

3.6 TOD Concept Plans on Hanoi City Centre

3.6.1 Approach

1) Area Characteristic

(a) Area Coverage and Profile

3.199 Hanoi City Center is composed mostly of Hoan Kiem district and adjoining wards of Ba Dinh, Dong Da, and Hai Ba Trung districts. This cluster includes the Ancient Quarter (AQ), which is considered the heart of Hanoi, and the French Quarter (FQ), which also has heritage value. (See Figure 3.6.1-1). The population in the influence area of UMRT Line1 and Line2 is approximately 216,000 and 127,800 within 1-km and 500-meter radius from the stations, respectively. The population density is very high in many wards in the cluster. Therefore its growth is low and even negative in some wards (see Table 3.6.1-1).

Table 3.6.1-1 Population Growth Trend in Hanoi City Centre

Ward	District	UMRT Station	Coverage Ratio ¹⁾	Population		AGR (%/yr) 09-13	Population Density (no/ha)
				2009	2013		
Nguyen Trung Truc	Ba Dinh	C8,V6	95	6,815	6,345	-1.8	428
Phuc Xa	Ba Dinh	C8,V6	70	15,091	16,679	2.5	294
Quan Thanh	Ba Dinh	C8	65	5,658	5,880	1.0	115
16 Wards	Hoan Kiem	C8,C9,C10,V6, V8	49 ²⁾	75,039	79,202	1.4	407
Truc Bach	Ba Dinh	C8	48	4,176	4,226	0.3	257
Ngo Thi Nham	Hai Ba Trung	C10	35	2,405	2,296	-1.2	343
Pham Dinh Ho	Hai Ba Trung	C10	35	2,457	2,574	1.2	231
Bui Thi Xuan	Hai Ba Trung	C10	30	1,561	1,406	-2.6	325
Kham Thien	Dong Da	V8	25	2,452	2,608	1.6	505
Van Chuong	Dong Da	V8	20	3,531	3,586	0.4	616
Nguyen Du	Hai Ba Trung	V8	20	1,320	1,313	-0.1	186
Van Mieu	Dong Da	V8	15	1,523	1,607	1.4	410
Total			48	122,027	127,724	1.1	338

Source: JICA Project Team

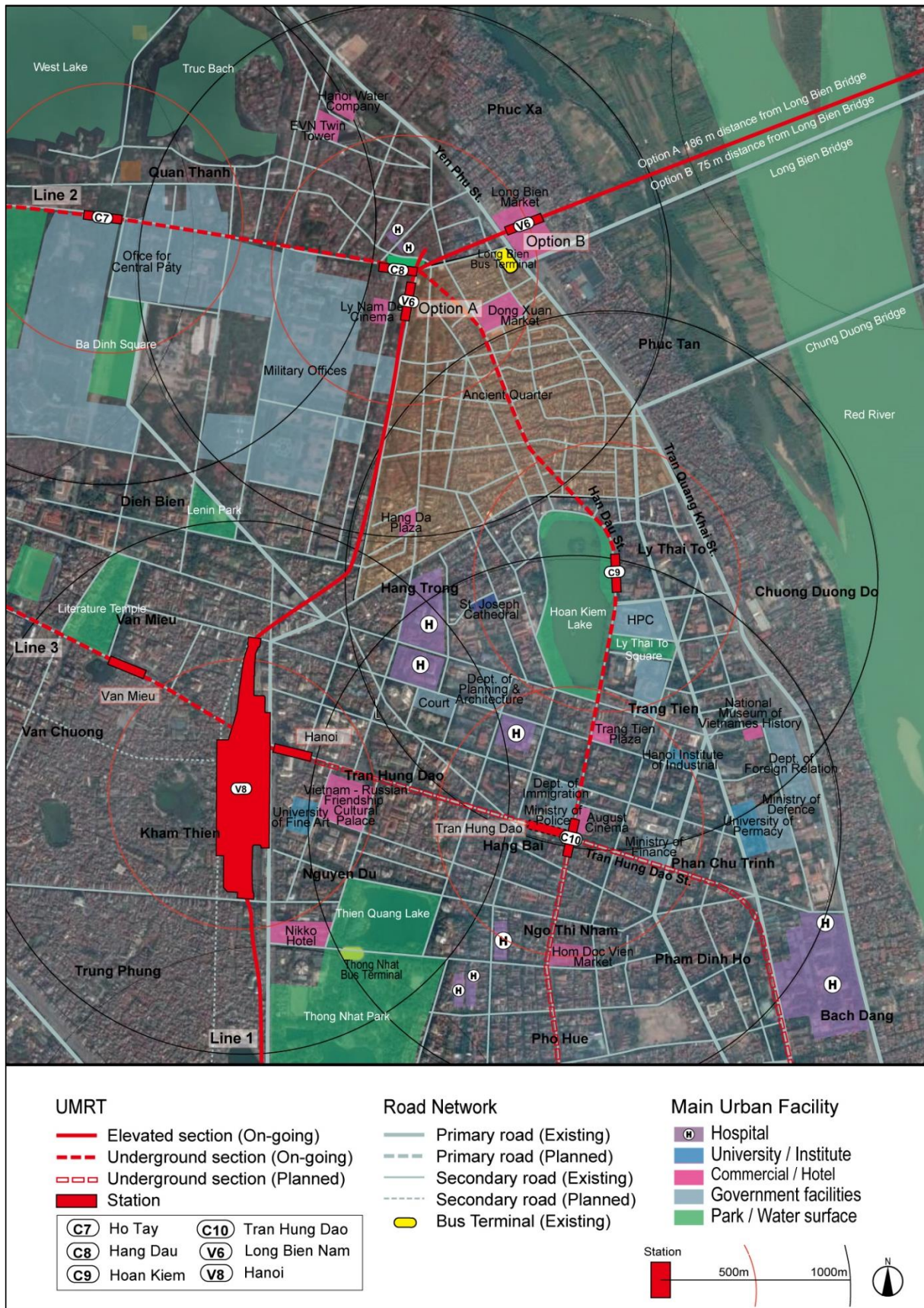
1) Coverage refers to % of ward area included within 500 m radius of UMRT station

2) Coverage ratio out of total area of 16 Hoan Kiem District included within 500 m radius of UMRT station, all Hoan Kiem district

(b) UMRT Route and Stations

3.200 UMRT Line1, Line2 and Line3 cover the city centre cluster with two stations on Line1 – Long Bien Nam (V6) and Hanoi, three stations on Line2 – Hang Dau (C8), Hoan Kiem (C9) and Tran Hung Dao (C10), and one station on Line3 – Hanoi station. The location of Long Bien Nam (C6) is subject to the final decision on the alignment of the Line1 at Red River crossing (it is noted that 75 meter north of existing Long Bien Bridge has been selected by MOT, MOC and HPC, but not officially approved yet). All of the stations of Line2 and Line3 are underground, while those of Line1 are elevated structures (see Figure 3.6.1-1).

Figure 3.6.1-1 Location of South of West Lake Urban Cluster



Source: JICA Project Team

(c) Socio-economic Conditions

3.201 The city centre cluster is the multi-functional traditional urban core of Hanoi City with a long history of urban development. Different types and scales of commercial and business activities flourish, government offices and head offices of large companies are located, schools and hospitals provide city-wide services and various events are held. This cluster does not only provide houses for the people to live but also generates large volumes of socio-economic activities and employment opportunities. Moreover, this cluster is the most distinguished and well-known tourism destination in the region.

3.202 Although new urban centres are being developed in outer areas and people and socio-economic activities are gradually shifting from the city centre to these new areas, the importance of the cluster will remain.

(d) Landuse

3.203 The landuse in this cluster is relatively clearly divided into four types: government space, AQ, FQ and outside-of-dyke area. Government space provides symbolic landscape which represents an image of Hanoi. In contrast, the AQ has been through transformations of its landscape and function over its long history; it is the living and commercial quarter with the highest population density enriched with tangible and intangible values.

3.204 The FQ has developed based on a good set of roads in grid pattern. Main roads are provided with wide sidewalks where old magnificent trees contribute to the enhancement of urban landscape and walkability.

3.205 A large number of people reside in the outside-of-dyke area where they also engage in various socio-economic activities. While improvement of the landuse of the area is not the subject of the study, there is a need to improve connectivity with the city centre and accessibility to UMRT.

(e) Transportation

3.206 Although the city centre is covered with a good network of roads in Hanoi, traffic congestion has become a rising concern of the society. The main causes of the situation are:

- (i) Demand is too large to be met by roads: Roads in the area is already well provided and farther roads development is rarely possible, unnecessary are not advisable.
- (ii) Traffic management is not sufficient: Available roads capacities are not fully utilized because of a number of factors including, installation and operation of traffic signal system, insufficient traffic flow control measures and enforcement, undisciplined traffic behavior of vehicle users and pedestrians, lack of parking facilities and parking management, and so on.
- (iii) Insufficient public transport: While bus routes covers most of major roads, they are unable to absorb more passengers and fail to accelerate a shift from private vehicle users.

2) Impact of UMRT

3.207 Expected impacts of UMRT in the city centre are significant and positive for sustainable development of the most valuable areas of the city. They are briefly as follows:

- (i) **Improvement of connectivity between the city centre and outer areas along the route (main transport corridor):** UMRT expands overall traffic capacities along the corridors which will benefit public transport users who are expected to shift mainly from buses as well as motorcycles. The UMRT will decongest the roads and benefit other road users, too. A typical example is that UMRT Line 1 will significantly contribute to decongesting Chuong Duong Bridge after a new UMRT bridge along Long Bien Bridge will be constructed. Improved connectivity between the congested city centre and relatively less developed outer areas will enhance diversification of socio-economic activities.
- (ii) **UMRT provides ample opportunities to improve traffic situation in the city centre:** When Line1, 2 and 3 are completed, they cover the most part of the city centre within walking distance. This means that a passenger who is in the city centre can access a UMRT station by walk. The current UMRT network in the city centre is designed adequately. From this viewpoint, it is desirable to extend Line3 farther to expanded its coverage, and provide additional station between V6 and V8 of UMRT Line1. Once the UMRT network in the city centre has been completed, there is an opportunity to introduce more drastic measures to control the entry of private vehicles in the city centre through provision of “fringe parking” and “road pricing”. Through the above traffic situation will be dramatically improved and road space can be more open for the use of pedestrians and other social and cultural activities. This will also promote more diversified economic activities as well as tourism in the most valuable heritage areas in Hanoi.
- (iii) **UMRT can provide opportunities for the people who reside in densely populated inner areas with substandard living conditions to move other areas:** Inner parts of the city centre are considered as one of the most problematic areas to live but the best for commercial business. UMRT can provide attractive options for the people and communities who can shift their residences in outer areas, but still can commute with UMRT to the city centre. In order to promote this concept, development of a new town integrated with UMRT in outer areas is worth for consideration.
- (iv) **UMRT can promote urban redevelopment in the city centre areas in sustainable manner:** Urban development/redevelopment in the city centre is expected to make farther progress in Hanoi. A key problem is that these developments will increase additional traffic load in already congested areas. UMRT can address both economic development and traffic issue at the same time by introducing the concept of TOD. Developments/redevelopments will be planned in a way that they are directly or effectively connected with UMRT stations through integrated architectural design, improved walkways including underground facilities, parking at strategic locations. This concept may also contribute to connect outside-of-dyke areas.

- (v) TOD will enhance value of the urban space in the city centre and optimize the landuse from economic, social and environmental viewpoints.

3) TOD Planning Direction

3.208 In reality, traffic management in the city centre is one of the most difficult tasks as in many large cities in the world. Traffic congestion in the city centre cannot be solved or mitigated without a network of grade separated (underground or elevated) mass-transit or restricting the entry of private vehicles in the city centre or both of them.

