4.6 PRELIMINARY COST ESTIMATE

4.6.1 Demarcation for Preliminary Cost Estimate

The Project Cost was estimated for the following 2 main parts.

1) **Underground Shopping Mall (USM)**, including;
   (1) Underground Shopping Mall (USM) at Ben Thanh Station Area (Civil, Architecture and Facilities)
   (2) Underground Shopping Mall (USM) beneath Le Loi Street (Civil, Architecture and Facilities)

2) Ben Thanh Central Station, including;
   (1) Ben Thanh Line 1 Station (Civil, Architecture and Facilities)
   ~ Overlapped with the Scope of Line 1 Project
   (2) Ben Thanh Line 2 Station (Civil Structure only, not including Architecture and Facilities)
   (3) Ben Thanh Line 4 Station (Civil Structure only, not including Architecture and Facilities)
   (4) Line 1 Tunnel beneath Le Loi Street (Civil Structure only)
   ~ Overlapped with the Scope of Line 1 Project

"1) Underground Shopping Mall (USM)" is the Study Area of the Project and the estimated Project Cost was utilized for Economical & Financial Analysis.

"2) Ben Thanh Central Station" is not included in the Economical & Financial Analysis of the Project, but its construction is closely related with the construction of USM.

The preliminary design of Line 1 Project including Ben Thanh Station and the underground tunnels was already completed, and their modifications were proposed for the Integrated Design, as described in Chapter 4 and other chapters of this Study.

Furthermore, the structures of Line 2 and Line 4 Ben Thanh Stations are also planned in the Study Area, and they shall be also coordinated.

Considering the above conditions, the Project Cost for Ben Thanh Central Station was estimated just as the "Reference", because the estimated cost had not been coordinated & adjusted with the budget of Line 1 Project. Those coordination & adjustments shall be commenced in the subsequent stage, after the HPC's official approval on this Study.

4.6.2 Summary of Cost Estimate, Underground Shopping Mall (USM)

The Project Cost and Construction Cost for Underground Shopping Mall (USM) were summarized in Table 4.34 and Table 4.35;

The cost allocation of Construction Cost between Public and Private was studied and decided in Financial Analysis, and the details were described in Chapter 7.

Table 4.34 Summary of Project Cost, Underground Shopping Mall (USM)

Exchange Rate: 1VND=0.0037JPY

Item		Cost		Equivalent Total Amount	
		Mil. JPY	Mil. VND	in Mil. JPY	in Mil. VND
A. ELIGIBLE PORTION					
Ⅰ) Procurement / Construction	**a)=d)+e)+f)**	**11,085**	**7,299,629**	**38,095**	**10,295,671**
I. Ben Thanh Central Station Area	**b)=b1+b2**	**4,634**	**1,736,352**	**11,059**	**2,988,841**
i) Civil Structures (Public)	b1	*731*	*1,699,603*	*7,020*	*1,897,171*
ii) Facility (Public)	b2	*3,903*	*36,749*	*4,039*	*1,091,670*
II. Le Loi Street Area	**c)=c1+c2**	**4,307**	**1,493,774**	**9,834**	**2,657,898**
i) Civil Structures (Public)	c1	*1,720*	*1,469,417*	*7,157*	*1,934,282*
ii) Facility (Public)	c2	*2,587*	*24,357*	*2,677*	*723,616*
Base cost for JICA financing	**d)=b)+c)**	**8,941**	**3,230,126**	**20,893**	**5,646,739**
Price escalation	**e)**	**1,136**	**3,405,900**	**13,738**	**3,712,896**
Physical contingency	**f)**	**1,008**	**663,603**	**3,464**	**936,036**
Ⅱ) Consulting services	**g)=g1 to g5**	**1,325**	**688,791**	**3,872**	**1,046,900**
1-1) Project Management Consultant	g1	222	145,992	762	205,992
1-2) Technical Design of USM (Public)	g2	443	291,984	1,523	411,714
1-3) Construction Supervision of USM (Public)	g3	333	218,988	1,143	308,988
2-1) Technical Design of USM (Private)	g4	187	18,187	254	68,728
2-2) Construction Supervision of USM (Private)	g5	140	13,640	190	51,478
Total (Ⅰ+Ⅱ)	**h)=a)+g)**	**12,410**	**7,988,420**	**41,967**	**11,342,571**

B. NON ELIGIBLE PORTION						
a	**Procurement / Construction**	**i)=l)+m)+n)**	**4,678**	**454,639**	**6,360**	**1,718,918**
	I. Ben Thanh Central Station Area	**j)=j1+j2**	**2,375**	**122,210**	**2,827**	**764,045**
	i) Architecture (Private)	j1	*2,081*	*119,444*	*2,523*	*681,876*
	ii) Facility (Private)	j2	*294*	*2,766*	*304*	82,169
	II. Le Loi Street Area	**k)=k1+k2**	**1,394**	**78,318**	**1,684**	**455,005**
	i) Architecture (Private)	k1	*1,199*	*76,485*	*1,482*	400,539
	ii) Facilities (Private)	k2	*195*	*1,833*	*202*	54,466
	Base cost	**l)=j)+k)**	**3,769**	**200,528**	**4,511**	**1,219,050**
	Price escalation	**m)**	**482**	**212,776**	**1,269**	**343,128**
	Physical contingency	**n)**	**427**	**41,335**	**580**	**156,740**
b	**Land Acquisition**	**o)=o1+o2+o3**	**0**	**0**	**0**	**0**
	Base cost	o1	0	0	0	0
	Price escalation	o2	0	0	0	0
	Physical contingency	o3	0	0	0	0
c	**Administration cost**	**p)**	**0**	**653,087**	**2,416**	**653,087**
d	**VAT**	**q)**	**0**	**1,306,176**	**4,833**	**1,306,176**
e	**Import Tax**	**r)**	**0**	**0**	**0**	**0**
Total (a+b+c+d+e)		**s)=i)+o)+p)+q)+r)**	**4,678**	**2,413,902**	**13,609**	**3,678,181**
TOTAL (A+B)		t)=h)+s)	**17,088**	**10,402,322**	**55,576**	**15,020,752**
C1.	**Interest during Construction (Public)**	u)=u1+u2	**255**	**0**	**255**	**68,919**
	Interest during Construction(Const. Public)	u1	255	0	255	68,919
	Interest during Construction (Consul. Public)	u2	0	0	0	0
C2.	**Interest during Construction (Private)**	v)	**4,002**	**0**	**4,002**	**1,081,622**
D.	**Commitment Charge**	w)	**506**	**0**	**506**	**136,757**
GRAND TOTAL (A+B+C1+C2+D)		x)=t)+u)+v)+w)	**21,851**	**10,402,322**	**60,339**	**16,308,050**
E.	**JICA finance portion (A+C1+D)**	y)=h)+u)+w)	**13,171**	**7,988,420**	**42,728**	**11,548,247**

Table 4.35 Summary of Construction Cost, Underground Shopping Mall (USM)

item	unit	Quantity	Unit Price		Cost		Total
			Foreign	Local	Foreign	Local	
			yen	VND	yen	VND	yen
I. Ben Thanh Central Station Area							
i) Civil Structures (Public)							
Preparation & General Items	LS	1	148,439,873	102,435,396,000	148,439,873	102,435,396,000	527,450,838
Traffic Diversion	LS	1	2,194,064	9,883,171,000	2,194,064	9,883,171,000	38,761,797
Removal of Road Pavement	m2	26,600	51	229,000	1,356,600	6,091,400,000	23,894,780
Construction of Diaphragm Walls	m2	16,093	5,124	19,347,000	82,460,532	311,351,271,000	1,234,460,235
Installation of King Posts	m	59,120	1,338	6,028,000	79,102,560	356,375,360,000	1,397,691,392
Concrete for Slabs	m3	67,440	5,126	10,100,000	345,697,440	681,144,000,000	2,865,930,240
Concrete for Walls & Columns	m3	3,527	7,742	9,538,000	27,306,034	33,640,526,000	151,775,980
Excavation	m3	270,802	95	429,000	25,726,190	116,174,058,000	455,570,205
Backfilling & Reinstatement of Road Surfaces	m2	22,500	814	3,667,000	18,315,000	82,507,500,000	323,592,750
Sub Total					**730,598,293**	**1,699,602,682,000**	**7,019,128,217**
ii) Facility (Public)							
Electrical System	m2	26,573	61,513	579,000	1,634,584,949	15,385,767,000	1,691,512,287
Air Conditioning & Ventilation System	m2	26,573	61,513	579,000	1,634,584,949	15,385,767,000	1,691,512,287
Water Supply & Drainage System	m2	26,573	17,224	162,000	457,693,352	4,304,826,000	473,621,208
Lift (Load 1,600kg)	set	1	9,842,103	92,656,000	9,842,103	92,656,000	10,184,930
Lift (Load 1,600kg)	set	1	9,842,103	92,656,000	9,842,103	92,656,000	10,184,930
Lift (Load 1,600kg)	set	1	9,842,103	92,656,000	9,842,103	92,656,000	10,184,930
Escalator (b=1,000mm, Rise: 5,500mm)	set	1	15,993,417	150,566,000	15,993,417	150,566,000	16,550,511
Escalator (b=1,000mm, Rise: 9,500mm)	set	1	36,907,886	347,460,000	36,907,886	347,460,000	38,193,488
Escalator (b=1,000mm, Rise: 11,500mm)	set	2	46,749,989	440,116,000	93,499,978	880,232,000	96,756,836
Sub Total					**3,902,790,840**	**36,732,586,000**	**4,038,701,407**
Total I. Ben Thanh Central Station Area					**4,633,389,133**	**1,736,335,268,000**	**11,057,829,624**

II. Le Loi Street Area							
i) Civil Structures (Public)							
Preparation & General Items	LS	1	126,733,010	77,895,183,000	126,733,010	77,895,183,000	414,945,187
Traffic Diversion	LS	1	3,841,274	17,303,034,000	3,841,274	17,303,034,000	67,862,500
Removal of Road Pavement	m2	19,700	51	229,000	1,004,700	4,511,300,000	17,696,510
Construction of Diaphragm Walls	m2	17,875	57,864	20,862,000	1,034,319,000	372,908,250,000	2,414,079,525
Construction of SMW & Jet Grouting (for USM)	m2	5,000	27,853	4,406,000	139,265,000	22,030,000,000	220,776,000
Installation of King Posts	m	44,000	1,301	5,860,000	57,244,000	257,840,000,000	1,011,252,000
Installation of Temporary Steel Deck Slabs	m2	1,014	33,056	2,015,000	33,518,784	2,043,210,000	41,078,661
Concrete for Slabs	m3	58,038	4,613	9,601,000	267,729,294	557,222,838,000	2,329,453,795
Concrete for Walls & Columns	m3	3,865	7,428	8,870,000	28,709,220	34,282,550,000	155,554,655
Excavation	m3	221,900	95	426,000	21,080,500	94,529,400,000	370,839,280
Backfilling & Reinstatement of Road Surfaces	m2	19,600	327	1,472,000	6,409,200	28,851,200,000	113,158,640
Sub Total					**1,719,853,982**	**1,469,416,965,000**	**7,156,696,753**
ii) Facility (Public)							
Electrical System	m2	18,444	61,513	579,000	1,134,545,772	10,679,076,000	1,174,058,353
Air Conditioning & Ventilation System	m2	18,444	61,513	579,000	1,134,545,772	10,679,076,000	1,174,058,353
Water Supply & Drainage System	m2	18,444	17,224	162,000	317,679,456	2,987,928,000	328,734,790
Sub Total					**2,586,771,000**	**24,346,080,000**	**2,676,851,496**
Total II. Le Loi Street Area					**4,306,624,982**	**1,493,763,045,000**	**9,833,548,249**

I. Ben Thanh Central Station Area							
i) Architecture (Private)							
(Interior Work) Passageway & Plaza	m2	11,352	93,900	6,725,000	1,065,952,800	76,342,200,000	1,348,418,940
(Interior Work) Store	m2	10,584	0	0	0	0	0
(Interior Work) Staircase	m2	537	3,318	14,945,000	1,781,766	8,025,465,000	31,475,987
(Interior Work) Toilet Room	m2	147	5,529	24,908,000	812,763	3,661,476,000	14,360,224
(Interior Work)Disaster Prevention Room	m2	260	1,659	7,472,000	431,340	1,942,720,000	7,619,404
(Interior Work) Mechanical Room	m2	2,934	553	2,491,000	1,622,502	7,308,594,000	28,664,300
(Interior Work) Electrical Room	m2	759	1,106	4,982,000	839,454	3,781,338,000	14,830,405
Atrium Work	m2	2,220	239,000	6,227,000	530,580,000	13,823,940,000	581,728,578
Entrance Work	m2	880	264,434	1,868,000	232,701,920	1,643,840,000	238,784,128
Elevator Shaft Work-4	set	3	18,564,322	373,613,000	55,692,966	1,120,839,000	59,840,070
Ventilation Tower Work-2	m2	480	396,859	3,736,000	190,492,320	1,793,280,000	197,127,456
Sub Total					**2,080,907,831**	**119,443,692,000**	**2,522,849,492**
ii) Facility (Private)							
Electrical System	m2	26,573	4,630	44,000	123,032,990	1,169,212,000	127,359,074
Air Conditioning & Ventilation System	m2	26,573	4,630	44,000	123,032,990	1,169,212,000	127,359,074
Water Supply & Drainage System	m2	26,573	1,296	12,000	34,438,608	318,876,000	35,618,449
Lift (Load 1,600kg)	set	1	740,803	6,974,000	740,803	6,974,000	766,607
Lift (Load 1,600kg)	set	1	740,803	6,974,000	740,803	6,974,000	766,607
Lift (Load 1,600kg)	set	1	740,803	6,974,000	740,803	6,974,000	766,607
Escalator(b=1,000mm, Rise: 5,500mm)	set	1	1,203,806	11,333,000	1,203,806	11,333,000	1,245,738
Escalator(b=1,000mm, Rise: 9,500mm)	set	1	2,778,013	26,153,000	2,778,013	26,153,000	2,874,779
Escalator(b=1,000mm, Rise: 11,500mm)	set	2	3,518,817	33,127,000	7,037,634	66,254,000	7,282,774
Sub Total					**293,746,450**	**2,781,962,000**	**304,039,709**
Total I. Ben Thanh Central Station Area					**2,374,654,281**	**122,225,654,000**	**2,826,889,201**

II. Le Loi Street Area							
i) Architecture (Private)							
(Interior Work) Passageway & Plaza	m2	8,829	93,900	6,725,000	829,043,100	59,375,025,000	1,048,730,693
(Interior Work) Store	m2	7,543	0	0	0	0	0
(Interior Work) Staircase	m2	460	3,318	14,945,000	1,526,280	6,874,700,000	26,962,670
(Interior Work) Toilet Room	m2	122	5,529	24,908,000	674,538	3,038,776,000	11,918,009
(Interior Work) Disaster Prevention Room	m2	0	0	0	0	0	0
(Interior Work) Mechanical Room	m2	1,276	553	2,491,000	705,628	3,178,516,000	12,466,137
(Interior Work) Electrical Room	m2	214	1,106	4,982,000	236,684	1,066,148,000	4,181,432
Entrance Work	m2	800	264,434	1,868,000	211,547,200	1,494,400,000	217,076,480
Ventilation Tower Work-2	m2	390	396,859	3,736,000	154,775,010	1,457,040,000	160,166,058
Sub Total					**1,198,508,440**	**76,484,605,000**	**1,481,501,479**
ii) Facilities (Private)							
Electrical System	m2	18,444	4,630	44,000	85,395,720	811,536,000	88,398,403
Air Conditioning & Ventilation System	m2	18,444	4,630	44,000	85,395,720	811,536,000	88,398,403
Water Supply & Drainage System	m2	18,444	1,296	12,000	23,903,424	221,328,000	24,722,338
Sub Total					**194,694,864**	**1,844,400,000**	**201,519,144**
Total II. Le Loi Street Area					**1,393,203,304**	**78,329,005,000**	**1,683,020,623**

4.6.3 Summary of Cost Estimate, Ben Thanh Central Station

The Project Cost and Construction Cost for Ben Thanh Central Station were summarized in Table 4.36 and Table 4.37, as the reference;
Because the budget procurements for Line 2 and Line 4 Projects have not been defined, the costs for those lines were categorized in "B. Non-Eligible Portion", as shown in Table 4.34.

Table 4.36 Summary of Project Cost, Ben Thanh Central Station

Exchange Rate: 1VND=0.0037JPY

Item		Cost		Equivalent Total Amount	
		Mil. JPY	Mil. VND	in Mil. JPY	in Mil. VND
A. ELIGIBLE PORTION					
Ⅰ) Procurement / Construction	a)=d)+e)+f)	**6,179**	**4,864,698**	**24,178**	**6,534,698**
(1) Line 1 Station	b)=b1+b2+b3	**2,936**	**1,550,868**	**8,674**	**2,344,382**
i) Civil Structures	b1	*668*	*1,451,905*	*6,040*	*1,632,446*
ii) Architecture	b2	*517*	*81,601*	*819*	*221,331*
iii) Facility	b3	*1,751*	*17,362*	*1,815*	*490,605*
(2) Line 1Tunnel beneath Le Loi Street (Civil)	c)	**2,258**	**1,199,595**	**6,697**	**1,809,865**
Base cost for JICA financing	d)=b)+c)	**5,194**	**2,750,463**	**15,371**	**4,154,247**
Price escalation	e)	**424**	**1,671,988**	**6,611**	**1,786,582**
Physical contingency	f)	**561**	**442,247**	**2,197**	**593,868**
Ⅱ) Consulting services (Line 1 Only)	g)=g1+g2	**947**	**170,945**	**1,579**	**426,891**
(1) Integrated Design of BT Station	g1	677	27,921	780	210,894
(2) Additional Task for C/S	g2	270	143,024	799	215,997
Total (Ⅰ+Ⅱ)	h)=a)+g)	**7,126**	**5,035,643**	**25,757**	**6,961,589**
B. NON ELIGIBLE PORTION					
a Procurement / Construction	i)=l)+m)+n)	**2,444**	**3,902,436**	**16,883**	**4,562,977**
(1) Line 2 Station (Civil Only)	j)	**1,770**	**1,172,346**	**6,108**	**1,650,724**
(2) Line 4 Station (Civil Only)	k)	**266**	**775,142**	**3,134**	**847,034**
Base cost	l)=j)+k)	**2,036**	**1,947,488**	**9,242**	**2,497,758**
Price escalation	m)	**186**	**1,600,181**	**6,107**	**1,650,451**

	Physical contingency	n)	**222**	**354,767**	**1,535**	**414,767**
b	**Land Acquisition**	o)	**0**	**0**	**0**	**0**
c	**Administration cost (Line 1, 2 & 4)**	p)	**0**	**576,214**	**2,132**	**576,214**
d	**VAT**	q)=q1+q2	**0**	**1,152,432**	**4,264**	**1,152,432**
	(1) VAT for Construction Cost (Line 1, 2 & 4)	q1	0	1,109,743	4,106	1,109,743
	(2) VAT for Consulting Service (Line 1 Only)	q2	0	42,689	158	42,689
e	**Import Tax**	r)	**0**	**0**	**0**	**0**
Total (a+b+c+d+e)		s)=i)+o)+p)+q)+r)	**2,444**	**5,631,082**	**23,279**	**6,291,623**
TOTAL (A+B)		t)=h)+s)	**9,570**	**10,666,725**	**49,036**	**13,253,212**
C1. Interest during Construction (Eligible Portion)		u)=u1+u2	**190**	**0**	**190**	**51,351**
	Interest during Construction (Const. Line 1)	u1	190	0	190	51,351
	Interest during Construction (Consul. Line 1)	u2	0	0	0	0
C2. Interest during Construction (Non Eligible Portion)		v)=v1+v2	**116**	**0**	**116**	**31,351**
	Interest during Construction (Const. Line2)	v1	72	0	72	19,459
	Interest during Construction (Const. Line 4)	v2	44	0	44	11,892
D1. Commitment Charge (Line 1)		w)	**234**	**0**	**234**	**63,243**
D2. Commitment Charge (Line 2 & Line 4)		x)	**167**	**0**	**167**	**45,135**
GRAND TOTAL (A+B+C1+C2+D1+D2)		y)=t)+u)+v)+w)+x)	**10,277**	**10,666,725**	**49,743**	**13,444,292**
E. JICA finance portion (A+C1+D1)		z)=h)+u)+w)	**7,550**	**5,035,643**	**26,181**	**7,076,183**

Note: In the above Project Cost, the original budget for "Line 1 Project" is not considered.

