Japan International Cooperation Agency (JICA)
Hanoi People's Committee, Vietnam

No.

The Project on Integrated UMRT and Urban Development for Hanoi in Vietnam

FINAL REPORT

Main Text Part II

Detailed Planning for Priority Station Areas and Project Implementation Mechanism

January 2011

ALMEC Corporation
Nippon Koei Co., Ltd

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Japan International Cooperation Agency
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THE PROJECT ON INTEGRATED UMRT AND URBAN DEVELOPMENT FOR HANOI IN THE SOCIALIST REPUBLIC OF VIETNAM

FINAL REPORT

PART II: DETAILED PLANNING FOR PRIORITY STATION AREAS AND PROJECT IMPLEMENTATION MECHANISM

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Exchange Rate of September 2010
10,000 Vietnam Dong (VND)= 42.67 Yen
1 US Dollar (US$) = 84.23 Yen
1 US$ = 19,738 VND

PREFACE

In response to the request from the Government of the Socialist Republic of Vietnam, the Government of Japan decided to conduct the Project on Integrated UMRT and Urban Development for Hanoi in Vietnam and entrusted to the project to the Japan International Cooperation Agency (JICA).

JICA dispatched a team to Vietnam between February 2009 and January 2011, which was headed by Dr. IWATA Shizuo of ALMEC Corporation and consisted of ALMEC Corporation and Nippon Koei Co., Ltd.

In the cooperation with the Vietnamese counterparts, the Team conducted the study. It also held a series of discussions with the relevant officials of the Government of Vietnam. Upon returning to Japan, the Team duly finalized the project and delivered this report.

I hope that this report will contribute to the sustainable urban development integrated UMRT of Hanoi Capital City and to the enhancement of friendly relations between the two countries.

Finally, I wish to express my sincere appreciation to the officials of the Government of Vietnam for their close cooperation.

January 2011

Kiyofumi KONISHI
Director General,
Economic Infrastructure Department,
Japan International Cooperation Agency

January 2011

Kiyofumi KONISHI
Director General,
Economic Infrastructure Department,
Japan International Cooperation Agency
Tokyo, Japan

Subject: Letter of Transmittal

Dear Sir,

We are pleased to formally submit herewith the final report of the Project on Integrated UMRT and Urban Development for Hanoi in Vietnam.

This report compiles the results of the project which was undertaken both in Vietnam and Japan from February 2009 to January 2011 by the Team comprising ALMEC Corporation and Nippon Koei Co. Ltd.

We owe a lot to many people for the accomplishment of this report. First, we would like to express our sincere appreciation and deep gratitude to all those who extended their extensive assistance and cooperation to the Team, in particular Hanoi People's Committee, Departments of Hanoi People's Committee, railway developers of UMRT Line1 and Line2.

We also acknowledge the officials of your agency for their support and valuable advice in the course of the Project.

We hope the report would contribute to the sustainable urban development integrated UMRT of Hanoi Capital City.

Very truly yours,

IWATA Shizuo
Team Leader
Project on Integrated UMRT and Urban Development for Hanoi in Vietnam
(HAIMUD)

Location Map of UMRT Lines in Hanoi City

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ABBREVIATIONS

AQ	Ancient Quarter
B/C	Benefit per Cost
BCR	Building Coverage Ratio
BIDV	Bank of Investment and Development of Vietnam
BRT	Bus Rapid Transit
CAT	City Air Terminal
CBD	Central Business District
DOC	Department of Construction
DOCST	Department of Culture, Sports and Tourism
DOF	Department of Finance
DONRE	Department of Natural Resource and Environment
DOT	Department of Transport
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
FAR	Floor Area Ratio
F/S	Feasibility Study
GOV	Government of Vietnam
HAIDEP	The Comprehensive Urban Development Programme in Hanoi Capital City of the Socialist Republic of Vietnam
HAPI	Hanoi Authority for Planning and Investment
HAUPA	Hanoi Authority for Urban Planning and Architecture
HPC	Hanoi People's Committee
HRB	Hanoi Metropolitan Rail Transport Project Board
IEE	Initial Environmental Examination
IRR	Internal Rate of Return
ITF	Intermodal Transfer Facility
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KTT	*Khu Tap Te* (public apartment complex)
LEP	Law on Environmental Protection
LR	Land Readjustment
MOC	Ministry of Construction
MOCST	Ministry of Culture, Sports and Tourism
MOF	Ministry of Finance
MONRE	Ministry of Natural Resource and Environment
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
NGO	Nongovernmental Organization
NH	National Highway
NPV	Net Present Value
ODA	Official Development Assistance
PFI	Private Finance Initiative
PMU	Project Management Unit
PPP	Public-Private Partnership
PTA	Public Transport Authority
ROW	Right of Way
RR	Ring Road
SEA	Strategic Environmental Assessment
SEDP	Socio-Economic Development Plan
SOE	State-Owned Enterprise
TEDI	Transport Engineering Design Inc.
TIF	Tax Incremental Financing
TRAMOC	Hanoi Transport Management and Operation Center
TOD	Transit-Oriented Development
UMRT	Urban Mass Rail Transit
UR	Urban Redevelopment
VNR	Vietnam Railway Corporation

1 APPROACHES FOR DETAILED PLANNING

1.1 Scope and Objective for Detailed Planning

101 Detailed planning aims at focusing on further studies of integrated station area development of Line1 and Line2 taking account of feasible project formation and examination of typical cases for the integrated development mechanism.

(i) To consolidate proposed concept plans and prepare implementation measures and cost estimation

(ii) To develop plans in detail in terms of level of study scale (1/1,000) and project implementation (cost estimation, implementation measures and program)

(iii) To examine applicable planning model and implementation methods of the integrated station area

102 Urban Planning Law stipulates that Zone Plan of 1/2,000 scale aims to formulate long-term development orientation of 20 or 25 years period, with planning indicators such as population, landuse, indicators for each block, etc. In this context, Detailed Plans for station area development are proposed, which will be studied and revised, and approved by Hanoi City Government as Zone Plans with regulatory basis.

1.2 Typology of UMRT Stations and Their Influenced Areas

103 A station can be categorized as to: (i) transportation (interchange) function of station, (ii) location as land use of station area, and (iii) type of structure. The transport function may range from low interchange traffic to major or high interchange with other UMRT lines and/or other road transport modes. The second – urban function – is determined by location and land uses, and fall into urban core (or CBD) and peri-urban (i.e., outside the main city center). The third is the type of structure - elevated, at-grade, or underground.

104 In terms of priority, the candidate list is pruned down to 18 stations of Phase1 (8 stations of Line1 and 10 stations of Line2) to be classified by the typology matrix shown on Table 1.2.1.

Table 1.2.1 Typology of 31 Stations by Location and Transport Function

Transport Function		**Location (Land Use Characteristics)**			
		CBD		Peri-Urban	
		Line 1	Line2	Line1	Line2
With Major Interchange Function	Other UMRT/Rail Lines	**V4 Gia Lam (GL)**	**C10 Tran Hung Dao (UG) + Line3**	**V12 Giap Bat (EL)** V16 Ngoc Hoi (GL)	C16 Thuong Dinh + Line2A + Line4 (BRT)
		V6 Nam Cau Long Bien (EL)+ C8 Hang Dau (UG) **V8 Hanoi (EL) + Line3 Station** **V9 C.V. Thong Nhat + C12 Bach Khoa** **C5Quan Ngua (UG) +Line5 Terminal Station**			
	Bus and Others		**C3 Tay Ho Tay (EL)** C11 Cau Den (UG) C14 Chua Boc (UG) C15 Nga Tu So (UG)	V13 Hoang Liet (EL)	
Without major Interchange function		~~**V7 Phung Hung (EL)**~~ **V10 B.V. Bach Mai (EL)**	**C6 Bach Thao (UG)** **C7 Ho Tay (UG)** **C9 Hoan Kiem Lake (UG)** C12 Kim Lien (UG)	V1Yen Vien(GL) V2 Cau Duong(EL) V3 Duc Giang(EL) **V5 Bac Cau Long Bien (EL)** **V11 Phuong Liet (EL)** V14 Van Dien (EL) V15 Vinh Quynh (EL)	**C1 Nam Thang Long (EL)** **C2 Ngoai Giao Doan (EL)** **C4 Buoi (UG)**

Notes: GL = at-grade, EL= elevated, UG = underground, **Bold** character = Phase I
Source: JICA Project Team

1.3 Selection Criteria

105 To rank stations within each of the cells with more than one entry, the Project Team was guided by key criteria for ranking. These are:

(i) Criticality of Issues/ problems – the choice of the station should precipitate an immediate decision on pending issues that cascade or impact on the other UMRT stations, if not the whole UMRT. Thus, issues affecting UMRT Line1 and Line3 are more urgent than UMRT Line2, because of their respective implementation schedules. If no action on these issues is made, a possible delay in detailed engineering design and implementation would ensue. Hence, they are critical.

(ii) Potential for urban development – the location of the station in the context of the city, in combination with land availability, casts the station and its surrounding area into a model for integrated development. Preparation of detailed plans for such a station can therefore be a model for others.

(iii) Challenge of inter-modal requirements – a station at the intersection of two or more rail lines, and/or at the crossing of major roads, give rise to substantial passenger transfers between rail and road, between rail lines. Necessarily, this translates into a challenging problem of dealing with horizontal and vertical traffic. The station with the highest traffic would gain top preference on this criterion.

1.4 Proposed Station Areas for Detailed Planning

106 Based on Table 1.3.1, the seven UMRT stations at five station site areas appropriate for detailed planning are:

(i) **Gia Lam Station (V4)** offers the best example of redevelopment of VNR yard for urban and transport integration with Inter-city Bus Terminal in a highly-urbanized setting;

(ii) **Nam Cau Long Bien (V6) and Hang Dau (C8)** stations are the best example of interchange station development where inter-modal transfer to road transport is important. It can also demonstrate station development in consideration with historical heritage site in Ancient Quarter;

(iii) **Hanoi (V8)** is a main station of Hanoi City and Vietnam, which has a big development potential with utilization of VNR owned land as well as needs for living condition improvement of built-up residential area. It is an integrated station with Line3 and other feeder services.

(iv) **C.V. Thong Nhat (V9) and Bach Khoa (C12)** is a good example station area development as a part of significant and symbolic node.

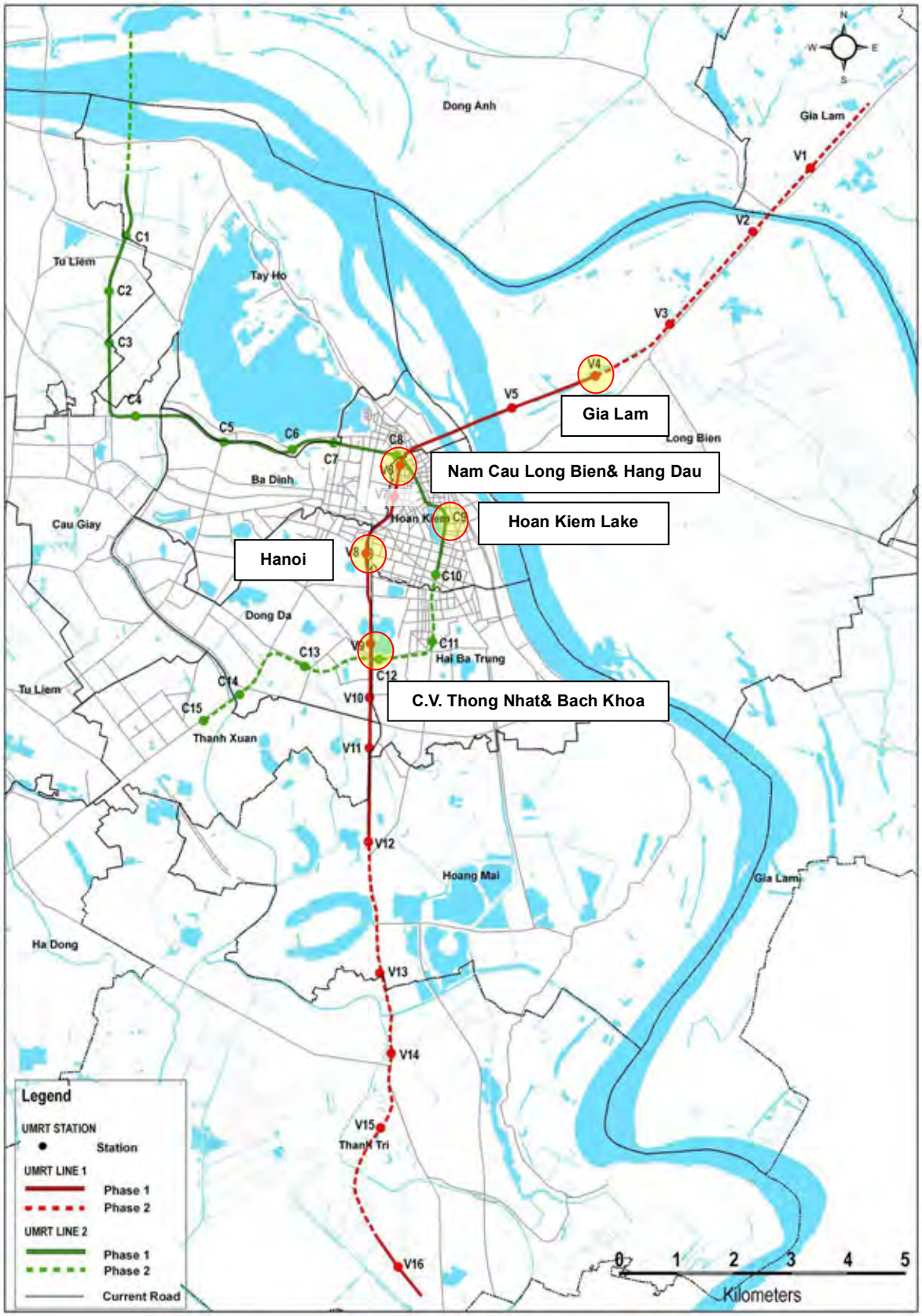
(v) **Hoan Kiem Lake (C9)** is a good example to develop a comprehensive approach for integration and harmonization between development and preservation of the urban center, including urban design and tourism development viewpoints.

