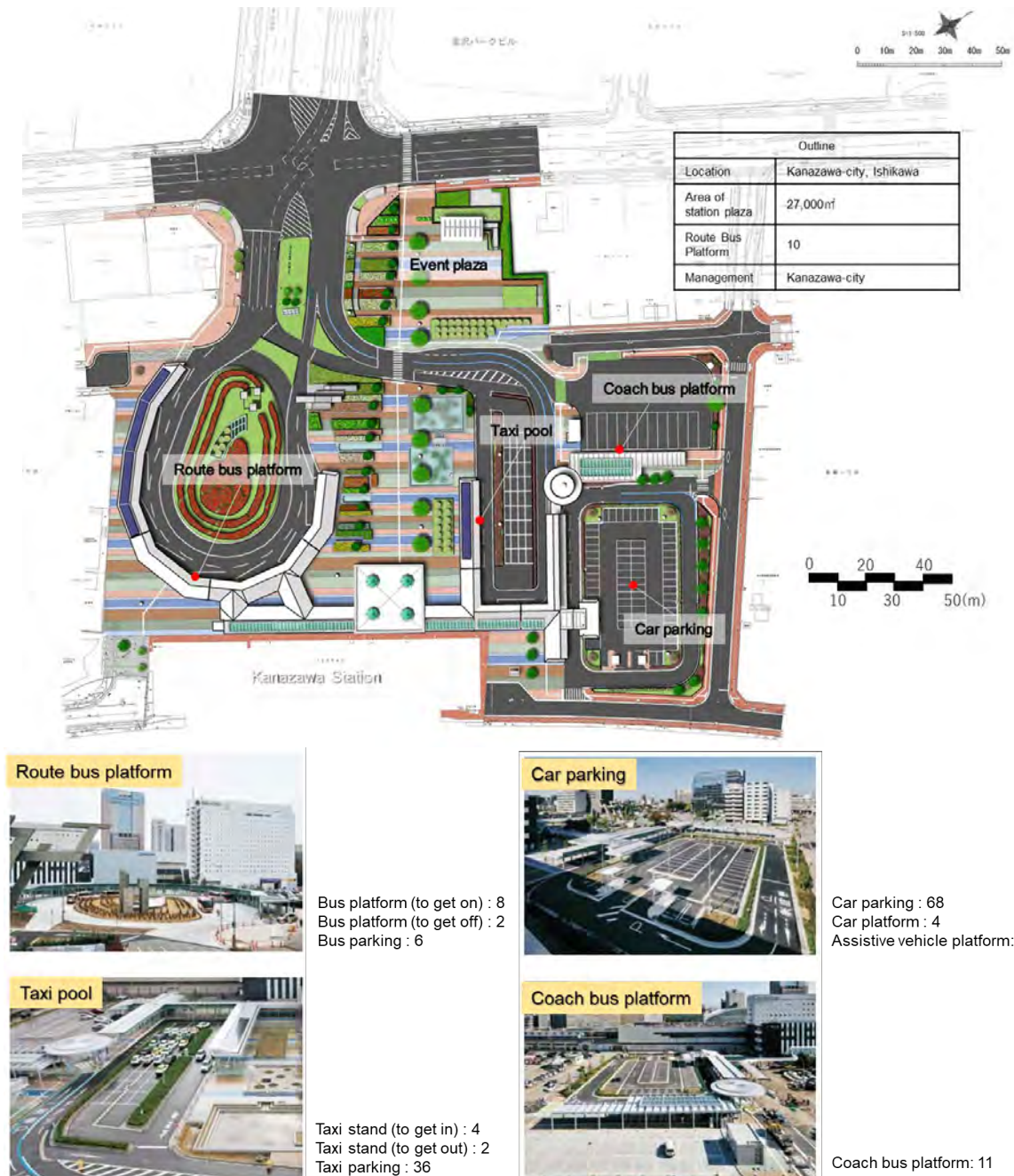
Source: Website of Ministry of Land Infrastructure & Transport,

Figure 3.5.1 Overview of Busta Shinjuku

(b) JR Kanazawa Station Plaza (West Entrance)

3.183 With opening of JR Hokuriku Shinkansen (High Speed Railway), the station plaza was developed in 2014 to provide multi-functional facilities on the western side. At the West entrance, various bus services such as intercity bus, airport express, tour bus, company bus, and temporary bus are provided. To connect with various facilities, an underground walkway network was also developed to improve accessibility.

3.184 A mall is facing the station plaza, as well as a hotel, some waiting space for bus, rental-car service, and other commercial facilities.