Table 4.37 Summary of Construction Cost, Ben Thanh Central Station

item	unit	Quantity	Unit Price		Cost		Total
			Foreign	Local	Foreign	Local	
			yen	VND	yen	VND	yen
A. Line 1 Station and Tunnels, (1) Line 1 Station							
i) Civil Structures							
Preparation & General Items	LS	1	63,224,732	74,423,610,000	63,224,732	74,423,610,000	338,592,089
Traffic Diversion	LS	1	2,270,358	10,226,838,000	2,270,358	10,226,838,000	40,109,659
Removal of Road Pavement	m2	12,150	51	229,000	619,650	2,782,350,000	10,914,345
Construction of Diaphragm Walls	m2	37,033	5,083	17,421,000	188,238,739	645,151,893,000	2,575,300,743
Installation of King Posts	m	21,150	1,319	5,942,000	27,896,850	125,673,300,000	492,888,060
Installation of Temporary Steel Deck Slabs	m2	3,500	33,056	2,015,000	115,696,000	7,052,500,000	141,790,250
Excavation	m3	204,946	96	435,000	19,674,816	89,151,510,000	349,535,403
Support System for Diaphragm Walls	ton	4,304	8,624	38,846,000	37,117,696	167,193,184,000	655,732,477
Concrete for Slabs	m3	24,961	3,952	8,861,000	98,645,872	221,179,421,000	917,009,730
Concrete for Walls & Columns	m3	5,026	9,794	9,863,000	49,224,644	49,571,438,000	232,638,965
Entrance	m	205	291,547	160,592,000	59,767,135	32,921,360,000	181,576,167
Backfilling & Reinstatement of Road Surfaces	m2	11,300	522	2,352,000	5,898,600	26,577,600,000	104,235,720
Sub Total i)					**668,275,092**	**1,451,905,004,000**	**6,040,323,607**
ii) Architecture							
(Interior Work) Paid Concourse & Platform	m2	2,934	47,033	3,736,000	137,994,822	10,961,424,000	178,552,091
(Interior Work) Free Concourse	m2	3,065	47,033	3,736,000	144,156,145	11,450,840,000	186,524,253
(Interior Work) Temporary Entrance	m2	1,167	47,033	3,736,000	54,887,511	4,359,912,000	71,019,185
(Interior Work) Station Office	m2	2,863	1,659	7,472,000	4,749,717	21,392,336,000	83,901,360
(Interior Work) Staircase	m2	245	3,318	14,945,000	812,910	3,661,525,000	14,360,553
(Interior Work) Toilet Room	m2	200	5,529	24,908,000	1,105,800	4,981,600,000	19,537,720
(Interior Work) Mechanical Room	m2	2,894	553	2,491,000	1,600,382	7,208,954,000	28,273,512

(Interior Work) Electrical Room	m2	2,397	1,106	4,982,000	2,651,082	11,941,854,000	46,835,942
Atrium Work	m2	320	239,000	6,227,000	76,480,000	1,992,640,000	83,852,768
Entrance Work	m2	154	264,434	1,868,000	40,722,836	287,672,000	41,787,222
Elevator Shaft Work -1	set	1	13,283,928	373,613,000	13,283,928	373,613,000	14,666,296
Ventilation Tower Work-1	set	2	13,311,575	498,151,000	26,623,150	996,302,000	30,309,467
Cooling Tower	set	1	12,323,245	1,992,602,000	12,323,245	1,992,602,000	19,695,872
Sub Total ii)					**517,391,528**	**81,601,274,000**	**819,316,242**
iii) Facilities							
Electrical System	m2	15,765	18,520	174,000	291,967,800	2,743,110,000	302,117,307
Environmental Control System	m2	17,265	52,915	498,000	913,577,475	8,597,970,000	945,389,964
Tunnel Ventilation System	LS	1	302,938,459	2,864,365,000	302,938,459	2,864,365,000	313,536,610
Pumping System	LS	1	27,777,365	249,075,000	27,777,365	249,075,000	28,698,943
Fire Protection System	m2	15,765	8,611	137,000	135,752,415	2,159,805,000	143,743,694
Lift (Load 1,600kg)	set	1	10,582,906	99,630,000	10,582,906	99,630,000	10,951,537
Escalator (b=1,000mm, Rise: 5,500mm)	set	4	17,197,223	161,899,000	68,788,892	647,596,000	71,184,997
Sub Total iii)					**1,751,385,312**	**17,361,551,000**	**1,815,623,051**
Total A (1)					**2,937,051,932**	**1,550,867,829,000**	**8,675,262,899**

A. Line 1 Station and Tunnels, (2) Line 1Tunnel beneath Le Loi Street							
Preparation & General Items	LS	1	73,531,697	53,123,101,000	73,531,697	53,123,101,000	270,087,171
Traffic Diversion	LS	1	3,694,140	16,640,271,000	3,694,140	16,640,271,000	65,263,143
Removal of Road Pavement	m2	5,000	48	215,000	240,000	1,075,000,000	4,217,500
Construction of Diaphragm Walls	m2	36,500	14,744	16,781,000	538,156,000	612,506,500,000	2,804,430,050
Installation of King Posts	m	9,000	1,260	5,677,000	11,340,000	51,093,000,000	200,384,100
Installation of Temporary Steel Deck Slabs	m2	3,420	31,096	1,895,000	106,348,320	6,480,900,000	130,327,650
Excavation	m3	115,500	91	409,000	10,510,500	47,239,500,000	185,296,650
Support System for Diaphragm Walls	ton	2,426	8,112	36,542,000	19,675,656	88,632,621,000	347,616,354
Concrete for Slabs	m3	15,635	4,416	9,093,000	69,041,952	142,164,509,000	595,050,635
Concrete for Walls & Columns	m3	11,385	9,804	8,662,000	111,620,501	98,618,602,000	476,509,328
Demolition of Diaphragm Walls of Line 1	m2	4,600	283,483	8,302,000	1,304,021,800	38,189,200,000	1,445,321,840
Backfilling & Reinstatement of Road Surfaces	m2	5,390	1,805	8,132,000	9,728,950	43,831,480,000	171,905,426
Total A (2)					**2,257,909,516**	**1,199,594,684,000**	**6,696,409,847**
B. Line 2 Station (Civil Only)							
Removal of Road Pavement	m2	5,100	51	229,000	260,100	1,167,900,000	4,581,330
Construction of Diaphragm Walls	m2	33,519	46,045	17,822,000	1,543,386,960	597,377,400,000	3,753,683,340
Installation of King Posts	m	9,180	1,325	5,969,000	12,163,500	54,795,420,000	214,906,554
Excavation	m3	189,133	92	415,000	17,400,236	78,490,195,000	307,813,958
Support System for Diaphragm Walls	ton	3,972	8,624	38,846,000	34,252,803	154,288,543,000	605,120,412
Concrete for Slabs	m3	22,193	3,750	9,026,000	83,223,750	200,314,018,000	824,385,617
Concrete for Walls & Columns	m3	7,466	10,029	9,127,000	74,878,520	68,144,007,000	327,011,346
Backfilling & Reinstatement of Road Surfaces	m2	5,100	773	3,484,000	3,942,300	17,768,400,000	69,685,380
Total B					**1,769,508,169**	**1,172,345,883,000**	**6,107,187,936**

C. Line 4 Station (Civil Only)							
Removal of Road Pavement	m2	5,500	51	229,000	280,500	1,259,500,000	4,940,650
Construction of Diaphragm Walls	m2	16,093	4,479	15,900,000	72,078,308	255,870,750,000	1,018,800,083
Installation of King Posts	ton	513	69,866	314,714,000	35,841,258	161,448,282,000	633,199,901
Excavation	m3	139,364	93	418,000	12,960,852	58,254,152,000	228,501,214
Concrete for Slabs	m3	25,449	3,796	9,781,000	96,602,886	248,912,757,000	1,017,580,087
Concrete for Walls & Columns	m3	4,433	10,385	9,209,000	46,039,821	40,826,260,000	197,096,983
Demolition of Walls (between B2 and B3 Floor Slabs, Line 2)	m3	1,188	350	1,578,000	415,730	1,874,348,000	7,350,818
Backfilling & Reinstatement of Road Surfaces	m2	3,600	413	1,860,000	1,486,800	6,696,000,000	26,262,000
Total C					**265,706,154**	**775,142,049,000**	**3,133,731,735**

4.6.4 Basis and Conditions for Preliminary Cost Estimate

The basis and conditions for Preliminary Cost Estimate are listed as follows;

< Basis and Conditions for Preliminary Cost Estimate >

(1) Base Year & Month for Cost Estimate: Oct. 2011

(2) Exchange Rate: 1VND = 0.0037JPY

1USD = 77.2 JPY = 20,628VND

(3) Price Escalation Rate:

Foreign Currency Component (FCC), Japanese Yen:	1.60%
Local Currency Component (LCC), Vietnamese Dong:	9.91%

(4) Physical Contingency

(Construction)	10%
(Consultant)	5%

(5) Interest during Construction

<Public>	(Construction)*1:	0.20%
	(Consultant)*1:	0.01%
<Private>	(Construction):	15.00%
	(Consultant):	0.01%

(6) Tax and VAT:

VAT for FCC & LCC:	10%
Tax on Consulting Services:	15%

(7) Rate of Commitment Charges*1: 0.1%

(8) Reference:

Cost Estimate Report, Preliminary Design of HCMC Urban Railway Construction Project, Ben Thanh - Suoi Tien Section (Line 1), Revision -3, May 14, 2010 ~ provided by MAUR

* The Project Cost of "Line 1 Project" was estimated in the Reference, including the Study Area of the Project (Ben Thanh Central Station and Line 1 Tunnel between Ben Thanh Station and Opera House Station).
The estimated Project Cost was approved by HPC's Decision No.4480/QD-UBND dated Sep. 21, 2011.

Note: *1 Rates in case of ODA Loan

Generally, (8) Reference was utilized as the basis of the Preliminary Cost Estimate of this Study. The Study Team reviewed the Reference in detail, and updated the basic prices (material, labor and equipment operation prices) etc. as of Oct. 2011.

The rates for items (2) to (7), Exchange Rate, Price Escalation Rate for FCC, Physical Contingency Rate, Interest during Construction, Tax & VAT and Rate of Commitment Charge were defined based on the values applied in "JICA FF Mission for HCMC MRT Line 1 Project held on October 2011". Price Escalation Rate for LCC was defined with the similar method with the "Reference", based on the fluctuation of two price indices in the latest ten years in Vietnam, as described in Sub Clause 4.6.6.
The JICA format of Project Cost Estimate was also referred.

Cost allocation of Construction Cost of USM between Public and Private was summarized as shown in Table 4.38, based on Public-Private Division of Roles described in Chapter 6.
Cost allocation of Facility for Private was decided as 7% which will derive approx. 20% of VND based Equity IRR in the base case (Loan funded by Vietnamese Domestic Bank, with; Loan Period to Maturity: 15years, Grace Period: 5 years, Interest Rate: 15%) in the economic (financial?) analysis described in in Chapter 7.

Table 4.38 Construction Cost Allocation of USM between Public and Private

Sector	Work Category	Work Items
Public Portion	Civil Structures	Preparatory & Temporary Works
		Traffic Diversion
		Retaining Walls
		Excavation
		USM Structures
		Backfilling
Private Potion	Architecture	Interior work
		Atrium work
		Entrance & Staircases
		Elevator Shaft
		Ventilation & Cooling Tower
Public/Private Shared Portion	Facility	Electrical System
		Air Conditioning & Ventilation System
		Water Supply & Drainage System
		Lifts & Escalators

4.6.5 Construction Cost

1) Composition of Construction Cost

The Construction Cost consists of the items in Figure 4.139 and Figure 4.140. Generally, those compositions were similar with the Reference, "Cost Estimate Report, Preliminary Design of HCMC Urban Railway Construction Project, Ben Thanh - Suoi Tien Section (Line 1), Revision -3, May 14, 2010".

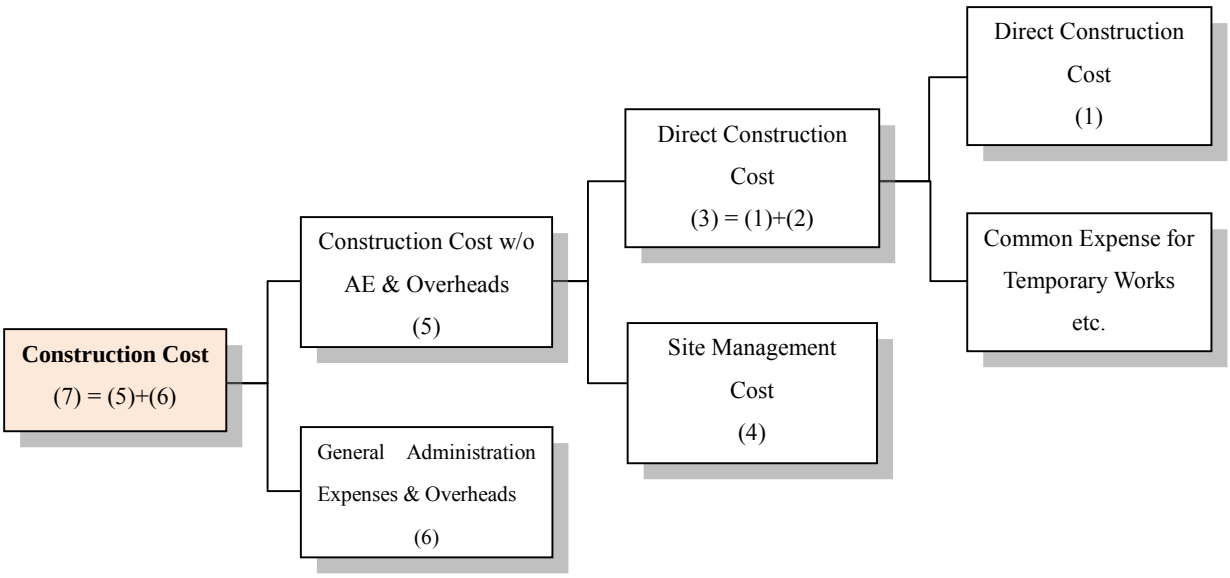


Figure 4.139 Components of Construction Cost (1/2)

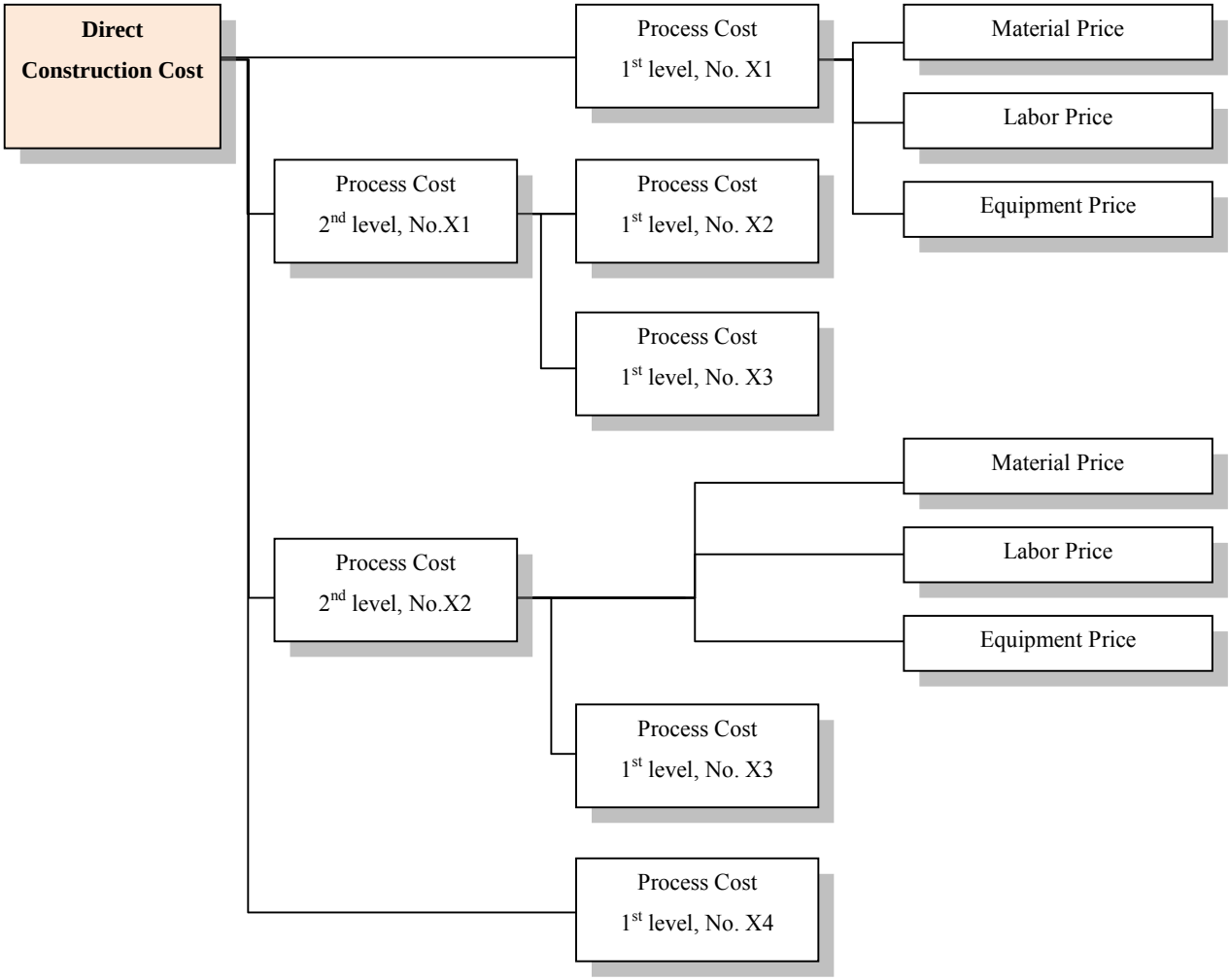


Figure 4.140 Components of Construction Cost (2/2)

(1) Direct Construction Cost

The calculation method of Direct Construction Cost was briefly described in the following Table 4.38.

Table 4.38 Calculation Method of Direct Construction Cost

<Civil Works>
i) General The Construction Costs are calculated the quantities of major construction works multiplied by the unit prices. The quantities of major construction works were calculated in the Study, and unit prices were set up based on the norms announced by Ministry of Construction with the basic prices (material, labor, equipment and fuel as of October 2011), referring to the "Reference". For several construction works, the unit prices were assumed with referring to the supplier's quotations or the data of the similar projects etc. ii) Material Prices Prices of major materials are collected from suppliers in Ho Chi Minh City, in general. For several materials not available in Vietnam, the import prices from Japan were surveyed. For some auxiliary materials for which the quotation collection was not available, the construction unit price book announced by Department of construction of Ho Chi Minh City was applied. iii) Labor Prices Labor cost (for Vietnamese) was calculated base on Decrees "No. 205/2004/ND-CP dated December 14, 2004", "No. 98/2009/ND-CP dated October 30, 2009" and Minimum Monthly Basic Wage for Vietnamese workers (2,000,000 VND/month) defined by "Decree No.70/2011/ND-CP dated 22/8/2011". Salary of Foreign Expatriate was based on Japanese Norm. iv) Equipment Prices Equipment cost: was calculated base on Circular No. 06 /2010/TT-BXD dated May 26, 2007 of the Ministry of Construction guiding method for making Equipment unit price on construction of works and fuel price on October 2011 and labor salary calculate above.
<Architectural Works>
The construction cost for Architectural Works was estimated by total floor area (m2) multiplied by the unit prices estimated for individual purposes including Passageway & Plaza, Store, Disaster Prevention Room, Mechanical Room, etc. The costs for the specific structures like Ventilation Tower, Entrance and Atrium were individually calculated.

<Facilities>
Based on the cost of the Reference, 3 major items of facilities for USM and Stations, "Electrical System", "Air Conditioning & Ventilation System" and "Water Supply & Drainage System" were defined and their unit prices per m2 of floor area were estimated. The costs for the lifts (elevators) and escalators were individually calculated.

(2) Indirect Construction Cost

The following indirect costs were estimated as percentage multiplied to the construction costs generally based on the Japanese standards for construction cost estimate.

- Common Expense for Temporary Works
- Site Management Cost
- General Administration Expenses & Overheads

(3) Items estimated in FCC and LCC

The major items which costs were estimated in Foreign Currency Component (FCC, in Japanese Yen) and in Local Currency Component (LCC, in Vietnamese Dong) were summarized in the following:

< Items estimated in FCC (Foreign Currency Components in Japanese Yen) >		
1) Construction Cost:	-	Material, Labor and Equipment to be imported
	-	General Administration Expenses & Overheads in Construction Cost
2) Interest during Construction for Construction & Consulting Services		
3) Commitment Charge		
< Items estimated in LCC (Local Currency Components in Vietnamese Dong) >		
1) Construction Cost:	-	Material, Labor and Equipment to be procured in Vietnam
2) Land Acquisition Cost		
3) Administration Cost		
4) VAT		

The ratios of cost of FCC and LCC were summarized in Table 4.39 in the following. The percentages of the Procurement eligible for STEP requirements was also described as the reference.

Table 4.39 Summary of Cost of FCC and LCC

	Cost			STEP
	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Total in mil. JPY	Eligible Percentage
<1> Underground Shopping Mall				
I. Ben Thanh Central Station Area	**7,009 (50.5%)**	**1,858,561 (49.5%)**	**13,886**	**-**
i) Civil Structures (Public)	731 (10.4%)	1,699,603 (89.6%)	7,020	24.0%
ii) Architecture (Public)	0	0	0	
iii) Architecture (Private)	2,081 (82.5%)	119,444 (17.5%)	2,523	-
iv-1) Facility (Public)	2,728 (96.6%)	25,684 (3.4%)	2,823	-
iv-2) Facility (Private)	1,469 (96.6%)	13,830 (3.4%)	1,520	-
II. Le Loi Street Area	**5,701 (49.5%)**	**1,572,093 (50.5%)**	**11,518**	**-**
i) Civil Structures (Public)	1,720 (24.0%)	1,469,417 (76.0%)	7,157	24.0%
ii) Architecture (Public)	0	0	0	
iii) Architecture (Private)	1,199 (80.9%)	76,485 (19.1%)	1,482	-
iv-1) Facility (Public)	1,808 (96.6%)	17,024 (3.4%)	1,871	-
iv-2) Facility (Private)	974 (96.6%)	9,167 (3.4%)	1,008	-
TOTAL				-

4.6.6 Price Escalation and Physical Contingency

1) Price Escalation

As described in Section 4.6.4, the applied price escalation rate for FCC was defined as the value applied in "JICA FF Mission for HCMC MRT Line 1 Project held on October 2011", and the rate for LCC was defined based on the fluctuation of two price indices in the latest ten years in Vietnam as shown in the following Table 4.40.

Foreign Currency Component (FCC), Japanese Yen: 1.60%

Local Currency Component (LCC), Vietnamese Dong: 9.91%

Table 4.40 Fluctuation of Vietnamese Price Indices

Year	Consumer Price index		Corporate Goods & Services Price Index	
	Value of Index*	Fluctuation from Previous Year	Value of Index*	Fluctuation from Previous Year
2002	104.30	-	103.90	-
2003	107.60	103.16%	106.20	102.21%
2004	115.90	107.70%	114.40	107.72%
2005	125.50	108.30%	119.50	104.46%
2006	134.90	107.50%	124.50	104.18%
2007	146.30	108.50%	133.10	106.91%
2008	179.60	122.80%	162.10	121.79%
2009	192.00	106.90%	174.10	107.40%
2010	209.64	109.20%	196.10	112.64%
2011	248.59	118.58%	232.24	118.43%
Average:	-	**110.29%**	-	**109.53%**
Average Rate above:		**109.91%**		

Source: Web Site of General Statistics Office of Vietnam
(http://www.gso.gov.vn/default_en.aspx?tabid=491)

In the Reference, the rate for LCC was defined as “10.6% per year” based on the five years average rate (2004 to 2008) of “Producers price index of industrial products in Vietnam” and “Consumer price index by month of the year in Vietnam”.
Considering the current inflation in Vietnam, the applied rate in this time, 9.91% is not too high.
Besides, the estimated amount of price escalation reached relatively high level, about 100% of the construction cost estimated as of October 2011. This is because of the long duration necessary prior to the commencement of the construction stage. The commencement of the construction was assumed at Year 2017.
In the further cost estimate in the subsequent stages, the rates for Price Escalation shall be reviewed and updated.

2) Physical Contingency

As described in Section 4.6.4, the applied rates of price escalation were defined based on the values applied in “JICA FF Mission for HCMC MRT Line 1 Project held on October 2011”, as follows:

Physical Contingency	(Construction)	10%
	(Consultant)	5%

4.6.7 Consulting Service Fee

The assumed Consulting Services in the Project Cost were summarized in the followings:

<1> Consulting Service for Underground Shopping Mall (USM)

<Public Sector>

1) Project Management Consultant, including
   - Coordination of design and construction between Public and Private
   - Project Management and Advisory Services for the Employer
2) Technical Design of USM (Public)
3) Construction Supervision of USM (Public)

<Private Sector>

1) Technical Design of USM (Private)
2) Construction Supervision of USM (Private)

<2> Consulting Service for Ben Thanh Central Station

1) Integrated Design of Ben Thanh Central Station
   - The Stations for Line 1, Line 2 & Line 4 and also USM will be coordinated and adjusted in this Integrated Design which will be funded from the budget of Line 1 Project.
2) Additional Task for Construction Supervision of Ben Thanh Line 1 Station
   - Because the Integrated Design of Ben Thanh Line 1 Station will be completed prior to the Tendering Stage of Line 1 Underground Section, the Contract Type of Line 1 Underground Section will be also modified from “Design & Build” to “Design, Bid & Build”. Consequently, the construction supervision works will be conducted by the Engineer, not by the Contractor.