Figure 1.3.1 Assessment of Stations for Detailed Planning

Station Name	Urgency of Issues	Urban Integration	Transport Integration	Assessment	Rank
V4: Gia Lam	Potential of relocation of VNR factory to affect Line 1 & VNR operations	High potentials for mixed-use development in urban Node for district	Highest volume of inter-modal transfers as north gateway transport hub	Good choice for an example of terminal station, with complex ITF and Urban Sub-center factors.	**A**
V5: Bac Gau Long Bien	None	Low potentials and low complexity	Low transfers and low pax traffic	Few specific issues for planning	C
V6: Nam Cau Long Bien	Rights issue on underground space, mitigation of development impact of AQ for preservation	Complex coordination with many adjoining building owners	Highest volume of transfers in both Lines 1 and 2	Good example of twin interline stations (with C8) in an underground setting, and a comprehensive planning approach in AQ	**A**
V7: Phung Hung	Mitigation of development impact of AQ for preservation	Park development	Low pax transfers and medium traffic	Few specific issues for planning	C
V8: Hanoi	Coordinating design for Lines 1 and 3 is urgent, due to timing of implementation	Highest potential for urban redevelopment, in a large contiguous property	High scale of interline + intermodal transfers, new road links & traffic management requests	Good example of comprehensive planning approach including various urban and transport issues	**A**
V9: C.V .Thong Nhat	None	Low potentials, only on one side of station which is built-up	High pax traffic and moderately- high transfers	Good example of twin interchange stations (withC12) in an underground setting	**A**
V10: B.V. Bach Mai	None	Low potentials and low complexity	Modest traffic and transfers	Few specific issues for planning	C
V11: Phuong Liet	None	Low potentials, on one side of station	Lowest traffic and transfers	Few specific issues for planning	C
V12: Giap Bat	VNR decision on property & inter-city train service, potential for relocation of bus terminal	Medium potentials for urban development	Moderately-high traffic and moderate transfers	Good example of a terminal station planning case	B
V16: Ngoc Hoi	None	Medium potentials for urban and industrial development in suburban area	Moderately-high traffic and transfers in high-speed railway in future	Few specific issues for planning	C
C1:Nam Thang Long	None	Low potential due to ongoing new town development	Moderately-high traffic and transfers	Few specific issues for planning (new town plan is existed)	C
C2: Ngoai Giao Doan	None	Low potential due to ongoing new town development	Moderately-high traffic and transfers	Few specific issues for planning (new town plan is existed)	C
C3: Tay Ho Tay	Planned City Air Terminal	Coordination with existing property developers	High intermodal traffic due to hub function	Good example of terminal (end-of-line) station for UMRT 2	B
C4: Buoi	None	Already built-up	Moderately-high traffic and transfers	Few specific issues for planning	C
C5: Quan Ngua	Coordination with planned road flyover in the area	Medium potentials	Moderately-high traffic and transfers	Good example of twin interline stations (with Line5) in an underground setting	B
C6: Bach Thao	None	Low potentials; serve Botanical Garden	Modest traffic and low transfers	Good example of pedestrian-oriented station	C
C7: Ho Tay	Alignment & station relocation vis-à-vis Government Center	New Parliament House & Official residences	Modest traffic and modest transfers	Good example of resolving conflicting plans/objectives	C
C8: Hang Dau	Rights issue on underground space, mitigation of development impact of AQ for preservation	Low potentials	Highest traffic and transfers in Line 2	Good example of twin inter-line terminals (with V6)	**A**
C9: Hoan Kiem Lake	Mitigation of development impact of AQ for preservation	Low potentials in short-term, future potential of urban development projects	Low traffic and transfers	Good example of comprehensive planning approach in AQ	**A**
C10: Tran Hung Dao	Inter-connection with UMRT3	Low potentials	Moderately-high traffic and transfers	Good example of twin inter-line terminals (with station of Line 3)	B

Source: JICA Project Team

Figure 1.3.1 Selected Priority Stations for Detailed Planning



2 DETAILED PLAN OF GIA LAM STATION AREA DEVELOPMENT

2.1 Present Condition

(1) General characteristics

201 Gia Lam area is a strategic point of transport network in north-east of Hanoi City. There is an intersection between NH-1 (to Bac Ninh, Lang Son) and NH-5 (to Hai Phong). Bypass of NH-1 is already developed in south of Gia Lam station area. At present, Gia Lam Station of national railway and international railway is located in a residential area, but it is app. 500m far from NH-1A. On south of the railway, commercial and educational facilities are clustered along NH-1. In north of the railway, except for small rural villages, most of lands are used for agriculture. Ngoc Thuy New Town Development Plan has been approved which will be developed north-west side of the station (see Figure2.1.1).

(2) Population

202 Estimated population of 500m radius from Gia Lam Station is 6,000, and employees are 4,400. Though there is a potential with good transportation of Gia Lam Station Area, residential and business clusters of a sub urban center have not been developed. Population density of Ngoc Lam Commune, south of the station, is 126per/ha, while Thuong Thanh Commune, north of the station is only 26per/ha. In the north of the station, rural villages are existed in front of the station which is surrounded by agricultural lands.

(3) Urban facilities

203 There is the Gia Lam Railway Factory of VNR (app. 19ha) between NH-1 and the station. In terms of effective landuse around the station in future, the land around the station should be used for other purposes. The access road from NH-1 to the station is narrow, and many small shops and venders are gathered along this access road. There is a railway hospital and a park in front of a lake, but walking environment is not so safe.

204 App. 500m far from the station, Gia Lam Bus Terminal is located. This bus terminal is one of the major ones in Hanoi City, and buses of cross-border to China, interprovincial of northern Vietnam, etc. Many inner-city buses depart from this station.

205 App. 1km far from the station to south, Gia Lam Airport is located. Along NH-5, several facilities and shops are gathered, but most of them are factories.

(4) Road network and transport condition

206 In the east of Gia Lam Station, there is a big intersection of NH-1 and NH-5. In future, NH-5 will be extended to north, and be connected to Dong Anh District and Noi Bai Airport. Gia Lam will be an important transport node of north east of Hanoi City.

207 Except for these two national roads, trunk road network is not existed. Ngoc Lam Street and Ngo Gia Kham Street are only access roads to Gia Lam Station, but it is very narrow in front of the station. In addition, roads to cross the railway are very few. Within 1km radius from the station, there are only two crossings (one is west of station, the another is near the intersection of east). Rural villages north of the station are isolated from urban activities.

Figure2.1.1 Present Condition of Gia Lam Station Area

V4 Gia Lam				
Socio-Economic Condition of Station Area		within 500m	500m -1km	Total
Population		5,974	13,711	19,685
Net Population Density (no./ha)		96	133	119
No. of Employment (workplace)		2,575	5,804	8,379
No. of Student (at school)		1,113	2,170	3,283
Socio-Economic Condition of Major Communes	District	Long Bien	Long Bien	
	Commune	Ngoc Lam	Thuong Thanh	
Average Household Size (persons)		4.4	5.0	
Ave. Monthly HH Income (000VND)		2,866	2,776	
HH with Self-owned Housing (%)		93.3	93.8	
HH with Car/ Motorcycles (%)		92.8	89.1	
Industry Structure (%)	Primary	1.1	23.9	
	Secondary	3.7	28.2	
	Tertiary	65.2	47.9	
Bus facilities and network	No. of Bus Stops	5 (within 500m)		
	Bus Route Number	10, 15, 17, 40, 42, 43, 54, 202, 203, 204, 205, 207, 209		

Related Plans and Projects
1) Ngoc Thuy New Town Development Project (planned)
2) Road widening of NH-5 (ongoing)
3) ECOTRANS suburban shuttle train from Long Bien to Dong Anh and Bac Ninh (planned)

(1) Gia Lam Station

(2) Station-front road

(3) Railway crossing

(4) Roadside shops in front of the station

(5) Main access road to station

(6) Hospital

(7) Lakeside park

(8) Gate of Gia Lam Railway Factory

(9) Gia Lam Bus Terminal

Source: JICA Project Team

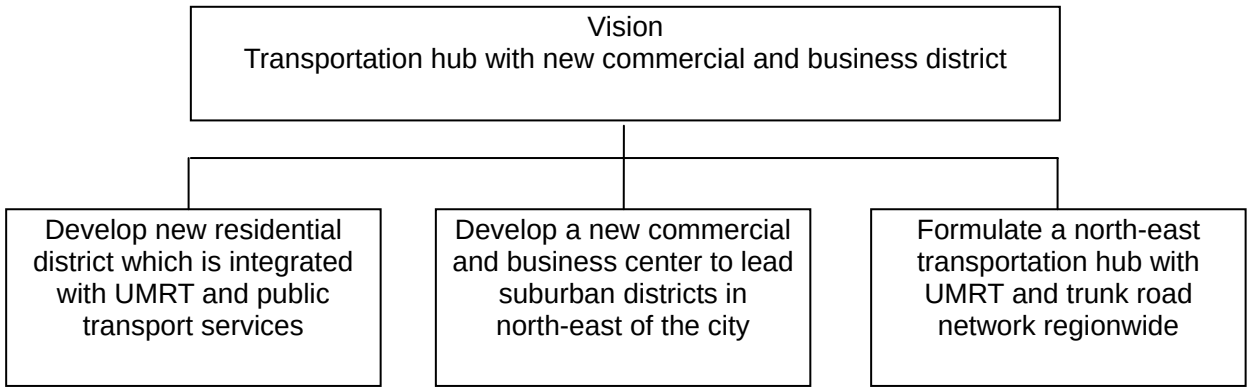
2.2 Vision and Strategies for Integrated Station Area Development

2.2.1 Overall Development Vision and Orientation

208 The vision of Gia Lam Station Area is to be “a transportation hub with new commercial & business district”. Accordingly, it can have such facilities as hotel, shopping center, business offices, and entertainment venues appropriate in scale to an urban sub center.

209 There are alternative development scenarios for Gia Lam station area development, since there are large-scale VNR yard and factory area and Gia Lam Bus terminal between station and NH-1. At present, the north-west station area will be developed as a new town for residential use mostly. If these lands will be used for urban development, socio-economic development potential to create commercial and business floors will be drastically increased as a gateway of north-west of Hanoi city. In addition, bus terminal will be relocated in front of Gia Lam station which enable smooth interchange from/ to UMRT and inter-city bus.

Figure 2.2.1 Vision and Goals of Gia Lam Station Area Development



Source: JICA Project Team

Table 2.2.1 Strategies of Gia Lam Station Area Development

Goals	Objectives	Strategies for Hanoi Station Area Development
1. Transport development	(1) Development station and related facilities	1) Develop a transportation hub of railway and public transport services 2) Formulate a local core facility to serve for disaster management, public service improvement and amenity
	(2) Improvement of accessibility	1) Develop pedestrian free-access spaces inside Gia Lam station to connect between north and south areas 2) Formulate trunk road network around Gia Lam Station including station access roads and railway crossing 3) Develop pedestrian network in new town and commercial and business district
	(3) Development of public transport services	1) Develop the ITF of both north and south which provide feeder bus services for station users 2) Redevelop Gia Lam Bus Terminal in front of station 3) Operate feeder bus services along NH-1 and NH-5
2. Economic development and strengthening of competitiveness	(4) Commercial and business development	1) Redevelop VNR owned land for commercial and business district 2) Develop commercial blocks near the station in new town 3) Develop roadside commercial facilities along NH-1
	(5) Revitalization of local socio-economic activities	1) Promote commercial street activities which connect to the station 2) Promote social and environmental activities in park and public facilities 3) Provide public services which is convenient for commuters
	(6) Cultural preservation and promotion	1) Develop new urban districts harmonized with rural scenery 2) Develop cultural facilities to preserve traditional values of Gia Lam area
3. Living condition improvement	(7) Development and improvement of housings and infrastructure	1) Develop a new town which is integrated with UMRT services 2) Rehabilitate and renew urban infrastructure and roads of existing built-up areas to improve living condition and accessibility
	(8) Improvement of amenity	1) Develop parks around new town and commercial and business district 2) Formulate green pedestrian network to access to station 3) Develop the station-front park and openspace for landscape and disaster prevention purposes
	(9) Improvement of security and safety	1) Formulate green network as a buffer for disaster prevention 2) Improve existing rural villages harmonized with a new town for tranquility of society

Source: JICA Project Team

2.2.2 Transport Development Strategies and Projects

(1) Development of Station and Related Facilities

210 UMRT, National Railway and International Railway will arrive to and depart from new Gia Lam Station. So the station should carry out multi-functions such as (i) interchange and transfer facilities to improve accessibility, (ii) facilities and spaces to promote opportunities of communication and information sharing, and (iii) public services and facilities for convenience of station users and local communities.

211 The development strategies for development of station and related facilities are as follows:

1) Develop a transportation hub of railway and public transport services

2) Formulate a local core facility to serve for disaster management, public service improvement and amenity

(2) Improvement of Accessibility

212 At present, Ngo Gia Kham Street is the only road to connect to station from NH-1. This street should be widened and directly cross railway to be a main access road from south to the station. Especially there is Gia Lam Bus Terminal along Ngo Gia Kham Street, which has a role of international gateway of northern Vietnam, accessibility between railway station and bus terminal need to be improved. In addition, there is no trunk road network of north station area. Though the Ngoc Thuy New Town Project has been approved, it is necessary to develop a west-east trunk road to access to north gate of the station before operation of UMRT. In addition, road network of the new town should be carefully planned to improve accessibility to station.

213 The development strategies for improvement accessibility are as follows:

1) Develop pedestrian free-access spaces inside Gia Lam Station to connect between north and south areas
2) Formulate trunk road network around Gia Lam Station including station access roads and railway crossing
3) Develop pedestrian network in new town and commercial and business district

(3) Development of Public Transport Services

214 NH-1, the main trunk road to connect to the city center is app. 500m far from Gia Lam Station. At present, local buses don't stop by the station, but most of buses just stop by bus stops along NH-1. To improve transfer accessibility between buses and UMRT, it is recommended some buses will go into the south ITF to get on and off Gia Lam Station directly, especially during commune time. Before relocation of the bus terminal, mini bus services to pick up passengers to the station will be operated especially for elderly and disabled who is difficult to walk, couriers and tourists who have luggage, etc.

215 The development strategies for development of public transport services are as follows:

1) Develop the ITF of both north and south which provide feeder bus services for station users
2) Relocate Gia Lam Bus Terminal in front of station
3) Operate feeder bus services along NH-1 and NH-5

2.2.3 Economic Development Strategies and Projects

(1) Commercial and business development

216 VNR railway factory is a crucial area to promote UMRT utilization and economic activities. It is obvious that it is difficult to make a decision of relocation of factory soon, since it is said there are factories and companies which are necessary to operate railways. But from broad and comprehensive viewpoints of urban development integrated with UMRT in future, it is strongly recommended to utilize this factory land into urban

socio-economic purposes for Hanoi City. VNR and HPC should consider carefully best approaches how to relocate these facilities and to upgrade potential of land utilization. While it will take long to relocate and redevelop this area, phasing development by area is recommended.

217 The development strategies for commercial and business development are as follows:

1) Redevelop VNR owned land for commercial and business district
2) Develop commercial blocks near the station in new town
3) Develop roadside commercial facilities along NH-1

(2) Revitalization of Local Socio-Economic Activities

218 Though urban redevelopment of VNR factory has a big potential, it is also necessary to strengthen existing socio-economic activities. Roadside commercial and business facilities along NH-1 should be developed for car users, while commercial streets along access roads to station will be promoted for station users and local communities. In addition, it is proposed rural villages in front of station will be preserved as a part of Ngoc Thuy New Town. But in future, urban function in front of the station should be strengthened, so landuse will be converted to commercial and business. Relocation and preservation of traditional values need to be carefully planned, and onsite relocation inside the new town is strongly recommended from a viewpoint of social consideration.

219 The development strategies for revitalization of local socio-economic activities are as follows:

1) Promote commercial street activities which connect to the station
2) Promote social and environmental activities in park and public facilities
3) Provide public services which is convenient for commuters

(3) Cultural Preservation and Promotion

220 UMRT station development will make a big impact on rural villages of north. While agricultural land will be converted into residential and commercial lands, traditional culture and lifestyle should be preserved. Relocation should be done onsite or neighboring areas nearby UMRT stations. Social and recreational spaces should be preserved and developed.