3.209 In order to maximize the benefits of UMRT, the following lines should be considered when formulating the TOD concept plan:

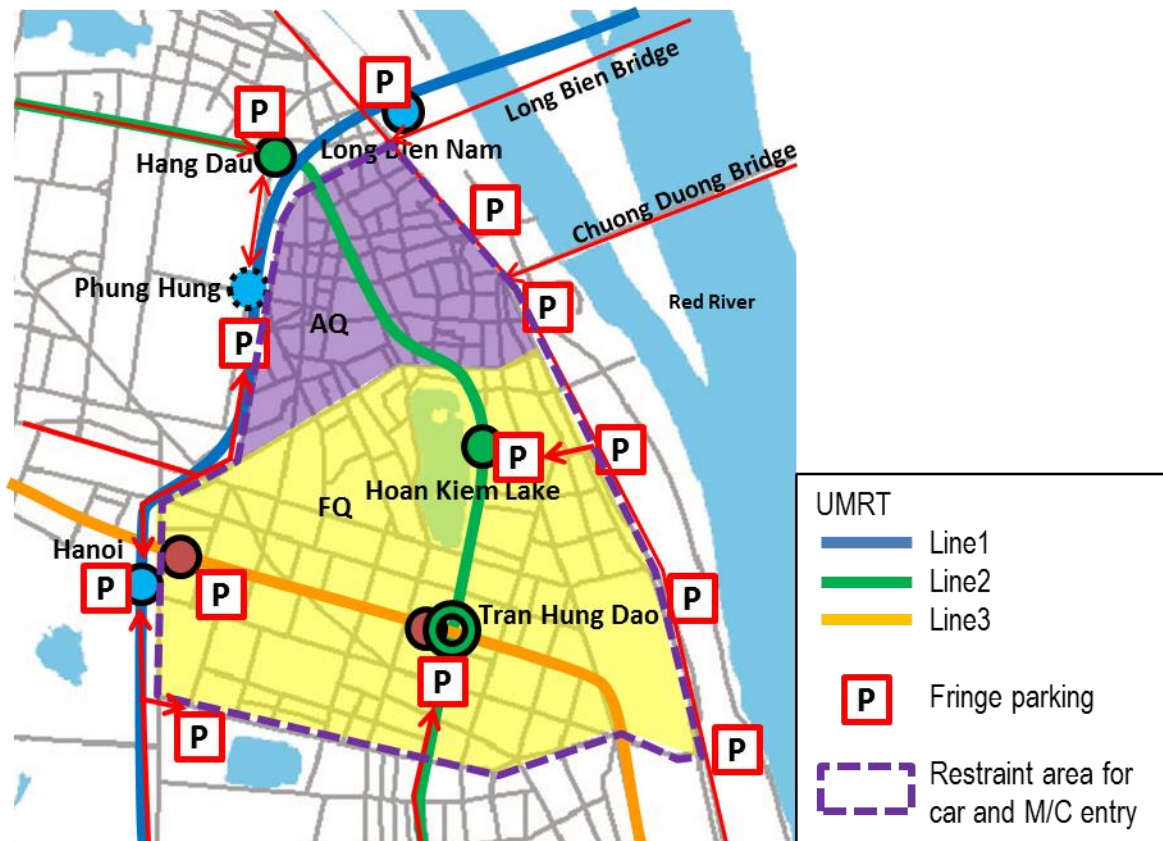
- (i) Maximize the network effects of UMRT and introduce TDM in AQ and FQ areas: Line1, Line2 and Line3 intersect each other in the city centre and their stations can cover all parts of the city centre within maximum of about 800 meter. This means that a passenger can reach a UMRT station within walking distance in the city centre. This provides a base to control the entity and parking of facilities are provided in fringe of the city centre, this policy can become more feasible.
- (ii) Contribute to bottlenecks removal in the city centre: There are two areas that can be considered in relation to UMRT development:
- Connect urban areas in the east and west of Hanoi Station. Where the station is elevated, there are opportunities to integrate both sides especially by existing Tran Hung Dao Street (or Ly Thuong Kiet Street) to connect with Quoc Tu Giam Street. This will contribute to the reduction of traffic conflicts in Dong Da District.
 - Encourage the shift of cars and motorcycles from using Chuong Duong Bridge to using the UMRT system and/or the to-be-abandoned Long Bien Bridge section, which can be converted for the use of BRT and NMT. Moreover, after a toll fee will be charged for using Chuong Duong Bridge, the shift to public transport will be even more promoted and positive traffic impact in the city centre should be more significant.
- (iii) Introduction of special feeder transport services in the city centre: The city centre can be provided with special transport services to farther improve accessibility to UMRT stations as well as mobility of the people within the city centre. These include expansion of current E-minibus service and E-bike service which connect UMRT stations each other as well as main points on-route. The stations can be located at UMRT stations.
- (iv) Effective use of the space within ROW of UMRT: There are opportunities to make use of the space within ROW of UMRT. For Line1, the available space is under the viaduct for possible use of commercial (small shops), traffic (parking) and public services (community service), and the air right at the stations. For underground sections of Line2, possible use include underground parking and walkway.
- (v) Integrated urban development: There are ample opportunities of integrated urban development/redevelopment in the city centre at and around the stations. They include but are not limited to Long Bien Market, Hang Dau Park, EVN, Hanoi City Police, VNR land at Hanoi Station.

4) Concept Plans on Improvement of Transport Situation in the City Centre by Leveraging UMRT Development

3.210 The development of UMRT Line1 and Line2 will bring about significant positive impacts on the transport environment in the problematic city centre if other related measures are implemented in a coordinated manner:

- (i) Introduction of TDM in the City Centre (AQ and FQ): Main concept on the proposed TDM in the city centre includes the following:
 - Development of parking facilities mainly in the fringe of the city centre and in the areas at and around the UMRT stations to encourage vehicle users not to enter the city centre: They park their vehicles at those parking spaces and walk or use special circulation bus services in the city centre.
 - Introduction of sticker system for the entry of cars and motorcycles in the city centre: Without a sticker, which can be purchased before entering the city centre, cars and motorcycles are not allowed to enter the city center. For those who are living in the city centre, special stickers will be provided. This system is called Area Licensing Scheme.

Figure 3.6.1-2 Concept of TDM for City Centre (AQ and FQ)

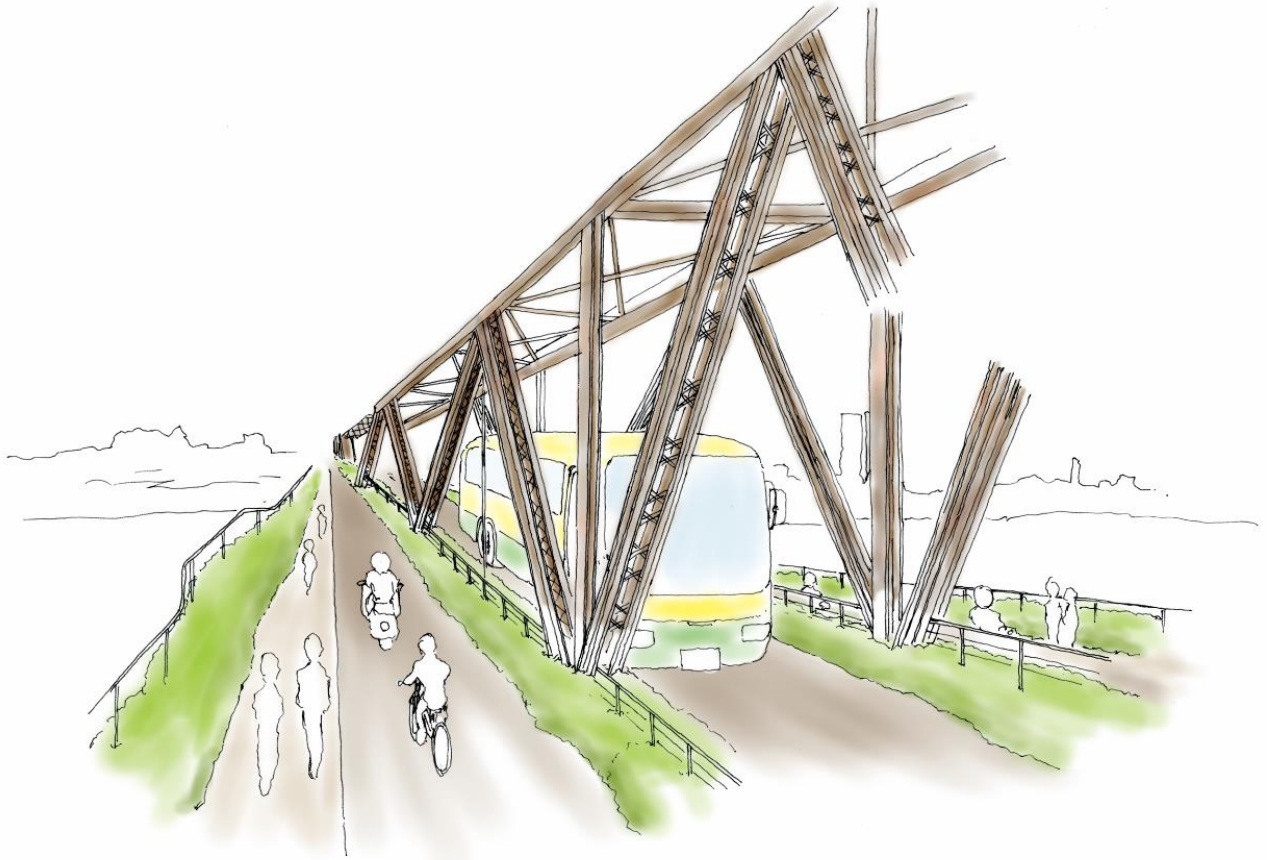


Source: JICA Project Team

- (ii) Use the to-be-abandoned VNR's Long Bien Bridge Section: After UMRT Line1 will be completed, the section including the rail purpose of the existing Long Bien Bridge will be discarded. It is proposed to convert this space for the use of special buses and non-motorized traffic to contribute to the reduction in road vehicle traffic using Chuong Duong Bridge. The route and space using Long Bien Bridge also present significant

opportunities for tourism and recreational purposes, and to strengthen the connectivity of the AQ with the Red River, which is the heritage value of the city. This project can also strengthen the connectivity with existing bus terminal located on Yen Phu Street (See Figure3.6.1-4).

Figure 3.6.1-3 Image of Long Bien Bridge Section Converted for Bus-NMT Corridor



Source: JICA Project Team

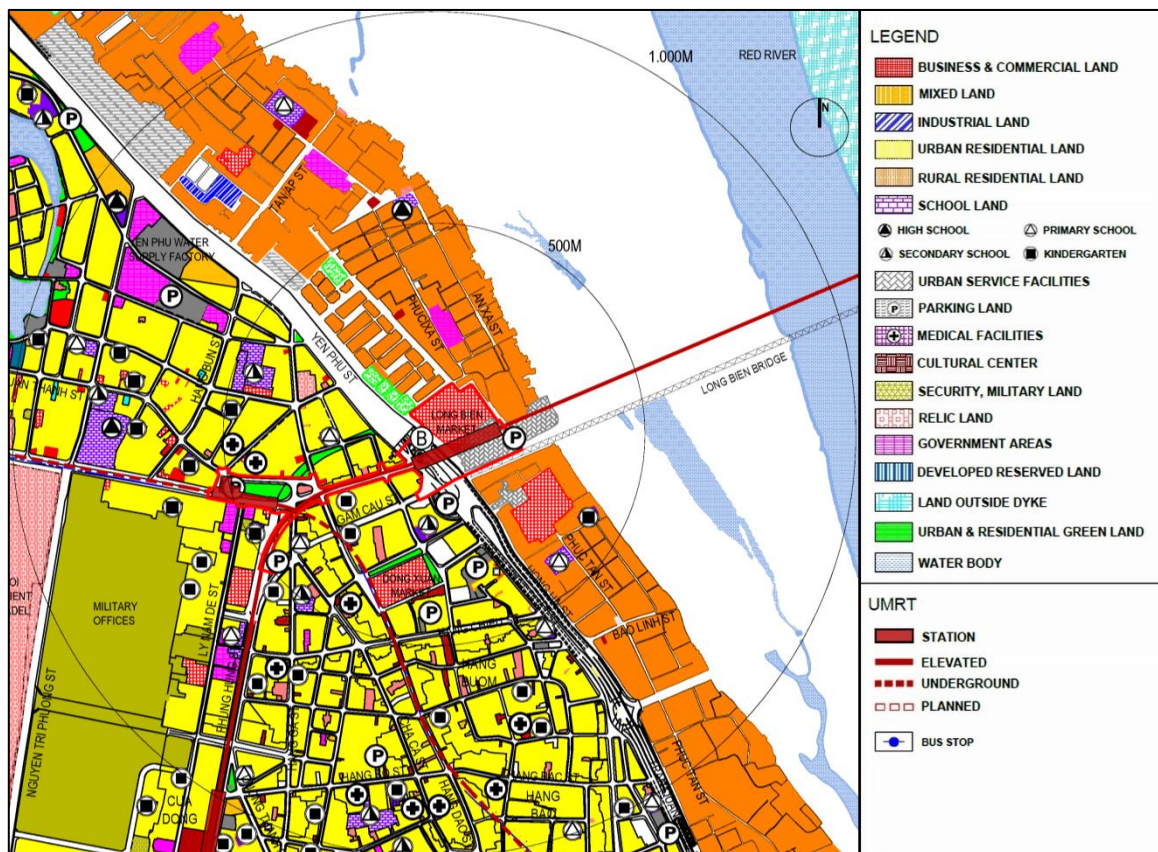
3.6.2 Hang Dau Station (C8) and Long Bien Nam Station (V6) Areas

1) Locational Characteristics

3.211 Hang Dau Station (C8) is underground station of Line2 and Long Bien Nam Station (V6) is elevated station of Line1 which will be located at the north of the AQ. Related main roads include Yen Phu Street – Tran Nhat Duat Street, which are known as dyke roads in the east, and Phan Dinh Phung Street and Thanh Quan Street in the west. Long Bien Bridge is the existing historical heritage of the city, and currently used by VNR and motorcycles.