4.6.8 Other Costs

The brief of other costs in Project Cost (shown in Table 4.32 and Table 4.34) are explained in the following:

Table 4.41 Brief of Other Costs

Cost Item	Description
1) Interest during Construction	This item was estimated based on the balances of "Construction Cost" and "Consulting Service Fee", referring to the calculation method in JICA format of Project Cost Estimate with the rates applied in JICA FF Mission for Line 1 Project held in Oct. 2011.
2) Commitment Charge	This item was estimated referring to the calculation method in JICA format of Project Cost Estimate with the rates applied in JICA FF Mission for Line 1 Project held in Oct. 2011.
3) Counterpart Funds	
(1) Land Acquisition	Because no additional land acquisition is required for USM and also related Metro Lines, land acquisition cost was not necessary for the estimation of the Project Cost.
(2) Administration Cost	This item was estimated referring to the calculation method in JICA format of Project Cost Estimate with the rates applied in JICA FF Mission for Line 1 Project held in Oct. 2011.
(3) VAT for Construction Cost and Consulting Service	This item was estimated based on "Construction Costs" and "Consulting Service Fee" with their "Price Escalation" and "Physical Contingency", referring to the calculation method in JICA format of Project Cost Estimate with the rates applied in JICA FF Mission for Line 1 Project held in Oct. 2011.

CHAPTER 5 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

5.1 LEGAL AND INSTITUTIONAL FRAMEWORK ON ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

5.1.1 Laws and regulations on environmental protection

1) Environmental policy and national plans

In Vietnam, the Law on Environmental Protection (LEP) is the umbrella law and the most comprehensive legal base relating to environmental protection. Its first version was approved in 1993, and was modified, amended in 2005 before became effective since July 2006.

In addition, the Government of Vietnam (GOV) has issued Decree 80/2006/ND-CP, and then Decree 21/2008/ND-CP as the instructive guidance for implementation of LEP. Furthermore, as shown in Table 5.1 - 5.6, many regulations on environmental protection have been issues, such as Circular 26/2011/TT-BTNMT that states principal issues on Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), etc.

Table 5.1 Main laws and regulations on environmental protection

Issuance date	Code/Number	Title
2002/06/26	Decision No. 82/2002/QD-TTg	Establishment, Mandate and Operations of the Vietnam Environment Protection Fund
2002/07/16	Decision No. 53/2002/QD-BKHCNMT	Promulgating the Organization and Operation Charter of Vietnam Environmental Protection Fund (expired)
2002/08/09	Decision No. 62/2002/QD-BKHCNMT	Promulgating the Regulation on the Protection of the Environment in Industrial Parks
2002/11/11	Decree No. 91/2002/ND-CP	Prescribing the Functions, Tasks, Powers and Organizational Structure of the Ministry of Natural Resources and Environment
2003/04/02	Decision No. 45/QD-TTg	Establishment of provincial Department of Natural Resources and Environment.
2003/05/08	Decision No. 600/2003/QD-BTNMT	Specifying mandates, responsibilities; powers and organizational structure of the Department of Water Resources Management
2003/06/23	Decision No. 782/2003/QD-BTNMT	Promulgating the Charter on organization and operation of Vietnam Environment Protection Fund
2005/12/12	**Order No. 29/2005/L-CTN**	**Law on Environmental Protection** (Note *)
2005/12/12	Decision No. 328/2005/QD-TTg	Approving the state plan on environmental pollution control till 2010
2006/06/23	Decree No. 65/2006/ND-CP	Organization and Operation of the Natural Resources and Environment Inspectorate
2006/08/09	**Decree No. 80/2006/ND-CP**	**Providing detailed guidelines for Implementation of a Number of Articles of the Law on Environmental Protection** (Note *)
2006/08/09	Decree No.	Sanctioning of Administrative Violation in the Domain of

Issuance date	Code/Number	Title
	81/2006/ND-CP	Environmental Protection
2006/11/22	Decree No. 140/2006/ND-CP	Providing for the Environmental Protection at Stages of Elaboration, Evaluation, Approval and Implementation of Development Strategies, Planning, Plans, Programs and Projects
2007/08/27	Circular No. 06/TT-BKH	On environmental protection in appraising and approving programs and projects
2008/02/28	**Decree No. 21/2008/ND-CP**	**Amending and supplementing a number of articles of the Government's Decree No. 80/2006/ND-CP of August 9, 2006, detailing and guiding the implementation of a number of articles of the Law on Environmental Protection** (Note *)
2008/07/15	Circular No. 03/2008/TTLT-BTNMT - BNV	Guiding the functions, tasks, powers and organizations of the natural resources and environment related specialized units under the people's committees at all levels
2008/09/15	Decree No. 102/2008/ND-CP	On the collection, management, exploitation and use of natural resources and environmental data
2008/09/18	Circular No. 04/2008/TT-BTNMT	Guiding the formulation and approval or certification of environmental protection schemes and the examination and inspection of implementation of environmental protection schemes
2008/09/30	Decision No. 132/2008/QD-TTg	On function, tasks, responsibilities, and organizational structure of Vietnam Environmental Protection Administration under MONRE
2010/03/18	Circular No. 08/2010/TT-BTNMT	Stipulation on the preparation of national environmental report, sectorial environmental situation report, and provincial environmental status report
2010/04/06	Circular No. 09/2010/TT-BGTVT	Stipulation on environmental protection for transportation infrastructure development projects
2011/04/18	**Decree No. 29/2011/ND-CP**	**Stipulation on strategic environmental assessment (SEA), environmental impact assessment (EIA), and environmental protection commitment (EPC)** (Note *)
2011/07/18	**Circular No. 26/2011/TT-BTNMT**	**Detailed stipulation on several articles of Decree No. 29/2011/ND-CP** (Note *)

Note : Important law or regulation relating to environmental impact assessment (EIA) of this Project*

Table 5.2 Law and regulations relating to water resources

Issuance date	Code/Number	Title
1998/05/20	TSRVN NA No. 08/1998/QH10	**Law on Water Resources**
2004/07/27	Decree No. 149/2004/ND-CP	Issuance of Permits for Water Resource Exploration, Exploitation and Use, or for Discharge of Wastewater into Water Source
2005/06/24	Circular No. 02/2005/TT-BTNMT	Guiding the Implementation of the Government's Decree No.149/2004/ND-CP of July 27, 2004, on the Issuance of Permits for Water Resource Exploration, Exploitation and Use, or for Discharge of Wastewater into Water Source

Table 5.3 Law and regulations relating to sewage and drainage

Issuance date	Code/Number	Title
1999/07/16	Decision No. 155/1999/QD-TTg	Issuing Regulation of hazardous waste management
2003/06/13	Decree No. 67/2003/ND-CP	Environmental protection fees imposed on wastewater
2004/07/27	Decree No. 149/2004/ND-CP	Regulating the probing, extraction and use of water resources, and discharge of wastewater to water sources
2005/06/24	Circular No. 02/2005/TT-BTNMT	Guiding implementation of Decree 149/2004/ND-CP
2007/01/08	Decree No. 04/2007/ND-CP	Amending and supplementing a number of articles of Decree 67/2003/ND-CP dated 13/06/2003 on environmental protection fees imposed on wastewater
2007/05/28	Decree No. 88/2007/ND-CP	Wastewater Disposal for Urban Areas and Industrial Zones

Table 5.4 Law and regulations on solid waste

Issuance date	Code/Number	Title
1999/07/10	Decision No. 152/1999/QD-TTg	Ratifying the Strategy For Management of Solid Waste in Vietnamese Cities and Industrial Parks till the Year 2020
2005/06/21	Directive 23/2005/CT-TTg	Enhancing the Management of Solid Wastes in Urban Centers and Industrial Parks
2006/12/26	Decision No. 23/2006/QD-BTNMT	Issuance of list of hazardous wastes
2007/04/09	Decree No. 59/2007/ND-CP	Solid Waste Management (including management of hazardous wastes)
2007/12/31	Circular No. 13/2007/TT-BXD	Guiding a Number of Articles of the Government's Decree No. 59/2007/ND-CP of April 9, 2007, on Solid Waste Management
2008/10/06	Decision No. 1440/2008/QD-TTg	Approving the planning on construction of solid waste treatment facilities in three northern, central and southern key economic regions up to 2020

Table 5.5 Law and regulations relating forest, biodiversity, natural environment

Issuance date	Code/Number	Title
2004/12/14	No. 29/2004/Q11	Law on Forest Protection and Development
2006/03/03	Decree No.23/2006/ND-CP	Implementation of the Law on Forest Protection and Development
2009/07/01	No. 20/2008/QH12	**Law on Biodiversity** (came into effect on July 1, 2009, stipulates biodiversity conservation and sustainable development)

Table 5.6 Law and regulations relating to climate change

Issuance date	Code/Number	Title
2007/04/06	Decision No. 47/2007/QD-TT	Approving the Plan on organization of the implementation of the Kyoto Protocol under the United Nations Framework Convention on Climate Change in the 2007-2010 period
2007/07/04	Decision No. 1016/QD-BTNMT	Establishing a Steering Committee to implement United Nations Frame Convention on Climate Change and Kyoto Protocol
2009/02/09	Decision No. 142/QD-BTNMT	Establishment of the Office on National Target Program to Respond to Climate Change
2009/04/20	Decision No. 743/QD-BTNMT	Establishing the steering committee of UNFCCC and Kyoto Protocol

Besides, GoV has joined 32 international environmental conventions/agreements/treaties, and is reviewing the plan to join other 6 ones (refer to the document "Register of International Treaties and Other Agreements in the Field of the Environment", published by UNEP in 2005, and website of Vietnam Environmental Protection Agency). Table 5.7 lists main international conventions/agreements/treaties relating to environmental protection which Vietnam has engaged.

Table 5.7 List of international environmental conventions/agreements/treaties which Vietnam engaged to

No	Name	Effective Date in Vietnam	Manage-ment Body
1.	Cartagena Protocol on Biosafety	2004 Ac	VEPA, MONRE
2.	Kyoto Protocol on Climate Change	2002 R	GDMH, MONRE
3.	Stockholm Convention on Persistent Organic Pollutants (POPs)	05/2001 R	VEPA, MONRE
4.	UN's International Declaration on Cleaner Production	22/9/1999	MPI
	UN Convention to Combat Desertification	23/11/1998 Ac	MARD
5.	Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal	13/03/1995 Ac	VEPA, MONRE
6.	Agreement on Cooperation for the Sustainable Development of the Mekong River Basin	1995 S	MFA
7.	United Nations Convention on the Law of the Sea (UNCLOS)	25/07/1994 R	MFA
8.	Vienna convention for the protection of the ozone layer including the Montreal Protocol on Substances that Deplete the Ozone Layer	26/01/94 Ac	GDMH
9.	United Nations framework Convention on Climate Change	16/11/1994 R	MONRE
10.	Convention on Biological Diversity (CBD)	16/11/1994 R	VEPA, MONRE

No	Name	Effective Date in Vietnam	Manage-ment Body
11.	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	20/01/1994 R	MARD
12.	MARPOL International Convention for the Prevention of Pollution from Ships	29/08/1991 S	VNMB, MOT
13.	Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)	20/9/1988	MONRE, MARD
14.	Convention Concerning the Protection of the World Cultural and Natural Heritage	10/10/1987 At	MOCI
15.	International Commitment on spray and utilize pesticide, FAO	1985	
16.	Convention on the Conservation of Migratory Species of Wild Animals (CMS)	Under discussion	
17.	Convention on abandon the development, production and storage of chemical weapons, microorganisms		
18.	Agreement on the Network of Aquaculture Centers in Asia and the Pacific	1989	MONRE
19.	Agreement for the Establishment of the Asia-Pacific Fishery Commission	1995 At	MOF
20.	Agreement on the Conservation of Nature and Natural Resources	Under discussion	

Legend: GDMH: General Department of Meteorology and Hydrology, MOF: Ministry of Fishery, VNMB: Vietnam Marine Bureau, MFA: Ministry of Foreign Affairs, MOT: Ministry of Trade, MONRE: Ministry of Natural Resources and Environment, MARD: Ministry of Agriculture and Rural Development, MPI: Ministry of Planning and Investment, MOH: Ministry of Health, MOST: Ministry of Sciences and Technologies, MOT: Ministry of Transportation, MOCI: Ministry of Culture and Information, now is the Ministry of Culture, Sport and Tourism.
S: Signed, R: Ratification, At: Accepted, Ap: Approval, Ac: Accession

2) Law on Environmental Protection (LEP 2005)

LEP 2005 amended in 2005 has fifteen (15) chapters and 136 articles as shown in Table 5.8.

Table 5.8 Structure of the Vietnam Law on Environmental Protection (LEP 2005)

Chapter	Name	Included articles
Chapter I	General Provisions	Article 1 ~ Article 7
Chapter II	Environmental Standards	Article 8 ~ Article 13
Chapter III	Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Undertakings	Article 14 ~ Article 27
Chapter IV	Conservation and Rational Utilization of Natural Resources	Article 28 ~ Article 34
Chapter V	Environmental Protection in Manufacturing, Business and Services Activities	Article 35 ~ Article 49
Chapter VI	Environmental Protection in Urban Centers and Residential Areas	Article 50 ~ Article 54
Chapter VII	Protection of Marine, River and Other Water Source Environments	Article 55 ~ Article 65
Chapter VIII	Waste Management	Article 66 ~ Article 85
Chapter IX	Prevention of and Response to Environmental Incidents; Remedying Environmental Pollution and Rehabilitation of Environment	Article 86 ~ Article 93
Chapter X	Environmental Monitoring and Information	Article 94 ~ Article 105
Chapter XI	Resources for Environmental Protection	Article 106 ~ Article 117
Chapter XII	International Co-operation in Protection of Environment	Article 118 ~ Article 120
Chapter XIII	Responsibilities of State Administrative Bodies and of Vietnam Fatherland Front and its Member Organizations for Environmental Protection	Article 121 ~ Article 124
Chapter XIV	Inspections, Dealing with Breaches, Resolution of Complaints and Denunciations Related to Environment, and Compensation for Environmental Damage	Article 125 ~ Article 134
Chapter XV	Implementing Provisions	Article 135 ~ Article 136

In addition, GoV has issued Decree 80/2006/ND-CP on August 9, 2006, to provide guidance for the implementation of the LEP 2005. Issues on environmental impact assessment are stated as followings in this Decree.

- Environmental Standards;
- Strategic Environmental Assessment (SEA);
- Environmental Impact Assessment (EIA);
- Environmental Protection Commitment (EPC);
- Environmental Protection in manufacture, production, business and services;

- Hazardous waste management;
- Environmental data and information disclosure.

The Decree includes two (02) annexes:

Annex 1: List of project subject to prepare the EIA reports.

Annex 2: List of inter-sector and inter-provincial projects with EIA reports to be appraised and approved by the Ministry of Natural Resources and Environment (MONRE)

Two years later, on February 28, 2008, the GoV issued Decree 21/2008/ND-CP that includes several modifications, amendments of Decree 80/2006/ND-CP. Particularly, the following articles are modified by Decree 21/2008/ND-CP.

- List of projects subjected to prepare EIA report
- Public consultation
- Appraisal, approval of EIA report
- Implementation of the project after the approval of the EIA report
- EIA for projects in industrial parks, processing zones, high tech parks
- Inspection

In addition, on April 18, 2011, the GoV issued Decree 29/2011/ND-CP which stipulates in detail the contents and procedure for formulation, submission and approval of SEA report, EIA report, and EPC.

As a guidance for Decree 29/2011/ND-CP, on July 18, 2011, the Ministry of Natural Resources and Environment (MONRE) issued Circular 26/2011/TT-BTNMT providing detailed stipulations on several articles of the Decree.

3) Environmental Impact Assessment (EIA)

Vietnam legal framework on EIA has two characteristics as followings:

Firstly, the projects which are obligated to make EIA report are defined in detail and listed up. Decree 29/2011/ND-CP (issued on April 18, 2011) lists up 146 projects which are obligated to make and submit the concerned EIA report for approval.

Secondly, the concept on Strategic Environmental Assessment (SEA) is introduced and incorporated. Consequently, before implementation of an individual project, the concerned development policy/plan/program should be approved, and the concerned environmental impacts should be anticipated and assessed. Categorization of plan/program which should make the SEA report is stated in the amended LEP 2005.

Furthermore, each ministry / central government authority has also issued technical guidelines or standards relating to EIA implementation, based on LEP and concerned regulations. Table 5.9 shows main technical guidelines issued by ministries/central government relating to environmental protection or EIA implementation for infrastructure development projects.

Table 5.9 Technical guidelines on environmental protection or EIA implementation issued by individual ministry/ central government

Ministry/ central government	Guidelines	Year of issuance
Ministry of Transportation (MOT)	Sector standard 22TCN 242-98 on EIA procedure during F/S and D/D for the transportation infrastructure development projects	1998
Ministry of Natural Resources and Environment (MONRE)	Guidelines for preparation of an EIA report of a transportation project	1999
Prime Minister (based mainly on recommendation of MPI)	Guidelines on preparation of F/S report for the ODA projects financed by international bank (ADB、AFD、JBIC、KfW、WB) (Decision No. 48/2008/QD-TTg)	2008
Ministry of Transportation (MOT)	Regulation on environmental protection for the transportation infrastructure development projects (Circular 09/2010/TT-BGTVT)	2010

4) Legal framework on land acquisition, compensation, resettlement

The Law on Land (issued in 1993 and revised in 2003) is the umbrella law that regulates issues on land administration, in general, and land acquisition, in particular. Besides, as shown in Table 5.10, there are many laws and regulations relating to the issues on land acquisition for development projects. In addition, each People's Committee of local province/city has to stipulate its own regulations to govern issues of land acquisition in its own territory. Table 5.11 shows regulations issued by Ho Chi Minh City on land administration and land acquisition.

Table 5.10 Laws and regulations relating to land administration, land acquisition, and compensation, resettlement for loss of land

Date of issuance	Law / Regulation	Content
1993/02	Circular No. 05-BXD/ DT	Classification of houses
1993/09/27	Decree No. 64/CP	Allocation of agricultural land to citizens for long-term use
1994/07/05	Decree No. 60/CP	Property ownership and the right to use urban residential land
1994/08/17	Decree No. 91/CP	Urban Planning Management
1998/12/02	Law of Grievance and Accusing	
2003/11/26	New Land Law 2003	(Came into effect on 1 July 2004, replacing the Land Law 1993)
2003/12/10	Construction Law	
2004/06/15 2006/11/29	Revised Law of Grievance and Accusing	
2004/10/29	Decree No. 181/2004/ ND-CP	Implementation guidelines for the Land Law

Date of issuance	Law / Regulation	Content
2004/10/29	Decree No. 182/2004/ ND-CP	Administrative management of violations in the land use rights
2004/11/16	Decree No. 188/2004/ ND-CP	On setting of prices (price frames) for different categories of land
	Circulation No. 114/2004/TT-BTC	Implementation guidelines for Decree No 188/2004/ND-CP
2004/12/03	Decree No. 197/2004/ ND-CP	On compensation, assistance and resettlement when the State recovers land for use in national defense, security, national interests and public interests (replacing Decree No. 22/CP)
2004/12/03	Decree No. 198/2004/ ND-CP	Collection of land use fee
2004/12/07	Circular No. 116/2004/TT-BTC	Issued by Ministry of Finance, on implementation guide-lines for Decree 197/2004/CP
2004	Circulation No. 117/ 2004/TT-BTC	Implementation guidelines for Decree No 198/2004/ND-CP
2005/03/18	Decree No37/2005/ ND-CP	Procedures for application of measures enforcing implementation of decision on administrative violation
2005/04/06	Decision No. 74/2005/QD-TTg	On the use of land use right transferred budget, the budget got from selling house, workshop and other structures when an economic unit has to relocate its office and estates, business in accordance with planning
2005/09/15	Circular No. 80/2005/ TT-BTC	Guidelines for organization of a network for conducting statistics of and surveying, investigating of the land prices in accordance with Decree No 188/2004/ND-CP (16 November 2004)
2006/01/27	Decree No. 17/2006/ ND-CP	On amendments to some provisions of some Decrees on implementation guidelines for the Land Law and Decree 187/2004/ND-CP on shifting the state companies into stock ones.
2006/02/18	Circular No. 69/2006/ TT-BTC	Amendment to Circular No116/2004/TT-BTC
2007/05/25	Decree No. 84/2007/ ND-CP	Additionally stipulating the grant of land use right certificates, recovery of land, exercise of land use rights, order and procedures for compensation, support and resettlement upon land recovery by the State, and settlement of land related complaints.
2007/07/02	Circular No. 06/2007/ TT-BTNMT	Guidance for implementation of a number of articles of Decree No. 84/2007/ND-CP.
2008/01/31	Circular No. 14/2008/ TTLT/BTC-BTNMT	Joint circular on guidance for implementation of a number of articles of Decree No. 84/2007/ND-CP.
2009/08/13	Decree No. 69/2009/ ND-CP	Additional stipulation on land use planning, land use price, land acquisition, compensation, support and resettlement.
2009/10/23	Notice No. 181/DC-CP	Amendment of Decree No. 69/2009/ND-CP.
2009/10/01	Circular No. 14/2009/TT- BTNMT	Detailed stipulations on compensation, supports, resettlement, and procedure for land acquisition, land hand-over, land lease.

Table 5.11 Regulations on land acquisition, resettlement, etc. issued by Ho Chi Minh City

Regulation number and date of issuance	Title
Decision 106/2005/QĐ-UBND, June 16, 2005	Issuance of regulations on compensation, support and resettlement when the State acquire lands in the territory of HCM City
Decision 02/2006/CT-UBND, January 16, 2006	On reinforce of tasks to implementing the Law on Land issued in 2003.
Decision 74/2006/QĐ-UBND, May 17, 2006	On compulsory procedure to carrying out the inventory on actual conditions of houses, lands and properties attached with lands, for compensation, support and resettlement when the State acquire land.
Decision 13/2006/QĐ-UBND, February 6, 2006	On organizational structure and functions of the Appraisal Committee of Compensation, Land Clearance of HCM City.
Decision 11/2006/QĐ-UBND, January 25, 2006	On the revision, addition to Article 10, and Article 9 of the provisions attached to Decision 106/2005/QD-UBND issued on 16/06/2005 on compensation, support and resettlement when the State acquire lands in the territory of HCM City

5.1.2 Relevant authorities

Table 5.12 describes functions and responsibilities of several central ministries/authorities relating to environmental protection as stipulated by LEP 2005 (Article 121).