221 The development strategies for cultural preservation and promotion are as follows:

1) Develop new urban districts harmonized with rural scenery
2) Develop cultural facilities to preserve traditional values of Gia Lam area

2.2.4 Living Condition Improvement Strategy and Projects

(1) Development and improvement of housings and infrastructure

222 Ngoc Thuy New Town will be a station-front residential district. This project will be a good practice of TOD (Transit Oriented Development) Concept, which realizes i) public transport oriented society, ii) commercial facilities in front of station, iii) integrated development of railway and residential areas in suburban area.

223 The development strategies for improvement of housing and infrastructure are as follows:

1) Develop a new town which is integrated with UMRT services
2) Rehabilitate and renew urban infrastructure and roads of existing built-up areas to improve living condition and accessibility

(2) Improvement of Amenity

224 At present, there is only a small lakeside park in an urban area of south. It is not attractive enough to provide amenity space for expected station users. Since it is difficult to develop openspace in south, green network will be expanded along streets to access station. In north, it is planned that parks will be developed outer of new town. In addition, station-front park is recommended to create a good landscape in front of station.

225 The development strategies for improvement of amenity are as follows:

1) Develop parks around new town and commercial and business district
2) Formulate green pedestrian network to access to station
3) Develop the station-front park and openspace for landscape and disaster prevention purposes

(3) Improvement of Security and Safety

226 From disaster prevention viewpoint, VNR factory area is not suitable which is enclosed by walls. When some incidents or disasters happen, station will be a disaster prevention facility to provide citizens necessary items and spaces for evacuation. Station area should be opened to public for safe, convenience and comfortability. Traditional properties and customs in rural villages should be preserved in new town.

227 The development strategies for improvement of security and safety are as follows:

1) Formulate green network as a buffer for disaster prevention
2) Improve existing rural villages harmonized with a new town for tranquility of society

2.3 Proposed Station Area Development Program and Projects

2.3.1 Overall Development Framework

1) UMRT Station Utilization Framework

228 Gia Lam Station will be one of the most popular stations of Hanoi City, as a north-eastern transport hub. It is estimated app. 51,000 passengers will use Gia Lam Station (see Table2.3.1). App. 40% of passengers will transfer from buses.

229 After new town development in short-term, many residents will use to go to offices and schools in city center. In long-term, after urban redevelopment of VNR factory areas, commercial and business district will be newly developed as a urban sub-center of Hanoi City. Many commuters and shoppers will get off the station to work and shopping. Ultimately, Gia Lam Station Area will be fully developed as a new urban core which is harmonized with commercial, business and residential activities.

Table 2.3.1 Estimated Passengers of Gia Lam Station (per day)

Mode		By Mode		Total	
		No. of passengers	%	No. of passengers	%
Passenger from/to station area	Walking	24,000	47.2	30,500	59.9
	Bicycle	400	0.8		
	Motorbike	2,400	4.7		
	Car	3,600	7.1		
Transfer passenger	Bus	20,300	39.9	20,400	40.1
	VNR	100	0.2		
	UMRT	0	0.0		
Total		50,900	100.0	**50,900**	100.0

Source: JICA Project Team

2) Urban Development Framework

230 Future landuse of north of the Gia Lam Station will be converted into residential and mixed use in north new town area. It is proposed industrial use of VNR factory land will be converted into commercial and business use in south to maximize land potential in front of station. App. 36,000 employees will be created in this new urban area, while population will be increased in north new town.

Table 2.3.2 Estimated Population and Employees of Gia Lam Station Area

	Whole Station Area (within 500m radius)		Urban development planning area
	Present	Future	Future
Area (ha)	78.5	78.5	35.7
Population (persons)	5,974	9,534	1,431
Gross population density (per/ha)	76	123	40
Employment population (persons)	4,414	38,810	35,784

Source: JICA Project Team

2.3.2 Project Formulation

231 Based on the vision and strategies, urban development projects are proposed with taking into consideration of current urban structure and landuse (see Table2.3.3).

Table 2.3.3 Proposed Projects for Gia Lam Station Area Development

	Transport Development Strategy	Economic Development Strategy	Living Condition Improvement Strategy
Station and related facilities	• Construction of new Gia Lam Station • Development of north and south ITF • Construction of pedestrian deck	• Development of commercial and public facilities inside of station	• Develop public service facilities inside of station
Within 100m	• Development of north access road • Development of west access road to cross railway	• Redevelopment of VNR owned land for commercial and business district	
Within 500m	• Relocation of Gia Lam Bus Terminal in front of station	• Construction of mixed-use commercial and business buildings	• Construction of mixed-use residential buildings along NH-1 • Development of south lakeside park • Formulation of green network
Surrounding influenced area	• Improvement of roads in built-up area • Provision of community bus service around the station	• Rehabilitation of local commercial streets	• Improvement of urban utilities in built-up area

Source: JICA Project Team

232 Based on proposed projects above, future landuse plan and projects are formulated as follows (see Table 2.3.4 and Table2.3.5):

Table 2.3.4 Future Landuse Plan of Gia Lam Station Area

	Residential	Mixed use	Commercial and Business	Special public use	Transport[1)]	Green and openspace	Military	Road	Total
ha	0.0	7	14.4	0.0	16.4	3.3	0.0	5.9	47.0
%	0.0	14.9	30.6	0.0	34.9	7.0	0.0	12.6	100.0

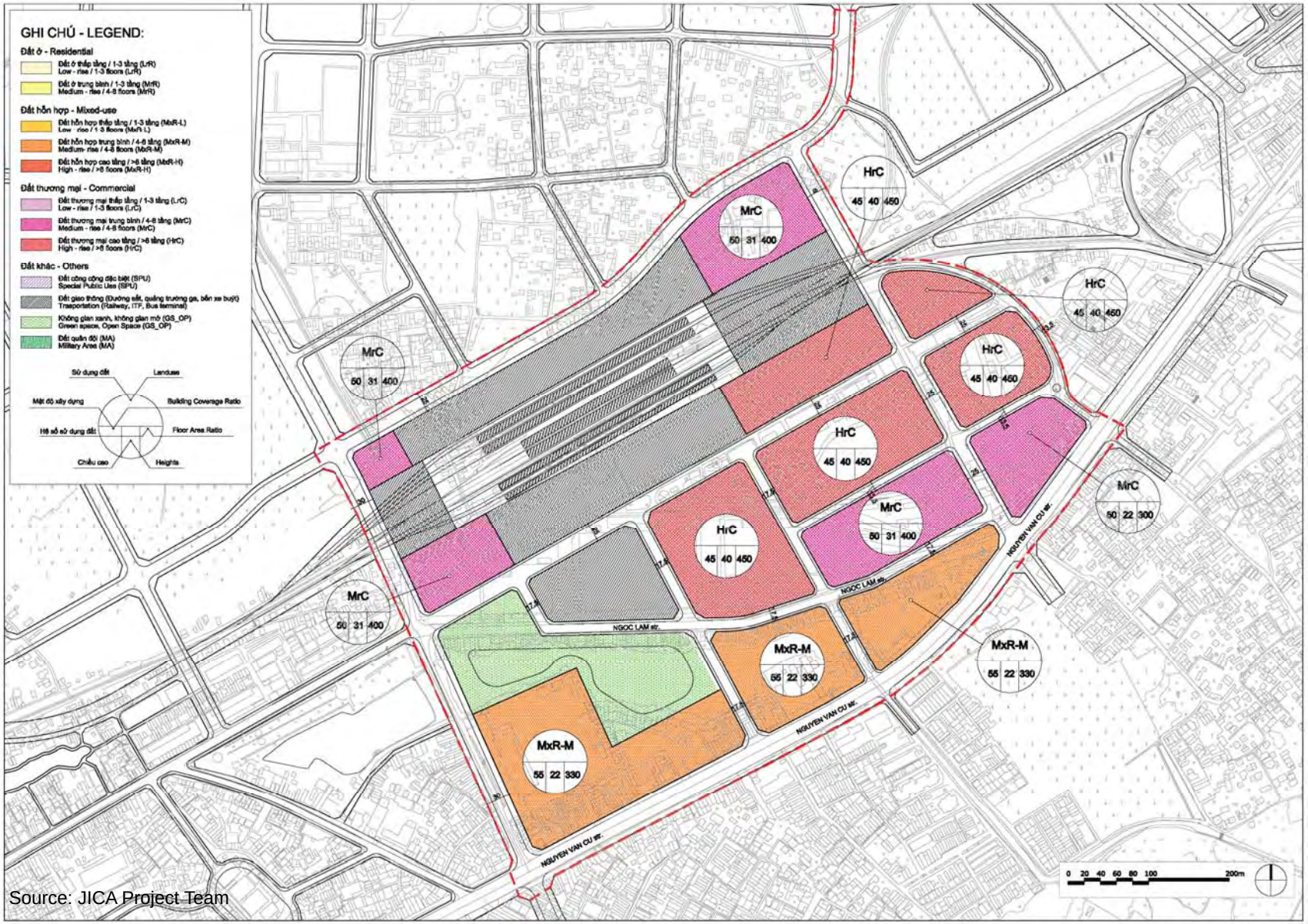
1): Transport landuse includes station and railway, ITF, bus terminal.
Source: JICA Project Team

Table 2.3.5 List of Project Packages for Gia Lam Station Area Development

Project Type	Name of Project	Project ID	Scale (ha)	Schedule	Landuse
Station and related facility development	Gia Lam Station & Railway	S1	6.6	Minimum	Transport
	North ITF	S2	2.3	Minimum	Transport
	South ITF	S3	2.3	Medium	Transport
Road development	New north access road (w=36m)	R1	3.0	Minimum	Transport
	Extension of Ngo Gia Kham Street (w=26m)	R2	0.7	Minimum	Transport
	Relocation of Gia Lam Bus Terminal	C2	1.5	Long	Transport
Urban development	Urban redevelopment of next to North ITF	A	1.9	Short	Commercial& Business
	Urban redevelopment of VNR factory area	B	17.4	Medium	Commercial& Business
	Urban redevelopment of roadside of NH-1	C	11.3	Long	Mixed use
Total Project Area			47.0		

Source: JICA Project Team

Figure 2.3.1 Proposed Detailed Plan of Gia Lam Station Area



Source: JICA Project Team

Figure 2.3.2 Proposed Building and Landscape Plan of Gia Lam Station Area

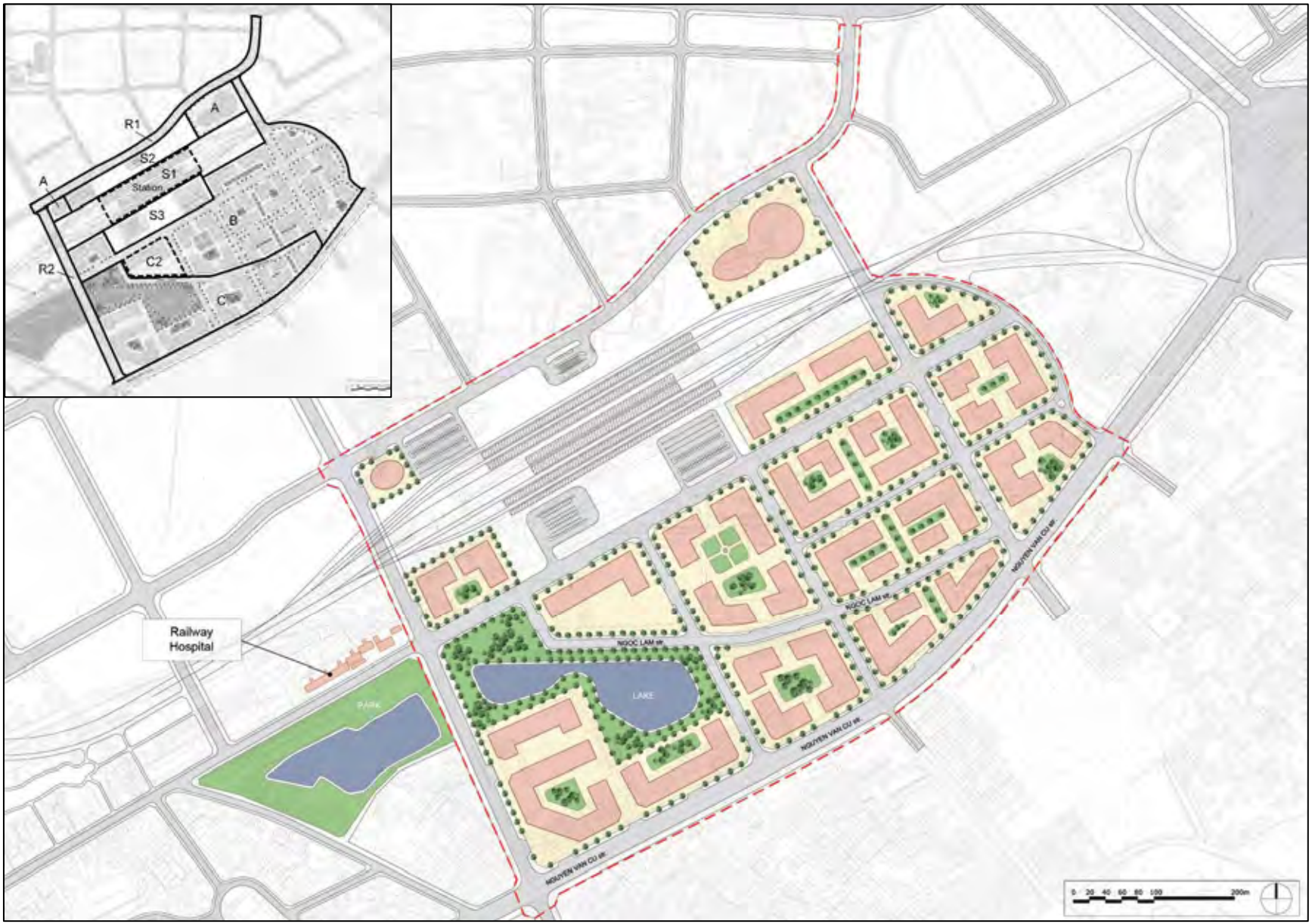


Figure 2.3.3 Section Plans of Gia Lam Station Area

Source: JICA Project Team

Figure 2.3.4 Development Image of Gia Lam Station Area (Example from other countries)

Image of north ITF
(Ohtaka no Mori Station of Tsukuba Express, Chiba, Japan)

Image of north ITF and commercial facility
(Tama Plaza Station, Denentoshi Line, Kanagawa, Japan)

Image of new town in front of station
(Otaka no Mori Station, Tsukuba Express, Chiba, Japan)

Image of new town
(Makuhari Bay Town, Chiba, Japan)

Image of urban redevelopment project of VNR factory
(Shiodome Siosite, urban redevelopment project of JR Cargo Facility, Tokyo, Japan)

Image of business district of redevelopment project of VNR factory (Urban redevelopment project of Eastern Shinagawa Station, Tokyo, Japan)