3.212 The area should serve as a transit gateway in the north of the city centre where Line1, Line2 and main city bus corridor intersect. There are two options on the alignment of Line1 which affects the location of V6 stations (Option A: 186 meter and Option B: 75 meter north of existing Long Bien Bridge). In the concept plan, option B (75 meter) is indicated which have been approved by MOT, MOC and HPC (see Box 1).

Figure 3.6.2-1 Present Location of Hang Dau Station (C8) and Long Bien Nam Station (V6) Areas



Source: JICA Project Team

Box 1: Background of Discussion of Location of New UMRT Bridge and Long Bien Nam Station

The discussion has been made on alternative locations of new UMRT Line1 Bridge crossing the Red River with regard to (a) transportation convenience (connecting with UMRT Line2-C8 station), (b) historical landscape of Long Bien Bridge and AQ, (c) river engineering and (d) resettlement aspects.

Under JICA-HAIDEP study in 2007, an alignment which is about 500 meter from the existing Long Bien Bridge was proposed to avoid negative impacts of landscape and river engineering, and the alignment of 200 meter was selected.

In HAIMUD study in 2011, two options of 200 meter and 30 meter (proposed in the Feasibility Study of UMRT Line1 project) were compared, and at the end of project, the alignment of 186 meter was approved by the Prime Minister.

After the approval of 186 meter option, the discussion was raised again since the alignment of 186 meter would require land acquisition of residential areas.

In HAIMUD2, two options of 186 meter and 75 meter (proposed by TEDI) were compared again.

At present, the alignment of 75 meter is favorable which MOT, MOC and HPC have agreed.

Figure: Comparison of V6 Long Bien Nam Station Options (186m and 75m)

Alternative Location Map	Criteria	Option A: 186m	Option B: 75m
	Connectivity between UMRT stations	50m connected by underground walkway	200m connected via elevated walkway
	Potential development area	Underground parking of Hang Dau Park	<ul style="list-style-type: none"> Underground parking of Hang Dau Park, Station plaza of Long Bien Market
	Visual impact on Long Bien Bridge	Rather positive	Less positive
	Resettlement	Required	Few

2) Planning Conditions and Directions

(a) Transportation Access Improvement

3.213 Key considerations for improvement of access to UMRT and local traffic circulation in the area include the following :

- (i) Integration of Line1 and Line2 stations as well as city bus terminal: Smooth transfer between Line1 and Line2 is important for passengers and will affect the ridership of both Lines. Connectivity of city bus terminal on the dyke road with UMRT should also be ensured.
- (ii) Improved walkability: While expansion of road space in the area is no longer possible nor advisable, priority should be given for pedestrians through more strict enforcement on private vehicle traffic movement and parking. At the same time,

walking conditions should also be improved including widening of sidewalk, improvement of pavement, provision of street trees, shade, street lights, safety facilities, among others.

- (iii) Development of parking facilities: Parking facilities and space in the area is absolutely lacking. It is advisable to develop various types of parking facilities at the fringe of AQ, including underground parking at Hang Dau Park in integration with Line2 station.

(b) Integrated Urban Development

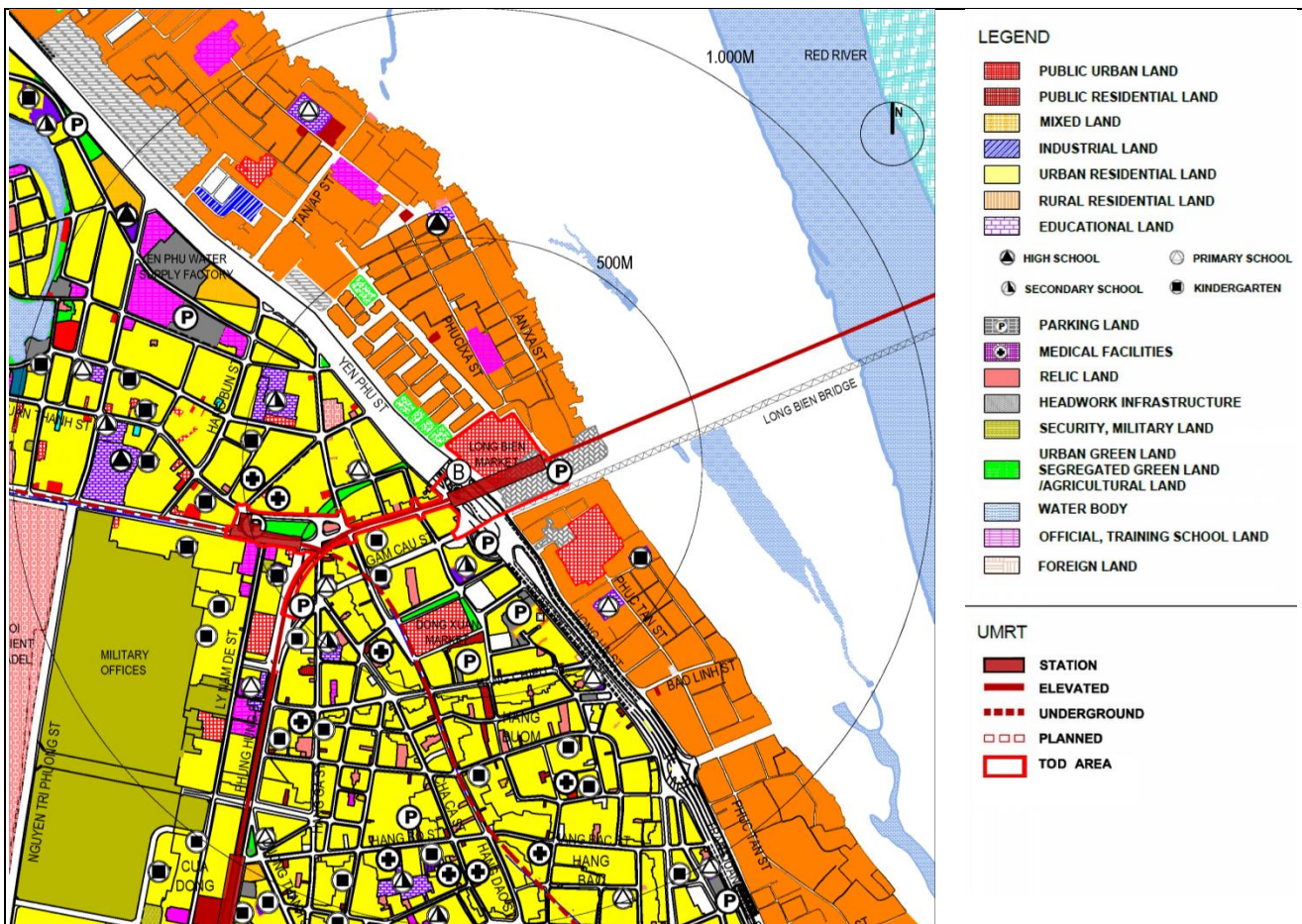
3.214 While there are ample opportunities for integrated urban development, the following points are to be noted:

- (i) Redevelopment of Long Bien Market: UMRT can enhance redevelopment opportunities of Long Bien Market dramatically, especially when Line1 is opted Option B. The market area can be reborn to modern competitive commercial complex provided with direct access to UMRT, while current market activities can be continued in much improved arrangement and function as an extended in much improved arrangement and function as an extended part of AQ. Integration with bus terminal and proposed BRT using existing Long Bien Bridge section can also enhance the competitiveness of the development.
- (ii) Use of the space under the viaduct of UMRT: New space will be operated when Line1 has been constructed. The space can be used for commercial and public service purposes, and add new attractions to the AQ.
- (iii) Use of underground space: As the height of buildings is limited in the area, possible use of underground space especially at and around the station is worth to be considered.

(c) Community Development

3.215 While the communities might be adversely affected during the construction of UMRT, they will significantly benefit from UMRT after it is in place. The expected benefits for local communities are not only the improvement of mobility and accessibility but also the increase in economic opportunities and socio-environmental conditions.

Figure 3.6.2-2 Hang Dau Station (C8) and Long Bien Nam Station (V6) Areas in Zone Plan



Main Planning Direction

- (i) Develop intermodal facilities at Hang Dau including development of underground facilities such as parking, walkway and commercial space;
- (ii) Improvement traffic management and walkability in the area;
- (iii) Integrate UMRT Line1 and Line2 stations as well as city bus terminal;
- (iv) Effective use of the space under the UMRT viaduct for pedestrian walkway and commercial purpose;
- (v) Effective use of to-be- abandoned Long Bien Bridge section for tragic and recreational purpose; and
- (vi) Redevelopment of Long Bien Market in integration with UMRT and effective use of Long Bien Bridge section.

Source: JICA Project Team based on draft Zone Plan

3) TOD Concept Plan

(a) Improvement of Access to UMRT station

3.216 While road improvements, such as widening, are extremely difficult in the area, the improvement of accessibility to UMRT station should be the focus of the improvement of walkability on existing roads. Existing road facilities and space need much space for improvement to accommodate diversified traffic needs and vibrant activities in the centre of the city.

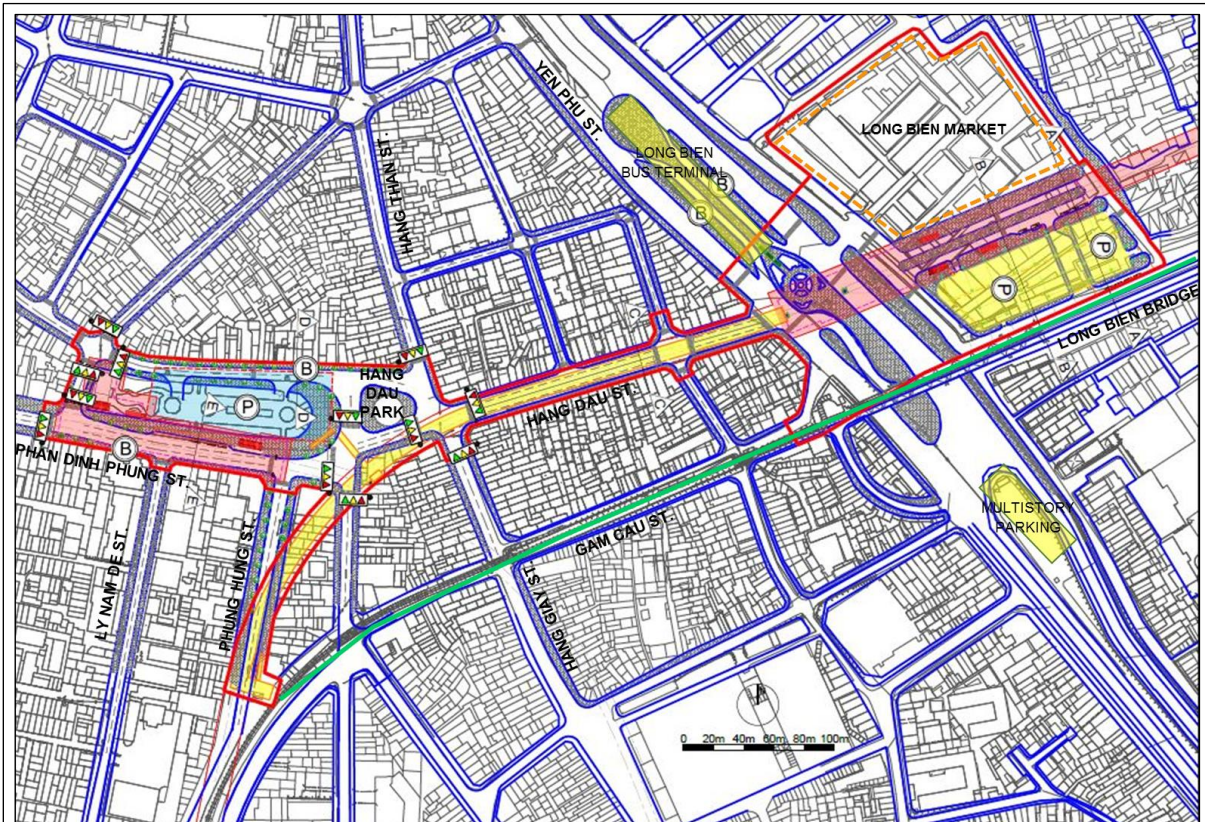
3.217 The lack of parking space is a root cause which hampers smooth, safe and comfortable walk in the area. Although the improvement of access to UMRT stations is closely related to the walkability in the entire city centre, necessary measures include improvement of sidewalk pavement, controlled use of sidewalk space, provision of safety facilities, among others, especially at and around the station where pedestrian traffic will be concentrated.

(b) Development of Intermodal Facilities at the Station

3.218 As the station is located on one of the most costly land in Hanoi, available space should be utilized to a maximum extent. This component include following specific measures:

- (i) Development of Underground Parking Integrated with the Station at Hang Dau (C8): The underground space at Hang Dau Park is a suitable space for underground parking which can be constructed in integration with the UMRT station.
- (ii) Development of Multi-level Parking Facilities in Long Bien Market Area: Multi-level parking facilities will be constructed in Long Bien Market area, which will be integrated with Long Bien Nam Station.
- (iii) Development of Elevated Walkway under Viaduct of UMRT Line 1: Space available under the viaduct of UMRT Line 1 can be used to improve accessibility to the UMRT station. The elevated walkway can also strengthen connectivity between AQ and Long Bien Market area including the bus terminal.
- (iv) Provision of loading/unloading facilities along Hang Dau and Phung Hung Streets: Using the road space at the UMRT station area, loading and unloading facilities for bus and other vehicles will be provided.