Talbe 5.12 Functions/responsibilities of central ministries/authorities relating to environmental protection

Ministry / authority	Functions / responsibilities
Ministry of Natural Resources and Environment (MONRE)	a/ To submit to the Government legal documents on environmental protection; b/ To submit to the Government for decision national policies, strategies and plans on environmental protection; c/ To assume the prime responsibility for settling or propose the Government or Prime Minister for settlement inter-branch or inter-provincial environmental issues; d/ To formulate and issue systems of environmental standards according to regulations of the Government; e/ To direct the construction and management of the national environment monitoring system and perform unified management of environment monitoring data; f/ To direct and organize the assessment of the national environment status to serve the formulation of environmental protection policies and solutions; g/ To perform uniform management of the evaluation and approval of strategic environment assessment reports and environmental impact assessment reports and registration of environmental protection commitments nationwide; h/ To guide, supervise, inspect and handle violations of the environmental protection law; settle disputes, complaints, denunciations and petitions related to environmental protection in accordance with the provisions of law on complaints and denunciations and other relevant laws; i/ To propose the Government the participation in international organizations, conclusion of or accession to treaties on environmental protection; take the prime responsibility for activities of international cooperation in environmental protection with other countries and international organizations;

Ministry / authority	Functions / responsibilities
	j/ To direct and supervise the observance of the environmental protection law by People's Committee at all levels; k/ To meet environmental protection requirements in national land use planning and plans, national strategy on water resources and integrated planning on inter-provincial river basins, national master plan on basic inventory, exploration, exploitation and processing of minerals.
Ministry of Planning and Investment (MPI)	Assume the prime responsibility for, and coordinate with ministries, ministerial-level agencies, Government-attached agencies and provincial-level People's Committees in ensuring that environmental protection requirements are met in socio-economic development strategies, master plans and plans of the whole country, regions as well as in important projects and works decided by the National Assembly, Government and Prime Minister.
Ministry of Agriculture and Rural Development (MARD)	Coordinate with the MONRE, concerned ministries, ministerial-level agencies, Government-attached agencies and provincial level People's Committees in: a/ directing, guiding and supervising the observance of the environmental protection law and other relevant laws in production, import and use of chemicals, plant protection drugs, fertilizers and agricultural waste; b/ management of genetically modified plant varieties and livestock breeds and products thereof; c/ management of dyke and irrigation systems, forest conservation zones and clean water for daily life in rural areas.
Ministry of Industry (MOI)[1]	Coordinate with MONRE, concerned ministries, ministerial-level agencies, Government-attached agencies and provincial-level People's Committees in: a/ directing, guiding and supervising the observance of the environmental protection law and other relevant laws in industries; b/ handling of seriously polluting industrial establishments under its management; c/ directing the development of the environment engineering industry.
Ministry of Fishery	Coordinate with MONRE, concerned ministries, ministerial-level agencies, Government-attached agencies and provincial-level People's Committees in: a/ directing, guiding and supervising the observance of the environmental protection law and other relevant laws in aquaculture; b/ exploitation and processing of aquatic resources, genetically modified aquatic organisms and products thereof, and marine conservation zones.
Ministry of Construction	Coordinate with MONRE, concerned ministries, ministerial-level agencies, Government-attached agencies and provincial-level People's Committees in directing, guiding and supervising the observance of the environmental protection law and other relevant laws in the construction of : a/ infrastructure works of water supply and drainage, b/ solid and liquid waste treatment in urban centers, c/ concentrated production and service zones, d/ construction material production establishments; e/ craft villages and concentrated rural residential areas.
Ministry of	Coordinate with MONRE, concerned ministries, ministerial-level agencies,

[1] Former Ministry of Industry and former Ministry of Trade have been integrated in July 2007 to be the Ministry of Industry and Trade.

Ministry / authority	Functions / responsibilities
Transportation	Government-attached agencies and provincial-level People's Committees in directing, guiding and supervising the observance of the environmental protection law and other relevant laws in the construction of transport infrastructure works and transport activities.
Ministry of Health	Direct, guide and supervise the management of medical waste and environmental protection work in medical establishments, food safety and hygiene, and burial services.
Ministry of National Defense, and Ministry of Public Security	Mobilize forces to respond to environmental incidents and remedy their consequences; direct, guide, supervise and inspect environmental protection work in armed forces under their respective management.
Other ministries, ministerial-level agencies and Government-attached agencies	Perform tasks specified in the LEP and coordinate with MONRE in directing, guiding and supervising the observance of the environmental protection law under their respective management.

MONRE was established mainly based on the restructure of the National Environment Agency (NEA, established in 1993) which was an agency under Ministry of Science, Technology and Environment (MOSTE, established in 1992). In 2002, with aim to strengthen governmental function for environmental protection, NEA was detached from MOSTE and integrated with several relevant agencies, and led to the establishment of MONRE.

The Vietnam Environment Protection Agency (VEPA), an organization under MONRE, was responsible for preparing policies relating to environmental protection, monitoring the observance of LEP, regulations, standards, etc., settling problems of disputes, accidents on environment, instructing local authorities and agencies on the tasks to protect environment, etc.

In 2008, the Environmental Department and the EIA Department under MONRE were integrated into VEPA, and VEPA was restructured and renamed to be "Vietnam Environment Administration" (VEA) with furthermore functions and staffs.
Besides, in regional areas, the provincial-level people's committees are in charge of pollution control in its jurisdiction. According to LEP 2005 (Article 122), provincial-level people's committees are responsible for the following tasks:

a/ To promulgate according to their competence environmental protection regulations, mechanisms, policies, programs and plans;
b/ To direct and organize the implementation of environmental protection strategies, programs, plans and tasks;
c/ To direct the construction and management of local environment monitoring systems;
d/ To direct periodical environmental status assessments;
e/ To organize the evaluation and approval of EIA reports under their competence;
f/ To organize propaganda and education about the environmental protection law;
g/ To direct the supervision, inspection and handling of violations of the environmental protection law; settle disputes, complaints, denunciations and petitions related to environment; and coordinate with other provincial-level People's Committees in dealing with inter-provincial environmental issues.

In 2002, agencies in charge of environmental protection in regional areas were also restructured similarly to what were done in central government. Consequently, the former Department of Science, Technology and Environment (DOSTE) under provincial-level people's committee was restructured, and the Department of Natural Resources and Environment (DONRE) was newly established. DONRE's main functions are: issuance of operation permit for factories, carrying out environmental monitoring of river water, air ambient, carrying out inspections to factories and waste water / solid waste treatment plants, exposing activities which violate law and regulations on environmental protection.

5.1.3 Project implementation procedure

1) Procedure relating to EIA preparation and appraisal

The following 3 sections of Chapter III of the LEP 2005 stipulate issues on environmental assessment.

Section 1: Strategic Environmental Assessment (SEA)
Section 2: Environmental Impact Assessment (EIA)
Section 3: Environmental Protection Commitments (EPC)

Section 2 has 6 articles (from Article 18 to Article 23) that define projects to be prepared EIA reports, elaboration and contents of the EIA report, appraisal and approval of the EIA report, implementation of the EIA report's commitments.

Besides, MONRE and other ministries have also issued several legal documents related to EIA. Table 5.13 lists up main regulations on EIA issued by MONRE and MOC (Ministry of Construction).

Table 5.13 Regulations on EIA issued by MONRE and MOC

Issuance date	Code/Number	Title
2000/08/08	Circular No. 10/2000/TT-BXD	Guiding the formulation of EIA report for a construction project
2006/09/09	Circular No. 08/2006/TT-BTNMT	Guiding the preparation of Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment
2006/09/08	Circular No. 13/2006/TT-BTNMT	Stipulation of organizations and operation of the assessment board for reports on Strategic Environmental Assessment (SEA) and EIA
2007/08/27	Decision No. 1281/QD-BTNMT	Authorizing directors of departments to review and approve the EIA reports
2007/11/26	Decision No. 19/2007/QD-BTNMT	Promulgating the Regulation on the conditions for and provision of the service of appraising environmental impact assessment reports
2008/12/08	Circular No. 05/2008/TT-BTNMT	Replace Circular 08/2006/TT-BTNMT on Guiding the preparation of Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment
2011/07/18	**Circular No. 26/2011/TT-BTNMT**	**Detailed stipulation on several articles of Decree 29/2011/ND-CP on SEA, EIA, and EPC**

2) Major issues relating to the preparation, appraisal, and approval of the EIA report

Circular 26/2011/TT-BTNMT issued by MONRE on July 18, 2011 is the most important regulation on the preparation, appraisal and approval of the strategic environmental assessment (SEA) report, the environmental impact assessment (EIA) report, and the environmental protection commitment (EPC). Table 5.14 shows structure of the Circular.

Table 5.14 Structure of Circular 26/2011/TT-BTNMT

No	Title	Content
I	General Provisions	1 The Circular stipulates in detail some articles of Decree 29/2011/ND-CP with focus on: (a) strategic environmental assessment (SEA); (b) environmental impact assessment (EIA); (c) environmental protection commitments (EPC); 2 Subjects of applications
II	SEA	3 Objects subject to elaboration of SEA and method of elaboration of SEA 4 Elaboration of SEA Report 5 Dossiers of request for appraisal of SEA Report 6 Entity in charge of appraising SEA Report 7 Responsibilities of the project owner after the appraisal of SEA Report 8 Report on result of appraisal of SEA Report 9 Responsibilities of agencies appraising, approving the strategy, planning, plan after receiving report on result of appraisal of SEA Report
III	EIA	10 Objects subject to elaboration of EIA Report and responsibilities of the project owner on elaboration of EIA Report 11 Re-elaboration and submission for appraisal, and approval of EIA Report 12 Public consultation during the process of elaboration of EIA Report 13 Dossiers of request for appraisal, approval of EIA Report 14 Entity in charge of appraising EIA Report 15 Procedure and period for appraising, approving an EIA Report 16 Responsibilities of the agency approving the EIA Report and project owner after the EIA Report is approved
IV	Organization structure and activities of SEA Appraisal Committee, EIA Appraisal Committee	17 Establishment of SEA Appraisal Committee, EIA Appraisal Committee 18 Members and structure of SEA Appraisal Committee, EIA Appraisal Committee 19 Functions and working principles of SEA Appraisal Committee, EIA Appraisal Committee 20 Conditions and criteria for selection of members of SEA Appraisal Committee, EIA Appraisal Committee 21 Responsibilities of members of SEA Appraisal Committee, EIA Appraisal Committee 22 Rights of members of SEA Appraisal Committee, EIA Appraisal Committee 23 Responsibilities and rights of chairman of Appraisal Committee 24 Responsibilities and rights of vice-chairman of Appraisal Committee 25 Responsibilities and rights of rebut members of Appraisal Committee 26 Responsibilities and rights of secretary member of Appraisal Committee 27 Responsibilities and rights of representative of DONRE who participates the Appraisal Committee established by a ministerial-level agencies 28 Responsibilities and rights of a permanent Appraisal Committee 29 Obtain opinions of DONRE when an Appraisal Committee established by ministerial-level agency has not member as representative of DONRE 30 Conditions for proceeding a formal meeting of Appraisal Committee 31 Participants of a formal meeting of Appraisal Committee 32 Content and procedure of a formal meeting of Appraisal Committee 33 Content of conclusion of Appraisal Committee 34 Format and content of record of a formal meeting of Appraisal Committee
V	Inspection and confirmation of environmental protection facilities/ measures before bringing the project to operation	35 Responsibilities of project owner before bringing the project to operation 36 Inspection, confirmation of environmental protection facilities/measures before bringing the project to operation 37 Trial operation of waste treatment facilities 38 Dossiers of request for inspection, confirmation of environmental protection facilities/measures using in operation phase of the project 39 Inspection, confirmation of environmental protection facilities/measures using in operation phase of the project 40 Establishment of the team to inspect environmental protection facilities/measures using in operation phase of the project 41 Working principles of the inspection team 42 Responsibilities and rights of members of the inspection team 43 Content and format of report on results of inspection 44 Re-inspection of environmental protection facilities/measures
VI	EPC	45 Objects subject to elaboration and registration of EPC and content of an EPC 46 Dossiers for registration of EPC 47 Procedure of registration of EPC 48 Responsibilities of project owner and authorities after the EPC is registered

No	Title	Content
VII	Implementation of the Circular	49 Implementing ministries/agencies/organizations 50 Implementation of the Circular (the Circular shall become effective from September 02, 2011. Circular 05/2008/TT-BTNMT, and Circular 13/2009/TT-BTNMT shall lose effect after the Circular becomes effective)

Circular 26/2011/TT-BTNMT has 41 appendices providing sample formats of the SEA Report, EIA Report, EPC document, etc.

3) Standards relating to environmental protection

Many Viet Nam Standards (TCVN) were made during the 1990 decade and now are being gradually revised. A number of Vietnam Standards have been replaced by the Technical Regulations (QCVN). The following Table 5.15 lists up major environmental standards and technical regulations, and its relevant Vietnam regulations.

Table 5.15 Vietnam regulations on standards/technical regulations, and major environmental standards/technical regulations

Issuance date	Code/Number	Title
2002/06/25	Decision No.35/2002/ QD-BKHCNMT	Issuance the list of obligatory application of Vietnamese environment standards
2006/12/18	Decision No.22/2006/ QD-BTNMT	Obligatory application of Vietnamese standards on environment.
2008/07/18	Decision No. 04/2008/QD-BTNMT	Issuance of environmental regulations
2008/12/31	Decision No. 16/2008/QD-BTNMT	Issuance of environmental regulations
2009/11/16	Circular No. 25/2009/TT-BTNMT	Issuance of national technical regulation on environment
	Noise and vibration	
	TCVN 3985-1985	Limiting the maximum noise level in working area
	TCVN 5949-1998	Limiting the maximum noise level in public and residential areas
	TCVN 6962-2001	Allowable vibration limits in constructive and industrial production
	Water quality	
	QCVN 08:2008/BTNMT	The national technical regulation on surface water quality
	QCVN 09:2008/BTNMT	The national technical regulation on ground water quality
	QCVN 10:2008/BTNMT	The national technical regulation on coastal water quality
	Air quality	
	QCVN 05:2009/BTNMT	The national technical regulation on hazardous substances in ambient air (replace TCVN 5937:2005 – Air quality - Standards for quality of ambient air)
	QCVN 06:2009/BTNMT	The national technical regulation on hazardous substances in ambient air (replace TCVN 5938:2005 – Air quality – Permitted maximum level of a number of toxic and hazardous

Issuance date	Code/Number	Title
		substances in ambient air)
	QCVN 19:2009/BTNMT	Replace TCVN 5939:2005 – Air quality – Industrial emission standards for dusts and inorganic substances
	QCVN 20:2009/BTNMT	The national technical regulation on industrial emission of organic substances (replace TCVN 5940:2005 – Air quality – Industrial emission standards for a number of organic substances)
	QCVN 22:2009/BTNMT	The national technical regulation on emission of thermal power industry (replace TCVN 7440:2005 – Emission standards for thermal power industry)
	Soil	
	QCVN 03:2008/BTNMT	The national technical regulation on heavy metals in soil
	Wastewater discharge	
	TCVN 6773: 2000	Water Quality - Water quality guidelines for irrigation
	TCVN 6774: 2000	Water Quality - Freshwater quality guidelines for protection of aquatic sites
	TCVN 6980: 2001	Water Quality - Standards for industrial effluents discharged into rivers used for domestic water supply.
	TCVN 6981: 2001	Water Quality - Standards for industrial effluents discharged into lakes used for domestic water supply
	TCVN 6982: 2001	Water Quality - Standards for industrial effluents discharged into rivers used for water sports and recreation.
	TCVN 6983: 2001	Water Quality Standards for industrial effluents discharged into lakes used for water sports and recreation.
	TCVN 6984: 2001	Water Quality - Standards for industrial effluents discharged into rivers used for protection of aquatic life.
	TCVN 6985: 2001	Water Quality - Standards for industrial effluents discharged into lakes used for protection of aquatic life.
	TCVN 6986: 2001	Water Quality - Standards for industrial effluents discharged into coastal waters used for protection of aquatic life.
	TCVN 6987: 2001	Water Quality Standards for industrial effluents discharged into coastal waters used for water sports and recreation
	TCVN 7222:2002	General Environmental Requirements for Central Domestic (Municipal) Wastewater Treatment Plants
	QCVN 14:2008/BTNMT	The national technical regulation on domestic wastewater
	QCVN 24:2009/BTNMT	The national technical regulation on industrial wastewater
	Solid waste	
	TCVN 6696-2000	Requirements for environmental protection for sanitary landfills.
	TCVN 6705-2000	Requirements for separation of non-hazardous waste.
	TCVN 6706-2000	Requirements for separation of hazardous wastes.
	TCVN 6707-2000	Prevention and warning signs for hazardous waste.
	TCXDVN 261:2001	Landfill – Standard for designing
	QCVN 07:2009/BTNMT	The national technical regulation on hazardous waste thresholds

4) Procedure for the preparation, appraisal and approval of an EIA report

Figure 5.1 summarizes the procedure to prepare, appraise and approve an EIA report, as stipulated by Decree 80/2006/ND-CP, Decree 21/2008/ND-CP, Decree 29/2011/ND-CP and Circular 26/2011/TT-BTTMT. A competent agency should have responsibility for the whole procedure of appraising and approving the EIA report. Based on the scope of work and the total project cost, MONRE or another ministry, or a ministerial level agency, or a governmental body or a provincial level People's Committee will be assigned as the competent approval agency.

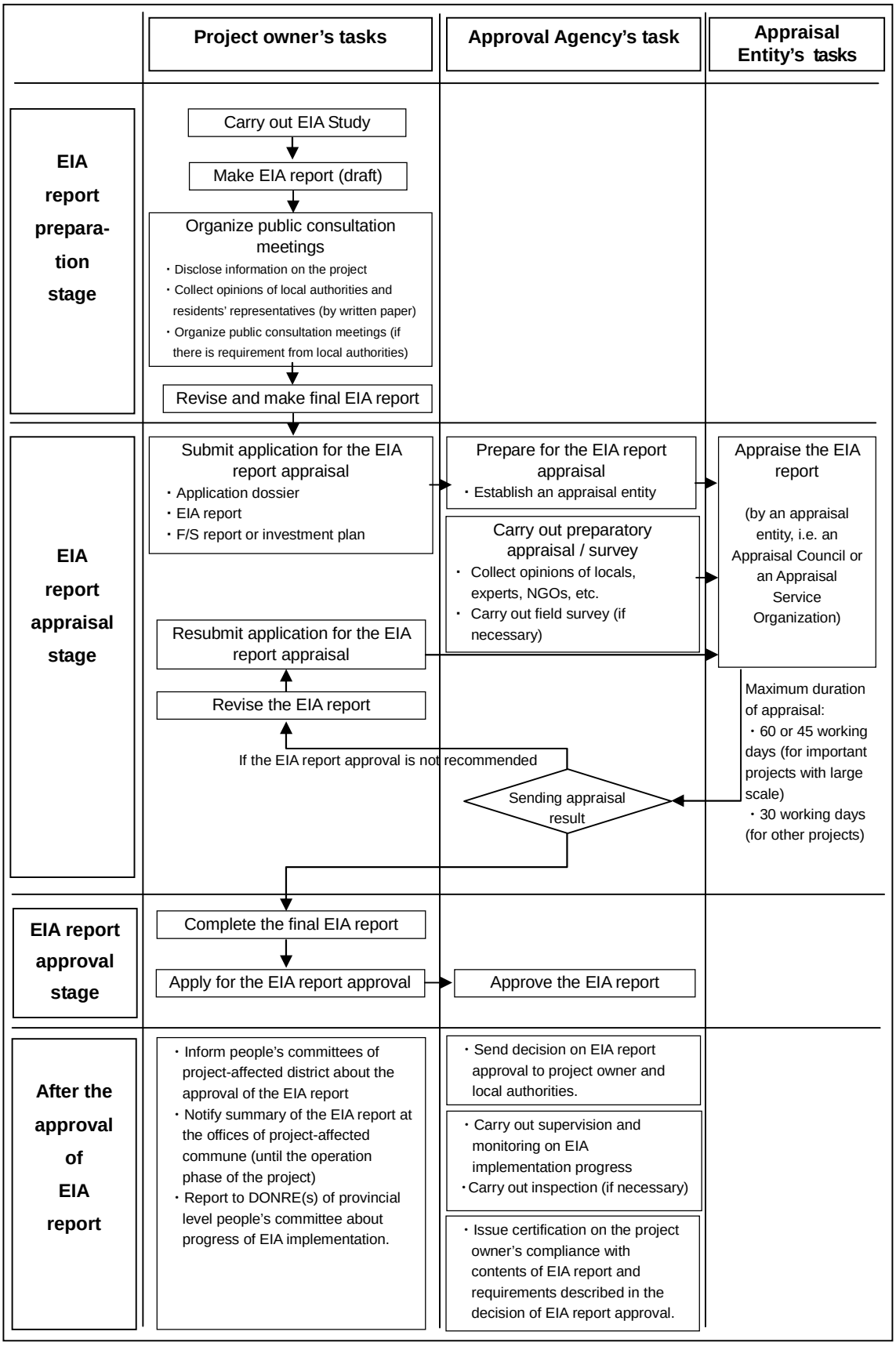
After receiving application for appraisal and approval, the competent approval agency shall make decision to establish or assign an independent entity to take role as the entity in charge of appraising the EIA report.

The EIA appraisal entity is an external entity independent to the EIA approval agency. Director of the EIA approval agency may examine the specificity, the technical characteristic of the project, the complication of surrounding environment, etc. and determine to assign an Appraisal Council, or an Appraisal Service Organization to appraise the EIA report. Duration for appraisal is fixed to be 30 or 45 or 60 working days. The EIA approval agency may determine the duration, after examining the project scope, the complication of the task, etc.

The EIA approval agency will then inform the project owner about result of EIA report appraisal. The project owner shall revise the EIA report and submit it again if there is such requirement from the EIA approval agency. Since then, the EIA approval agency shall issue the decision to approve the EIA report within 15 working days.

The EIA approval agency is nominated based on the project scope and the estimated project cost described in the F/S report. If the project cost is estimated to exceed 35 trillion VND (about 1.2 billion US$), then its investment plan should be approved by the National Assembly, and its EIA report should be appraised and approved by MONRE (refer to Decision 49/2010/QH-12 approved by National Assembly on June 19, 2010). If the project cost is estimated not exceed 35 trillion VND, then its investment plan is commonly approved by ministerial level agency or provincial level people's committee, and its EIA report is commonly appraised and approved by relevant Department of Environment of ministerial level agency or Department of Natural Resources and Environment (DONRE) of provincial level people's committee.

Figure 5.1 Flow-chart of procedure for preparation, appraisal, and approval of EIA report



5.1.4 Deviation between JICA Environmental Guidelines and Vietnam's legal framework on environmental assessment

The current EIA system in Vietnam is basically consistent with international practice. However, it lacks concrete procedures and requirements for information disclosure, public consultation. In addition, it lacks consideration on impacts to local socio-economy such as the followings.

(1) Local economy such as employment, livelihood, etc.
(2) Utilization of land, local resources, etc.
(3) Social institutions, local decision-making institutions
(4) Vulnerable social groups (the poors, indigenous peoples, etc.)
(5) Equality of benefits and losses, equality in the development process
(6) Gender, children's rights
(7) Local conflicts of interest

The following Table 5.16 lists up major deviations between Vietnam's impact assessment legal framework and JICA Guidelines for Environmental and Social Considerations (April 2010).