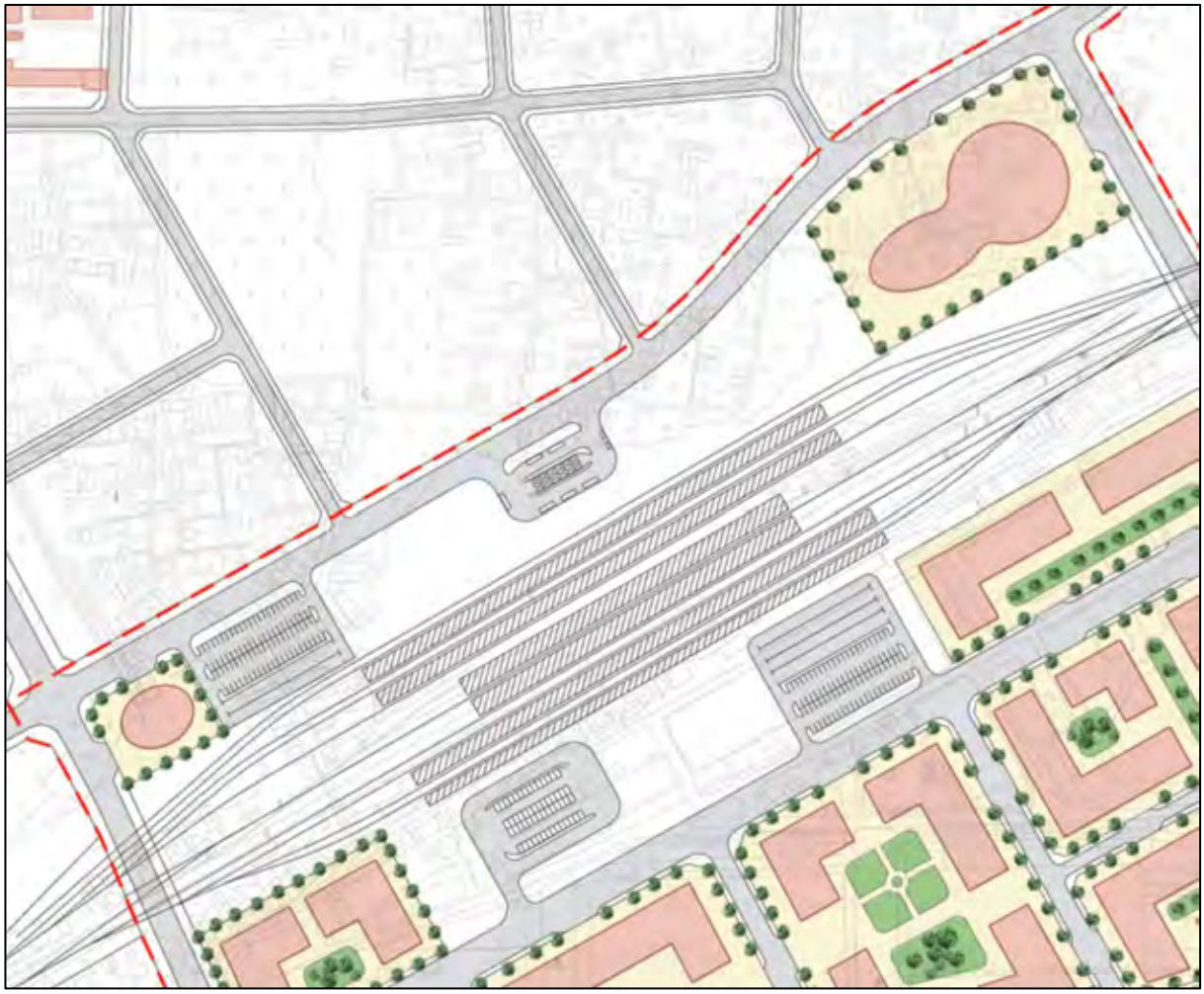
Source: JICA Project Team

2.3.3 Station and Related Facilities Development Plan (Project S1, S2 and S3)

233 Station Facility: The plat forms will be constructed at 2nd floor level, and concourse and ticket gates are located at 1st floor. Since width of the station will be app. 90m, the structure will be a barrier of local communities. To improve connectivity and accessibility from both sides, the ground floor and free concourse at 1st floor will be opened to pedestrian to cross between north and south of railway. Space of the ground floor will be used for motorbike and vehicle parking spaces, tenant spaces, and disaster prevention facilities (ex. storages of emergency food, water and medical care facilities). At the free concourse of 1st floor, various facilities which are convenient for station users especially commuters and residents will be located, such as café, restaurants, bookstore, and public service facilities (ex. exhibition space, admin service center), etc.

234 Intermodal Transfer Facility: Intermodal Transfer Facility will be developed both in north and south. In short-term, since the land of south between the station and VNR factory area is limited, only the south access road will be developed, mainly used for railway operation. In the north ITF, parking spaces, bus stops, taxi pools will be developed.

Figure 2.3.5 Station and Intermodal Transfer Facility Development Plan



Source: JICA Project Team

2.3.4 Road Development Plan (Project R1 and R2)

235 To improve accessibility from NH-1 to station and to cross the railway and connect districts of north and south, Ngo Gia Kham Street should be widened between NH-1 to Ngoc Lam Street, and newly developed from Ngoc Lam Street to cross the railway (underpass of box culvert), and connect to new north road.

236 In north, new access road will be developed as a main entrance of the station. According to the approved District Plan of Long Bien District, the alignment of the trunk road of north will be connected directly in front of the station. In this case, it is impossible to develop the north ITF to provide enough entrance space for pedestrian and transport facilities. It is strongly proposed to readjust the alignment of approved trunk road toward north (app. 30m) to provide the space for ITF.

237 It is proposed two (2) alternatives related to the alignment of north access road (see Table2.3.6 and Figure2.3.6). HAUPA has not agreed with readjustment of approved alignment of north road, since this area is belong to Ngoc Thuy New Town development area, so it is difficult to readjust. But JICA Project Team recommend to coordinate with the developer of new town (Hong Ha Construction Company) to discuss with appropriate road alignment and network of the new town to embody TOD concept for convenience of residents.

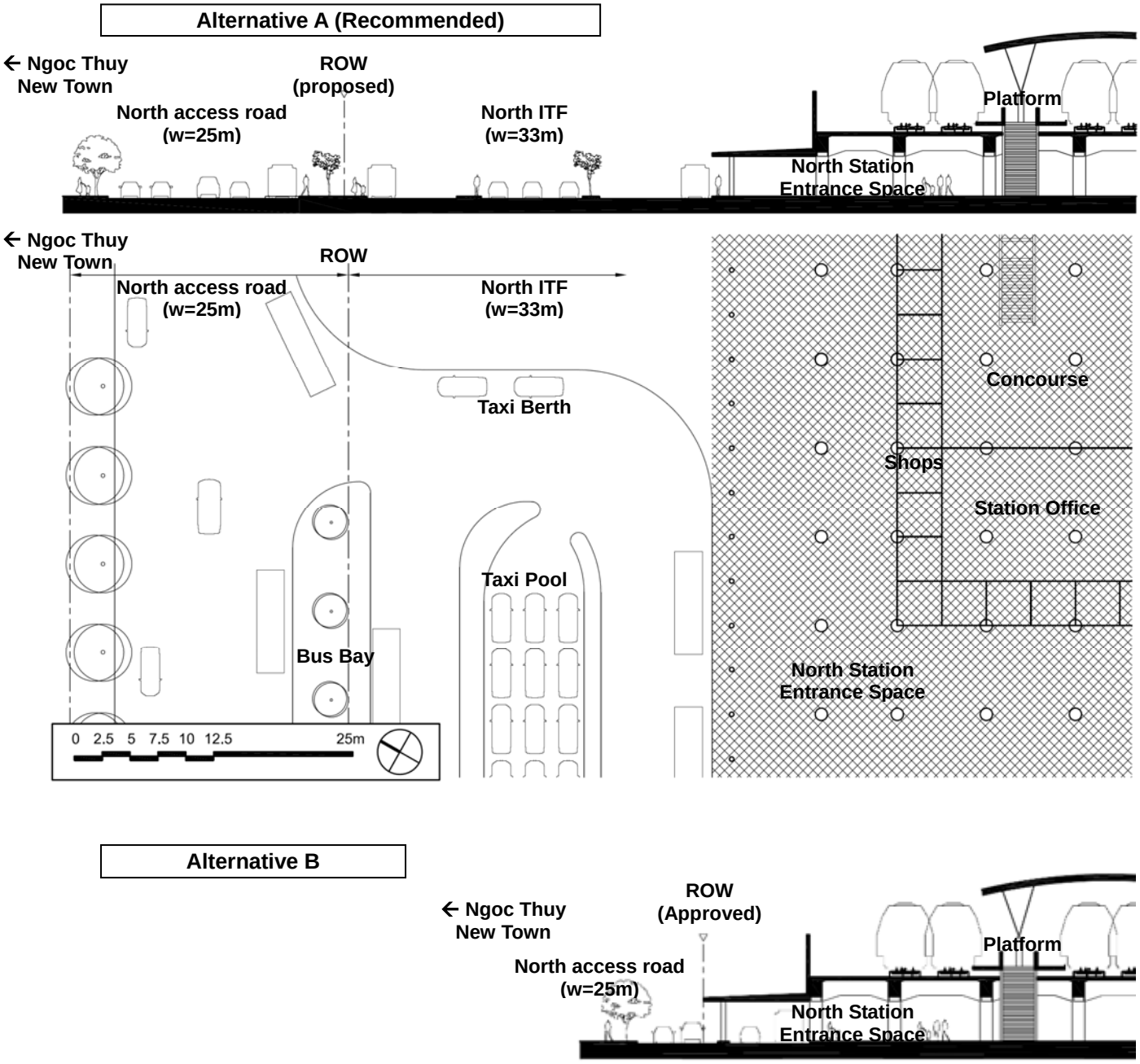
Table 2.3.6 Alternatives of Alignment of North Access Road

	Necessity of readjustment of approved road alignment	Provision of North ITF	Consenting party
Alternative A	Necessary (toward 30m-north)	Possible	JICA Project Team, VNR
Alternative B	Not necessary	Impossible	HAUPA

Source: JICA Project Team

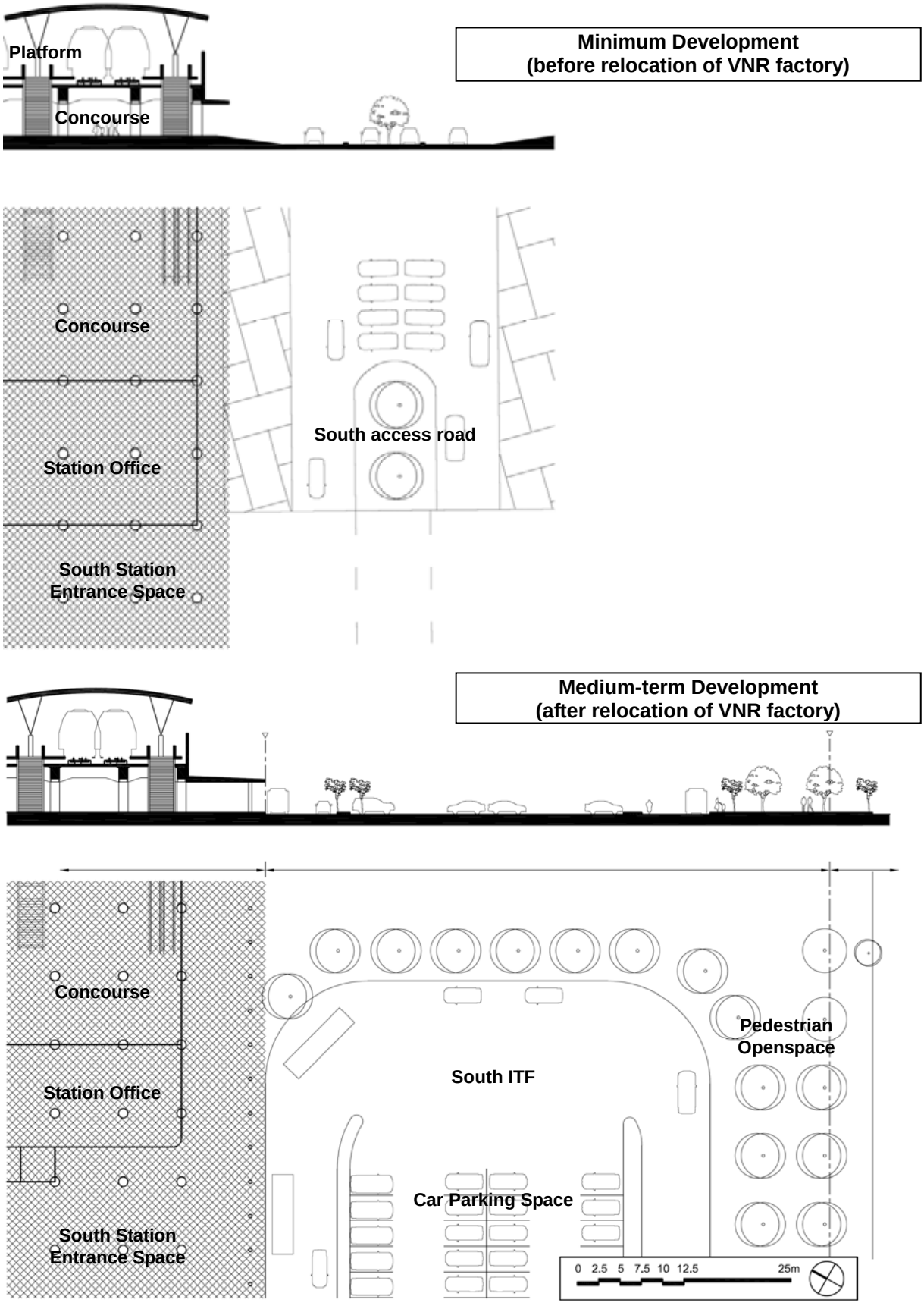
238 As for accessibility from south, station access road (w=22m) will be developed by land acquisition when UMRT is developed, because VNR factory cannot be relocated in short-term. In medium-term, after relocation of VNR factory, south ITF will be developed in front of the station, so accessibility from south will be drastically improved (see Figure2.3.7).

Figure 2.3.6 Alternatives of Alignment of North Access Road



Source: JICA Project Team

Figure 2.3.7 Phasing Development of South Access Road and ITF



Source: JICA Project Team

2.3.5 Urban Development Plan of North of Gia Lam Station (Project A)

(1) Present Condition

239 At present, there are some houses of rural villages in the Block A. When north access road and north ITF will be developed, these residential blocks need to be relocated for public infrastructure development purpose.

(2) Proposed Functions and Facilities

240 The Block A will be very convenient location next to north ITF, and along new north access road. 8th floor buildings of commercial and business will be developed, as the first urban commercial facilities for rural villages of north station. Supermarket, commodity shops, public facilities, etc. will be useful to people in their daily lives.

2.3.6 Urban Development Plan of VNR factory area (Project B)

(1) Present Condition

241 At present, VNR related factories of app. 17.4ha are occupied in front of the Station. All the area is enclosed by high walls, so station access road is very narrow and small shops and venders do business around there.

(2) Proposed Functions and Facilities

242 To maximize urban development potential to formulate a sub urban center of Gia Lam Station area, VNR factories will be relocated to other suburban areas. After relocation and land preparation, Gia Lam Bus Terminal will be relocated into the Block B2 in front of Station. It is recommended to connect from the station to the new bus terminal with pedestrian deck. In other blocks, 8th floor or 10th floor commercial and business facilities will be constructed. Domestic and international top companies will be moved in and lead local economy of Long Bien District.