Figure 3.6.2-3 Facility Concept Plan of Hang Dau Station (C8) and Long Bien Nam Station (V6)



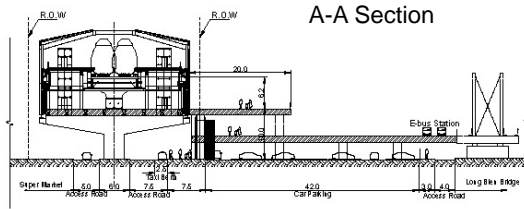
Main Components

- Development of underground walkways
- Development of elevated walkway under the Line1 viaduct
- Development of underground parking integrated with the station
- Lading/unloading facilities along Hang Dau and Phung Hung Streets

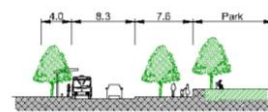
Legend

	TOD Area
	UMRT ROW
	Station Structure
	Station Entrance
	Station Plaza
	Elevated Walkway
	Parking
	Underground Parking
	Bus Bay
	Traffic Signal
	TOD Potential Area

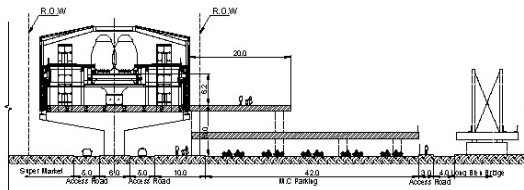
A-A Section



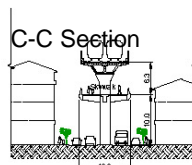
D-D Section



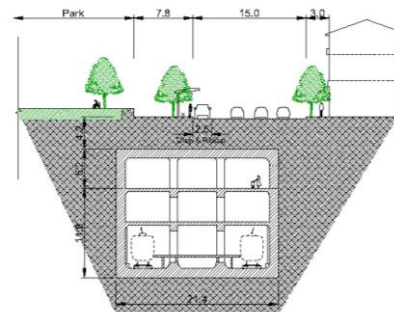
B-B Section



C-C Section



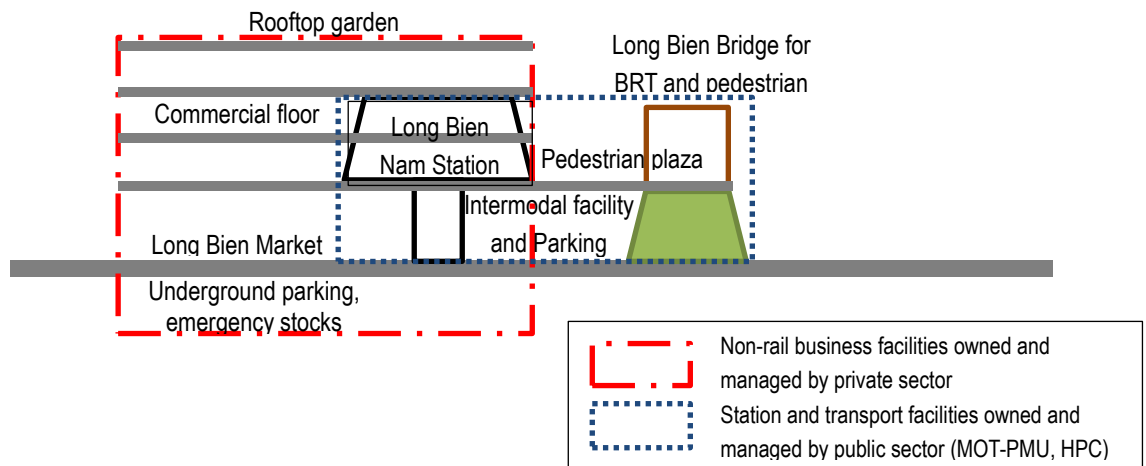
E-E Section



Source: JICA Project Team

- (c) **Use of the Space under UMRT Viaduct at Ground Level:** The space under the viaduct will also be organized at ground level for different uses including walkway, parking, small shops, among others.
- (d) **Integrated Urban Development at Long Bien Market:** Redevelopment of Long Bien Market in integration with UMRT is highly possible. It will not only contribute to economic development but also to the improvement of transport conditions.

Figure 3.6.2-4 Proposed Ownership and Management of TOD complex at Long Bien Nam Station (V6) Area



Source: JICA Project Team

Box 2: TOD Concept Plan of Phung Hung Station (preliminary)

In case if the location of V6 Long Bien Nam Station will be at Long Bien Market, the distance between V6 and V8 Station will be more than 2km, which is out of walking coverage. For this, it is necessary to consider to develop Phung Hung Station, which was originally proposed. The preliminary concept plan proposed under HAIMUD in 2011 is summarized as follows:

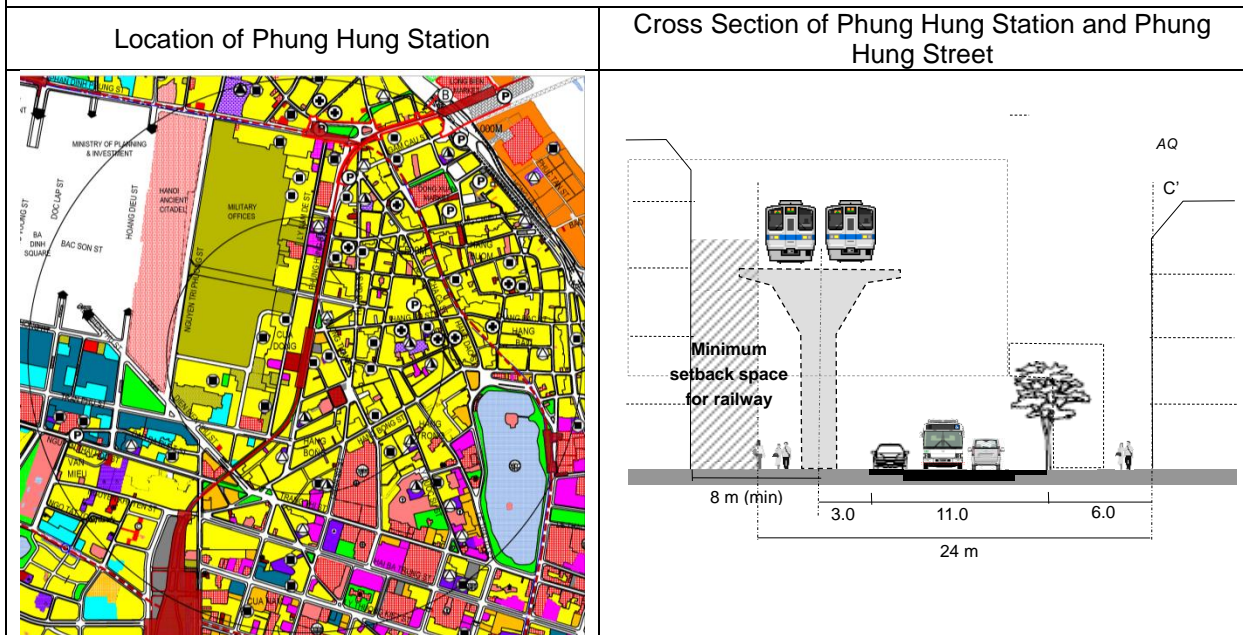
Locational Characteristics: Phung Hung Station will be located west center of AQ. Phung Hung Street is one way from south to north. In front of the station location, there is a small park at present. Along the street, there are restaurants and small markets, and designated roadside parking areas. West side of railway, out of AQ is high-dense residential areas with 4-5 stories.

Planning Consideration and Directions: Phung Hung Station will be the central station of AQ, as well as center of surrounding stations of Hang Dau, Nam Cau Long Bien and Hoan Kiem Lake. Under the station and railway, Phung Hung Street will be served as an outer trunk road of AQ, and commercial facilities will be developed along the street. Together with these stations, this station area will create pedestrian friendly commercial area in harmony with modern function and traditional values.

Transport access improvement concept: Since dynamic urban development activities are strictly restricted in AQ, station-related facility will be developed in a limited openspace. The small park crossing Phung Hung Street and Bat Dan Street is the only potential area to develop a station entrance space. Though Phung Hung Street is a one-way street at present, it will be improved for two-ways traffic flow. Elevated walkway under the viaduct will be extended from V6 Long Bien Nam Station, C8 Hang Dau Station and V7 Phung Hung Station, as well as V8 Hanoi Station is possible. The space under the viaduct should be utilized as a carriageway and sidewalk, without any additional land acquisition of both sides.

Integrated urban development concept: Roadside facilities along Phung Hung Street will be improved and rehabilitated in line with UMRT development. Urban redevelopment projects at west of station will be promoted to be improve a west gateway of the AQ.

Community improvement concept: Local traditional socio-economic activities in the AQ will be promoted at and around the station.



Source: JICA Project Team based on HAIMUD1 Final Report

3.6.3 Hoan Kiem Lake Station (C9) Area

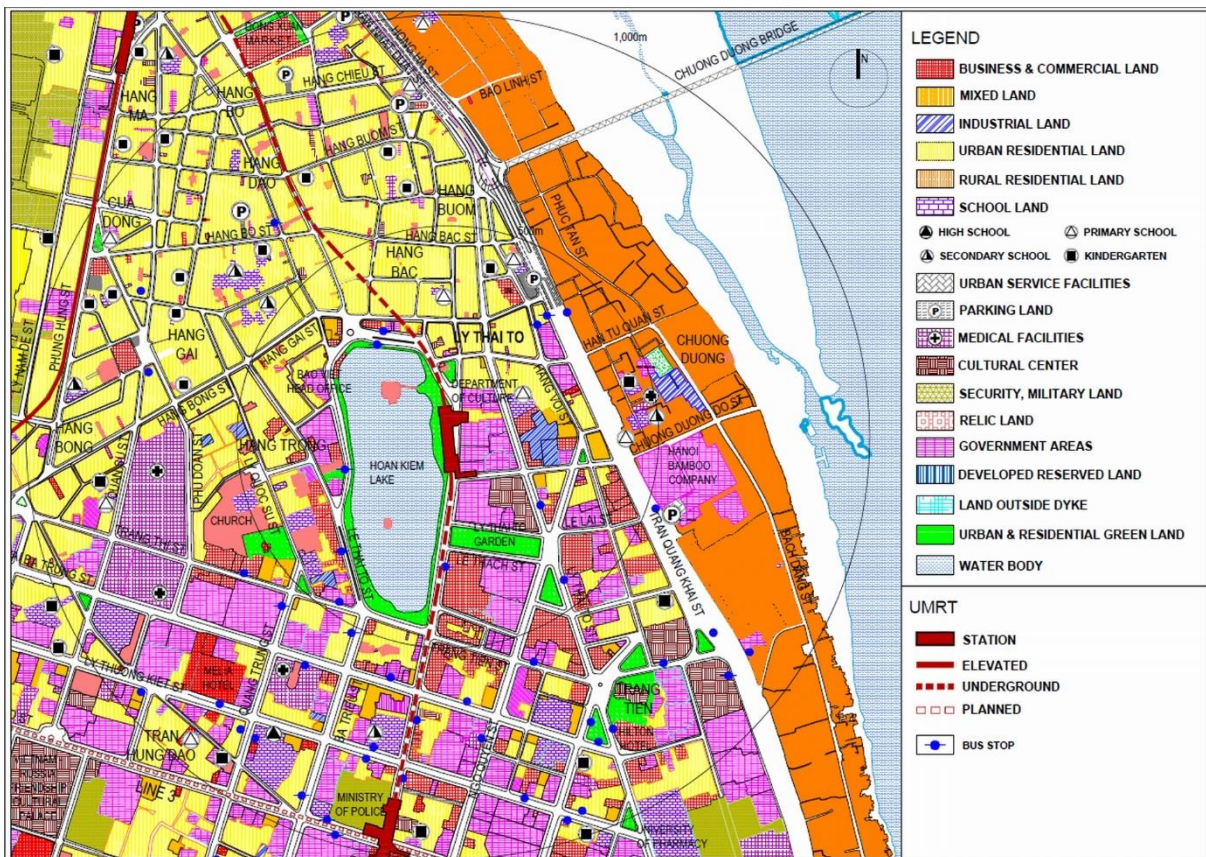
1) Locational Characteristics

3.219 Hoan Kiem Lake Station (C9) is an underground station located on Hoan Kiem Lake shore. The station serves as the southern gateway of AQ and connects with FQ. As Hoan Kiem lakeside is a symbolic and holly space of the city, utmost care has been taken when choosing the location of the station as well as its entrances, to ensure tranquility and traffic order, which UMRT can contribute to.