Table 5.16 major deviations between Vietnam's impact assessment legal framework and JICA Guidelines for Environmental and Social Considerations

JICA Guidelines	Vietnam's EIA institutional framework
1. Principle: Environmental impacts that may be caused by projects must be assessed and examined in the earliest possible planning stage. Alternatives or mitigation measures to avoid or minimize adverse impacts must be examined and incorporated into the project plan.	At the project level, environmental impacts are assessed and examined only from the stage of F/S. IEE or Environmental Scoping is not compulsory in the environmental assessment procedure. In an EIA report, alternatives should be examined, and all anticipated impacts caused by the project should be assessed without the scoping process.
2. Ensuring accountability and transparency	There is no provision on accountability and transparency in Vietnam regulations on environmental assessment.
3. Ensuring meaningful participation of stakeholders - In principle, project proponents etc. consult with local stakeholders through means that induce broad public participation to a reasonable extent, in order to take into consideration the environmental and social factors in a way that is most suitable to local situations, and in order to reach an appropriate consensus. - (In the case of Category A projects,) JICA encourages project proponents etc. to consult with local stakeholders about their understanding of development needs, the likely adverse impacts on the environment and society, and the analysis of alternatives at an early stage of the project, and assists project proponents as needed. - The outcome of such consultations must be incorporated into the contents of project plans.	According to Decree 29/2011/ND-CP, in the process of making the EIA report, the project owner should carry out consultation by the following method: - Send a written request for consultation and a document outlining the main project items, environmental issues, and measures to mitigate environmental impacts to people's committees (PCs) of communes, wards or townships where the project is to be implemented and representatives of communities and organizations directly affected by the project; - Request the above-mentioned PCs and representatives of communities and organizations to give comments on the document sent. - In case of necessity, the commune-level PCs shall organize a dialogue with the project owner and representatives of organizations and communities directly affected by the project. - After receiving the written request for consultation, the commune-level PCs shall reply the project

	owner in writing and publicize such reply. Past this time limit, if a consulted PC fails to send a written reply to the project owner, it is regarded as agreeing with the project owner's investment plan. As described above, consultation is limited to commune-level PCs and representatives of affected organizations and communities. The concept on "local stakeholders" has not been widely recognized in Vietnam yet. And main purpose of consultation is likely to obtain agreeing or disagreeing opinions of local authorities, instead of to promote local residents' understanding and participation.
4. Information disclosure - JICA discusses frameworks with project proponents etc. in order to ensure information disclosure, and comes to an agreement in an early stage of cooperation projects. - (In the case of Preparatory Survey,) Project proponents etc. disclose scoping drafts, which consist of project name, countries, locations, project outlines, categorizations and the reasons behind them, alternatives, impacts, and contents. - EIA reports are required to be made available to the local residents of the country in which the project is to be implemented. The EIA reports are required to be available at all times for perusal by project stakeholders such as local residents and copying must be permitted.	According to Decree 29/2011/ND-CP (Article 22), after the EIA report is approved, the project owner shall formulate, approve and publicize the Environmental Management Plan at the offices of the commune-level PCs where consultation had been conducted to enhance people's awareness about the project, and enable people's participation in the supervision and monitoring of the project. However, it seems that the process and method to disclose such information are not properly undertaken in actuality. Therefore, in general, the project-affected people are not easy to access to information such as the EIA report or the EMP of the project, and present their opinions on the project.
5. Project categorization: JICA classifies projects into four categories (A ~ C, and FI) according to the extent of environmental and social impacts, taking into account an outline of project, scale, site condition, etc.	The system of environmental assessment in Vietnam is consisted of: (1) Strategic Environmental Assessment (SEA), (2) Environmental Impact Assessment (EIA), and (3) Environmental Protection Commitment (EPC). Objects subject to elaboration of SEA are socio-economic development strategies, plannings and plans at national level, regional level, provincial level, key economic regions, and inter-provincial river watersheds. At the project level, projects are categorized into two groups: group has to elaborate an EIA report, and group has not to elaborate an EIA report but only has to submit an EPC. Decree 29/2011/ND-CP lists up 146 groups of projects which have to elaborate and submit an EIA report for approval.
6. Impacts to be assessed: The impacts to be assessed with regard to environmental and social considerations include impacts on human health and safety, as well as on the natural environment, that are transmitted through air, water, soil, waste, accidents, water usage, climate change, ecosystems, fauna and flora, including trans-boundary or global scale impacts. These also include social impacts, including migration of population and involuntary resettlement, local economy such as employment and livelihood, utilization of land and local	According to Circular 26/101/TT-BTNMT (stipulating in detail a number of articles of Decree 29/2011/ ND-CP), impacts in pre-construction phase, construction phase, and operation phase should be anticipated and assessed. In pre-construction phase, alternatives on project location, and without-the-project option should be examined, and impacts caused by land acquisition, relocation, and resettlement should be assessed. In construction phase and operation phase, all project activities should be identified and impacts caused by these activities should be anticipated and assessed while taking into considerations the source of impact, subject of impact,

resources, social institutions such as social capital and local decision-making institutions, existing social infrastructures and services, vulnerable social groups such as poor and indigenous peoples, equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and working conditions including occupational safety. Items to be addressed in the specific project are narrowed down to the needed ones through the scoping process.	extent of impact, occurrence frequency of impact, recovering possibility, etc. However, it seems that the following impacts are not properly considered: impacts to local economy (employment, livelihood, utilization of land, etc.), local resources, social institutions, local decision-making institutions, vulnerable social groups (the poors, indigenous peoples, etc.), equality of benefits and losses, equality in the development process, gender, children's rights, and local conflicts of interest.
7. Concern about Social Environment and Human Rights: JICA respects the principles of internationally established human rights standards such as the International Convention on Human Rights, and gives special attention to the human rights of vulnerable social groups including women, indigenous peoples, persons with disabilities, and minorities when implementing cooperation projects.	There is no provision on concern about human rights in the legal framework on project impact assessment in Vietnam.
8. Involuntary Resettlement People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by project proponents etc. in a timely manner. Prior compensation, at full replacement cost, must be provided as much as possible. Host countries must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels, or at least to restore these to pre-project levels. Measures to achieve this may include: providing land and monetary compensation for losses (to cover land and property losses), supporting means for an alternative sustainable livelihood, and providing the expenses necessary for the relocation and re-establishment of communities at resettlement sites. ... In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance.	In Vietnam, issues on land acquisition, compensation, resettlement, etc. are regulated by the law and regulations on land administration (such as the New Land Law 2003, Decree 69/2009/ND-CP, Circular 14/2009/TT-BTNMT, etc.). If a development project needs to acquire some lots of land, then these above-mentioned law and regulations will be applied, an inventory-of-loss (IOL) will be carried out, and people who loses lands, properties, means of livelihood, etc. will be compensated and/or supported in relocation and resettlement. Measures to help project-affected people in restoring livelihood, improving living standard, etc. after resettlement have not been properly considered for a long time in the past. Only in the recently-issued Decree 69/2009/ ND-CP, the livelihood restoration plan has been stated for the first time as a measure to help affected people in obtaining sustainable livelihood. However, it needs further efforts to improve legal framework on involuntary resettlement and strengthen capacity of local agencies responsible for planning and implementing the livelihood restoration plan.
9. Indigenous Peoples Any adverse impacts that a project may have on indigenous peoples are to be avoided when feasible by exploring all viable alternatives.	There is no particular provision on indigenous peoples in Vietnam's legal framework on project impact assessment.
10. Monitoring Project proponents etc. should make efforts to make the results of the monitoring process available to local project stakeholders. When third parties point out, in concrete terms, that environmental and social considerations are not being fully undertaken, forums for discussion and examination of countermeasures are established	According to Decree 29/2011/ND-CP (Article 22), after the EIA report is approved, the project owner shall formulate, approve and publicize the Environmental Management Plan at the offices of the commune-level PCs where consultation had been conducted. However, in the legal framework on impact assessment in Vietnam, there is no provision on the project owner's obligation to publicize results of

based on sufficient information disclosure, including stakeholders' participation in relevant projects. Project proponents etc. should make efforts to reach an agreement on procedures to be adopted with a view to resolving problems.	monitoring process, and the procedure to settle complaints raised by the public on environmental issues relating to the project.

5.2 EXAMINATION OF ENVIRONMENTAL AND SOCIAL IMPACTS

5.2.1 Examination of alternatives

1) Development area proposed by the UMRT Line 1

Figure 5.2 shows the development area of Ben Thanh Station as planned in the Basic Design Study of the HCMC UMRT Line 1 Project, and Table 5.17 shows its construction scale.

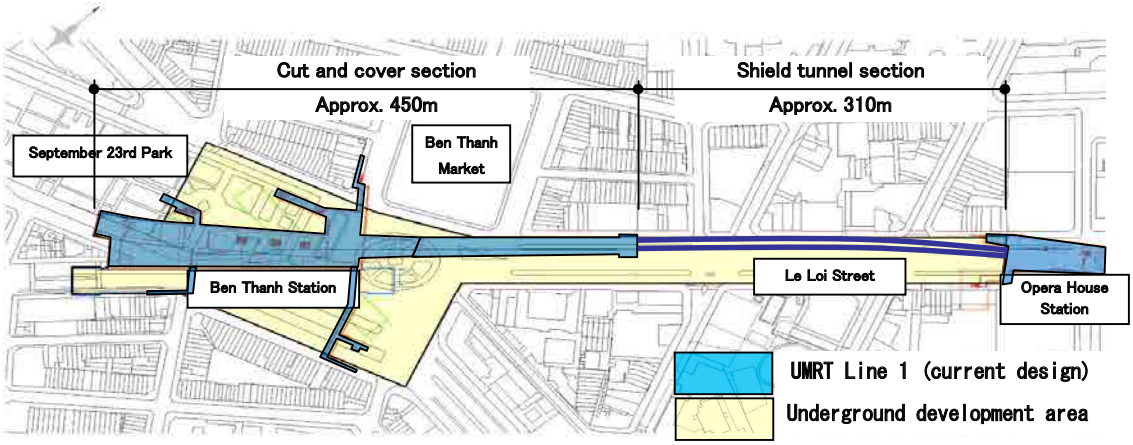


Figure 5.2 Development area of UMRT Line 1 Ben Thanh Station

Table 5.17 Rough construction scale of UMRT Line 1 Ben Thanh Station

Construction scale (Ben Thanh Station)	Station, stairs, exits, others, totally 15,300m^2 in space

2) Alternatives

The following two alternative studies on UMRT Line 1 project are currently being examined by JICA study Team.

- Construction method of underground shopping mall and Line 1 tunnel beneath Le Loi Street
- Construction method of Ben Thanh Central Station

(1) Alternatives on construction method of the tunnel of Line 1 and the underground shopping mall beneath Le Loi Street

In this section, several alternatives on construction method for the tunnel section of UMRT Line 1 and shopping mall beneath Le Loi Street are examined. The shield tunnel is adopted in the current UMRT Line 1 design for a part of tunnel beneath Le Loi Street. However, in this shield tunnel section, the tunnel structure interferes with the underground shopping mall structure, so the underground shopping mall cannot be constructed above the Line 1 tunnel and the area of the underground development decreases. On the other hand, in case that the tunnel structure is changed from the shield tunnel to the cut & cover tunnel, the underground shopping mall can be constructed above the Line 1 tunnel. Consequently, the area of the underground development expands and the underground shopping mall can be connected with the basement of surrounding buildings, and this will enable the appropriate development of underground space of urban newly constructed area, and contribute to the development of the local district. Advantages and disadvantages of the alternatives are described as followings. Figure 5.18 shows the current construction method for Line 1 and the underground shopping mall beneath Le Loi Street, and Table 5.19 shows comparison between the alternatives.

Table 5.18 Construction method for tunnel of Line 1 and the underground shopping mall beneath Le Loi Street

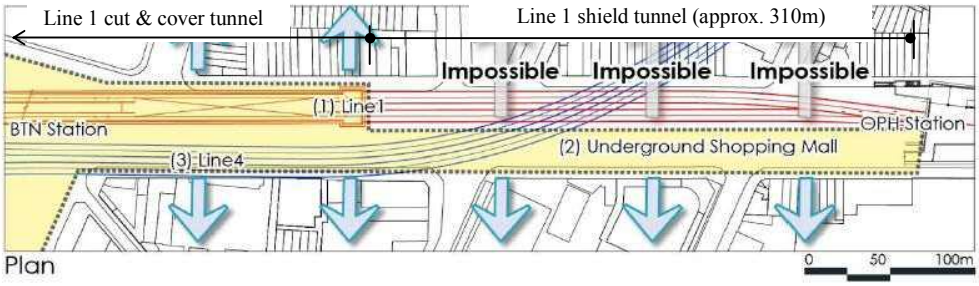
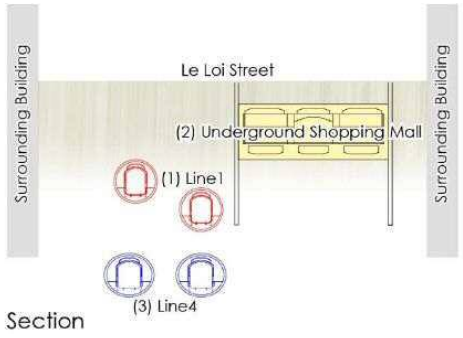
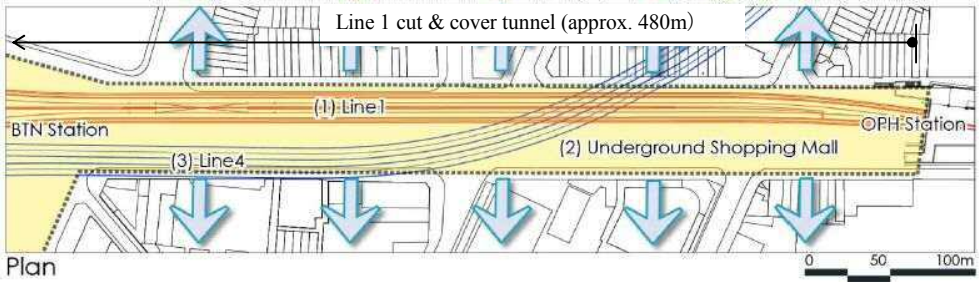
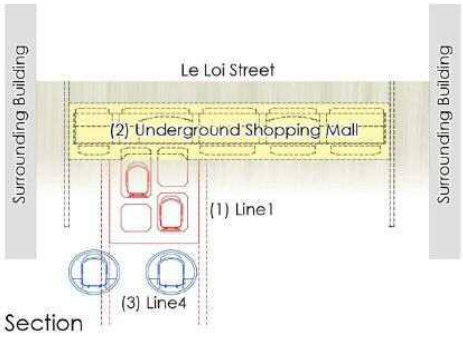
	Outline of alternative
Alternative A	  ・Construction method Line 1: shield tunnel Line 4: shield tunnel USM: cut & cover tunnel ・No design change for Line 1 tunnel ・The area of USM becomes small
Alternative B	  ・Construction method Line 1: cut & cover tunnel Line 4: shield tunnel USM: cut & cover tunnel ・Design change for Line 1 tunnel ・The area of USM becomes large

Table 5.19 Comparison between construction methods for the tunnel of Line 1 and the underground shopping mall beneath Le Loi Street

Comparison item	Comparison between alternatives
Technical viewpoint	1) In case of Alternative A, there is no need for change in construction method for Line 1, and thus it will not affect current schedule of Line 1. However, the area of USM will be small, and the connectivity of the underground development with the buildings along the northeast wide of Le Loi Street cannot be ensured, and consequently it is expected that the creation of comfortable and attractive urban space, and the harmonized development planned under PPP scheme are difficult to be realized. 2) In case of Alternative B, it needs to change current plan. However, the area of USM can be expanded largely, and the underground development can be connected with the buildings located along the project site. Consequently, it is expected that the comfortable and attractive urban space can be created and contribute to the development of local district. However, it will need to carry out measures such as removal of the temporary soil retaining walls.
Environmental and social viewpoint	1) In case of Alternative A, due to the introduction of the shield construction method, environmental and social impacts are expected slighter than the ones in case of cut & cover construction method, especially for the tunnel section deep under the ground. In the area where the cut & cover construction work is carried out, it needs to perform traffic management and safety control for the road traffic on ground. 2) In case of Alternative B, due to the cut & cover construction method, a larger number of issues to be concerned (such as the decline of groundwater level, the management for road traffics on ground during construction phase, etc.) comparing to the case of shield construction method. In addition, the area with high possibility in occurring of ground deformation and inequitable ground subsidence will be larger. Impacts caused by the cut & cover construction method for the USM section are similar for both alternatives.
Recommendation of optimum alternative and its reason	Recommended alternative: Alternative B 1) In case of Alternative B, construction cost may be relatively high, but from the viewpoint of urban planning, it is considered as an optimum alternative, due to its rationality and its efficiency in investment for the USM development. 2) With respect to issues on environmental and social consideration, it needs to carefully carry out planning, design, construction, and supervision, including impact mitigation measures and impact monitoring (such as the ones describing in the following sections).

(2) Methods of design and construction of Ben Thanh Station

In this Project, it needs to make integration of a number of plans with different implementation progress. Currently, there are many undefined factors remaining. Line 1 is under the bidding process to select contractors for the design-and-build contract. F/S for Line 2 has just been completed. Initial examination for Line 4 has just been completed. And under this F/S stage of the Project, USM development plan is now being studied as a PPP project. Therefore, it needs to compare and examine: (1) the alternative under which design and construction are carried out separately one by one to meet its own implementation progress, and (2) the alternative under which areas surrounding Ben Thanh Station are comprehensively designed and integrally constructed with harmonization between the plans and differences between the implementation progress of the plans are also taken into consideration (Table 5.20).

- Alternative A: project designs are done separately, and constructions are commenced one by one at different timings depending on each project implementation progress.
- Alternative B: integral construction is done based on comprehensive design of all planned projects.

Table 5.20 Comparison between methods of design and construction of Ben Thanh Station

Comparison item	Comparison between alternatives
Technical viewpoint	1) In Alternative A, each project is designed separately with the others. Therefore, rationality of an integrated development of underground space cannot be ensured, and there is high possibility that the design will be inconvenient for users. In addition, construction cost will become high with high difficulty in construction, due to the one-by-one separate constructions. 2) In Alternative B, the integrated construction is possible with the comprehensive design. There is high possibility that the urban space will be well developed to effectively serve users of the station, railways, facilities, etc. especially in transferring between different railways. Moreover, the construction cost can be saved, because the construction of station, platforms, facilities, etc. can be done at one time.
Environmental and social viewpoint	1) In Alternative A, construction plan of each project will be carried out one by one and separately with the others. Therefore, it is expected that construction duration will become very long, and the surroundings will suffer adverse impacts caused by the projects during a relatively long time. Furthermore, construction sites will be changed depending on each project plan, and therefore, it will cause many different impacts with longer duration to traffic on the roads on ground.

	2) In Alternative B, construction of the station and platforms, facilities, etc. is carried out at once, therefore, the total duration of construction can be shortened, and duration of impacts to surroundings can be also shortened. In addition, impacts to traffic on the roads may be mitigated due to the rational setting up of the construction site for all construction works.
Recommendation of optimum alternative and its reason	Recommended alternative: Alternative B 1) From the viewpoint of urban development, Alternative B is recommended because it enables the rational development of comfortable and attractive urban space, which includes the rational development of station facilities. Alternative B is also expected as a cost saving alternative. 2) Construction will be carried out according to a comprehensive plan, thus it is expected that construction duration will be shortened, and construction works will be efficiently carried out, and consequently, impacts to surrounding areas will be mitigated.

3) Differences with UMRT Line 1

The area targeted by the Project is larger than the area targeted by the on-going HCMC UMRT Line 1 Construction Project, because the Project plans to develop not only Ben Thanh Station but also the underground space of its surrounding areas (such as the underground shopping mall beneath Le Loi Street). In this section, differences between the Project scope and the one planned by the Line 1 Project are described as a comparison between the with-project alternative and the without-project alternative.

Figure 5.3 and Table 5.21 show differences between construction plan of Ben Thanh Station described in the HCMC UMRT Line 1 Project, and contents of plan in this Project.

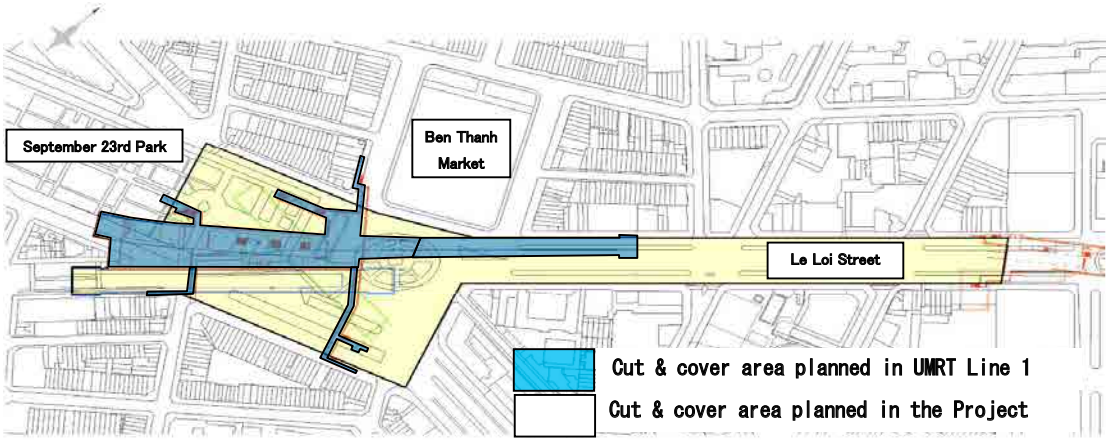


Figure 5.3 Difference between the cut & cover area planned in Line 1 Project and the one planned in the Project

Table 5.21 Comparison between construction plan of Ben Thanh Station under the Line 1 Project and contents planned in the Project

Main difference	Construction plan of Ben Thanh Station under the HCMC UMRT Line 1 Project	Contents planned in the Project
Development area	An area of 15,300m^2 in total is planned for station, stairways, exits, etc.	An area of 59,000m^2 in total is planned for not only station, stairways, exits, etc. as planned in Line 1 Project, but also for the underground square, transfer pathways, underground shopping mall, etc.
Attached facilities	Attached facilities (electric rooms, control rooms, elevators, emergency exits, fire prevention facilities, etc.) are planed with target limited to the railway operation and UMRT users.	In addition to the left, attached facilities are also planned to serve users of the underground shopping mall (i.e. air conditioner, ventilation facilities, fire prevention facilities, etc. should be increased in quantity and strengthened in capacity).
Area of cut & cover works	Area of cut & cover works is limited to the station and its facilities.	Area of cut & cover works will cover the area for the underground shopping mall that will be expanded to Opera House Station.
Increased users in operation phase	Users are mainly UMRT's users.	Convenience of means of transportation planned by the Project will lead to the increase in number of UMRT's users. And in addition, there will be users of the underground shopping mall, tourists, etc.

Due to the differences in content of construction plans, in addition to anticipated impacts that may be caused by the construction of Ben Thanh Station under UMRT Line 1 Project, it is expected that the Project here will cause a number of additional impacts as shown in Table 5.22.

Table 5.22 Additional impacts that may be caused by the Project in comparison with the construction plan of Ben Thanh Station under the UMRT Line 1 Project

Difference	Additional impact
Larger development area	1) Area affected by noise, vibration, air pollution, sand dust, etc. in construction phase becomes larger.
	2) Area affected by traffic congestion and passage impediment during construction phase becomes larger.
	3) More larger number of underground utilities which are to be relocated.
	4) More larger number of trees, electric poles, and other establishments along the road sides which are to be relocated.
Increased number of attached facilities with more electric power consumption	5) Increased number of the attached facilities which more electric power consumption will lead to the increase of heat generation around the project site.
Larger cut & cover area	6) Larger cut & cover area will lead to the increase in quantity of excavated/waste soils. In addition, impacts to environment surrounding the construction material exploitation sites will be more significant.
	7) Larger cut & cover area will lead to more significant impacts to groundwater environment (groundwater level, water vein, etc.),

	and larger number of buildings which are likely to be affected by inequitable ground subsidence.
Increased number of users in operation phase	8) A larger volume of piped water will be required.
	9) A larger volume of waste water volume will be generated.
	10) A larger quantity of solid waste will be generated.

5.2.2 Local stakeholders consultation plan and progress of implementation

According to Vietnam law and regulations on environmental assessment, after the EIA report is approved, projects owner should send a summary of the EIA report to people's committees of project- affected communes/wards and representatives of project-affected communities/ organizations and request their comments. Comments obtained from project-affected communes/wards and communities/organizations should be described in the EIA report (Law on Environmental Protection, Article 20, and Decree 21/2008/ND-CP, Article 1-4). Method to carrying out this consultation is stated as following (Decree 29/2011/ND-CP, Article 15).