Figure 2.3.8 Urban Development Plan of VNR Factory Area

Source: JICA Project Team

2.3.7 Urban Development Plan of Roadside of NH-1 (Project C)

(1) Present Condition

243 In the Block C, there is a lake inside though it is enclosed by buildings. Gia Lam Bus Terminal is located along Ngo Gia Kham Street. Shop houses are clustered along NH-1 and Ngoc Lam Street, but inside the block, land is not used fully. Since this block has a big value which is located along NH-1 and near to station, it will be redeveloped for economic activities.

(2) Proposed Functions and Facilities

244 6th floor mixed-use complex will be developed around the lake. Residential apartments will be very popular which has a good accessibility both NH-1 and Gia Lam Station. Water surface will be preserved as a lake park to provide amenity space for residents and visitors.

Figure 2.3.9 Urban Development Plan of Roadside of NH-1

Source: JICA Project Team

Table2.3.7 Project Profile of Block A and C of Gia Lam Station Area Development

		A1	A2	C1	C2	C3
Landuse		C&B	C&B	Mixed	Mixed	Mixed
Development Framework	No of Population	0	0	762	357	313
	No. of Employee	565	2,913	4,337	2,029	1,780
Construction plan	Land area (m2)	3,029	15,608	37,176	17,392	15,254
	Building area (m2)	1,515	7,804	18,588	8,696	7,627
	BCR (%)	50.0	50.0	50.0	50.0	50.0
	Total floor area (m2)	12,116	62,432	111,528	52,176	45,762
	No. of floor	8	8	6	6	6
	FAR (%)	400.0	400.0	300.0	300.0	300.0

Source: JICA Project Team

Table2.3.8 Project Profile of Block B of Gia Lam Station Area Development

		B1	B2	B3	B4	B5	B6	B7	B8	B9
Landuse		C&B	Transport (bus terminal)	C&B	C&B	C&B	C&B	C&B	C&B	C&B
Development Framework	No of Population	0	0	0	0	0	0	0	0	0
	No. of Employee	1,240	0	5,182	2,974	4,953	3,548	1,516	3,114	1,633
Construction plan	Land area (m2)	6,645	14,881	24,675	14,161	23,588	19,007	7,217	14,829	11,661
	Building area (m2)	3,323	-	11,104	6,372	10,615	9,504	3,248	6,673	5,831
	BCR (%)	50.0	50.0	45.0	45.0	45.0	50.0	45.0	45.0	50.0
	Total floor area (m2)	26,580	-	111,038	63,725	106,146	76,028	32,477	66,731	34,983
	No. of floor	8	-	10	10	10	8	10	10	6
	FAR (%)	400.0	-	450.0	450.0	450.0	400.0	450.0	450.0	300.0

Source: JICA Project Team

2.4 Social and Environmental Considerations

2.4.1 Current state of socio-environmental condition

245 In the north of the proposed Gia Lam Station, there are two big ponds lying between the station and the residential areas. A large land in the south of the proposed station is being used by VNR as railway station, repair workshops, etc. Gia Lam Bus Terminal is located about 380m south of the proposed station. Valuable flora and fauna are unlikely existing in this area.

246 Baseline data on natural environment at the Gia Lam Station are not available, due to the fact that this station was not selected as a site for the survey carried out by CEPT (Center for Environmental Protection in Transportation) in December 2006.

247 The station area development projects will cause effect to Thuong Thanh Commune and Ngoc Lam Commune. Land around the station is split into two parts by the existing railway. There are only 2 narrow roads crossing the railway near the station. Thuong Thanh Commune in the northern side of the railway is vulnerable to flood (flood vulnerability index = 12.60) and incapable to response to disasters in case of emergency (emergency response capability = 0.00). There is almost no park nor open space in this Commune (parks/open spaces per 1000 population = 0.01). Ngoc Lam Commune is also vulnerable to flood (flood vulnerability index = 11.80), and in lack of water area, park/open space, green area.

Table2.4.1 Coverage of Public Service and Sanitation

		Electri-city	Piped water con-nectivity	Toilet cover-age	Gas	Tele-phone	Solid waste collec-tion	Internet
		(%)	(%)	(%)	(%)	(%)	(%)	(%)
Thuong Thanh	Long Bien	100.0	89.0	82.8	73.4	82.8	82.8	4.7
Ngoc Lam	Long Bien	100.0	92.2	81.1	87.8	95.0	94.4	8.4

Source: Household Interview Surveys (HIS 2005), HAIDEP

Table2.4.2 Coverage of Urban Amenity and Disaster Prevention Capacity

Commune	District	Urban Amenity and Disaster Prevention Capacity						
		Road area ratio	Flood vulner-ability index	House-hold with secure tenure	Emer-gency response capacity	Water area per 1000 pop	Parks/ open spaces per 1000 pop	Green area per 1000 pop
		(%)		(%)	(m/ha)	(ha)	(ha)	(ha)
Thuong Thanh	Long Bien	4.9	12.60	92.2	0.00	4.45	0.01	16.02
Ngoc Lam	Long Bien	9.2	11.80	97.8	11.70	1.07	0.05	1.09

Source: Household Interview Surveys (HIS 2005), HAIDEP

248 Current living conditions of Thuong Thanh Commune and Ngoc Lam Commune are assessed as followings (see Table2.4.3 and Table2.4.4).

Table2.4.3 Living Condition Assessment of Thuong Thanh Commune

Overall	Objective score shows unfavorable living condition of Thuong Thanh. Convenience, safety and capability scores are low, while amenity and health scores are good. People are generally satisfied with the conditions but for amenity.
Convenience	Traffic condition is inconvenient because road ratio is insufficient and public transport service is not provided well. Status of power supply is unsatisfactory for the residents.
Safety & Security	Being located along the Duong River, the commune is prone to flood. In addition, as NH5 borders the commune, traffic safety is a problem for Thuong Thanh residents.
Health & Wellbeing	Thuong Thanh has fair health condition. Basic conditions such as water supply, waste collection and sanitary facility are not sufficiently provided.
Amenity	Because of agricultural land, the commune has green area, but there are only little area of park and cultural facilities. Consequently people are discontented with greenery and landscape.
Capability	Income and vehicle ownership is fairly high.

Source: Urban Karte, HAIDEP, 2005

Table2.4.4 Living Condition Assessment of Ngoc Nam Commune

Overall	Overall objective score is low except for good convenience score. It shows unfavorable living condition of Ngoc Lam. People are satisfied with the living conditions but for amenity.
Convenience	Ngoc Lam area is quite convenient as basic service such as electricity or education is sufficiently provided. People are satisfied with public transport accessibility and bus is more often used for commuting than other communes in Hanoi city.
Safety & Security	Ngoc Lam is highly prone to flood and inundation as it is located near the Red River. Traffic is very heavy thus traffic safety is a big problem.
Health & Wellbeing	As vehicle concentration is the heaviest in Hanoi, air pollution is serious and endangers health. There is no hospital in the commune. Water supply and sanitary condition needs improvement.
Amenity	Ngoc Lam has some amenity spaces but not adequate for population. People are dissatisfied with amenity condition of the commune. Living space is quite large and people are satisfied.
Capability	Income is high but internet usage is not popular.

Source: Urban Karte, HAIDEP, 2005

2.4.2 Anticipated adverse impacts and mitigation measures

1) Anticipated adverse impacts

249 It is expected that the station area development projects will result in environmental improvement and upgrading of the quality of life of residents in the communities around the stations, through improved road system, drainage system, solid waste collection and disposal system, public facilities, amenity facilities, community disaster preparedness and response capacity, etc.

250 However, the station area development projects would cause following adverse impacts to the communes around the project sites (see Table2.4.5).

Table2.4.5 Anticipated Environmental and Social Impacts

Impact		Description
Socio-economic environment		
	Involuntary resettlement	Intermodal transfer facilities, parking lots, access roads etc. in the South of the station are planned within the VNR's property. Large populous land in the North and in the West will be acquired for development of the new distribution roads (RD-NR-1, RD-NR-2), the parking spaces, intermodal facility, etc.
	Sanitation	Organic wastes and waste water generated from the construction sites may cause water-transmitted diseases and affect health of local citizens.
Pollution		
	Air pollution	Operation of construction machinery and transportation vehicles may cause significant impact on ambient air quality of adjacent residential areas.
	Water pollution	Waste water from construction activities and discharged water from the stations may cause deterioration of water quality of the vicinities.

Source: JICA Project Team

251 Since the project will include the development of supermarket/ market (in block A), it will require to make an EIA (and a RAP) in accordance with Decree No. 21/3008/ND-CP.

2) Measures to mitigate impacts of land acquisition

252 During pre-construction phase, land acquisition and involuntary resettlement are considered as the most significant impacts that would cause by the development projects. Scale of land acquisition and project-affected people and households are anticipated as following. Since project-affected households mentioned here would lose all or a great part of their residential land, they are considered as households to be relocated and resettled, temporarily or permanently.

Table 2.4.6 Scale of Land Acquisition and Project-affected Buildings by Minimum Project

ID	Minimum Project	Area of land to be acquired	Number of project -affected building
		(m^2)	(buildings)
S1	Gia Lam Station	Exclusion	Exclusion
S2	North ITF	22,900	46
R1	New north access road (w=25m)	30,200	78
R2	Extension of Ngo Gia Kham Street (w=30m)	11,300	59
Total		64,400	183

Source: JICA Project Team

Table2.4.7 Scale of Land Acquisition and Project-affected People and Households by Short, Medium and Long term project

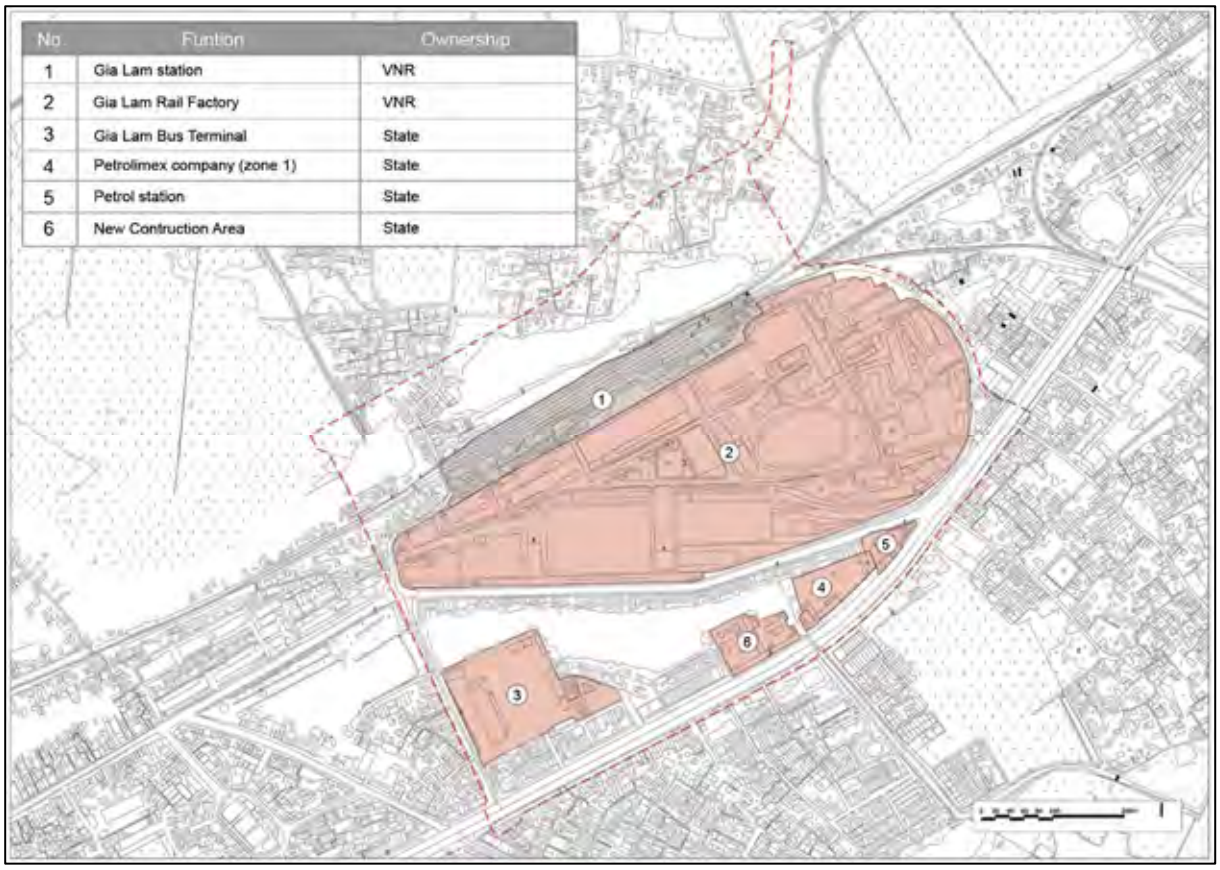
ID	Project	Area of land to be acquired	Affected housing area	Population density	Number of project-affected people	Number of project-affected household
		(m^2)	(m^2)	(pers/ha)	(pers)	(HHs)
S3	South ITF	23,200	-	-	-	-
A	Urban redevelopment of next to North ITF	18,600	5,344	151	81	18
B	Urban redevelopment of VNR factory area	158,700	-	-	-	-
C	Urban redevelopment of road side of NH-1	27,900	27,900	151	421	95
Total		228,400	33,244		502	113

Source: JICA Project Team

Note: Population density (151 pers/ha), and average household size (4.4 pers/HH) are referred to Urban Karte (HAIDEP, 2005), for Ngoc Lam Commune

253 There are several facilities which public owned or related inside the planning area (see Figure 2.4.1). These facility areas will be potential lands for urban development with relocation and renewal old public facilities.

Table 2.4.1 Location of Public owned Facilities in Gia Lam Station Area



Source: JICA Project Team

254 In order to facilitate the relocation and resettlement of affected people, and to mitigate adverse impacts of relocation and resettlement, it is recommended that the following issues should be carefully considered.

a) Integrating urban development/redevelopment with resettlement

255 Resettlement should be treated as a development opportunity, and resettlement issues should be treated as an integral aspect in urban planning, whereas city-wide resettlement plans are developed as part of urban development.

256 For middle/ long term development, instead of applying common method of land acquisition (recovery of land, compensation for loss of land, and relocation of affected people to resettlement sites, etc.), it suggests that the “land readjustment system” and /or “urban renewal system” with transforming “land use right” to “floor right” would be useful for land acquisition measure.

b) Development opportunities and livelihood restoration

257 Consultations with affected groups and stakeholders can help identify innovative methods for restoring affected livelihoods and incomes. Steps such as

identifying suitable resettlement sites, offering additional shop area at a premium, and vocational training can help strengthen livelihood restoration.

c) Public consultation, participation and information disclosure

258 Possibility of land acquisition and sustainability of resettlement depends largely on the affected people's sense of ownership over the issues on land price, compensation for loss of land and properties, and their new residence and neighborhood. This can be gained through active participation at the planning stage and through pre-investment by the beneficiaries. Consultation and participation will help minimize risks of resistance and conflicts, offer innovative local solutions, enhance community ownership, improve project quality, and facilitate timely completion of projects. Consultative processes help protect rights and address concerns of the affected people, and enable the implementing agency to explore innovative solutions. Information disclosure on all aspects of resettlement is important for ensuring transparency, enhancing credibility, and enabling informed choices. The role of NGOs is useful for bringing in social mobilization and community development skills into the implementation process.

d) Grievance redress, independent monitoring and evaluation

259 Mechanism for grievance redress is essential for addressing the concerns of the affected people, especially those in the vulnerable category. It is essential to institute an independent monitoring mechanism in order to make the resettlement process transparent and accountable. External evaluation of resettlement impacts is a useful tool for assessing effectiveness of the implementation strategy.