Source : Website of Kanazawa City

Figure 3.5.2 Overview of JR Kanazawa Station Plaza (West Entrance)

(c) Development of Station Plaza on the Stations of JR Yamanote Line

3.185 Due to urban population growth and motorization during the High Economic Growth Period, provision of pedestrian space and vehicle space was necessary and development of station plaza was implemented. Among all existing station plazas, about 50% were decided by the city plan between the end of WWII and the High Economic Growth Period. Table 3.5.4 shows the development conditions of the station plaza for JR Yamanote Line in Tokyo. Many station plazas are not so large, but given the pace of urbanization in Tokyo it was important that the development of station plazas was implemented under planning decisions. Otherwise it would have been very difficult to proceed with land acquisition.

Table 3.5.4 Development Status of Station Plazas for the Stations of JR Yamanote Line

Station	Planned Area of Station Plaza (m ²)	Boarding / Alighting (Pax / day)	Date of Planning Decision
Akihabara Station (East Entrance) (West Entrance)	4,000 4,300	217,237	1993.12.10 1996.4.8
Hamamatsucho Station	2,500	306,992	2009.4.25
Tamachi Station (East Entrance)	7,000	309,500	1989.1.20
Shinagawa Station (East Entrance)	14,000	891,310	1946.4.25
Takadanobaba Station	2,610	424,572	
Shinjuku Station (West Entrance) (East Entrance)	24,600 14,200	1,571,602	1980.1.22 1956.12.7
Tokyo Station (Yaesu Entrance) (Marunouchi Entrance)	10,300 12,200	396,152	2002.6.28 2002.6.29
Shinbashi Station (East Entrance) (West Entrance)	9,600 3,090	499,214	1946.12.7 1946.12.7
Meguro Station	1,700	196,688	1946.8.20
Gotanda Station (East Entrance) (West Entrance)	4,900 2,020	252,274	1946.8.20 1946.8.20
Osaki Station (West Entrance)	5,740	187,418	1964.2.7
Shibuya Station (West Entrance) (East Entrance)	15,230 8,140	891,460	1946.8.20 1946.8.20
Ebisu Station	3,767	275,652	1947.2.20
Ikebukuro Station (East Entrance) (West Entrance)	13,290 6,180	2,620,000	1946.8.20 1946.8.20
Otsuka Station (South Entrance) (North Entrance)	9,130 6,490	105,000	1946.12.7 1946.12.7
Sugamo Station (North Entrance) (South Entrance)	3,010 1,511	239,000	1946.12.7 1946.12.7
Komagome Station	2,568	119,000	1946.12.7

Source: MLIT, Annual Report of Urban Planning (2008)



JR Tamachi Station Left: 1965, Right: Now



JR Shibashi Station Left: 1965, Right: Now



JR Ikebukuro Station Left: 1955, Right: Now



JR Shinagawa Station Left: 1981, Right: Now

Source: http://blog.livedoor.jp/k1959s4405-showa_tokyo/

Figure 3.5.3 Change of Station Plaza for Stations of JR Yamanote Line

4) Station Plaza Development in Dhaka

3.186 In previous section, the directions of station plaza development by station were considered. The station plazas proposed in Dhaka were classified into 3 groups from the viewpoint of the characteristics and possibilities of land acquisition by station.

Table 3.5.5 Proposed Types of Station Plaza Development and Required Facilities

Size of Station Plaza	Transportation Square (Bus)	Rickshaw CNG	Car Taxi Pool	Parking (Car, Bike)	Environmental Space
Large (More than 10,000 m ²)	○	○	○	○	○
Medium (5,000 m ²)	○	○	○	—	○
Small	○	—	—	—	—

Source: JICA Study Team

- (i) **Large Medium (More than 10,000 m²):** Terminal stations such as Kamalapur, Vatara, and Hemayetpur should have a large station plaza. Because the access by various modes such as bus, CNG, Rickshaw, Taxi and private car can be expected, the spaces for boarding / alighting and parking are necessary. As for the pedestrian space, large public space is also important.
- (ii) **Medium Station Plaza (5,000 m²):** Focus on intermodal facilities for the connectivity with various modes such as bus, private car, taxi, CNG and Rickshaw and public space. Emphasize commercial development around the station plaza, this is the core of successful TOD.
- (iii) **Small Station Plaza:** A lot of planned stations of MRT Line 1 and MRT Line 5 are located within existing urbanized areas and it is difficult to acquire the land necessary for the development of station plazas. At least, connectivity with other modes must be ensured and minimum land must be allocated for this purpose.

3.187 Following figures show the example of each type of station plaza.



Source: JICA Study Team

Figure 3.5.4 Example of Large Station Plaza



Source: JICA Study Team

Figure 3.5.5 Example of Facility Layout for Large Station Plaza