- Project owner sends a written request for consultation and a document outlining the main project items, environmental issues, and measures to mitigate environmental impacts to people's committees (PCs) of communes, wards or townships where the project is to be implemented and representatives of communities and organizations directly affected by the project;
- Request the above-mentioned PCs and representatives of communities and organizations to give comments on the document sent.
- In case of necessity, the commune-level PCs shall organize a dialogue with the project owner and representatives of organizations and communities directly affected by the project.
- After receiving the written request for consultation, within 15 working days, the commune-level PCs shall reply the project owner in writing and publicize such reply. Past this time limit, if a consulted PC fails to send a written reply to the project owner, it is regarded as agreeing with the project owner's investment plan.

Thus, the consultation with project-affected people is not strictly obligatory for project owner during the EIA preparation process in accordance with Vietnam law and regulations. However, in this Preparatory Survey, MAUR had been explained about the need for organizing consultation with local stakeholders in accordance to JICA Guidelines for Environmental and Social Considerations (April 2010, Section 2-4), and discussions had been organized between MAUR's staff and the Survey Team to make a rough plan for implementing the local stakeholder consultation in line with above-mentioned JICA Guideline.

The proposed rough plan for organizing local stakeholder consultation is as following. MAUR will be discussed on the details of the plan (such as: time and venue of consultation meeting, method to dismiss information, list of candidate participants, consultation content, etc.).

Rough plan for implementing local stakeholder consultation

1) Purpose of local stakeholder consultation : (a) to identify and address all potential negative impacts that may be caused by the project to natural and social environment; (b) to foresee and/or resolve potential obstacles, constraints and conflict, especially between the existing on-ground commercial entities (shops, stores, etc.) and the planned underground shopping mall; (c) to collect local stakeholders' opinions on the Project and reflect them into the project plan/design thus to improve the Project's relevance and sustainability; (d) to promote awareness, understanding and consent of stakeholders, especially of owners of the on-ground commercial entities.

(2) Stakeholder analysis: Stakeholder analysis had been initially discussed between MAUR and the Survey Team during the Preparatory Survey.

(3) List of local stakeholders: staff in charge in MAUR will take responsibility to make the list and update it regularly.

(4) Establish a two-way communication between MAUR and local stakeholders: MAUR will assign a staff to be in charge of a contact person/ coordinator between local stakeholders and JICA Team and MAUR.

(5) Pamphlet to introduce about the Project: In the next stage of the Project, a pamphlet introducing the Project plan, summary of environmental scoping, method to contact with the Project owner, etc. shall be made, printed and distributed widely to local stakeholders and residents around the Project site.

(6) Meeting with key stakeholders should be organized in the next stage of the Project, to discuss with them about the plan of local stakeholder consultation and promote their consent/cooperation.

(7) Organizing the local stakeholder meeting (in the next stage of the Project)

At the present time, identified local stakeholders are grouped as following

	Group of stakeholder	Group members
1	Local authorities	- HCMC, District 1 Urban Management Division - HCMC, District 1 Economy Management Division - HCMC, Department of Culture, Sports and Tourism - HCMC, Department of Planning and Architecture - People's Committee of Ben Thanh Ward, District 1, HCMC
2	Local resident organizations	- Fatherland Front of District 1, HCMC - Woman Organization of District 1, HCMC - Youth Association of District 1, HCMC - Veterans Association of District 1, HCMC
3	Owners/users of the buildings/ lands	- Saigon Tourist - Vietnam Railways Company, South Branch - Department of Health, HCMC (for the hospitals) - SaiGon Trade - Other land/properties developers, real estate agents

4	Managements of hotels, stores, offices, etc.	- Hotel managements - Renting office managements - Restaurant/ coffee shop/ shop managements - Bus management agency/ operator/ cooperative - Taxi companies - Cooperatives of cyclo, bike-taxi (to be confirmed)
5	Representatives of residents	- Neighborhood associations - Representatives of residents of apartments
6	Owners of small shops	- Representatives of owners of shops in Ben Thanh Market - Representatives of owners of night-booths around Ben Thanh Market

Staff in charge in MAUR are now making the list of local stakeholders based on the above-described groups, which includes name, address, telephone number, contact person, etc. of each stakeholder.

In addition, the printing of a pamphlet introducing the Project, the exhibition of Project plan, etc. are being examined as means to dismiss information on the Project to stakeholders. These means to dismiss Project information, the stakeholder analysis and other preparations in advance to the stakeholder consultation should be examined in detail in the next stages of the Project.

5.2.3 Examination of environmental and social impacts (environmental scoping)

1) Outline of the project and its surrounding environment

(1) Outline of the project construction plan

The construction plan of the Project has aim to construct an underground shopping mall associated with underground squares, underground pathways, underground shopping areas, mainly at the same level with the concourse of Ben Thanh Station planned by the UMRT Line 1 Project. The planned development area will cover the underground space starting from the area in front of Ben Thanh Station to Opera House Station of UMRT Line 1. A part of its surface area is placed on the September 23rd Park and the others are placed on the public roads (including the roundabout in front of Ben Thanh Market and Le Loi Street). The Project will not need to acquire any private land and will not cause any affect to private structure.

- Rough scale of facilities : First underground floor: approx. 59,000m^2
  (including USM, and a number of station facilities)
  Extension: approx. 780m Width: 44m ~ 140m
- Depth of the USM : First underground floor: approx. GL-9m
  Excavation depth: approx. GL-12m

(2) Usage of the buildings surrounding the project site

The project site is located in the urban center of Ho Chi Minh City, where there are many houses and business structures assorted with market, hotels, offices, hospitals, etc. (Figure 5.4). Characteristics of the project site may be described as followings.

- Plan to construct Ben Thanh Station on UMRT Line 1 is under implementing.
- It is an urban center with a historic market attracting many people to visit every day.
- It has high concentrations of people and urban functions, serving as a core of economy, tourism, history, culture, and commerce.
- It is a transportation hub adjacent to the inner-city trunk roads and a city bus terminal, into which the UMRT Line 2, 3a, and 4 are planned to link together.
- However, its surrounding areas are assorted and facing many problems such as traffic congestion, due to the poorly improved road network, and other infrastructure.

Ben Thanh Market was built by a French construction company in 1914, and is one of the most ancient structures remaining in Sai Gon. In 1985, it was repaired totally and became this current appearance. Nowadays, it becomes a good landmark that attracts many tourists to visit and ramble around every day.

At the front of the south main gate of Ben Thanh Market, there is the Quach Thi Trang roundabout, and here there is the statue of General Tran Nguyen Han, a Vietnamese hero, and the figure of Quach Thi Trang, a woman who sacrificed her life in the war against America.

Any development project sited at this roundabout may cause affects to these statue and figure, and the relocation of these statue and figure should be carefully planned with close coordination with competent agencies.

Besides, Table 5.23 and Figure 5.4 show a number of relatively large-scaled structures located closely to the project site.

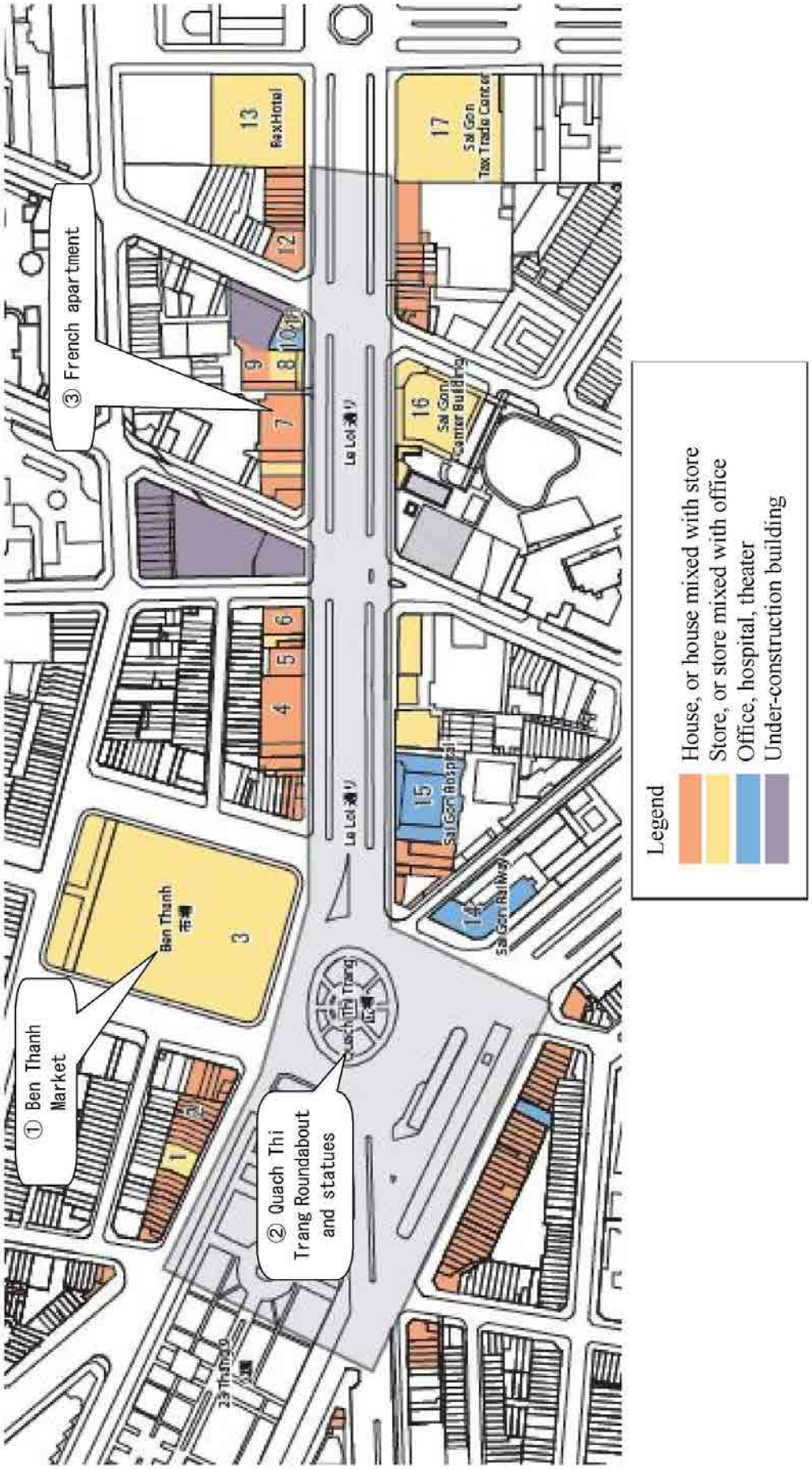


Figure5.4 Buildings adjacent to the project site

Table 5.23 Relatively-large scaled structures located close to the project site

No.	Name of the structure	Usage	Construction period	Repaired or not	Number of floor / under-ground floor	Construc-tion materials
1	QUEEN ANH BUILDING	S	-	-	13/0	-
2	TAN HAI LONG HOTEL	H	-	-	11/0	RC
3	Cho Ben Thanh	S	Fr	Repaired	1/0	RC
4	Yen Hung	S/R	Fr	Repaired	3/0	Brick
5	Sapa	S/R	Fr	Repaired	3/0	Brick
6	Kim Dung Doanh Nghiep Tu Nhan	S/R	Fr	Repaired	5/0	Brick
7	Apartment	S/R	Fr	Repaired	3/0	Brick
8	Xuong,Kimdo,Lotus Gallery,Jazz Club	S	Fr	Repaired	2/0	Brick
9	Unknown	R	Fr	Repaired	4/0	Brick
10	Sea Bank	O	Mo	Not	7/0	RC
11	Bach Bang	S	Po	-	7/0	RC
12	NHG	S/R	Am	Repaired	5/0	RC
13	Rex Hotel	H	Am	Repaired	5/0	RC
14	Saigon Railway	O	-	-	3/0	RC
15	Saigon Hospital	S/R	-	-	3/0	RC
16	Sai Gon Center Building	S/O	Mo	-	-	RC
17	Saigon Tax Trade Center	S	Fr	Repaired	4/0	RC

Legend [Usage] R: resident, S: shop, O: office, H: hotel, T: theatre, cinema
[Construction period] Fr: French period (1850-1929), Wa: was against French (1930-1959), Am: war against America (1960-1975), Po: post war (1976 - 1900), Mo: modern period (1991-)
Source: Data abstracted from the NJPT Study (HCMC UMRT Line1 Building Investigation Report), and revised and edited partly by the JST.

Table 5.24 Current situation of the project site

Item		Content
Title of the study		Preparatory Survey on Ben Thanh Central Station Project in Ho Chi Minh City, Viet Nam
Social environ-ment	Local resident (residents/ opinions on the project, etc.)	The project is sited in the center of District 1, where many government offices, exclusive hotels, shops, etc. are densely located. The site has high concentrations of citizens and urban functions, but its road network and other infrastructure are poorly improved, and it results the problems such as traffic congestion. Consequently, there is a rising need to develop the station square, the access roads, the underground pedestrian way, etc. together with the development of the central junction station for the planned UMRT (Line 1, 2, 3a, and 4).
	Land use (urban, rural, relic, landscape, hospital, etc.)	The buildings in the area around the project site are used as house mixed with store, hotel, office, hospital, etc. In the north of the project site, there is Ben Thanh Market, and in the center of the project site there is the Quach Thi Trang Roundabout (where the statue of General Tran Nguyen Han is standing in

		the middle). The Office of Ho Chi Minh City People Committee, and the Opera House (two beautiful structures built in the French colonial period) are a little far from the project site in the east. And in the south, there is the Saigon General Hospital.
	Economy, transportation (commerce, agriculture, fishery, industrial zone, bus terminal, etc.)	Around the project site, there are Ben Thanh Market, and many stores, hotels, recreation facilities, etc. that attract not only citizens but also foreign visitors. In the south of the Quach Thi Trang Roundabout, there is the largest scale inner-city bus terminal in the City which is under relocation to make land for the on-going UMRT Line1 Project.
Natural environ-ment	Topography, geology (land with steep slope, soft ground, land slide, fault, etc.)	The project is sited on the flat land with no slope and with average altitude of about 2m. Its soft ground is found commonly in the basin of Saigon River. Ground water level is generally found at about 2 m of depth from the ground surface. A number of hotels are using water from the wells in substitute for piped water when there is suspension of piped water supply. It needs to pay attention on the decline of ground water level, and the inequitable ground subsidence when carrying out the soil works in this area.
	Precious plants and animals, their habitat (natural park, habitat of specified species, etc.)	Surrounding areas of the project site have been urbanized since long time ago, and are occupied mainly by many houses, stores, business facilities, etc. Natural environment of the areas is strongly affected by human activities, and is not suitable for natural plants and animals to inhabitant.
Pollution	Complaint raising situation (kinds of pollution which are concerned by the public)	There are usually heavy traffic flows consisted of buses, cars, motorbikes, etc. on the roads surrounding the project site. Air pollution, excessive noise, traffic accident, etc. are the most concerned problems in the City. In addition, it is high possibility for soil excavation works in Ho Chi Minh City to cause impacts to the adjacent buildings. Therefore, in this Project, it needs to consider the application of proper construction methods proposed in the existing EIA reports, as described in Table5.27.
	Implementation of counter-measures (institutional measure, assistance, etc.)	Ho Chi Minh City PC is trying to promote the use of mass transportation with aim to reduce traffic congestion, traffic accident, air pollution, excessive noise in the City.
Other special mentions		Drainage system in the City is poorly developed, and cannot function effectively due to the improperly-disposed garbage. Therefore, inundations are occurred in many places in the City when there is heavy rain.

2) Confirmation of environmental impacts

(1) Extents of environmental impacts (checklist)

Table 5.25 shows the identified environmental items that should be concerned in the project, referring to the JICA Environmental Checklist (Railway Sector).

Table 5.25 Initial environmental checklist (as of the end of November 2011)

Major checked items	Check results
1: Permits, explanation	
(1) EIA and environmental permits	
(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) EIA reports for HCMC UMRT Line 1 and Line 2 have been already prepared and approved. EIA report for the Project has not been prepared yet. (b) EIA report for UMRT Line 1 has been prepared by a consultant entrusted by Ho Chi Minh City PC, and it has been approved in November 2006 by MONRE (Ministry of Natural Resources and Environment). EIA report for UMRT Line 2 has been prepared during F/S carried out by ADB, and it has been approved in May 2009 by Ho Chi Minh PC Department of Natural Resources and Environment (DONRE) (c) EIA report for the Project is expected to be prepared during the next coming studies. If conditions are imposed on the approval of EIA report, these conditions should be met during the next coming studies. (d) Generally in Viet Nam, only the submission and approval of the EIA report is required for a development project. There is no requirement for obtaining other environmental permit.
(2) Explanation to the local stakeholders	
(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) According to Viet Nam regulations, disclosure of summary of the EIA report is obligatory, but public consultation meeting is organized only when there is requirement from the people's committee(s) of commune affected by the project. In this project, MAUR is to take initiative in organizing the meetings with local stakeholders with supports from the JICA Study Team. (b) Comments raised in the local stakeholder meetings or public consultation meetings will be reflected in the project planning.
(3) Examination of alternatives	
(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) In this Preparatory Survey, several alternatives on construction method for the crossing section of Line 1 and Line 4 under Le Loi Street, and phasing of construction are examined. Environmental and social considerations are taken into account in the examination of these alternatives (See Section 5.2.1 Examination of alternatives).
2 : Pollution control	
(1) Water quality	
(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? (b) Do effluents from the station and the shopping mall comply with the country's effluent standards and ambient water quality	(a) In the project site, there will be no cutting or filling that expose topsoil during construction phase. Therefore, it is anticipated that possibility of topsoil runoff will be negligible, and impact to surface water quality in the downstream is considered negligible. (b) In operation phase, waste water generated from the station and the shopping mall should be estimated, and appropriately treated in accordance with Vietnam regulations and standards on

Major checked items	Check results
standards? Is there a possibility that the effluents will cause areas not to comply with the country's ambient water quality standards?	waste water.
(2) Wastes	
(a) Are wastes generated from the station and shopping mall, properly treated and disposed of in accordance with the country's regulations?	(a) During construction phase, construction debris, and solid waste from worker camps should be properly treated as described in the following Table 5.27. In addition, a part of soil generated from the excavation work may not be reusable and should be properly treated as waste soil. In operation phase, waste generated from the station and shopping mall should also be properly collected, treated, and disposed by authorized company in accordance with Ho Chi Minh City regulations.
(3) Noise and vibration	
(a) Do noise and vibrations from the station and shopping mall (in construction phase and in operation phase) comply with the country's standards?	(a) In construction phase, noise and vibration will be generated from the operation of construction machinery, trucks, etc. It is necessary to take appropriate measures to mitigate impact of noise and vibration as shown in Table5.27. In operation phase, buildings located near by the project site may be affected by vibration generated by the moving train. Therefore, damages caused by vibration to these buildings should be properly monitored.
(4) Ground subsidence	
(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence? (especially in case of subways)	(a) Earth works such as excavation would lead to the decline of groundwater level and then subsidence of ground. As recommended in Table5.27, appropriate construction method, such as installation of watertight soil retaining walls, should be applied to avoid impact to groundwater. In addition, in operation phase, subsidence of buildings adjacent to the project site should be monitored.
3 : Natural environment	
(1) Protected areas	
(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) In the areas around the project site, there is not any protected area designated by Vietnam laws or international treaties and conventions.
(2) Ecosystem	
(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	(a) The project is sited in the center of a highly-urbanized metropolitan city, where there is not any primeval forest, tropical rain forest, ecologically valuable habitat.
(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	(b) The project site does not encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions
(c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?	(c) The project site is located in a densely-populated urban center which is not suitable for valuable species to inhabitant.
(d) Are adequate protection measures taken to	(d) The project site is located in a densely-populated urban center which is not suitable for a migration route of wild

Major checked items	Check results
prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of station and shopping mall will have impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environments?	animals and domestic animals. (e) The project site is located in a densely-populated urban center where there is no large green area for wild animals to inhabitant. Impact to ecosystem is negligible. (f) The project does not aim to construct the railway but to develop an underground station and shopping mall. Impact to natural environment is negligible.
3) Hydrology	
(a) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	(a) Earth works such as excavation may partly affect groundwater level. Impact to groundwater movement and water flows of Sai Gon River and Dau Hu Canal is now under confirming. According to staff in charge of HCM PC DONRE, HCM University of Technology is carrying out a study on groundwater in the area around Ben Thanh Market. In the Preparatory Survey, information on the above-mentioned study and other relevant information had been collected partly. Thus, it needs to carry out further detailed examination on impacts caused by earth works to groundwater in the next stage of the Project.
(4) Topography and geology	
(a) Is there a soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) The project is sited in the flat area, therefore occurrence of slope failure or landslide is not expected. (b) The project is sited in the flat area, therefore occurrence of slope failure or landslide is not expected. (c) Soil runoff from the waste soil dumping site may be expected. It needs to introduce appropriate measures to prevent this soil runoff.
4 : Social environment	
(1) Resettlement	
(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs,	(a) The project will use only the underground space of public lands (Quach Thi Trang roundabout, September 23rd Park, Le Loi Street) where there is not any house, store, shop, etc. As described in the EIA report of UMRT Line 1, land acquisition and resettlement are not required for the construction of Ben Thanh Station. The Study Team also carried out field reconnaissance surveys, and confirmed that land acquisition and resettlement are not required for the Project. In order to make land for the on-going UMRT Line 1 Project,

Major checked items	Check results
restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Are the compensations going to be paid prior to the resettlement? (e) Are the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	the bus terminal in front of Ben Thanh Market, and its attached gasoline stand, ticket counter, shop located inside the bus terminal are being relocated to the site in the western area of the September 23rd Park. According to person in charge in DOT, construction of the new bus terminal facilities is going to start in December 2011 and will be completed in about March 2012. Small shops in the existing bus terminal will be relocated to the new terminal in about March 2012. Relocation of these shops shall be followed up during the implementation of the Project. In addition, no any street stall has been found in the project site during the field surveys carried by the Study Team.
(2) Living and livelihood	
(a) Where railways are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts? (b) Is there any possibility that the project will adversely affect the living conditions of inhabitants other than the affected inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., by causing increases in traffic congestion and traffic accidents)?	(a) The Project has aim to contribute to the smooth transfer between the railway and other transportation means, such as to mitigate congestion of buses which is the sole mean of public transportation in the City. Therefore, basically the Project will not cause adverse impact to existing means of transportation. In addition, house, store, shop are not found exist in the project site, thus alteration of existing land uses, changes in sources of livelihood, or unemployment, etc. are not expected. (b) The Project is expected to contribute to improve citizen's accessibility to Ben Thanh area. Adverse impact to other residents is not anticipated. (c) During construction phase, it is anticipated that a considerable number of temporary construction workers will come to the project site. Therefore, it needs to carry out sanitary health education to workers, and measures to prevent spread of infectious diseases such as HIV/AIDS, as recommended in Table5.27. d) During construction phase, a part of roads around the project site may be temporarily blocked and cause traffic congestion at some sections. In addition, accidents accompanied with excavation works, construction machinery, fall down from high places, etc. may occur. Therefore, it needs to implement accident prevention measures as recommended in Table5.27. (e) Underground station and shopping mall are expected not cause impedance to traffic and movement of people on ground. It is expected that accessibility to the buildings near by the project site will be improved with the use of the underground pathways. Construction work will cause adverse impacts to