3) Measures to mitigate impacts of air pollution

260 Residents living in the area in the north-west of the station would be affected by air pollution and water pollution cause during construction phase.

261 During construction phase, the operation of construction machinery affects the ambient air quality by emitting pollutants. The magnitude of pollution will depend on the types of equipment and the operation time. Depending on wind conditions such as velocity and direction, emissions from construction equipment would affect the ambient air quality of neighboring areas. In addition, earth moving equipment during construction would also be a major source of dust emission. To mitigate impacts of air pollution, the following measures are recommended.

- Periodically cleaning and watering the project sites.
- Secure distance between the construction machinery and construction site boundary as much as possible.
- Using construction equipment and vehicles which comply with the latest regulations.
- Periodical inspection and maintenance of construction equipment and vehicles.
- De-concentrate construction activities.
- De-concentrate the flow of construction trucks.
- Use cover sheets for trucks carrying soil.
- Under the weather conditions such as strong wind, the construction activities are suspended temporally for prevention of dust scattering.
- Training construction equipment drivers and truck drivers.
- Monitoring the air quality at the project site during all of the project cycles.

4) Measures to mitigate impacts of water pollution

262 During construction phase, if the contaminated drainage from the construction activities flows into surface water without proper treatment, it would pollute surface water quality around the project areas. During operation phase, discharged water including sewage from the station would deteriorate water quality as well. The following treatment measures should be prepared for discharged water from the project.

- Build a small dike to prevent run-off water from construction sites.
- Consideration of separating construction areas with sheet piles.
- Mud should be dehydrated before discharged and reused as much as possible.
- Proper design and maintenance of drainage systems at station. The design includes a sewage facility with a proper capacity, sewage pipes locating lower than the water supply pipes, and if necessary, preliminary treatment facilities.
- Monitoring discharged water quality from stations, and surface water quality.

5) Measures to mitigate impacts of soil contamination

263 The redevelopment of existing VNR factories (17.4 ha, Block B) with the construction of 8th floor or 10th floor commercial and business facilities may involve the excavation of polluted soil. If the excavated soil is not treated appropriately, it may impact the environment through illegal dumping on private/public land, or pollution of the surrounding environment if the residual soil is contaminated by toxic materials.

264 It is proposed that excavated soil should be carefully treated by the following measures.

- Analysis of toxic materials of soil to be excavated.
- ˜Utilization of excavated soil within the project.
- ˜Contracting out treatment/dumping/recycling of residual soil.
- Covers and walls to preventing run off of stockpiled soil.

6) Measures to mitigate impacts of wastes

265 The construction activities in large areas of Block B, C, etc. would generate a variety of wastes, including construction and demolition waste from the existing VNR factories. Construction and demolition debris are composed of inert materials such as soil, rock, concrete, brick and asphalt etc., and non–inert materials including metal, timber, paper, glass and general garbage. The volume of the wastes to be generated is unknown at present time. However, at the design phase, waste volume and type should be assessed quantitatively. And during the construction phase, they should be reused and recycled as much as possible. With respect to the waste which cannot be reused and recycled, they would be contracted to and collected by an authorized company.

2.5 Project Implementation Mechanism

2.5.1 Issue on Implementation of Gia Lam Station Area Development

266 Overall project implementation schedule is divided into four stages of minimum by the UMRT opening in 2017, short term, middle term and long term. Each project in station development area is scheduled on these four stages from the viewpoint of synergy with station opening and difficulty of implementation, especially, land acquisition. Implementation issue in each stage are explained as following;

1) Issue on minimum project implementation

267 Minimum project in Gia Lam station development area include Station and related facilities development (S1, S2 and S3) and road development (R1 and R2). Basically, these projects must be completed by the UMRT opening in 2017 and are required expeditiousness in project implementation. Main issues of minimum development are shown as followings;

- Smooth land acquisition
- Secure financial resource
- Utilization of SOE
- Role sharing among HPC and VNR

2) Issue on short -term project implementation

268 Short-term project in Gia Lam station development area is urban redevelopment of next to North ITF (A). This project is planned as commercial and business use and expected high synergy effect with station development. Therefore, it should be implemented to meet the time of UMRT opening as much as possible.

- Encouragement of private investment

3) Issue on medium and long -term project implementation

269 Medium and long-term project in Gia Lam station development area consist of two projects of urban redevelopment of road side of NH-1 (B) and urban redevelopment of VNR factory area (C). These projects aim urbanization with commercial and business use and mixed use and improvement of urban living condition in existing built-up area. In these built-up area, land acquisition cost will be high and it will be taken long time for the negotiation with land right holder. For that reason, it is difficult to encourage private investment in built-up area at present. Main issues of medium and long-term development are shown as followings;

- High cost for land acquisition
- Consensus building among residents
- Resettlement measure
- Encouragement of private investment

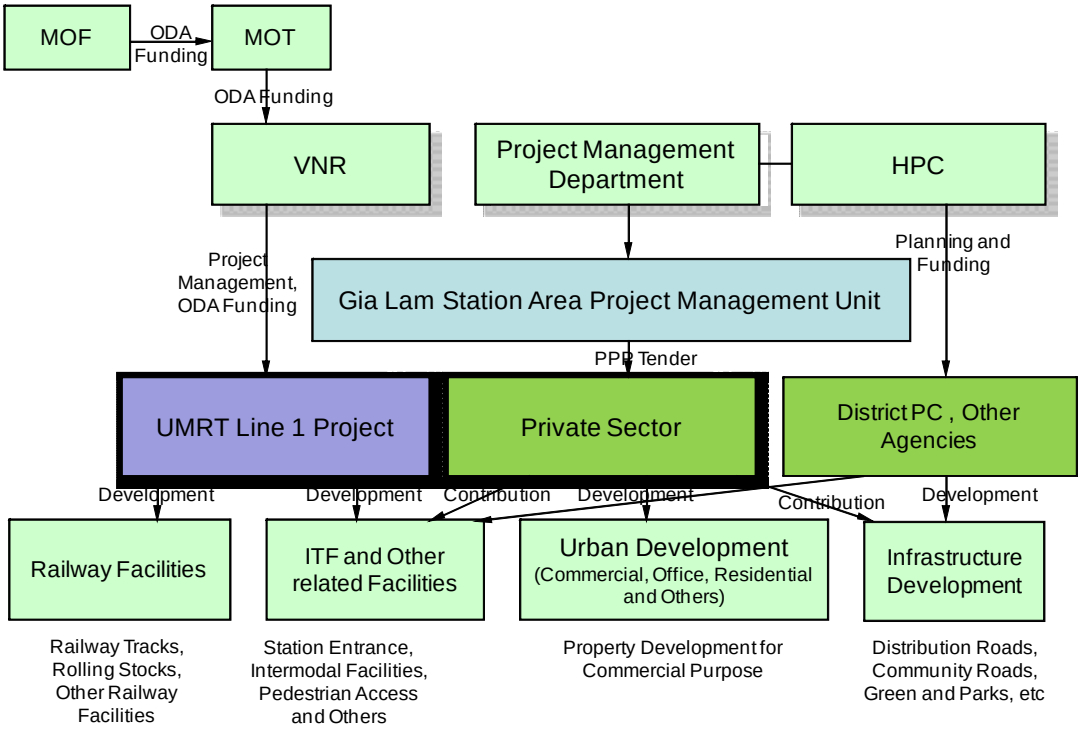
2.5.2 Proposed Project Implementation Measures

1) Application of Public and Private Partnership Scheme

270 The following figure is an example of possible PPP scheme to be applied to the Gia Lam Station Area development, in which a project management unit (PMU) will be created specifically for this development by HPC, which prepares and implement PPP tenders. Most of the project components such as urban development A, B and C will be implemented under this PPP scheme.

271 Each project (such as the urban development project B) or subdivided project bloc will be competitively tendered separately by the PMU based on the PPP procedure which is to be designed by the Project Management Department for Integrated UMRT Station Area Urban Development established under HPC. Specific requirement for the contribution by the private sector to the development of public facilities and infrastructure such as road, drainage, sewers, green and parks, pedestrian access and sidewalks and so on will be a part of Request for Proposal (RFP) of such PPP tender.

Figure 2.5.1 Possible PPP Scheme for Gia Lam Station Area Development



Source: JICA Project Team

272 VNR could act as a pure land load or predetermined joint venture partner for the selected private sector developer who wins the PPP tender. VNR could also have an option to develop its own land without applying this PPP scheme. HPC will be profited by gaining total control over the development and also by reducing its financial burden on its development of public facilities and infrastructure due to the contribution from the private sector developers through the implementation of this PPP scheme.

2) Station and Related Facilities Development (Project S1, S2 and S3)

273 Station and related facilities development in Gia Lam station area consist of three components of station building (S1), North ITF (S2) and South ITF (S3). ITF basically

should be developed just in time of station opening because of the function of convenience and comfortableness for passengers and station users. However, South ITF is planned in VNR factory area which is under operation at present and it is not clear to change from factory use to urban use. Therefore, North ITF should be developed as main gateway in opening stage of UMRT in 2017. South ITF is developed in medium term as one of the components of urban redevelopment of VNR factory area (C)

274 VNR will be in charge of station and related facility development, because VNR will be main receiver of the project benefit on the UMRT business. Therefore, VNR should implement station and North ITF of minimum project and South ITF of medium term project. Possibility of procuring long term and low interest concessional funding such as bilateral and multilateral financing should be examined for the development of these ITF facilities.

275 Land for station and North ITF will be provided from a part of existing right of way (ROW) and land recovery by VNR. On the other hands, land for South ITF is provided from a part of ROW and VNR factory land.

3) Road development (Project R1 and R2)

276 In opening stage of UMRT, New north access road (R1) and Ngo Gia Kham Street (R2) is exclusive access route from NH-1 road to station. These two roads should be developed as minimum project by the UMRT opening in 2017.

277 Land acquisition is carried out by land recovery from existing private land in rural village. Since the alignment of the planned road, which is approved under the Detailed Plan of District, will be just next to the new station, it will be impossible to develop the North ITF. It is proposed to readjust the alignment of the planned road toward north to secure land for ITF development (see Figure 2.5.2).

278 HDOT will be in charge of the R1 and R2 project which will function as urban trunk road. HDOT should implement these two road development as individual road project. However, possibility of procuring long term and low interest concessional funding such as bilateral and multilateral financing should be examined for the development of these roads.

4) Urban Development of next to North ITF (Project A)

279 Urban development of next to North ITF is planned as short term project for commercial and business. This project will be a trigger for private investment in Gia Lam area development.

280 This project is carried out by general urban development measure using land recovery. Land for the project will be acquired from private in rural village area. Regarding financial resource, it is necessary to coordinate private investors under HPC facilitation. This project could be implemented under the above-described PPP scheme.

5) Urban redevelopment of VNR factory area (Project B)

281 Urban redevelopment of VNR factory area will be core project in Gia Lam station area. However, coordination of relocation and redevelopment of VNR factory will take a long time. This project is planned as medium term project.

282 Land for the project will be provided by land recovery from VNR to private investors by concession. HPC should act as a facilitator for Public Private Partnership (PPP) type projects to develop necessary infrastructure of the area at maximum value for money.

283 Project B include South ITF and Bus terminal project. This project should be implemented by VNR and TRAMOC. They will use public budget for the development.

6) Urban redevelopment of roadside of NH-1 (Project C)

284 Project C is planned as long term project because of the difficulty of land acquisition and adoption of alternative measure of LR and UR. The Implementation scheme of project C is shown as following figure 2.5.3.

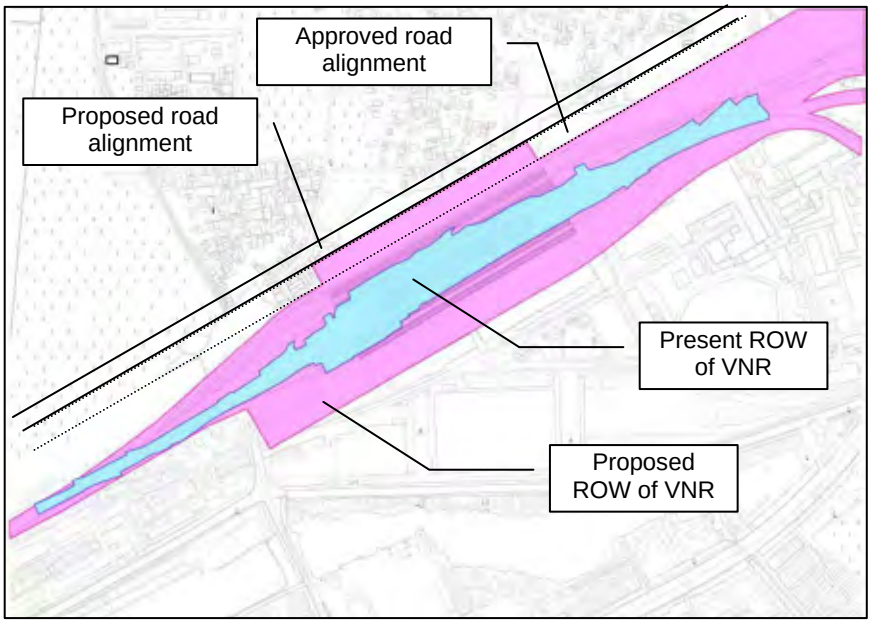
285 Private investor acquires land of existing bus terminal after relocation to new bus terminal in project B. This land is used as seed land for urban development. In addition, private investor acquires private lands who agree to relocate to other place. Land use rights of private investor and residents who will resettle on-site are re-plotted into new building lot and are exchanged to building floor right. After the UR project the private land right holders are provided floor right. Private investor bear all project cost and enjoy revenue from selling a part of floor created on the UR buildings.

286 Private land right holder can choose on-site resettlement or outside. The private land right holders who will participant in the LR and UR projects will be provided the floor right instead of compensation.

287 LR and UR need specific legal schemes for land right protection through the implementation of the project. In existing legal framework in Vietnam, there is no legal land right protection for LR and UR. It will take a long time to establish legal framework for these two alternative measures.