3.220 While the road network is well provided, traffic congestion is a raising issue. The area is not only attracting traffic but also serve through traffic. Lack of bypass roads especially on the west and Chuong Duong Bridge which discharge large volume of traffic on the east aggravates the situation in the area.

3.221 Hoan Kiem Station is the nearest access point of UMRT for outside-of-dyke area where many people reside and socio-economic activities are concentrated.

Figure 3.6.3-1 Present Location of Hoan Kiem Station (C9) Area



Source: JICA Project Team

2) Planning Consideration and Direction

(a) Transport Access Improvement

3.222 As the station is located at the heart of the city, involving spiritual, cultural and environmental concerns of the people, the location of the station has been selected carefully. The station will be utilized for different purposes, not only for regular daily trips but also by tourists and participants to various events, which are held frequently in the area.

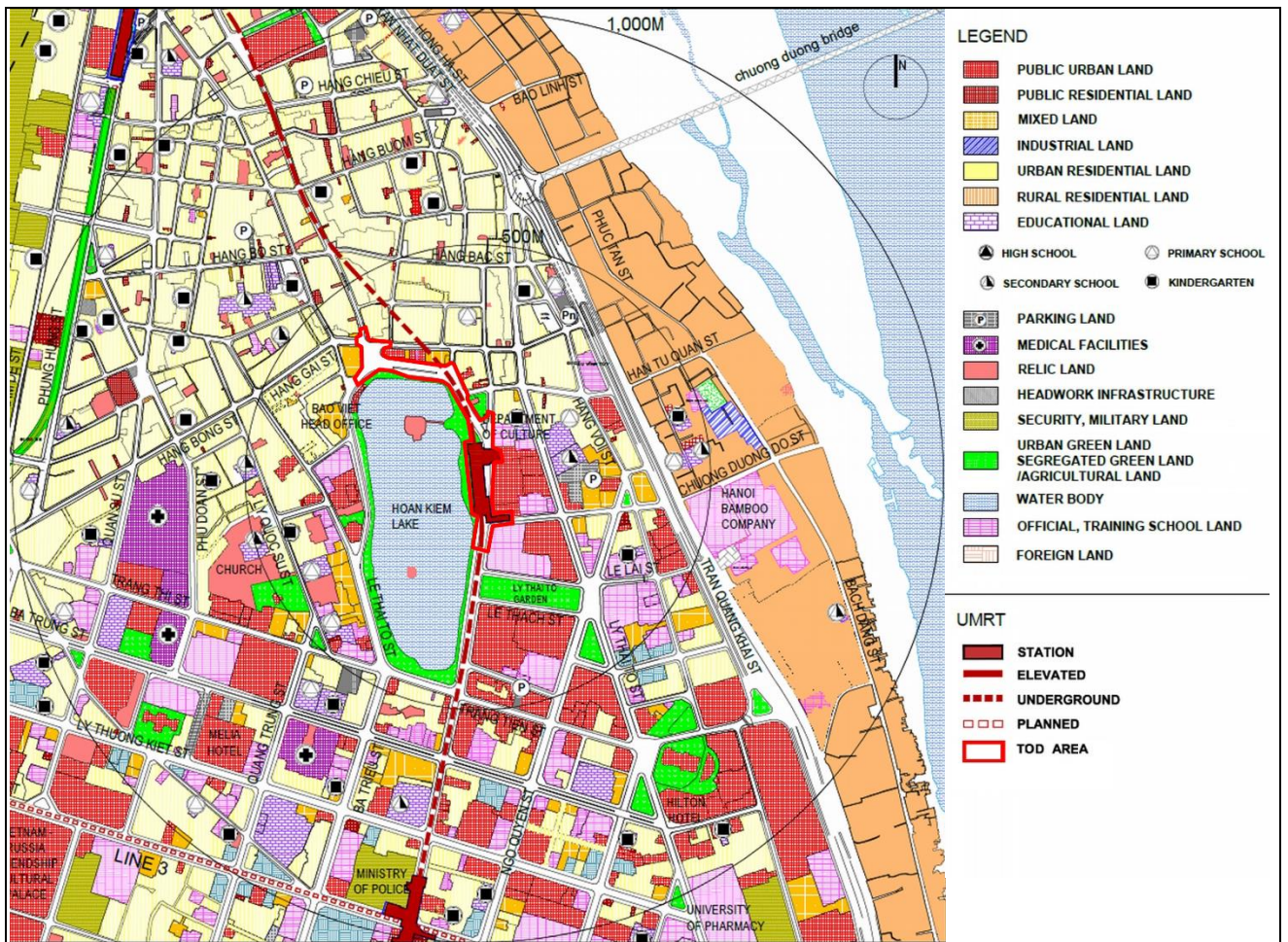
3.223 As for all UMRT stations located in the city center, special attention should be paid to the improvement of access to the UMRT station, and to the possibilities of improving local traffic conditions through UMRT. Main considerations are more specifically as follows:

- (i) Coordinated traffic management: Traffic management at and around the UMRT station should be implemented in coordinated manner with other station areas located in the city center.
- (ii) Improvement of walkability in the area: Improvement and space management of sidewalk are particularly important.
- (iii) Widening sidewalks along Tran Quang Khai Street: Tran Quang Khai Street is a main road for vehicle traffic. However, it should also function as a main pedestrian corridor. As the carriageway of the road is wide enough, the existing sidewalk can be widened.
- (iv) Improvement of connectivity with outside-of-dyke area: An elevated walkway can be provided to connect the outside-of-dyke area and the city center and facilitate the access to the UMRT station.
- (v) Redevelopment of Dong Kinh Nghia Thuc Square for pedestrian-friendly gateway space: Although the square is an important gateway to AQ, traffic situation in the intersection is chaotic and unsafe, especially for pedestrian. The situation should be improved through proper traffic engineering and space management.

(b) Integrated Urban Development

- (i) Redevelopment of EVN land integrated with UMRT: EVN land is located at an ideal location for integrated development with UMRT. The land can provide space for multi-purpose commercial, tourism and recreation facilities. The development will enhance the ridership of UMRT and at the same time can contribute to the improvement of traffic management in the city center.
- (ii) Promotion of urban renewal of existing facilities: There are other plots of land and facilities that should be redeveloped in the future. In order to promote TOD farther, it is advisable to provide connectivity between the UMRT station and penitential redevelopment area using underground space.

Figure 3.6.3-2 Hoan Kiem Station (C9) Area in Zone Plan



Main Planning Direction

- (i) Attend to area-wide traffic management improvement in coordination with Hang Dau Station (C8) and Long Bien Nam Station (V6)
- (ii) Improve walkability in the area including widening of sidewalk along Tran Quang Khai Street
- (iii) Improve connectivity between the station and outside-of-dyke areas
- (iv) Redevelop the area for more pedestrian friendly symbolic space as a gateway to AQ
- (v) Redevelop EVN land for multi-functional commercial and public service complex in integration with UMRT

Source: JICA Project Team based on draft Zone Plan

3) TOD Concept Plan

3.224 On the basis of the aforementioned planning considerations and directions, TOD concept plans for Hoan Kiem Lake Station were formulated as follows (see Figure 3.6.3-3)

(a) Improvement of Accessibility to UMRT System

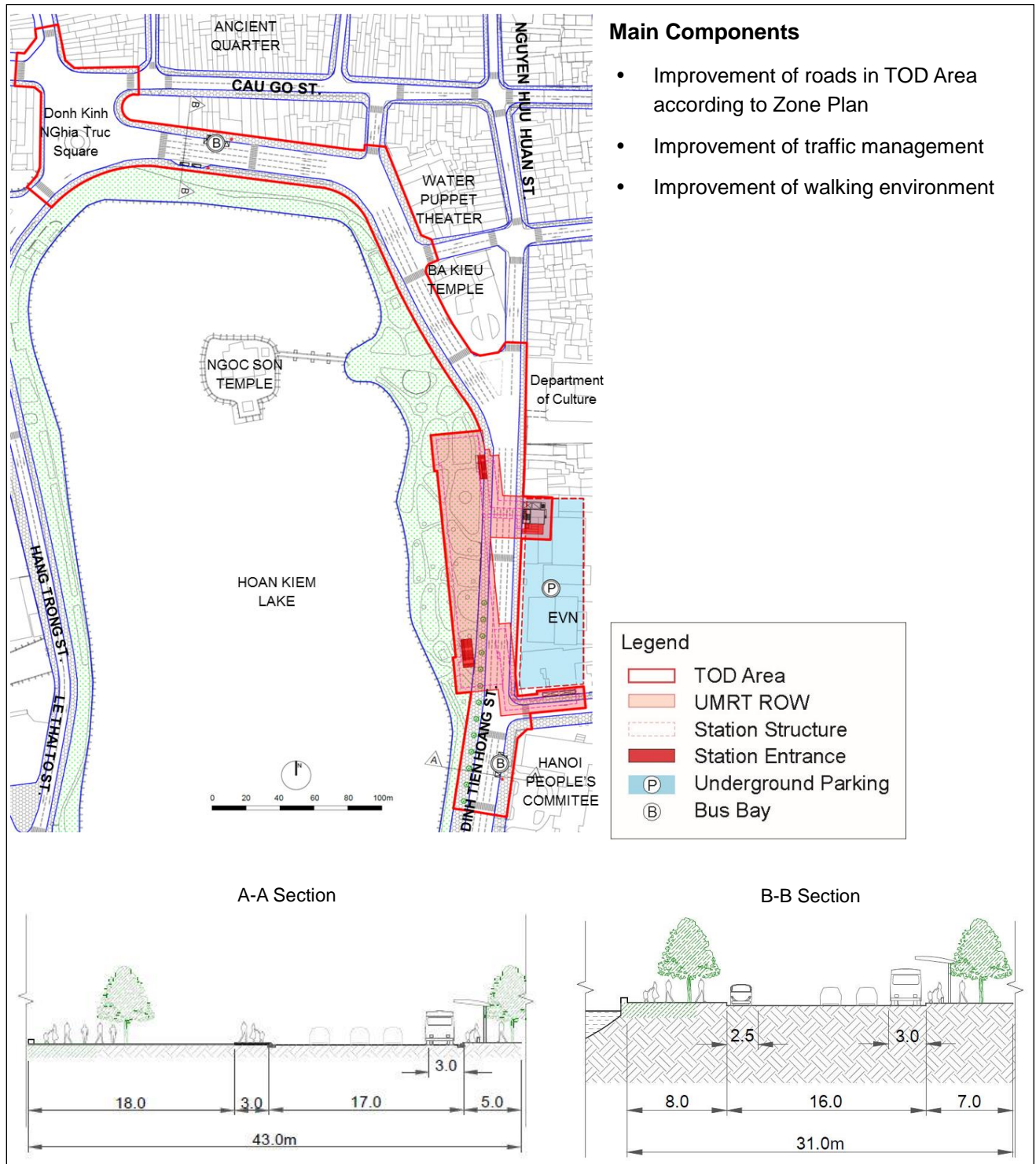
3.225 In addition to the overall improvement of walkability and vehicle traffic control and management, the following specific measures are to be implemented to improve accessibility to UMRT station:

- (i) Farther Improvement of Traffic Space along the Hoan Kiem Lake: The road space along the lakeside is one of the best space for pedestrians to enjoy the Lakeview and approach to the entrance to AQ. When UMRT is opened, more pedestrians will gather in the area, especially for various cultural events which are held time to time. However, vehicle traffic flow along Dinh Tien Hoan Street is also heavy. Therefore the area especially covered by TOD Area should be provided with proper traffic management to provide a priority to pedestrian traffic.
- (ii) Provision of Underground Parking in Integration with EVN Land Redevelopment: After EVN land will be redeveloped, it will be necessary to provide multi-level underground parking facilities to curb the entry of private vehicles into the AQ and to meet the parking demand in the area.

(b) Development of Intermodal Facilities and Local Transport Services

- (i) Improvement of Dong King Nghia Thuc Spare Area: After UMRT will be placed, the number of opportunities to improve the transport situation will increase, based on effective use of the road space at Dong King Nghia Thuc Square where the space is mostly used for buses, taxis and tourist vehicles boarding. The traffic flow is not well regulated due to complex intersections, lack of traffic engineering and enforcement and undisciplined behavior of road users. Since the area is a symbolic gateway to the AQ, the space should be redesigned in a way that traffic circulation is regulated, pedestrians can walk safely and comfortably. Measures include recanalization of the intersection, widening and improved space management of sidewalks, provision of pedestrian priority measure, extension of pedestrian precinct area, among others.
- (ii) Introduction of Extended Local Minibus Circulation Service: At present, buses are using the square and E-minibus provides circulation services in a limited scale. After the UMRT will be in operation, the route bus service can be ceased and E-minibus operation can be expanded to cover wider areas of the city center in connection with other UMRT stations and main destinations located in the city center, current EV minibus can be upgraded then.

Figure 3.6.3-3 TOD Facilities Plan for Hoan Kiem Station (C9) Area



Source: JICA Project Team

(c) Integrated Urban Development

3.226 EVN land is the most appropriate space for integrated urban development. If the area is developed based on appropriate TOD concept, the benefits can be much enhanced and enjoyed widely among developers and society.