Major checked items	Check results
(e) Is there any possibility that the station and shopping mall will impede the movement of inhabitants? (f) Is there any possibility that structures associated with station and shopping mall will cause a sun shading and radio interference?	residents in the surrounding areas, due to the removal of electric poles, electric cables, water supply pipes, drainage pipes. However, in operation phase, positive impacts such as improvement of accessibility to the urban center are expected. (f) The Project will utilize underground spaces, and will not cause impacts of sun shading or radio interference.
(3) Heritage	
(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) In the north of the project site, there are Ben Thanh Market and apartment which are built in the French colonial period. In addition, there are statues in the center of the roundabout in front of Ben Thanh Market. In construction phase, it appears the need to temporarily remove these statues. In the UMRT Line 1 Project, persons in charge of HCM PC are being consulted on how to remove these statues appropriately. In this Preparatory Survey, discussions with relevant authorities will be continued to make agreement on the issue. Furthermore, with respect to the impacts to the surrounding buildings such as Ben Thanh Market, French apartment, etc., basic investigation of the buildings located near by the station and railway, and survey on maintenance conditions of these buildings have been carried out under the D/D Study of the UMRT Line 1 Project. In this Preparatory Survey, results of the investigation and survey mentioned above will be reviewed, and proper mitigation measures will be recommended in case that significant impacts caused by the Project to these establishments are identified. Besides, it will need to take proper actions in accordance with relevant Vietnam regulations if archaeologically-valuable remains are found during the excavation works.
(4) Landscape	
(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a)The Project aims mainly to develop the underground facilities, and therefore, structures to be constructed on land surface are limited to small-scaled entrances/exits, ventilation towers, and atriums, These on-land structures will be designed in harmonization with surrounding landscape and in accordance with the architectural guideline which is being prepared by the City. In construction phase, it will need to relocate a number of trees along the sides of Le Loi Street (about 200 trees with 5m~30m of height). Relevant HCM City authorities should be consulted on the relocation of these trees. In addition, in operation phase, high trees may not be replanted in some sections of Le Loi Street, where the thickness of the ground is reduced to 2~3 meters due to the appearance of the underground shopping mall.
(5) Ethnic Minorities and Indigenous Peoples	
(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	The Project is sited in the center of the urban area, and impact to culture and lifestyle of ethnic minorities and indigenous peoples is not expected.
(6) Working conditions	

Major checked items	Check results
(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) Contractors should be obligatory to perform construction works in accordance with Vietnam laws and regulations on working environment. Besides, it needs to monitor the contractors' work to ensure their compliance with Vietnam laws and regulations on working environment. Method of monitoring, identification of organization in charge of monitoring, and its feasibility should be examined in detail in the next coming studies.
5 : Others	
(1) Impacts during construction	
(a) If the construction activities might cause traffic congestion, are adequate measures considered to reduce such impacts? (b) Is there the need to remove the existing facilities on the ground or underground (such as electric pole, water supply pipe, sewage pipe, telephone cable)?	(a) In construction phase, it is expected that traffic congestion will be increased, and levels of air pollution, noise, vibration will also temporarily rise. Therefore, it needs to take measures to mitigate these impacts as recommended in Table5.27. (b) In construction phase, it needs to temporarily relocate or remove the Quach Thi Trang roundabout, the statues stood in the center of the roundabout, trees and electric poles along Le Loi Street, etc. In addition, it also needs to carry out survey on the underground water supply pipes, drainage pipes, electric cables, etc. and remove these underground existing utilities. In the UMRT Line 1 Project, relevant authorities are consulted on the relocation/removal of these items. In this Preparatory Survey, consultation will be continued in order to facilitate the relocation/ removal of these items in a proper manner.
(2) Monitoring	
(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	In this Preparatory Survey, environmental considerations are limited at IEE level, and only main items of the monitoring plan are described. In the next coming stages of the Project, the EIA report, as well as the environmental monitoring program should be prepared..

Major checked items	Check results
6 : Note	
(1) Reference to Checklist of Other Sectors	
(a) Where necessary, pertinent items described in the Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation). (b) Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities).	(a) Not available (b) Not available
(2) Note on Using Environmental Checklist	
(a) If necessary, the impacts to trans boundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as trans boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) Not available

(2) Environmental scoping (draft)

Table 5.26 shows main environmental items and assessments of impacts during each phase of construction, and operation. These assessments should be done in further detail in the next coming stages of the Project.

Table 5.26 Initial environmental scoping (draft)

No.	Environmental item	Assessment		Basis of assessment
		Con-struction	Opera-tion	
[Social environment]				
1	Involuntary resettlement	D	D	The Project will use only the underground space of public lands (roundabout, park, and road). Acquisition of private land, relocation of house, shop, etc. are not required.
2	Local economy such as employment and livelihood	B-	A+	Business activities of shops, hotels, factories, companies, etc. located close to the planned stations may be disturbed temporarily during construction phase. In operation phase, accessibility to the area will be improved and economic activities around the newly-constructed stations may become more active. However, in operation phase, it needs to take into consideration the coexistence of the underground shops and the small shops on the ground adjacent to the project site.
3	Land use and utilization of local resources	D	A+	In construction phase, impact to land use and local resources is not expected. In operation phase, it is anticipated that lands around the project site will be used in more effective manner.
4	Social capitals,	D	A+	In operation phase, land use in the urban center areas will

No.	Environmental item	Assessment		Basis of assessment
		Con-struction	Opera-tion	
	local organizations, such as authorities to make decisions			be more advanced. Positive impacts are expected because users of the railway, tourists, residents who run small business around the station, local residents, and people who use other means of transportation different to the railway, etc. will be more convenient in transportation.
5	Existing social infrastructures and services	B-	B+	In construction phase, it needs to relocate/ remove the statues, trees, electric poles and underground utilities such as water supply pipes, drainage pipes, electric cables, etc. In operation phase, the Project will contribute to the effective use of underground spaces in Ben Thanh area.
6	The poor, indigenous and ethnic people	D	D	The Project is sited in the center of the urban area, and impact to culture and lifestyle of ethnic minorities and indigenous peoples is not expected.
7	Misdistribution of benefit and damage	C-	C-	It is expected that the Project will not cause distribution of benefit and damage. However, it needs to confirm the impacts that may be caused by the underground shopping mall to the shops existing on ground during the consultation meetings with local stakeholders.
8	Cultural heritage	B-	B-	In construction phase, it needs to discuss with relevant authorities of HCM City on the temporary relocation of the statues in the roundabout in front of Ben Thanh Market. Besides, in both construction phase and operation phase, Ben Thanh Market and the apartment built in the French colonial period may be affected by vibration and inequitable ground subsidence.
9	Local conflict of interests	C-	C-	Results of the interview survey to railway users, local residents, etc. will be reflected during the Project planning, and therefore, conflict of interests between residents in the local area is not expected. However, it is expected that owners of the buildings adjacent to the project site may have conflicting opinions on the location of the pathways linking the station and shopping mall with the adjacent buildings, the stairs, the exits, etc. Therefore, it needs to organize meetings and to make consensus among the local stakeholders on this issue.
10	Water usage or water rights and rights of common	D	D	Not available.
11	Sanitation	C-	D	In construction phase, sanitary condition around the project site may be temporarily deteriorated. In operation phase, adverse impact to sanitation is not expected.
12	Hazards (risk), infectious diseases such as HIV/AIDS	B-	D	During construction phase, it is anticipated that a considerable number of temporary construction workers will come to the project site and cause the spread of infectious diseases such as HIV/AIDS. Therefore, it needs to implement appropriate counter-measures as recommended in Table5.27.

No.	Environmental item	Assessment		Basis of assessment
		Con-struction	Opera-tion	
[Natural environment]				
13	Topography and geographical features	D	D	The project site is located on the flat ground, and therefore, the change of topological or geographical features of the area is not anticipated.
14	Soil erosion	C-	D	Soil runoff from the disposal sites of waste soils generated from the excavation works is expected, and therefore, it needs to implement prevention measures as recommended in Table5.27.
15	Groundwater	A-	B-	In construction phase, excavation works may cause decline of groundwater level. It needs to implement measures as recommended in Table5.27 to avoid impact to groundwater level.
16	Hydrological situation	D	D	Impact to hydrological situation is not expected
17	Coastal zone (mangroves, coral reefs, tidal flats, etc.)	D	D	The project site is far from the seashore/ coastal zone, and impact to seashore/ coastal zone is not expected.
18	Flora, fauna and biodiversity	B-	D	The Project is sited in the center of urban area, and it will not cause affect to wild animals and plants, and ecosystem. However, in construction phase, it needs to temporarily relocate a number of trees along the sides of Le Loi Street (about 200 trees with 5m~30m of height).
19	Meteorology	D	D	Impact caused by the Project to meteorology is expected negligible.
20	Landscape	B-	B-	In construction phase, landscape of Le Loi Street may be damaged due to the relocation of the trees (5m~30m of height) along the sides of this street. In operation phase, high trees may not be replanted in some sections of Le Loi Street, due to the appearance of the underground shopping mall and the thickness of the ground is reduced to 2~3 meters.
21	Global warming	D	B-	In operation phase, the Project is expected to contribute to the improvement of traffic congestion in the area around the project site, and then lead to the reduction of exhausted gas from vehicles and motorbikes. However, adverse impacts caused by heat generated from the station, underground concourse, shopping mall, etc. are expected.
[Pollution]				
22	Air pollution	B-	B+	In construction phase, it is anticipated that concentrations of dust and exhausted gas will increase temporarily, due to traffic congestion, earth works, and the operation of construction machinery. In operation phase, the Project is expected to contribute to the mitigation of traffic congestions, and reduction of air pollution.
23	Water pollution	C-	B-	In both construction phase and operation phase, waste water generated from the station and underground shopping mall will be discharged to the existing sewerage system of the City. Relevant authorities of

No.	Environmental item	Assessment		Basis of assessment
		Con-struction	Opera-tion	
				HCM PC are being consulted on the connection (volume of waste water, location of connection, number of connections, etc.) with the existing sewerage system. However, it needs to carry out monitoring of water quality of water courses surrounding the Project site to ensure that they are not affected by the Project operation. .
24	Soil contamination	D	D	The Project will not use poisonous chemicals, and therefore, soil contamination is not expected.
25	Waste (including waste soil)	B-	C-	In construction phase, generation of construction debris and solid wastes from the worker camps is expected. In addition, a part of soil generated from the excavation works may not be reusable and should be treated as waste soil. As described in the EIA report for the UMRT Line 2 Project, there is a plan to use excavated soil to fill in low grounds in Cu Chi District in the north of Ho Chi Minh City. In this project, a similar disposal method may be introduced. Anyway, wastes should be properly collected, transported, and disposed by authorized company in accordance with relevant regulations issued by Ho Chi Minh City PC. In operation phase, it needs to follow up the works of the company who is entrusted to collect, treat, and dispose wastes generated from the station and shopping mall, to ensure that these works are properly carried out y in accordance with Ho Chi Minh City regulations.
26	Noise and vibration	B-	B-	In construction phase, noise and vibration will be generated from the operation of construction machinery, trucks, etc. In operation phase, the railway may contribute to the reduction of motorbike and vehicle traffic volume, and it is expected that noise level in the area will be decreased. However, in operation phase, buildings located near by the project site may be affected by vibration generated by the moving train, and therefore, it needs to monitor the damage condition of these buildings.
27	Ground subsidence	A-	B-	Earth works such as excavation would lead to the decline of groundwater level and then subsidence of ground. As recommended in Table5.27, appropriate construction method, such as installation of watertight soil retaining walls, should be applied to avoid impact to groundwater. In addition, in operation phase, subsidence of buildings adjacent to the project site should be monitored.
28	Offensive odor	D	D	There is no project component or activity that may cause offensive odor.
29	Bottom sediment	D	D	The project site is flat and far (more than 700 m) from the river and canal. Impact of bottom sediment is negligible
30	Accidents, traffic congestion	B-	B-	In construction phase, a part of roads around the project site may be temporarily blocked, and it may cause traffic congestion at some sections. In addition, accidents accompanied with excavation works, construction machinery, fall down from high places, etc. may occur.

No.	Environmental item	Assessment		Basis of assessment
		Con-struction	Opera-tion	
				In operation phase, fire may occur from the facilities that use electric power or gas, and accidents accompanied with flood may also occur when there is abnormal heavy rain. Therefore, it needs to carefully examine fire and flood prevention measures during the phases of planning, design and construction of the Project.

注） *A+/- : Serious impact is expected (positive/negative).*
B+/- : Some impact is expected (positive/negative)
C+/- : Extent of impact (positive/negative) is unknown. Further examination would be necessary.
D : No or negligible impact is expected

(3) Impact mitigation measures

Table5.27 shows environmental items which are assessed as serious negative impact (A-), or some negative impact (B-), or impact with unknown extent (C-) according to the initial scoping described in the previous section. Measures to mitigate impacts are also described in the table.

Table5.27 Potential negative impacts and relevant mitigation measures

No.	Negative impact	Mitigation measure
2	Local economy such as employment and livelihood	In order to mitigate impedance to business activities of stores, offices, hotels, etc., around the project site during construction phase, contractors should make traffic management plan which includes the items such as: schedule for operation of construction vehicles and machinery; identification of roads blocked by construction activities; covering of cut & cover sections with road deck plates; arrangement of detouring roads for pedestrians and vehicles; arrangement of signboards, signals, etc. to guide people on the detouring roads; deployment of personnel for traffic distribution direction; etc.
5	Existing social infrastructures and services	The relocation or removal of Quach Thi Trang Roundabout, statues, trees, electric poles, and underground utilities such as water supply pipes, sewerage pipes and electric cables should be carefully planned and properly implemented, under coordination with relevant authorities of HCM City PC.
8	Cultural heritage	In the UMRT Line 1 Project, relevant authorities of HCM City PC are being consulted on the relocation/removal of the statues stood in front of Ben Thanh Market. In the next phases of the Project, consultation shall be continued to facilitate these relocation/ removal in a proper manner. Furthermore, with respect to the impacts to the surrounding buildings such as Ben Thanh Market, French apartment, etc., basic investigation of the buildings located near by the station and railway, and survey on maintenance conditions of these buildings have been carried out under the D/D Study of the UMRT Line 1 Project. In this Preparatory Survey, results of the investigation and survey mentioned above will be reviewed, and proper mitigation measures will be recommended in case that significant impacts caused by the Project to these establishments are identified. Besides, it will need to take proper actions in accordance with relevant Vietnam regulations if archaeologically-valuable remains are found during the excavation works.
9	Local conflict of interests	The project owner (MAUR) should make efforts to organize local stakeholder meetings, disclose information on the Project, discuss with owners of the adjacent buildings, users/tenants of the buildings, etc. to promote consensus and

No.	Negative impact	Mitigation measure
		cooperation of local residents
11	Sanitation	Contractors should make sanitation management plan, and duly implement this plan. Particularly, sanitary facilities (trash bins, toilets, etc.) should be appropriately placed at construction sites, and staff in charge of sanitary management should be deployed appropriately at every construction site, etc.
12	Hazards (risk), infectious diseases such as HIV/AIDS	Contractors should duly implement measures to prevent working accidents, to carry out regular medical examinations for workers, education and instruction on sanitary health and infectious diseases. In case of necessary, education on sanitary health and HIV/AIDS prevention program should be implemented.
14	Soil erosion	The stockpiling, reuse, and disposal of excavated soils should be carefully examined. Excavated waste soils should be collected and disposed by authorized company in accordance with HCM City PC regulations. However, contractors should monitor the process of waste soil transportation and disposal to ensure that soils are disposed properly in accordance with the contract. Contractors should also follow up the tasks of soil disposal to ensure that the sites for temporary storage of excavated soils, and the sites for disposing waste soils are properly managed.
15	Groundwater	In advance to the commencement of construction, it needs to carry out survey on groundwater level, to estimate impacts that may be caused by the excavation works to groundwater level, and examine measures to avoid or mitigate these impacts. In construction phase, in order to avoid impact to groundwater in the area surrounding the project site, it should apply appropriate construction method such as the use of soil retaining walls with high impermeability or installation of waterproof walls until the deep impermissible layer. In addition, during construction phase, it should carry out the continuous monitoring as recommended in the EIA report for UMRT Line 1. In operation phase, groundwater level and ground subsidence in the areas surrounding the project site should be periodically monitored.
18	Flora, fauna and biodiversity	Contractors should co-work with agency in charge of management of parks and green trees under Department of Transportation of HCM City PC to appropriately relocate / remove trees along the sides of Le Loi Street.
20	Landscape	Contractors should co-work with agency in charge of management of parks and green trees under Department of Transportation of HCM City PC to appropriately relocate / remove trees along the sides of Le Loi Street.
22	Air pollution	In construction phase, contractors should implement measures to reduce impacts of dust and exhausted gases , such as: build temporary walls around the construction sites; use construction equipment and vehicles which comply with the latest regulations on exhaust gas control; periodically inspect and maintain construction equipment and vehicles; periodically clean and water the project sites; use cover sheets for trucks carrying soil; etc.
23	Water pollution	In construction phase, waste water generated from construction sites should not be discharged directly to drainage system or surrounding surface water bodies. Waste water should be settled and preliminarily treated before discharged, in accordance with Vietnam standards on waste water. Contractors should make sanitation management plan for construction sites, and duly implement this plan. Particularly, sanitary facilities (trash bins, toilets, etc.) should be appropriately placed at construction sites, and staff in charge of sanitary management should be deployed appropriately at every construction site, etc. In operation phase, waste water generated from the station and shopping mall, etc. should be collected and discharged to the sewerage system of the City. And water quality of water courses around the Project site should be periodically monitored.
25	Waste	In construction phase, contractors should bear efforts to reduce construction

No.	Negative impact	Mitigation measure
	(including waste soil)	waste, and to separately collect, re-use these wastes. Excavated soils should be utilized in filling in low grounds, or used as materials for the embankments, construction site developments, etc. Unusable construction wastes, garbage generated from worker camps, and waste soils should be properly collected, treated, and disposed by authorized company in accordance with HCM City regulations. As described in the EIA Report for the HCMC UMRT Line 2, the low lands in Cu Chi District in the north of HCMC are planned for dumping excavated waste soils. These lands may also be used for dumping excavated waste soils generated by the Project. In the next coming studies, impacts caused by transportation and disposal of these excavated waste soils should be assessed, and mitigation measures as well as monitoring program should be examined in case of necessity. In operation phase, works of company who is entrusted to collect, treat, and dispose solid wastes generated from the station and shopping mall should be followed up to ensure that it is properly carried out in accordance with HCM City regulations.
26	Noise and vibration	In construction phase, contractors should bear efforts to reduce noise from the construction sites by installing the temporary walls around the construction sites, using construction machinery and vehicles which reduces noise and vibration. Construction machinery and vehicles should be periodically inspected and maintained to be able to use in best condition. Operation of vehicles should be properly managed to avoid concentration of vehicles at a same time and in the same place. Operators of construction machinery and drivers of vehicles transporting equipment and materials should be instructed and trained appropriately. In operation phase, it needs to confirm possibility of damages caused by vibration from the moving train to the buildings in the adjacent areas. In case of necessity, it should monitor the solidity and damage situation of the buildings around the project site which is sensitive to vibration.
27	Ground subsidence	In construction phase, in order to avoid impact to groundwater, it should apply proper construction method such as installation of waterproof soil retaining walls around the excavation site, etc. In addition, it should also carry out continuous monitoring on groundwater level, leakage of groundwater to underground structures, inequitable subsidence of buildings located closely to the project site. In operation phase, it should periodically monitor the groundwater level, the leakage of groundwater to underground structures, and the inequitable subsidence of buildings located closely to the project site.
30	Accidents, traffic congestion	In construction phase, construction vehicle operation plan should be appropriately made, and routes for construction vehicles should be properly planned to avoid concentration of machinery and vehicles in limited roads. Drivers of vehicles bringing equipment and materials should be properly trained to ensure that they observe the driving rules, driving routes, etc. In addition, measures to prevent groundwater and rain water flowing into the underground facilities, counter-measures to flood accidents when there is abnormal heavy rain, and fire prevention measures should be appropriately considered and reflected in the phases of planning, design, and construction of facilities of the Project.

5.3 RECOMMENDED DRAFT OF TOR FOR ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

5.3.1 Outline of TOR for environmental and social considerations

Ben Thanh Station is planned as a central station where there is a junction of HCMC UMRT Line 1, Line 2, Line 3a, and Line 4. EIA report for Line 1 has been approved by Ministry of Natural Resources and Environment (MONRE), and EIA report for Line 2 has been approved by Department of Natural Resources and Environment (DONRE) of HCM City PC. Assessment of impacts caused by the construction of Ben Thanh Station is briefly described in these EIA reports.

In this Project, construction of the underground square, shopping mall, pathways linking the platforms, and pathways linking the station with the nearby buildings are planned, in addition to the construction plan for Ben Thanh Station. The area (totally about 52,000 m^2) targeted by the Project includes the space beneath Le Loi Street which expands from Quach Thi Trang Roundabout to Opera House Station. The area covered by the Project is larger than the station area planned by UMRT Line 1 and Line 2. Therefore, according to Viet Nam regulation on EIA (Decree 29/2011/ND-CP issued on April 18, 2011, Article 15), it needs to prepare an EIA report and obtain its approval from competent authority.

In the next coming studies of the Project, an EIA report should be prepared in accordance with Vietnam regulations on EIA, and with "JICA Guidelines on Environmental and Social Considerations (April 2010)".

Recommended TOR for the EIA Study to be carried out under the next coming studies is as following.

a) Review of existing documents and information, and carry out field reconnaissance survey:

Collect and review basic information on social environment and natural environment, EIA reports associated with HCMC UMRT projects. Carry out field reconnaissance surveys to grasp current conditions of social environment and natural environment.

Collect and analyze documents and information on legal framework and institution relating to EIA in Viet Nam.

b) Grasp of project contents

Examine the following project contents for preparing the EIA study for the Project.

- Project objective
- Location and structure of station platforms, underground shopping mall, passenger pathways, station facilities, etc. of Ben Thanh Station
- Facility operation & maintenance plan
- Facility construction plan and construction schedule

c) Studies in Viet Nam

Carry out the following studies and field surveys to confirm potential environmental issues identified in the scoping.

(1) Socio-economic condition, employment and livelihood
(2) Existing social infrastructure and services
(3) Local conflict of interest

(4) Public sanitation
(5) Condition of domestic water usage
(6) Survey on natural environment and social environment around the exploitation sites for construction materials (rock, sand, etc.)
(5) Hazards, risk, infectious diseases (HIV/AIDS)
(6) Soil erosion
(7) Groundwater movement, groundwater usage
(8) Flora, fauna, and ecosystem
(9) Landscape
(10) Air pollution
(11) Water pollution
(12) Solid waste
(13) Noise and vibration
(14) Ground subsidence
(15) Accident

d) Assessment of environmental impacts

Based on information collected in Japan and in Viet Nam during the field surveys, examine and analyze content and extent of environmental impacts that may be caused by the Project during construction phase and operation phase respectively.

e) Preparation of impact mitigation measures, environmental management program, and environmental monitoring program

Based on result of environmental impact assessment, examine mitigation measures for impacts which are expected to be significant. Content and method of mitigation measure, as well as time, cost, and institutional arrangement necessary for implementation of mitigation measures should also be examined and summarized in the environmental management program.

In addition, examine the environmental monitoring program to confirm the changes of environment conditions during construction phase and operation phase, and results of impact mitigation measures. Items to be monitored and monitoring method, frequency, site, as well as necessary budget and support institution should also be examined.

f) Stakeholder meeting

Method to organize the stakeholder meetings, and the corresponding time schedule, place, number of participants, questions and answers raised in the meetings, etc. should be described in the EIA report.

g) Preparation of the EIA report

Prepare an EIA report in line with Viet Nam regulations on EIA and JICA Guidelines on Environmental and Social Considerations (April 2010). The EIA report should have contents as instructed by Circular 26/2011/TT-BTNMT. And results of the stakeholder meetings should be included in the EIA report.