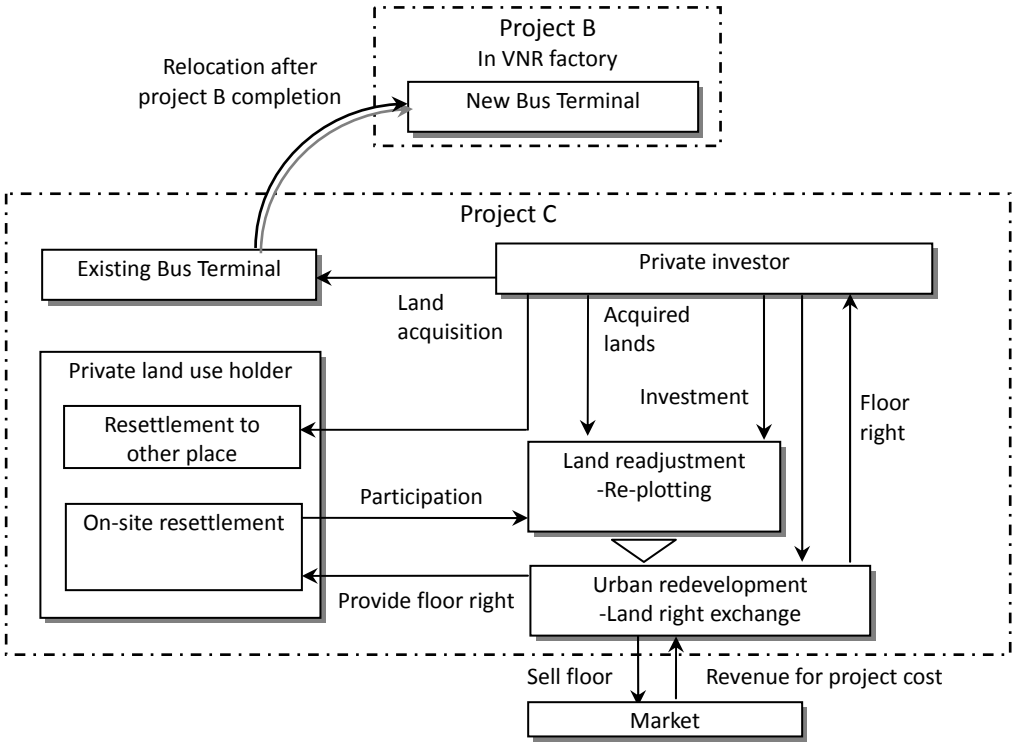
288 Combination of LR and UR as a new development measure should be initiated by HPC with responsibility of developing required infrastructure to invite the private sector developers. Although implementation would involve new development measures based on new legal arrangement, this project could also be implemented under the PPP scheme.

Figure 2.5.2 ROW and Road Alignment (Present and Proposed)



Source: JICA Project Team

Figure 2.5.3 Implementation Scheme using LR and UR in Project C



Source: JICA Project Team

Table 2.5.1 Implementation Program of Gia Lam Station Area Development

Project type	ID	Name of project	Schedule	Project area (ha)	Land acquisition area (ha)	Implementation Method	Implementation body	Financial resource
Station and related facility development	S1	Gia Lam Station & Railway	Minimum	6.6	-	Utilization of ROW and land acquisition from private lands	VNR	ODA
	S2	North ITF	Minimum	2.3	2.3	Land acquisition from private lands	VNR/HPC[1)]	VNR/HPC[1)]
	S3	South ITF	Medium	2.3	2.3	Land acquisition from VNR factory area	VNR/HPC[1)]	VNR/HPC[1)]
Road development	R1	New north access road (w=25m)	Minimum	3.0	3.0	Land acquisition from private lands	HDOT	HPC
	R2	Extension of Ngo Gia Kham Street (w=30m)	Minimum	1.6	1.1	Land acquisition from private lands	HDOT	HPC
	C2	Relocation of Gia Lam Bus Terminal	Long	1.5	1.5	Land recovery from VNR factory area and sell land of existing bus terminal	TRAMOC	HPC/Private
Urban development project	A	Urban redevelopment of next to North ITF	Short	1.9	1.9	Land acquisition from private lands	Private/HPC	Private/Public
	B	Urban redevelopment of VNR factory area	Medium	17.4	15.9	Land recovery from VNR factory area and development with LR and UR methods	Private/HPC	Private/Public
	C	Urban redevelopment of road side of NH-1	Long	11.3	2.8	Land recovery from private lands and development with LR and UR methods	Private/HPC	Private/Public

Source: JICA Project Team

1) It has not been discussed and agreed between VNR and HPC which will be an implementation body and a financial resource for ITF development. JICA Project Team recommends VNR will develop ITF as a station related facility development.

2.5.3 Proposed Implementation Schedule

1) Minimum development

289 Regarding station and related facility (S1, S2), the land acquisition for ROW of VNR should be completed until 2012 and construction of station and ITF should be completed until UMRT opening in 2017. South ITF (S3) is planned at VNR factory area. Therefore, development timing of South ITF is in the period of medium term when Project A is implemented.

290 Road development of new north access road (R1) and extension of Ngo Gia Kham Street (R2) should be completed until UMRT opening in 2017. In addition, two roads of R1 and R2 are used for access route for construction work of station and north ITF. Therefore the land acquisition should be completed before Station and ITF construction work.

2) Short term project

291 Urban development project of VNR owned land (A) is planned as short-term project. For the location nearby new north access road, the land acquisition should be carried out in the same period of land acquisition of road project.

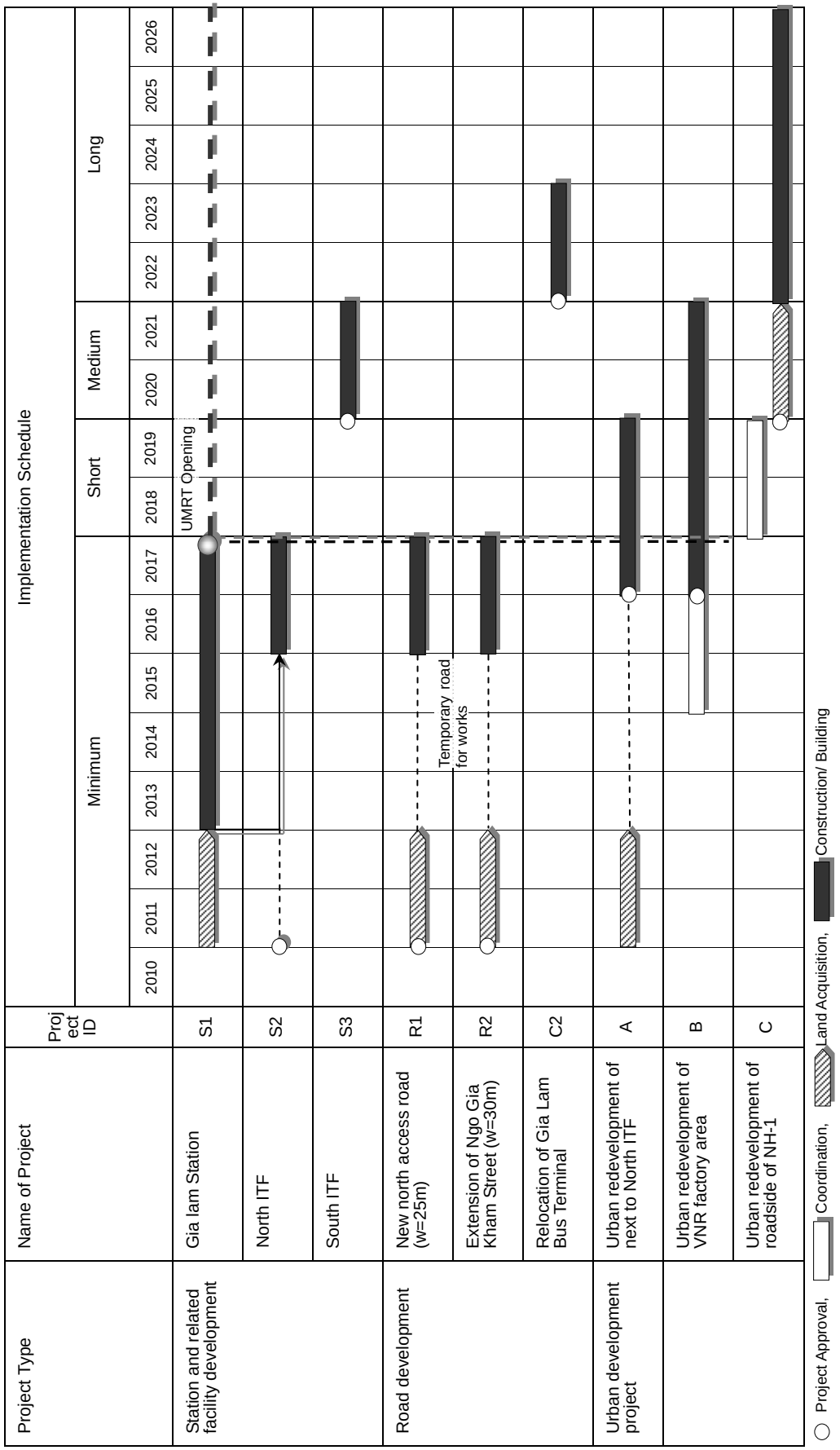
3) Medium term project

292 From viewpoint of urbanization of Gia Lam station area, it is desirable that urban redevelopment of VNR factory area (Project B) is implemented as soon as possible. This project doesn't need a long time for land acquisition. Therefore, if relocation and land use change of VNR factory could be decided, it is expected speedy implementation and urbanization. As schedule at late, project implementation form 2016 is proposed.

4) Long term stage project

293 Urban redevelopment of roadside NH-1 (Project C) need the time for the preparation and implementation. This project adopts LR and UR scheme. The establishment for the legal system also needs a long time. In addition, this project should be implemented after Project B in VNR factory land from viewpoint of stepwise urbanization. Therefore implementation of project C is planned from 2022.

Table 2.5.2 Implementation Schedule of Gia Lam Station Area Development



2.5.4 Project Investment and Operation Cost

294 Investment and operation cost of Gia Lam station area development is summarized as following table 2.5.3. Station building is excluded from this cost estimation. Total investment cost of Gia Lam station area is estimated at 785.0 million USD.

Table 2.5.3 Investment and Operation Cost of Gia Lam Station Area Development

Project type	Name of project	ID	Investment cost (million USD)			Operation (million USD/year)
			Land acquisition	Construction	Total	
Station and related facility development	Gia lam Station	S1	Exclusion	Exclusion	Exclusion	Exclusion
	North ITF	S2	12.6	1.2	13.8	0.1
	South ITF	S3	31.3	1.3	32.6	0.1
	Sub total		43.9	2.5	46.4	0.2
Road development	New north access road (w=25m)	R1	16.6	2.1	18.7	0.2
	Extension of Ngo Gia Kham Street (w=30m)	R2	14.1	1.1	15.2	0.1
	Relocation of Gia Lam Bus Terminal	C2	11.6	0.8	12.4	0.1
	Sub total		42.3	4.0	34.6	0.4
Urban development project	Urban redevelopment of next to North ITF	A	10.3	34.0	44.3	2.9
	Urban redevelopment of VNR factory area	B	214.3	324.1	538.4	20.3
	Urban redevelopment of road side of NH-1	C	34.9	86.4	121.3	22.0
	Sub total		252.3	444.5	704.0	45.2
Total			338.5	451.0	785.0	45.8

Source: JICA Project Team

2.5.5 Financial Analysis of Urban Development Project

295 Financial analysis of public and private Investment of urban development in Gia Lam station area is summarized as following Table 2.5.4.

296 Project A will have high profitability for private investor because of low cost for land acquisition.

297 Regarding project B, in case I, project B will have difficulty to secure profitability of private investor because of the high cost of factory land acquisition. In case II of project B is based on the assumption that VNR inject their factory lands to the urban development project. It will reduce the cost of private investment therefore will improve the profitability of the investment.

298 Regarding project C, it is assumed that private investor will acquire lands of existing bus terminal and a half of private land. In that case, private investor will have sufficient profitability in project C. In summary as far as the urban development projects are concerned there will be good possibility for private sector investor to secure sufficient profitability and PPP scheme could be possible.

Table 2.5.4 Financial Analysis of Urban Development Projects of Gia Lam Station Area Development

Name of project	ID	Investment scheme	Public investment and revenue		Private Investment			
			Investment (million USD)	Revenue	Investment (million USD)	NPV (million USD)	Project IRR	B/C
Urban redevelopment of next to North ITF	A	-	-	-	44.3	44.1	24%	2.63
Urban redevelopment of VNR factory area	B	Case I : Private investment	-	214.3 mil USD	538.4	-206.3	8%	1.65
		Case II VNR invests with factory land	133.7	25.6 mil USD/year	324.1	122.8	18%	2.00
Urban redevelopment of road side of NH-1	C	-	-	-	121.3	43.5	18%	2.21

Source: JICA Project Team

Note IRR: Internal Rate of Return (Project IRR is a indicator to show the level of total project profitability), NPV: Net Present Value, B/C: Benefit per Cost

Interest rate is assumed of 12%/year, Calculation period: 15years since completion of project

3 DETAILED PLAN OF NAM CAU LONG BIEN& HANG DAU STATION AREA DEVELOPMENT

3.1 Present Condition

3.1.1 General characteristics

301 Nam Cau Long Bien and Hang Dau Station Area covers the Ancient Quarter (AQ) and Thang Long Citadel, which are a historical center of Vietnam. The Ancient Quarter is called “a heart of Hanoi”, with vibrant traditional commercial activities called “36 streets”, unique urban structure with many alleys and houses in backyard, traditional living style with relatives, intangible cultural values, etc. The land use of the station area consists mainly of a mixed land use of residential and commercial. Many tourists visit to the AQ so commercial potential is very large.

302 The south-west of AQ is a military and political area and Thang Long Citadel is located. Long Bien Bridge is a historical heritage of Vietnam. Nearby this bridge, Long Bien bus terminal is located in Hong Ha Street, in front of Long Bien Market. More than 80% of HH engage service industry, and there are high opportunities to do business in this area, since the AQ is a regional commercial center of Vietnam. In addition, many tourists visit to the AQ so commercial potential is very large. Traffic flow from many directions concentrates in this area to come to the center of Hanoi. There are two big wholesale markets (Long Bien and Dong Xuan), and many shops in AQ, so many motorbikes, buses and cars are gathered to AQ. Carriageways are always overcrowded. Pedestrian cannot walk safe since most of sidewalks are occupied by parking and vendors. Living condition of the AQ and out of dyke areas (Phuc Xa Commune and Phuc Tan Commune) is poor in terms of sanitation, flood danger and security.

3.1.2 Population

303 Estimated population of 500m radius from Nam Cau Long Bien Station is 33,600, while number of employees is app. 21,100 and of students is 7,000. In case of 500m radius from Hang Dau Station, population is 31,400, number of employees is 22,400 and of students is 10,200.

304 Among all of UMRT station areas, density of this station area is the highest. It is said the population density of the Ancient Quarter is about 800persons/ha. Overcrowded dwelling has negative impacts on living condition and social environment of traditional lifestyle in the Ancient Quarter.

3.1.3 Urban facilities

305 There are schools, markets, Commune People’s Committees, etc. which citizens use for their daily life. Compared to other residential areas, various urban facilities are gathered in the Ancient Quarter. Under the regulation of the Ancient Quarter, it is restricted to build over than 3rd floor in front of streets, and over than 5th floor in backyard. But some hotels and office buildings break the regulation and construct 7th or 8th buildings. In addition, there are registered traditional architectures, but many of these buildings are used for shop houses or other purposes, which are not traditional at all.

306 There are many traditional and cultural properties, such as Bach Ma Temple, Water Tower and many religious sites. These cultural properties are symbol of the Ancient Quarter and Hanoi City.

307 Out of the AQ, there is Ministry of Defense west of stations. Along Le Nam De Street, there are some Ministry of Defense related facilities, such as a library, a newspaper company, a cinema, etc. In north of the AQ, there are hotels and apartments of mid and high-rise. Since this area has a geographical advantage between Thuc Bac Lake and the Ancient Quarter, urban development activities been have promoted.