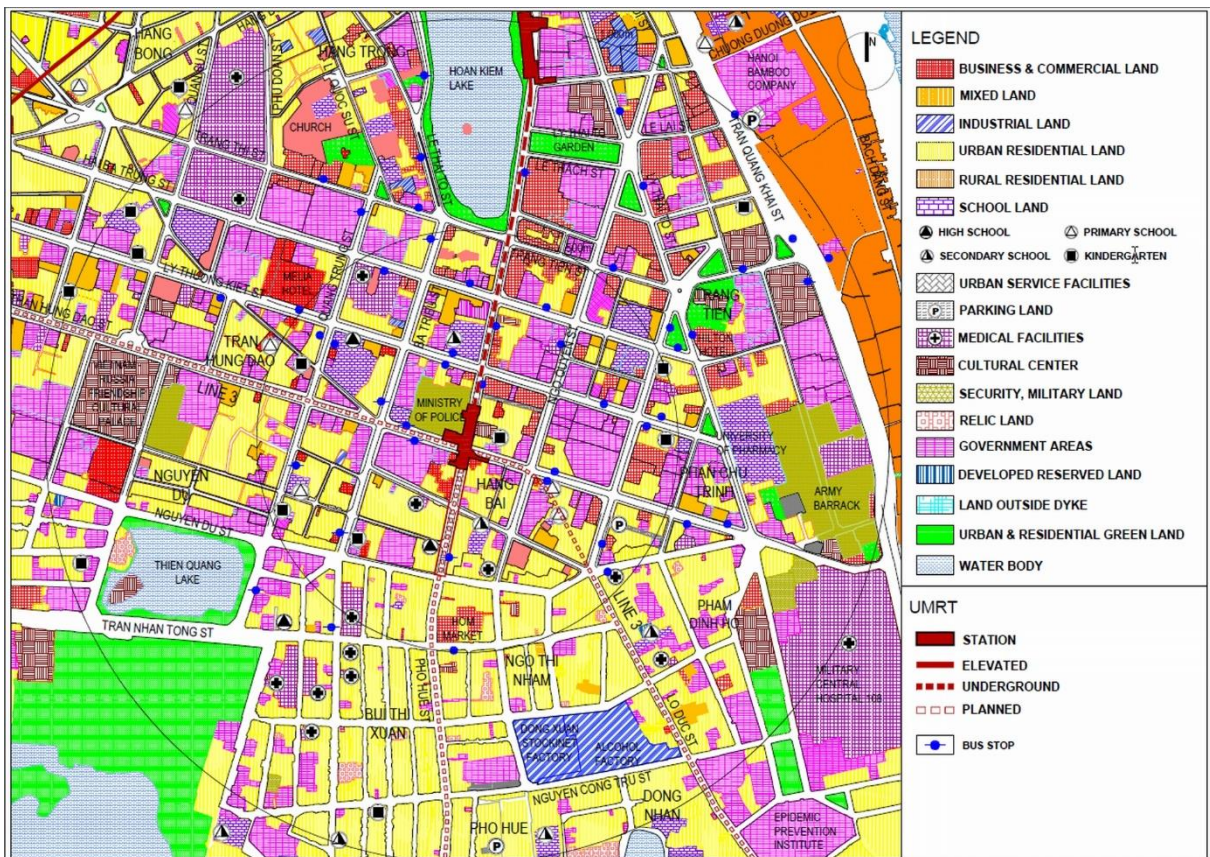
3.6.4 Tran Hung Dao Station (C10) Area

1) Locational Characteristics

3.227 Tran Hung Dao Station (C10) is an underground station located in the centre of the FQ, where public and private buildings concentrate for residential, commercial, business and public services uses. This station is the end of the phase1 section of Line2. It will become an important interchange station when Line3 will be extended from Hanoi Station to the east. Line2 is also to be extended farther south and to connect with on-going Line2A. Then the C10 station will become the transit hub in the FQ where large urban redevelopment opportunities exist, though the building height is restricted up to 9 floors.

3.228 The area is provided with a very good network of high quality urban roads with wide sidewalks with trees, which can contribute to increased walkable distances.

Figure 3.6.4-1 Present Location of Tran Hung Dao Station (C10) Area



Source: JICA Project Team

2) Planning Conditions and Directions

(a) Transportation Access Improvement

3.229 The station is provided with the best and the most adequate high standard urban roads in Hanoi and is expected to function as the important UMRT access point together with Line3 station in the FQ. In order to enhance the ridership of UMRT and at the same time to contribute to the improvement of traffic situation in the area, the following measures should be implemented;

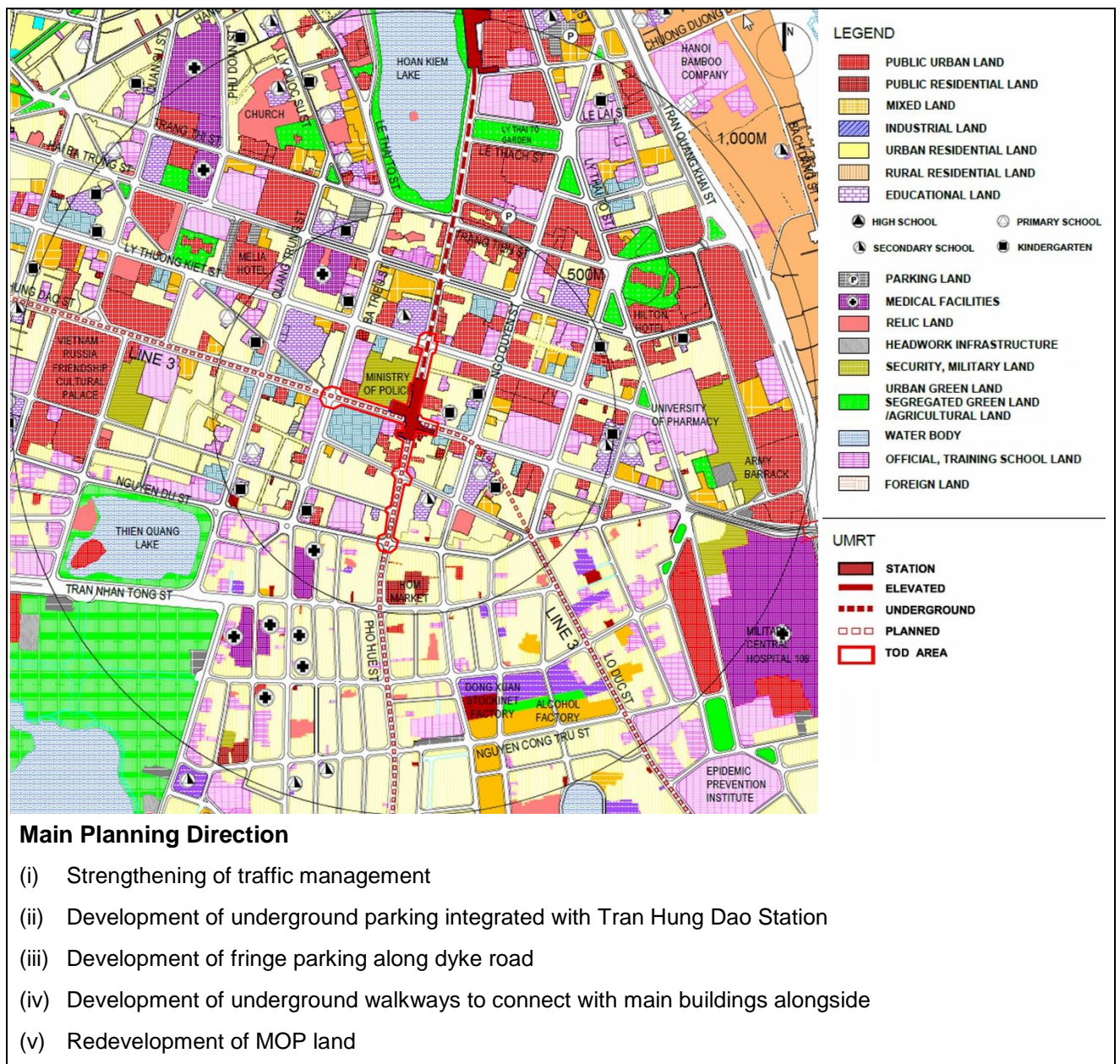
- (i) Strengthen Traffic Management to Ensure Improved Walkability and Regulated Traffic Flow: This include improvement of existing sidewalk conditions, space management of sidewalk space, provision of necessary street furniture such as benches, trash bins, street lights, etc. to encourage UMRT users to walk longer. Providing safe crossing of busy main streets is also important.
- (ii) Develop Underground Parking in Integration with Tran Hung Dao Station: When Tran Hung Dao station will be built through the open cut method, the construction space will be filled back with the earth. The proposed underground parking is to make use of the space for underground parking which can therefore be constructed at much lower cost than new construction.
- (iii) Develop Underground Walkways: Tran Hung Dao station is located in the middle of the FQ where redevelopment of old facilities and public land is being undertaken. As building height is controlled by regulation in FQ, there will be more needs for development of underground space in the future. In order to sustain this trend, it is proposed to provide underground walkway along the UMRT Line to enable the roadside building developments to be connected directly with underground walkway.
- (iv) Develop Fringe Parking along the Dyke Road: In order to further expand the catchment area of UMRR, it is necessary to provide the people in outside-of-dyke area with smooth connectivity such as elevated walkway to cross Tran Quang Khai Street and improvement of connecting roads. The construction of integrated multi-level parking along the dyke road is also effective to further encourage the use of UMRT and restraint the entry of private vehicles in the city centre.

(b) Integrated Urban Development

3.230 UMRT will bring about significant impacts on urban development in the area as experienced in many cities of other countries.

- (i) Redevelopment of the land of the Ministry of Police: The MOP land is ideal for TOD integration with UMRT, and could become a successful model of future redevelopment of similar facilities located in the area. As it is always difficult for underground UMRT stations to be provided with adequate space for intermodal function, this type of development is very important because it can be directly integrated with UMRT. If it is properly designed, both UMRT ridership and value of redeveloped space will increase.
- (ii) Promotion of Urban Redevelopment of Other Facilities/Lands: There will be an increasing demand for redevelopment in the area. They should be promoted in a way that the area is regenerated as a transit based urban area.

Figure 3.6.4-2 Tran Hung Dao Station (C10) Area in Zone Plan



Source: JICA Project Team

3) TOD Concept Plan

3.231 The following measures are able to enhance accessibility to the UMRT station, contribute to the improvement of the traffic situation, and promote urban renewal in the area;

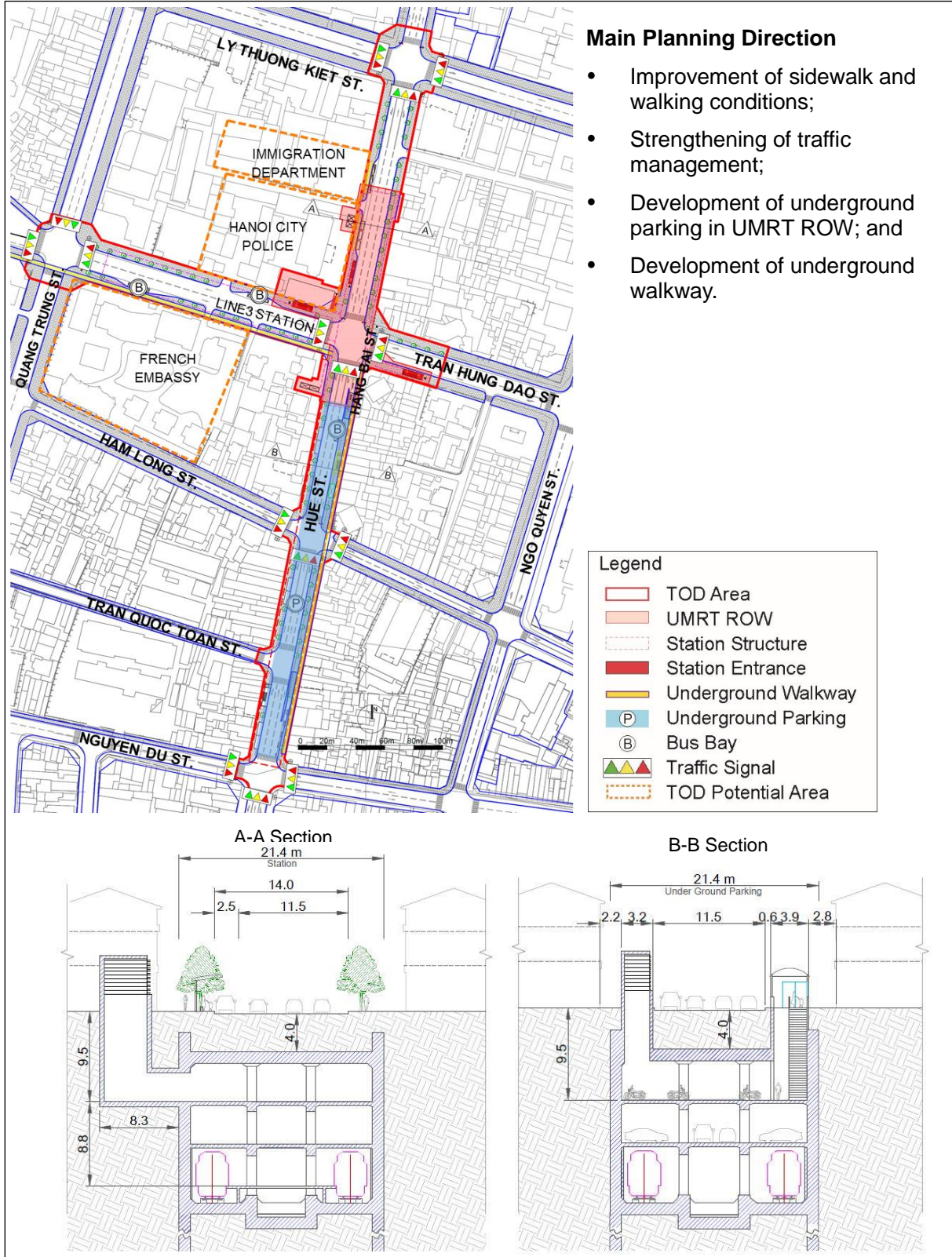
(a) Improvement of Accessibility to UMRT Station

3.232 This component include (i) improvement of sidewalks and walking conditions, (ii) strengthening traffic management, (iii) development of underground parking using UMRT ROW (see Chapter 5 in detail), (iv) development of fringe parking along the dyke road and pedestrian crossing, and (v) development of underground walkway.

(b) Development of Underground Walkway

3.233 Development of underground walkway around the station and along the UMRT Line to create new opportunities for improvement of pedestrian traffic flow and urban redevelopment along the routes. Possible areas for extended underground walkway have been identified and the concept has been elaborated (see Figure 3.6.4-4, Figure 3.6.4-5, and Figure 3.6.4-6).

Figure 3.6.4-3 Facility Concept Plan of Tran Hung Dao Station (C10)



Source: JICA Project Team

Figure 3.6.4-4 Direction of Underground Walkway Extension connecting to Potential Development Area



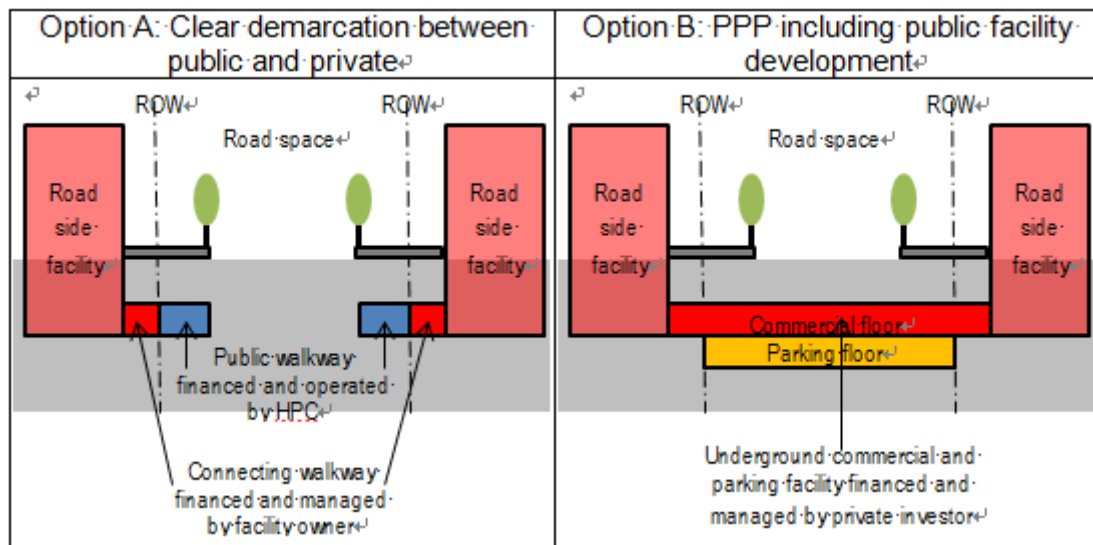
Source: JICA Project Team

Figure 3.6.4-5 Image of Underground Walkway integrated with Roadside Facilities



Source: JICA Project Team

Figure 3.6.4-6 Options for underground walkway development



Source: JICA Project Team

(c) Integrated Urban Development

3.234 This component includes the following:

- (i) **Redevelopment of MOP Land:** Redevelopment of MOP land should provide pedestrian plaza at the concourse level of the UMRT station for direct connection between UMRT and MOP redevelopment complex. Formulation of redevelopment plan for MOP land is necessary.
- (ii) **Promotion of Urban Renewal of Existing Facilities:** Although it is expected that needs for urban renewal are high, more specific survey and plan formulation are necessary.

3.6.5 Hanoi Station (V8) Area

1) Locational Characteristics

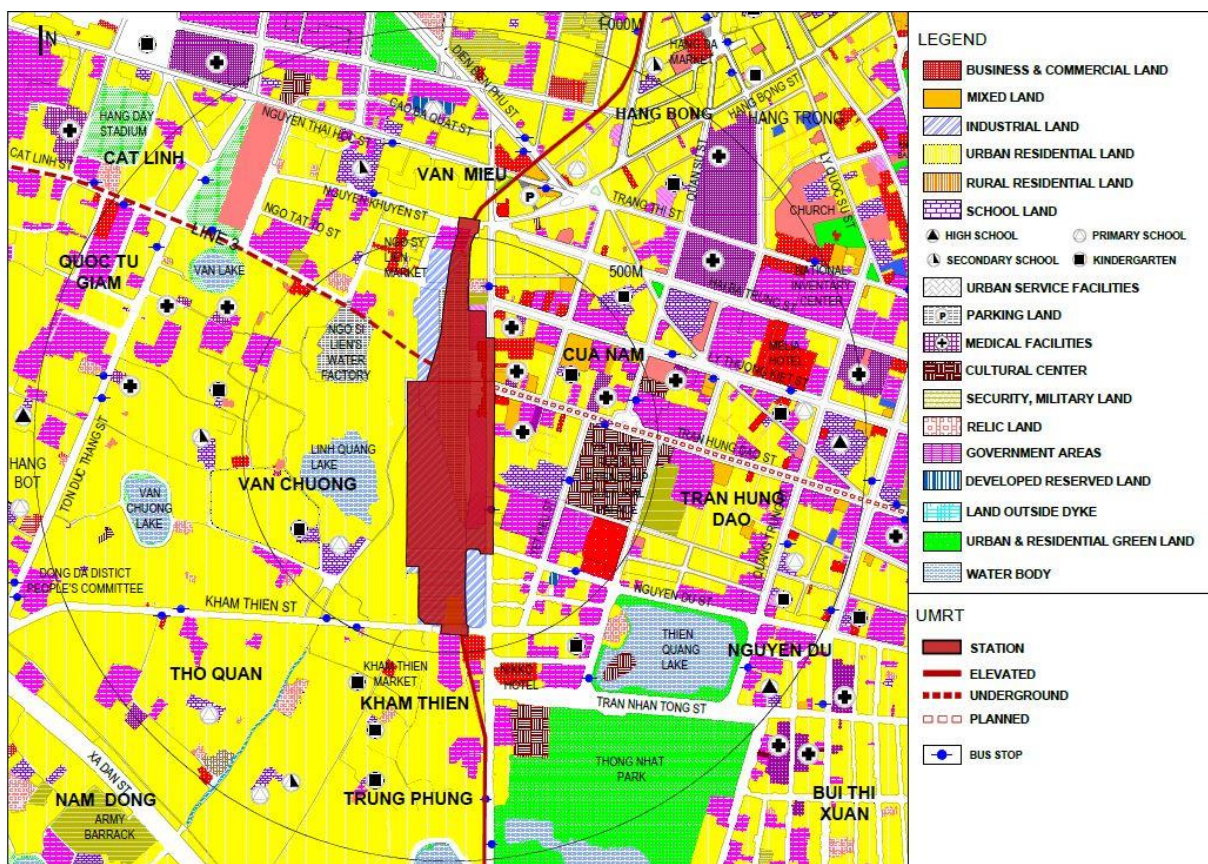
3.235 Hanoi Station (V8) will be an elevated structure located at the west edge of the AQ and the FQ and in the centre of Hanoi urban area. The station will be developed in VNR land where VNR currently operates long-distance services. The land is about 11-ha, large enough to meet the demand for various types of transport services and urban development.

3.236 Because of the existing at-grade facilities of VNR as well NH1, the landuse on both sides of the line are significantly different. Whereas the urban structure is organized on the east side (FQ), the west side is characterized by heavily congested traditional settlements with population density of more than 400 persons/ha and poor roads.

3.237 However, the land with at grade railway tracks stretching on one kilometer causes a number of serious traffic problems including blocking east-west connection of main urban roads and aggravation of traffic situation at and around complex intersection in the north of VNR land.

3.238 The station is planned to serve both existing long distance passenger services and UMRT.

Figure 3.6.5-1 Present Location of Hanoi Station (V8) Area



Source: JICA Project Team

2) Planning Conditions and Directions

3.239 Expected impacts of UMRT in the area are significant both on transport and urban development, as follows:

- (i) As the railway structures are elevated, the urban areas to the east and to the west can be directly connected and provide opportunities to strengthen articulation of the road network. This will significantly improve traffic circulation in the adjoining areas.
- (ii) Opportunities will increase substantially for urban renewal and improvement of living conditions in the existing communities in Van Chuong Ward.

(a) Transportation Access Improvement

3.240 As it has been discussed in a number of studies conducted in the past, TOD is very important for Hanoi Station area, not only at the scale of the UMRT system, but also city-wide because of potential traffic improvement. The existing VNR tracks are all elevated and urban areas on both sides of two railway will be directly connected and can be integrated. This opportunity should be utilized to a maximum extent to improve accessibility in the area.

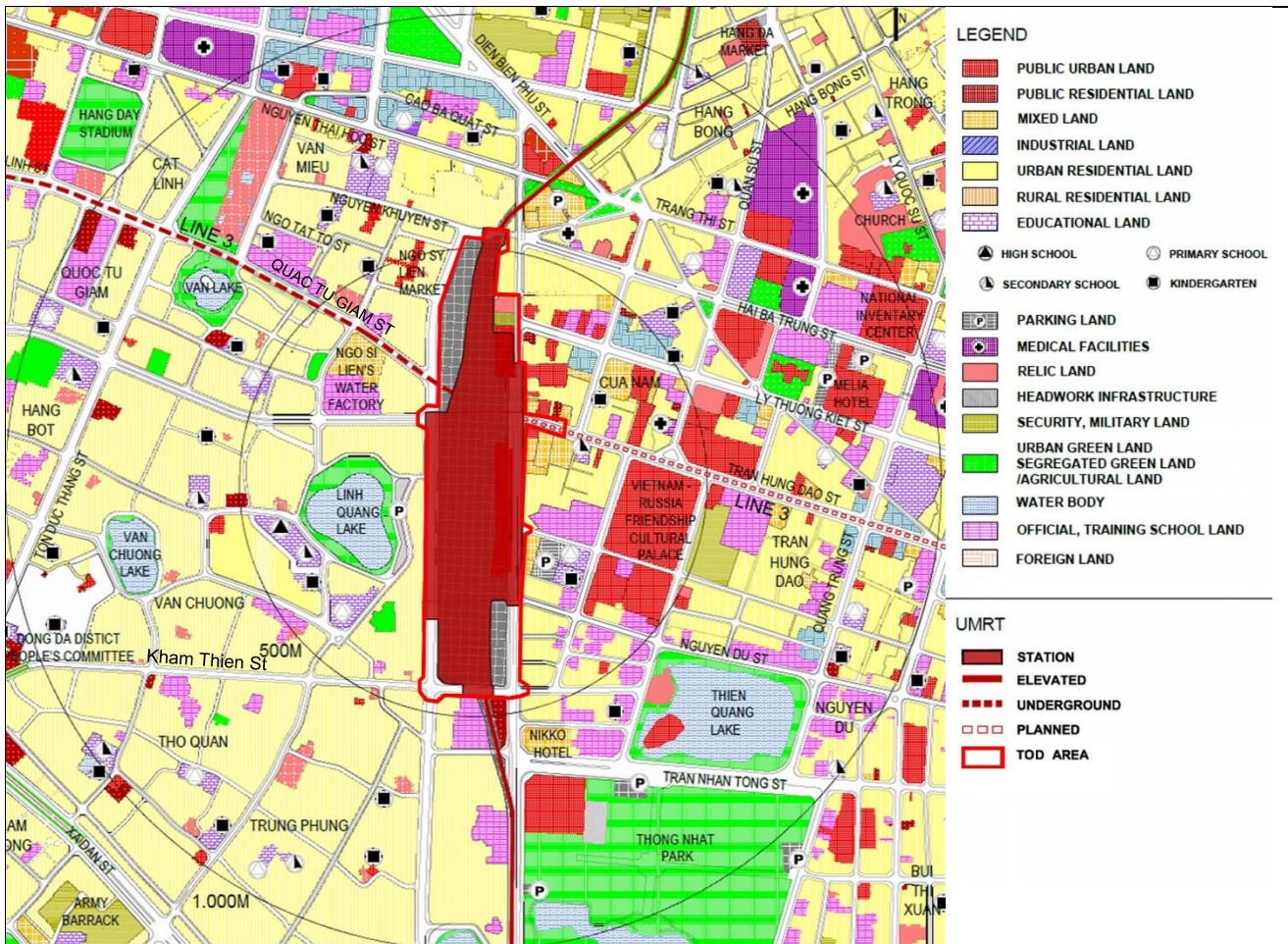
- (i) Development of East-West Connection Roads: A key intervention is to develop a number of east-west connection roads, among which extension of Tran Hung Dao Street and other roads included in Zone Plan.
- (ii) Development of a Comprehensive Station Plaza: As Hanoi Station is to serve both urban and inter-city passengers, it is expected that a lot of traffic will be generated due to a large number of passengers and feeder services (taxi and others). It is a must to provide a station plaza on both sides of the station. However, when Tran Hung Dao Street will be extended, the existing station will need to be relocated within VNR land. Relocation is not technically difficult.
- (iii) Development of New North-South Road on the West Side of the Station: In parallel to NH1, a road on the west side of the station is necessary not only to improve traffic situation in the area but also to improve accessibility and promote urban renewal in the existing communities.
- (iv) Provision of Smooth Connection between Line1 and Line3: Connectivity between two UMRT Lines is important.