308 Inside Yen Phu Street which is called the dyke road of Red River, there is Long Bien Bus Terminal. Though there are only bus bays, many bus passengers use this terminal. There are no pedestrian crossings from Hang Dau Street to bus bays.

309 Outside of Yen Phu Street of the dyke road, it is legally prohibited to live, but many residential buildings are settled. Long Bien Market, the biggest market in Hanoi and northern Vietnam is also located outside of dyke, next to Long Bien Bridge.

3.1.4 Road network and transport condition

310 Road network of Ancient Quarter is grid-shaped, which were water channel from Red River to Thang Long Citadel long ago. Originally each street has characteristics of business, such as silver craft, Chinese medicine, silk, Buddhist objects, etc. But traditional businesses have been changed into modern ones, such as clothes, mobile, café, etc. In these several years, traffic congestion has been serious, because of several reasons as follows:

i) Commercial facilities have functions as both wholesale and retail, so there are many trucks and motorbikes gathering to deliver and purchase commodities.

ii) Many hotels are also gathered in this area, many mini buses park to pick up guests in front of hotels.

iii) Two main north-south streets of Hang Dao – Hang Giay, and Luong Van Can – Hang Luoc are used by through traffic, while there are many shops which customers often park motorbikes in front of shops.

311 Elevated UMRT Line1 will be operated along Phung Hung Street. This street is the west outer road of the AQ, so many through traffic pass it. But because it is one-way from south to north direction, and not so many shops are clustered, it is not so congested.

312 Hang Dau Street is one of the main east-west trunk roads, which connect to West Lake and Ba Dinh District. Intersection around the Water Tower is crowded with cars and motorbikes, which come from many directions.

Figure3.1.1 Present Condition of Nam Cau Long Bien and Hang Dau Station Area

Socio-Economic Condition of Station Area		within 500m	500m -1km	Total
Population		31,374	69,028	100,402
Net Population Density (no./ha)		407	375	385
No. of Employment (workplace)		17,177	40,029	57,206
No. of Student (at school)		7,820	13,257	21,076
Socio-Economic Condition of Major Communes	District	Hoan Kiem	Ba Dinh	Hoan Kiem
	Commune	Hang Ma	Nguyen Trung Truc	Dong Xuan
Average Household Size (persons)		4.1	3.9	4.2
Ave. Monthly HH Income (000VND)		3,277	3,167	3,747
HH with Self-owned Housing (%)		84.9	66.0	75.1
HH with Car/ Motorcycles (%)		83.1	83.0	86.4
Industry Structure (%)	Primary	1.0	0.0	3.1
	Secondary	17.3	14.8	8.6
	Tertiary	81.7	85.2	88.3
Bus facilities and network[1)]	No. of Bus Stops	9 (within 500m)		
	Bus Route Number	1, 14, 18, 22, 23, 31, 36		

Related Plans and Projects
1) ECOTRANS suburban shuttle train from Long Bien to Dong Anh and Bac Ninh (planned)
2) Hang Dau underground parking development (planned)

(1) Phan Dinh Phung Street

(2) Local market along Phung Hung Str. (planned station location)

(3) Hang Dau Park

(4) Roundabout and Water Tower

(5) Street in Ancient Quarter

(6) Hang Than Street (planned elevated railway of Line1 location)

(7) Yen Phu Street (dyke road)

(8) Long Bien Bus Terminal

(9) Long Bien Bridge

Source: JICA Project Team

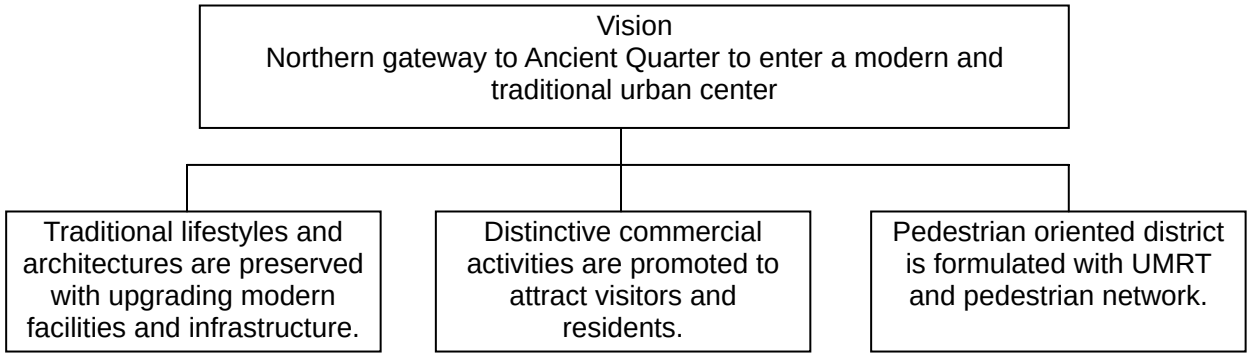
3.2 Vision and Strategies for Integrated Nam Cau Long Bien and Hang Dau Station Area Development

3.2.1 Overall Development Vision and Orientation

313 The vision of two stations is “the northern gateway to Ancient Quarter to enter a modern and traditional urban center”. Historically there was a gate named “O Quan Chuong” which is remained at eastern side of Hang Chieu Street in Ancient Quarter. These stations should be a new symbol of gateway of this area. The station area of two stations is expected to formulate common gateway development as the northern gateway of the Historical Center of Hanoi, where convenient transfer facilities and attractive open space is proposed to be equipped.

314 While it is important to preserve tradition of the Ancient Quarter with improving living and transport conditions, development opportunities will be created along the outer area of Ancient Quarter in conjunction with Line1 elevated railway construction. This urban redevelopment is expected to encourage socio-economic activities by new urban services in Ancient Quarter, taking account of harmonized development with Ancient Quarter in terms of landscape and urban design. In addition, accessibility to Long Bien Bus Terminal needs to be improved for passengers’ convenience and safety.

Figure 3.3.1 Vision and Goals of Nam Cau Long Bien and Hang Dau Station Area Development



Source: JICA Project Team

Table 3.2.1 Strategies of Nam Cau Long Bien and Hang Dau Station Area Development

Goals	Objectives	Strategies for Hanoi Station Area Development
1. Transport development	(1) Development station and related facilities	1) Develop transfer facilities and spaces for smooth transfer between Line1 and Line2 2) Design station and related facilities which harmonize with Ancient Quarter 3) Develop commercial and service facilities to serve for passengers, residents and tourists
	(2) Improvement of accessibility	1) Develop a pedestrian deck to connect to Long Bien Bus Terminal 2) Develop a new road under elevated railway to connect Long Bien Bus Terminal 3) Utilize spaces under elevated railway and station for transport , public and commercial purposes
	(3) Development of public transport services	1) Improve facilities of Long Bien Bus Terminal 2) Operate community bus service inside the Ancient Quarter for tourists and hotel guests 3) Traffic management of private vehicles
2. Economic development and strengthening of competitiveness	(4) Commercial and business development	1) Develop a shopping mall inside stations and transfer facilities 2) Promote new modern commercial activities harmonized with the cultural image of Ancient Quarter 3) Promote tourism services with utilization of UMRT
	(5) Revitalization of local socio-economic activities	1) Revitalize traditional commercial streets 2) Develop community openspace inside the urban blocks 3) Promote tourism events collaborated with utilization of UMRT
	(6) Cultural preservation and promotion	1) Revitalize traditional architectures and townscape 2) Promote cultural events inside stations and parks
3. Living condition improvement	(7) Development and improvement of housings and infrastructure	1) Stabilize population density to mitigate negative impacts on urban infrastructure, traffic flow, environment, etc. 2) Provide new residential facilities mixed with commercial and business area to utilize high-potential land efficiently 3) Promote rehabilitation activities of the Ancient Quarter
	(8) Improvement of amenity	1) Formulate a pedestrian oriented district of the Ancient Quarter 2) Redevelop Hang Dau Park with multi-functions 3) Preserve traditional landscape of the Ancient Quarter and Long Bien Bridge harmonized with modern infrastructure and buildings
	(9) Improvement of security and safety	1) Provide facilities for disaster prevention and community safety inside and around the station 2) Develop Hang Dau Park as an evacuation area 3) Develop cultural and tourism service facilities to improve social welfare and environment for multi-generation

Source: JICA Project Team

3.2.2 Transport Development Strategies and Projects

(1) Development of Station and Related Facilities

315 Two lines of UMRT will connect in this station area. Nam Cau Long Bien Station of UMRT Line1 is elevated while Hang Dau Station of Line2 is underground. It is necessary to take into account how passengers will transfer these two stations. Nam Cau Long Bien Station is new urban symbol which will be developed in the traditional Ancient Quarter. Since it is difficult to construct massive structure in this area in short-term, there are multi-function facilities inside the station, such as a tourist center, café, exhibition space which appeal history and tradition of the Ancient Quarter, etc.

316 The development strategies for development of station and related facilities are as follows:

1) Develop transfer facilities and spaces for smooth transfer between Line1 and Line2
2) Design station and related facilities which harmonize with Ancient Quarter
3) Develop commercial and service facilities to serve for passengers, residents and tourists

(2) Improvement of Accessibility

317 One of the most important factors for planning is improvement of accessibility between i) two UMRT stations, ii) stations and Long Bien Bus Terminal, iii) stations and the Ancient Quarter. For transferring two stations, it is proposed to develop a station access space at the north corner of Nam Cau Long Bien Station, which has a sunken garden connecting pedestrian underground of Hang Dau Station and car parking space. From this sunken garden, transfer passengers use elevators and escalators to access to elevated Nam Cau Long Bien Station.

318 When elevated railway of UMRT Line1 will be constructed, the space under viaduct will be used for new trunk road (w=app. 28m) connecting from Hang Dau Street to Yen Phu Street. So road network of north Ancient Quarter will be reformed, while preserving the Water Tower of the cultural property. Bus passengers of Long Bien Bus Terminal will walk along a new trunk road or a pedestrian deck under the viaduct to access to Nam Cau Long Bien Station.

319 The development strategies for improvement accessibility are as follows:

1) Develop a pedestrian deck to connect to Long Bien Bus Terminal
2) Develop a new road under elevated railway to connect Long Bien Bus Terminal
3) Utilize spaces under elevated railway and station for transport , public and commercial purposes

(3) Development of Public Transport Services

320 At present, there are no pedestrian crossings to Long Bien Bus Terminal. Many bus users are not safe to cross streets. So when railway of UMRT Line1 will be constructed, Long Bien Bus Terminal will be upgraded to improve connectivity with railway stations and sidewalk.

321 To improve accessibility and mobility inside the Ancient Quarter, traffic management measures should be implemented to restrict through traffic, roadside parking, etc. The final goal of the Ancient Quarter is to formulate a pedestrian oriented district, called “Transit Mall” which is a special area with a street network along which automobile traffic is prohibited or greatly restricted and only public transit vehicles and pedestrians are permitted. It is recommended to operate community buses which pick up tourists and hotel guests together.

322 The development strategies for development of public transport services are as follows:

1) Improve facilities of Long Bien Bus Terminal
2) Operate community bus service inside the Ancient Quarter for tourists and hotel guests
3) Traffic management of private vehicles

3.2.3 Economic Development Strategies and Projects

(1) Commercial and business development

323 Since many transfer passengers will walk transfer facilities such as a sunken garden and pedestrian underground, commercial facilities for passengers will be developed. Commuters will be able to enjoy shopping and relaxing when they get through station facilities during commuting time. Commercial activities will be diversified which promote cultural and tourism development, while restricting industrial and wholesale activities which generate negative environmental impacts and heavy traffic. It is proposed that profits of commercial facilities will be charged a tax for preservation of the Ancient Quarter and Long Bien Bridge.

324 The development strategies for commercial and business development are as follows:

1) Develop a shopping mall inside stations and transfer facilities
2) Promote new modern commercial activities harmonized with the cultural image of Ancient Quarter
3) Promote tourism services with utilization of UMRT

(2) Revitalization of Local Socio-Economic Activities

325 It is a good opportunity to rehabilitate and revitalize traditional roadside commercial activities, when UMRT is operated and traffic volume is reduced. Image of “36 streets” will be rehabilitated, while openspace will be secured inside the urban block. At present, only one street is registered for a pedestrian street on weekend nights, pedestrian mall of all streets will be open for only pedestrian on weekend. So residents will be able to enjoy shopping from venders, eating at roadside, enjoy traditional festival, etc.

326 The development strategies for revitalization of local socio-economic activities are as follows:

1) Revitalize traditional commercial streets

2) Develop community openspace inside the urban blocks

3) Promote tourism events collaborated with utilization of UMRT

(3) Cultural Preservation and Promotion

327 Some of profits of UMRT operation will be reimbursed to improve infrastructure and buildings of the Ancient Quarter for "living preservation". While urban development activities will be promote along new railway out of the Ancient Quarter, traditional urban structure and buildings will be improved and preserved. Hang Dau Park will be utilized to conduct traditional events of the AQ.

328 The development strategies for cultural preservation and promotion are as follows:

1) Revitalize traditional architectures and townscape

2) Promote cultural events inside stations and parks

3.2.4 Living Condition Improvement Strategy and Projects

(1) Development and improvement of housings and infrastructure

329 At present, many urban infrastructure and residential blocks are deteriorated. When UMRT Line2 of subway will be constructed, underground infrastructure network will be rehabilitated. It is proposed to develop underground multi-purpose duct of water supply, drainage, heating, electricity, telecom, etc. While redeveloping residential blocks along UMRT Line1, population density will be reduced and stabilized to promote voluntary relocation to suburban areas along UMRT railways.

330 The development strategies for improvement of housing and infrastructure are as follows:

1) Stabilize population density to mitigate negative impacts on urban infrastructure, traffic flow, environment, etc.

2) Provide new residential facilities mixed with commercial and business area to utilize high-potential land efficiently

3) Promote rehabilitation activities of the Ancient Quarter

(2) Improvement of Amenity

331 As already mentioned in transport strategy, it is recommend formulating a pedestrian oriented district of the Ancient Quarter and Hoan Kiem Lake area. Though openspace is limited in the AQ, Hang Dau Park will be utilized as bus stops, park, and event space for citizens and station users. Advantage of traditional landscape of Long Bien Bridge and Ancient Quarter will be strengthened, so passengers of UMRT Line1 will be able to enjoy both traditional and modern landscapes.

332 The development strategies for improvement of amenity are as follows:

1) Formulate a pedestrian oriented district of the Ancient Quarter

2) Redevelop Hang Dau Park with multi-functions

3) Preserve traditional landscape of the Ancient Quarter and Long Bien Bridge harmonized with modern infrastructure and buildings

(3) Improvement of Security and Safety

333 There are no evacuation spaces inside the Ancient Quarter. UMRT station and Hang Dau Park will be disaster prevention facilities which store water, food, medical implements for emergency. One of the characteristics of the Ancient Quarter is multi-generational habitation, so events and activities for local community should be secured and promoted at stations and openspace which will be newly developed with UMRT.

334 The development strategies for improvement of security and safety are as follows:

1) Provide facilities for disaster prevention and community safety inside and around the station

2) Develop Hang Dau Park as an evacuation area

3) Develop cultural and tourism service facilities to improve social welfare and environment for multi-generation