(b) Integrated Urban Development

3.241 Opportunity for integrated urban development is high. If VNR land is properly developed, the benefits will be significant not only for the UMRT operator but also for potential developments and communities in the area. Main undertakings include:

- (i) Development of station building and comprehensive commercial/business complex within the VNR land;
- (ii) Relocation and retrofitting of current Hanoi Station within the station area which can be transformed into railway museum and public space;
- (iii) Promoting urban renewal and living environment improvement in existing communities in the west side area of the station including Linh Quang Lake.

Figure 3.6.5-2 Hanoi Station (V8) Area in Zone Plan



Main Planning Direction

- (i) Development of East-West connecting roads
- (ii) Development of North-South Road on the west side of the station
- (iii) Provision of passenger connecting facilities between Line1 and Line3
- (iv) Development of comprehensive station plaza on both sides of the station
- (v) Widening of sidewalk along NH1
- (vi) Development of fringe parking within the station area
- (vii) Development of comprehensive station building
- (viii) Relocation and restoration of existing Hanoi Station within the station area

Source: JICA Project Team based on draft Zone Plan

3) TOD Concept Plan

(a) Determination of TOD Area

3.242 The TOD Area for Hanoi Station has been determined. It includes VNR land and the necessary road space which is directly adjacent to the station facilities to ensure the provision of necessary intermodal facilities (See Figure 3.6.5-3)

(b) Improvement of Accessibility to UMRT Station

- (i) Connecting of Tran Hung Dao Street and Quoc Tu Giam Street: This plan is included in Zona Plan and is considered highly necessary and feasible when elevated UMRT Line 1 has been completed. There are two options of (a) extension of Tran Hung Dao Street to connect to Quoc Tu Giam Street directly, or (b) development of indirect roads¹. A constraint is relocation of existing Hanoi Station with heritage value in case of extension of Tran Hung Dao Street. The station can be relocated without difficulty within the same component. At this opportunity, the building can be farther restored to regain the historic design and converted for railway museum or cultural activities.
- (ii) Development of a New Access Road and Widening NH1 Section: Considering the traffic and function of Hanoi Station, access roads to the station should be strengthened including a new front road on the west side of the station and widening of NH1 section on the eastside of the station. Widening of NH1 will be done using VNR land to facilitate vehicle traffic flow in the station plaza. The existing sidewalk of NH1 on the FQ side should be widened for smooth movement of increasing number of pedestrians.
- (iii) Improvement of Traffic Management of Intersections: Development of new roads at Hanoi Station area will affect traffic flow not only in the project area but also in adjoining roads and intersections. Area wide traffic management improvement measures should be provided to maximize the benefit of TOD at Hanoi Station.

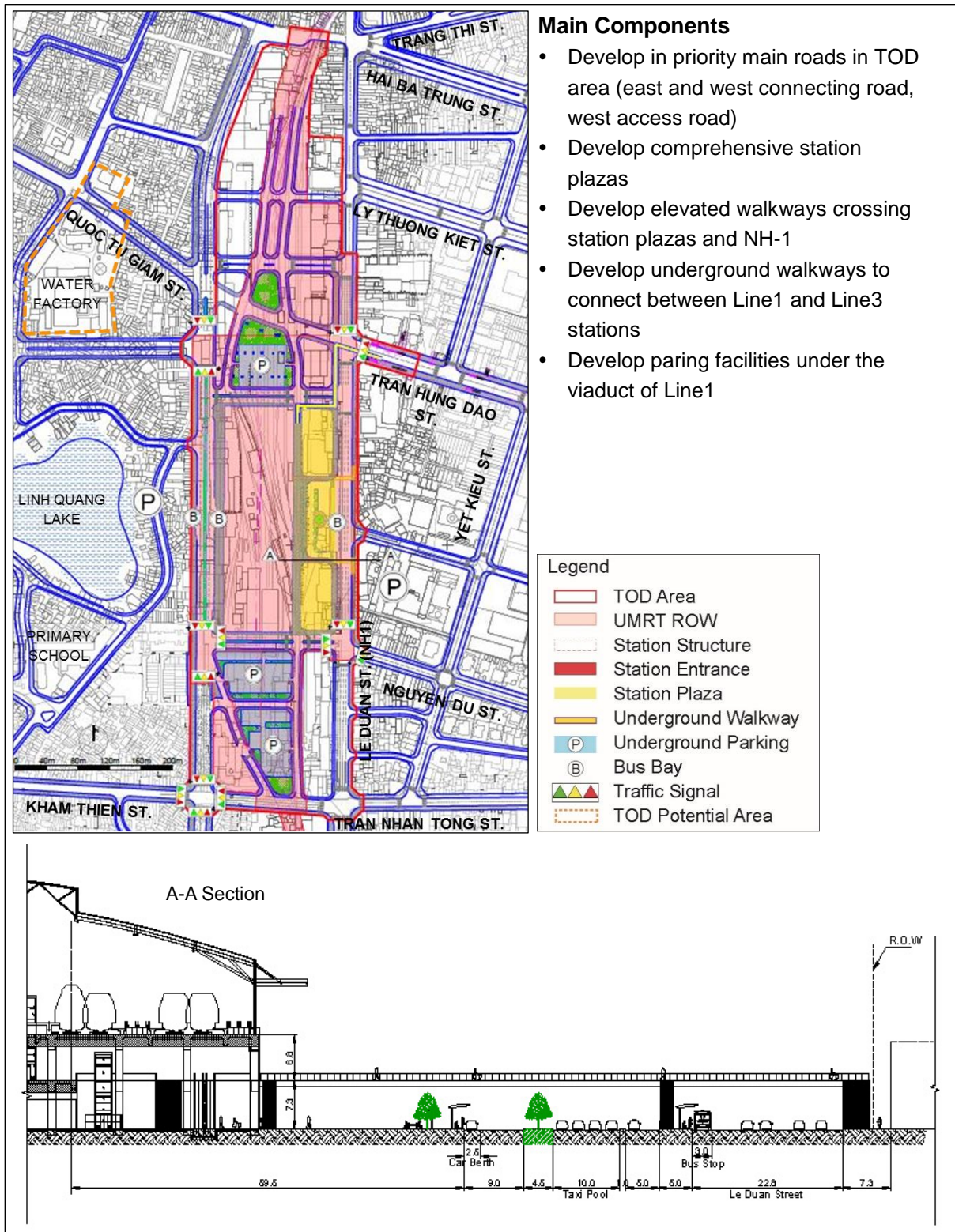
(c) Development of Intermodal Facilities at the Station

3.243 This includes the following projects;

- (i) Development of a Station Plaza on Both Sides of the Station: As Hanoi Station is a large station where UMRT Line3 as well as intercity passenger service are also connected, the station plaza should be provided on both sides of the station. It is also important to improve the access to the station from the west in order to avoid traffic concentration at the station on one side only. The western station plaza can also facilitate the access of the people and may promote urban renewal in the existing crowded communities.
- (ii) Development of Elevated Walkway: Elevated walkway to connect the station area and the FQ area should be provided to ensure the safety of pedestrians and reduce traffic conflict on NH1.
- (iii) Widening of Sidewalk along NH1: As it aforementioned, sidewalk along the east side of NH1 should be widened to accommodate increasing number of pedestrian traffic due to UMRT development
- (iv) Provision of Connecting Facilities with Line3: Line1 station and Line3 station should be connected as smoothly as possible

¹ Another option was proposed to extend Ly Thuong Kiet Street originally, but this is omitted because this alignment is not preferable which can't connect Quoc Tu Giam Street directly while it also requires land acquisition.

Figure 3.6.5-3 Facility Concept Plan of Hanoi Station (V8)



Source: JICA Project Team

(d) Integrated Urban Development

3.244 Integrated urban development opportunities in the area become more visible when they are integrated with UMRT development. The large plots of VNR land that are available, and the elevated structure of UMRT provide open connection of landuse on both sides. These are key factors to transform the area into a vibrant TOD core on the west edge of the city centre. Some preliminary recommendations for integrated urban development in the area (including adjoining area) include the following;

- (i) Development of multi-level and multi-functional activities complex and station buildings on VNR land;
- (ii) Development of Hanoi Station Heritage Park including railway museum;
- (iii) Redevelopment of station west area in Van Chuong Ward;

Figure 3.6.5-4 Images of Integrated Urban Development



Source: JICA Project Team

Figure 3.6.5-5 Overall Development Image of west area and Proposed 1st Phase Projects



Source: JICA Project Team based on HAIMUD Final Report

3.6.6 Key Points for Decision by JCC

3.245 In the city center cluster, many zone plans are related including A7 (H1-2), A3 (H1-1), A5 (H1-1), A4 (H1-1), A7 (H1-3) and A7 (H1-4). In this area, new development plans and projects are limited, except for individual construction projects.

3.246 As proposed in the concept plans, there are many public facilities which will be relocated and redeveloped, and potentials of underground development with underground parking. So it is necessary to take into consideration of TOD potentials of these areas, such as Long Bien Market, Hang Dau Park, EVN, Hanoi City Police, VNR land at Hanoi Station to manage urban development projects and transport projects in compliance with Zone Plan.

3.247 Key points for decision by JCC are summarized in Table 3.6.2. While TOD concept plans are in compliance with Zone Plans, it is proposed to reflect proposed TOD areas and intermodal facilities in the Zone Plan. In particular, final decisions of (a) alignment of UMRT railway and bridge crossing the Red River and station locations of V5 Long Bien Bac and V6 Long Bien Nam, (b) alignment of east – west road at V8 Hanoi Station are indispensable for approval of Zone Plans.

3.248 At present, HAUPA plans to apply proposed underground parking projects into the Zone Plan, and proposed urban redevelopment projects will be taken into consideration. Proposed underground parking plans shall be reflected into the Parking Plan of Hanoi City which has been prepared by DOT.

Table 3.6.2 Key Points of City Center for Decision by JCC

Coverage	Key Points for Decision
Common Issues	<ul style="list-style-type: none"> • Designation of TOD Area and its reflection in Zone Plan • Transformation to transit-oriented, pedestrian-friendly, compact urban areas with comfortable access of UMRT Line1, 2 and 3 stations • Restriction of entry and use of private vehicles in designated zone through pricing and/ or physical controls • Promotion of organized and coordinated urban redevelopment to maintain a sustainable environment with culture and landscape
C8 Hang Dau Station/ V6: Long Bien Nam Station	<ul style="list-style-type: none"> • Immediate decision on Line 1 route and location of Long Bien Nam Station • Use of Long Bien Bridge for public benefits (pedestrians and others) • Redevelopment of Long Bien Market in integration with UMRT development
C9: Hoan Kiem Station	<ul style="list-style-type: none"> • Promotion of urban redevelopment of Dong Kinh Nghia Thuc Square and EVN including underground space
C10: Tran Hung Dao Station	<ul style="list-style-type: none"> • Redevelopment of TOD potential area (Hanoi City Police and other public facilities) • Underground parking development • Coordination with Line3 extension • Underground development of FQ
V8: Hanoi Station	<ul style="list-style-type: none"> • Development of east- west road connection: Tran Hung Dao St. (option A)¹⁾ or indirect roads (option B) to connect with Quoc Tu Giam St. and Cat Linh St. • Coordination with Line3 station • Timely implementation of west road development project

1) In case of option A, relocation of existing Hanoi Station for preservation as a museum is proposed.

Source: JICA Project Team