5.3.2 Environmental Management Program and Environmental Management Plan（EMP）

An Environmental Management Program shall be formulated in the stage of EIA study, as a part of the EIA Report to ensure the environmental commitments made at the EIA study are implemented in an efficient and effective manner. In addition, an Environmental Management Plan shall be formulated after the approval of the EIA Report (according to Article 22 of Decree 29/2011/ND-CP).

1）Design Phase Environmental Management Plan

<Preparation of the Design Phase Environmental Management Plan>

The Design Phase EMP is designed to ensure and assure the environmental protection and pollution prevention and control designs are able to comply with the approved Environmental Impact Assessment (EIA) Study report's recommendations, DONRE's requirements and conditions, as well as endorsed public comments on the Project. The Design Phase EMP will outline, *inter alia*, its objectives and the means to achieve these objectives as:

(a) Management framework of the Design Phase EMP;
(b) Project organization for the design activities, including the designation of responsibility for each design function and level;
(c) Works program for the design and the deliverables arising from the translation of EIA, DONRE and other requirements/commitments into the project design;
(d) Systematic design protocols; to increase efficiency in use of resources (i.e. materials and energy); minimize pollution from chosen materials/form of design; reduce impacts associated with the disposal of materials; encourage the recovery, reuse and recycling of materials; as well as minimize potential nuisances, such as, noise, smell and vibration, etc.;
(e) Scope and content of design environmental monitoring and audit, and duty of the design engineer;
(f) Design audit procedure and duty of an Independent Checker (Environmental);
(g) Systematic protocols to ensure all requirements are translated from the EIA process to design, contract and subsequent tendering documentation, with the aim to ensure the implementation of all the project's environmental requirements, in a coherent, consistent and timely manner;
(h) Protocol/procedures to deal with any environmental design changes and the necessary actions to achieve the required or enhanced project environmental performance, including the implementation of the environmental auditor's recommendations.

<Preparation of environmental auditing>

The audit procedure shall be prepared to validate compliance with the environmental protection conditions, and EIA process recommendations and requirements. The audit is

required to confirm no resultant secondary or unforeseen or cumulative impacts arising due to the design or design changes, etc. has been introduced into the project implementation process.

<Documentation>

The reporting requirement and the frequency of reporting will be stated in the EMP. A Design Phase EMP report shall be prepared to conclude the environmental design work at the end of each audit period.

2) Construction Phase Environmental Management Plan

<Preparation of the Construction Phase Environmental Management Plan>

The Construction Phase EMP shall contain the following.

(a) Duties of the Environmental Team (ET) Leader, the Independent Checker (Environment) (ICE), Engineer's Representative and Contractor, in relation to the Project's environmental monitoring and audit requirements during construction;
(b) Information on the project organization and programming of construction activities;
(c) The project construction schedule and the necessary environmental monitoring and audit programme to track the environmental impacts;
(d) Traffic Management Plan
(e) Requirements for the review of pollution sources and working procedures in the event of non-compliance of the project's environmental performance criteria;
(f) Environmental monitoring protocols and their technical requirements;
(g) Environmental auditing procedures;
(h) Requirements for the documentation of environmental monitoring and audit data, and appropriate reporting procedures; and
(i) Complaint resolution procedures.

<Preparation of site surveillance plan>

The site surveillance plan shall be prepared as a means to assess and ensure the project's environmental protection and pollution control measures are in compliance with the construction contract specifications.

<Complaint procedure>

The complaint procedure shall be prepared with includes the following items.

(a) Log complaint and date of receipt onto the complaint database and inform the ICE immediately;
(b) Investigate the complaint to determine its validity, and to assess whether the source of the problem is due to project works;

(c) If a complaint is valid and due to project works, identify mitigation measures in consultation with the ICE;
(d) If mitigation measures are required, advise the Contractor accordingly;
(e) Review the Contractor's implementation of the identified and required mitigation measures, and the current situation;
(f) Undertake additional monitoring and audit to verify the complaint if necessary, and ensure that any valid reason for complaint does not recur through proposed amendments to work methods, procedures, machines and/or equipment, etc.
(h) Report the investigation results and the subsequent actions to the complainant; and
(i) Log a record of the complaint, investigation, the subsequent actions and the results in the monthly EMP reports.

<Rules for documentation>

All documentation shall be filed in a traceable and systematically manner. Site document, such as, monitoring field records, laboratory analysis records, meeting minutes, correspondences etc., shall be cross-referenced by the ET leader and be ready for inspection upon request. All Construction Phase EMP results and findings shall be documented in the Construction Phase EMP reports prepared by the ET and endorsed by ICE prior to disseminate to the MAUR and JICA.

The content and frequency of the EMP reporting shall be determined in the detail design stage.

3) Operation Phase Environmental Management Plan

<Clarification of an Environmental Policy>

The Operation Phase EMP shall include an Environmental Policy statement represents a commitment by the railway/station operation and management authority to carry out his activities in a sustainable manner and with the aim of protecting the environment.

<Preparation of the Operation Phase EMP>

The environmental protection conditions, including, all statutory limits for project operation, all EIA study recommendations and requirements, DONRE's comments and any endorsed public comments related to the operation phase of the development project shall be clearly defined in the Operation Phase EMP. The various measures for implementation by the railway/station operation and management authority shall be in a tabulated format for easy reference.

<Recommendation on the environmental organization>

The Operation Phase EMP shall include the recommendation on environmental organization to be integrated into the railway/station operation and management authority, and the appropriate institutional arrangements in order to implement the EMP in an effective manner.

<Rule for Documentation>

The Operation Phase EMP shall include the rules for collection of information and preparation of reports, report submission frequency, etc. It shall also provide statement on the content and the appendices of the EMP reports.

5.3.3 Environmental Monitoring Plan (EMoP)

Table 5.28 describes items to be monitored, as well as its indicators, frequency, and sites, during the design phase, construction phase, and operation phase. However, contents of this table shall be reviewed and revised during the stages of EIA study and detail design.

Table 5.28 Environmental Monitoring Plan (draft)

Item	Indicators	Frequency			Site
		Design Phase	Construction Phase	Operation Phase	
Air ambient	SPM, CO, NO2, SO2, Carbohydrates, microclimate parameters	1 time 1day/time	4times/year 1day/time (during all construction phase)	4times/year 1day/time (during 2 years)	to be defined in F/S
Noise and vibration	Leq, L10, L90	1 time 1day/time	4times/year 1day/time (during all construction phase)	4times/year 1day/time (during 2 years)	to be defined in F/S
Ground water level	Ground water level	1 time 1day/time	All the time (during all construction phase)	All the time (during 2 years)	to be defined in F/S
Ground subsidence	Deformation of ground	1 time 1day/time	All the time (during all construction phase)	All the time (during 2 years)	to be defined in F/S
Surface water quality	Temperature, pH, Turbidity, EC, BOD, COD, DO, Total-P, Total-N, Oil-grease, Coliform	1 time 1day/time	3times/year 1day/time (during all construction phase)	6times/year 1day/time (during 2 years)	to be defined in F/S

5.3.4 Estimated cost, financial sources, and implementation framework for environmental and social considerations

After the Preparatory Survey, and before submission for approval of the investment plan for the Project, it should carry out an EIA study and obtain the approval of the EIA Report in accordance with Vietnam regulations on EIA.

Recommended TOR for the EIA study for the Project was described in Section 5.3.1. It consists of the following main components.

(1) Review of Vietnam's legal framework on EIA, existing documents and information, and carrying out field reconnaissance surveys
(2) Analysis of project contents
(3) Field surveys (local conflict of interest, piped water usage, groundwater movement, groundwater usage, air pollution, noise and vibration, ground subsidence, others)
(4) Examination of impacts (anticipation and assessment of impacts during design phase, construction phase, operation phase of the Project)
(5) Preparation of impact mitigation measures, environmental management program, environmental monitoring program
(6) Organization of local stakeholder consultation
(7) Preparation of the EIA report

Regarding the framework to carrying out the EIA study, it is a common practice in Vietnam under which a local environmental consultant is contracted to carry out the EIA study under the supervision of an international environmental expert. It is estimated that at least 4 months will be needed to prepare an EIA report for the Project and obtain its approval. Consequently, it is estimated that at least 16M/M of local personnel and 5 million Yen will be needed for this EIA report preparation and approval.

5.4 ESTIMATED COST, FINANCIAL SOURCES, AND IMPLEMENTATION FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL CONSIDERATIONS FOR THE OVERALL PROJECT

In order to ensure the effective implementation of environmental and social considerations, the following agencies/organizations should actively involve.

- International Cooperation Agency（JICA）
- Hochiminh City People's Committee (PC), Department of Natural Resources and Environment, (HCMC DONRE), and Environment Division of Ben Thanh District People's Committee (DPC)
- MAUR
- Design / Construction Supervision Consultant
- Contractors
- Independent Environmental Consultant

Proposed organizational chart for implementing environmental and social considerations for the Project is shown in Figure 5.5.

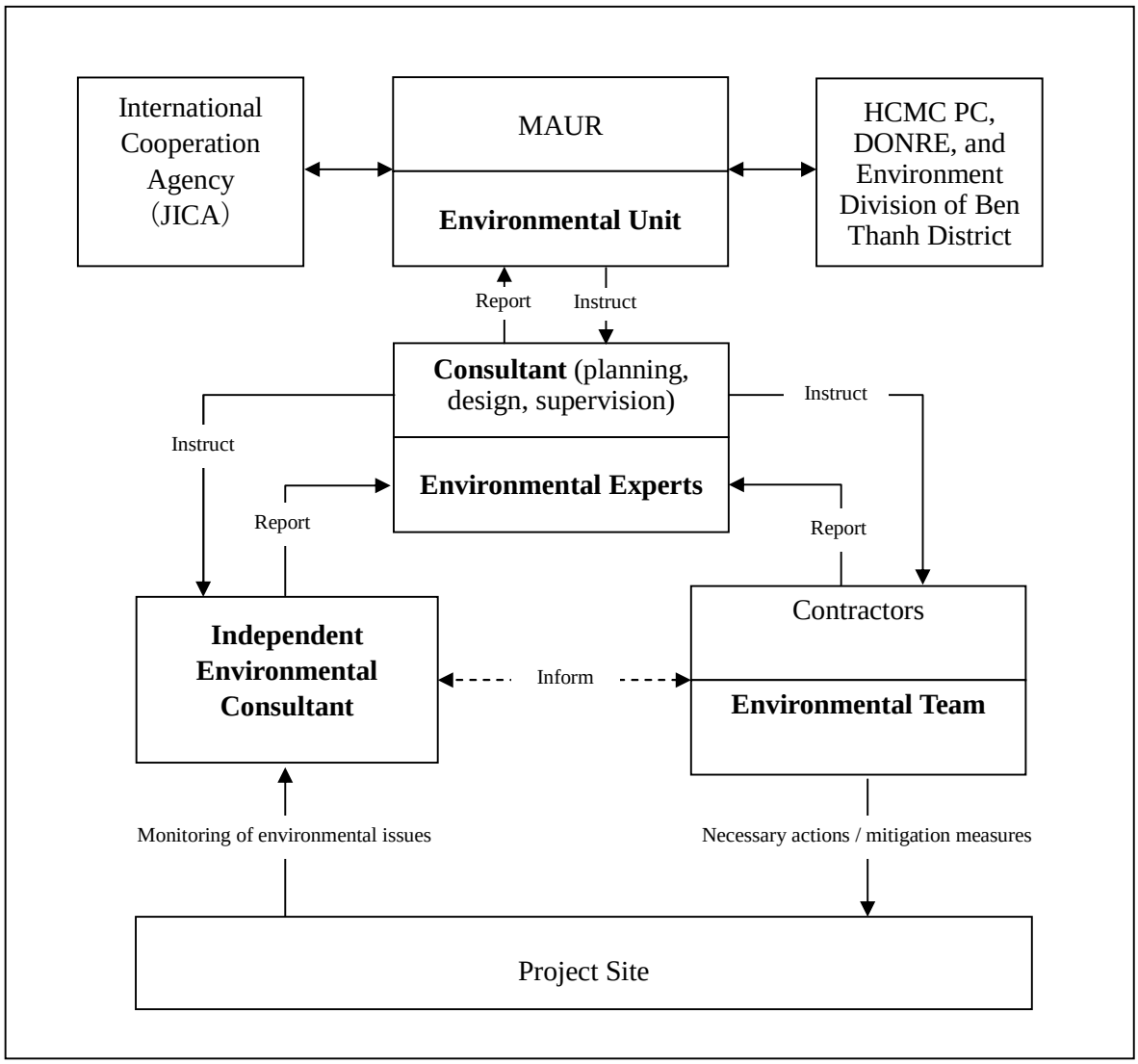


Figure 5.5 Organizational chart for implementing environmental and social considerations (design phase and construction phase)

Table 5.29 describes main functions of each agency/organization involved.

Table 5.29 Main functions of agency/organization involving in the implementation of environmental and social considerations

Agency/organization	Main functions
Hochiminh City PC	- Instruct DONRE, Environment Division of Ben Thanh District, and other relevant agencies in implementing the Project.
HCMC DONRE and Environment Division of Ben Thanh DPC	- Coordinate between relevant agencies, supervise the implementation of EMP - Collect and coordinate residents' opinions, and collaborate with consultant in responding to residents' complaints if any.

Agency/organization	Main functions
MAUR	- Taking role as Project implementing agency, have the ultimate responsibilty for environmental performance of the Project from the stages of project design and investment preparation. - In the stages of project design and investment preparation, supervise the preparation of EIA report, and submit the EIA report to eligible agency (DONRE) for approval. - After the approval of the EIA report, collaborate with the construction supervision consultant in supervising the implementation of EMP and EMoP. - Keep close communication with local agencies, local stakeholders, JICA, and other relevant entities, ensure them the full knowledge about the project progress, potential issues, and mitigation actions. - Listen and respond to stakeholders' concerns, suggestions, and demands for environmental and community protection. - Receive and review monitoring reports from construction supervision consultant and contractors, timely initiate necessary actions to the unexpected accidents, fires, etc.
Design / construction supervision consultant	- Take charge of ultimate supervision of all activities relating to environmental management of the Project. - In design phase, ensure the incorporation of environmental protection and impact mitigation into project planing and engineering design. - In construction phase, supervise the contractors' activities for environmental protection, and ensure that the requirements in the EMP and contract specifications are fully complied with.
Independent Environmental Consultant (selected through a bid, and work under a contract with construction supervision consultant)	- Supervise contractors' activities to ensure that they are complied with content of EMP and the construction contract. - Carry out monitoring of environmental changes, in order to be able to quickly discover unexpected accidents and work out appropriate measure to respond to these accidents. - In design stage, prepare training documents on environmental protection, guides on environmental management, etc. and carry out training programs to strengthen capacity in environmental management and supervision of relevant authorities and entities. - Collect local residents' opinions on environmental issues around the construction sites, and feed back them in the measures to avoid/mitigate adverse impacts to local environment. - Carry out regular site inspections, supervise non-compliance of

Agency/organization	Main functions
	environmental quality performance and the effectiveness of corrective measures. - Carry out regular monitoring of environmental changes around construction sites, and report to the construction supervision consultant. - Upon request by the construction supervision consultant when necessary, conduct public complaint investigation and assessment.
Contractors	- Strictly implement the impact mitigation measures listed in EMP. - Work within the scope of contractual requirements and other tender conditions, collaborate with the supervision consultants for mitigation implementation, site inspection, and any corrective actions instructed by the supervision consultants.

MAUR should establish an Environmental Unit under its organization, who will be in charge of a day-to-day environmental supervision and management for the Project, including coordination between stakeholders. Necessary budget for the Environmental Unit's activities should be included in MAUR's total budget. In principle, cost for preparation and approval of EIA report should also be paid by MAUR.

Generally, a design / construction supervision consultant will be contracted to prepare / carry out EMP and EMoP. In D/D stage, a design consultant may be entrusted to prepare an EMP and an EMoP. In construction phase, an independent environmental consultant may be entrusted by the construction supervision consultant to supervise the implementation of EMP and to implement EMoP. Necessary budget for supervision of EMP implementation and for implementation of EMoP should be included in the budget for consultancy contract.

Necessary budget for contractors to carry out activities relating to environmental protection should be included in the total construction contract cost.

CHAPTER 6 PROJECT EFFECTS

The following is a proposed framework for continuous evaluation of the project effects for the part of this project for which the use of Japanese ODA funds is being considered.

6.1 OUTLINE OF PROJECT EVALUATION BY JICA

6.1.1 Outline of evaluation at each stage

The framework for project evaluation (project level) for yen loans is described in "New JICA Project Evaluation Guidelines 1st Edition (August 2010)" (hereafter referred to as the "Guidelines"). The following is a summary of the evaluation of yen loan projects from the Guidelines for ¥200 million and higher.

Table 6.1 Outline of evaluation of yen loan projects

Stage	Type	Timing	Outline of evaluation	Main focus of evaluation
Prior stage	Prior evaluation	Before implementation	Comprehensive judgment on the appropriateness of implementation, after checking the priority and necessity of implementation, and clarifying the contents and predicted effects. The evaluation indicators established at the prior evaluation stage are used as criteria for measuring the degree of progress of the cooperation and the effect.	In particular the project necessity, relevance, objectives, content, effect (usefulness), external factors and risks, etc., are analyzed using five DAC evaluation items, and the overall suitability of the project plan is examined.
Project implementation stage	Interim review	5th year after the loan contract	Re-examines the relevance, as well as analyzes the prospects for achievement of the targets, the factors promoting and the factors hindering the project, and trends, etc. The evaluation results are used to review the plan and improve the operational system.	Examines relevance, effectiveness (is the initially anticipated project effect occurring?), efficiency, together with the contributing and hindering factors affecting the project, based on the current situation and achievements.
Subsequent stage (after completion)	Evaluation after completion	Up to the 3rd year after completion	Evaluation is carried out using the five DAC evaluation items (relevance, effectiveness, efficiency, impact, sustainability) with the objective of comprehensive evaluation after project completion.	A comprehensive judgment is carried out focusing on whether the initially envisaged effect has been achieved for all five evaluation items.
	Monitoring after completion	7th year after completion	Of the five DAC evaluation items, re-examination is carried out for effectiveness, impact, and sustainability. In addition, the status of response to any lessons or advice arising from the evaluation after completion is checked, and any final advice or lessons are derived and used to improve the project.	Examined for effectiveness, impact, sustainability.

* DAC: Development Co-operation Directorate

Table 6.2 Focus of the evaluation using the five DAC items

Relevance	Degree of consistency of development assistance with the target group, recipient country, donor priorities, and government policies.
Effectiveness	Yardstick to measure the degree of achievement of the target of the development assistance.
Efficiency	Measurement of output (qualitative as well as quantitative) for the given input. This is an economic term that indicates that the resources with the least cost have been used to achieve the effect anticipated by the development assistance. In order to confirm that the most efficient approach has been adopted, normally it is necessary to carry out comparison with other approaches.
Impact	Changes brought about by the development assistance, whether direct or indirect, intentional or unintentional, and positive or negative. Development assistance includes the major influences and effects on the local society, economy, environment, and other development indicators.
Sustainability	Measurement of whether the benefit of the development assistance continues even though the support from the donor has been finished. Development assistance must be sustainable from both the environmental and financial points of view.

Based on the above, the timing and content of the evaluations are reproduced in Table 6.3.

Table 6.3 Summary of evaluation timing and content of implementation

Stage	Type	Timing	Necessity	Objectives	Content	External factors	Risks	Five DAC items				
								Relevance	Effectiveness	Efficiency	Impact	Sustainability
Prior stage	Prior evaluation	Before implementation	○	○	○	○	○	○	○			
Project implementation stage	Interim review	5th year after loan contract						○	○	○		
Subsequent stage (after completion)	Evaluation after completion	Up to the 3rd year after completion						○	○	○	○	○
	Monitoring after completion	7th year after completion							○		○	○

6.1.2 Setting indicators for continuous evaluation

On the other hand, JICA uses performance indicators for consistent project evaluation from before to after, as a continuous evaluation initiative.

For yen loan projects, operational and effectiveness indicators for the main sectors have been introduced since the year 2000 as performance indicators. Operational and effectiveness indicators are defined as follows, and both operational and effectiveness indicators correspond to outcome indicators in the types of performance indicators defined by the World Bank. In yen loan projects, operational and effectiveness indicators are considered to be outcome level indicators as a rule.

- Operational indicator: An indicator that quantitatively measures the operational status of a project
- Effectiveness indicator: An indicator that quantitatively measures the effect producing status of a project

The "project objectives" of a yen loan project are frequently stated relating to two stages. In other words, they indicate the effect of the project of developing the equipment or facility (output).

(1) The output is being appropriately operated and used

(2) These are producing effects in the area of the beneficiary

Operational indicators measure (1), and effectiveness indicators measure (2).

For all yen loan projects that have been examined since 2001, a prior evaluation has been carried out and published. The prior project evaluation table produced during this evaluation contains the actual values (baseline) existing at the time of examination of the operational and effectiveness indicators, the target values, and the time for their achievement, and JICA and the implementing organization agree on setting these indicators at the time of examination.

After commencement of the project, the implementing organization measures and records the operational and effectiveness indicators as part of the interim review, the post project evaluation, and post project monitoring. It is required that the indicators be measured continuously for seven years after completion of the project, and the effectiveness of each stage is evaluated using the measured results.

6.2 SETTING A FRAMEWORK FOR EVALUATION OF THE PROJECT EFFECT

Based on the fundamental thinking of the Guidelines as described above, the following framework is proposed for continuously evaluating the effect of the project.

Also, the operational indicators and the effectiveness indicators are set taking into consideration the criteria given in the Guidelines provided for reference when setting indicators.

Table 6.4 Criteria for reference when setting indicators

・Validity

Whether setting indicators can measure real results of the project.

・Reliability

Whether setting indicators can measure the same results that anyone measures several times.

・Accessibility

Whether setting indicators are possible to access data easily.

6.2.1 Setting evaluation indicators for the effect of this project

It is considered that the indicators set by Kawasaki Azalea for the relevant bureau (Commercial and Tourism Section, Economic and Labor Bureau, Kawasaki City) in a similar project in the past were effective, so the framework for setting the operational and effectiveness indicators for this project will be proposed with reference to this example.

First, Table 6.5 summarizes the concepts regarding the significance of the project required from the operator. It is considered that by sharing these concepts with the operator, the public benefit can be ensured.

Table 6.5 Concepts of significance required from operator

Role required from operator	It is expected that the convenience of the area around the station will be improved by functioning as a commercial facility that will be the core for raising the image and improving the attractions and amenities of the area around Ben Thanh Station, and in addition by providing a safe and comfortable public underground walkway for users such as the city residents, etc.	
Main work of the operator	Management of the rental or operation of the shops within the underground shopping mall	
Public benefits of the operator	Public benefit	Ensuring a safe and comfortable walking space for pedestrians around the Ben Thanh Station area and contributing to the improvement in convenience.
	Contribution	The underground shopping mall is indispensable for the convenience and safety of the city residents and for the commercial vitality of the area around Ben Thanh Station.
Necessity of use of private sector	High specialism	The work requires a high degree of specialism, such as maintenance of a large-scale facility and management of the rental of the shops, etc., so safe, lively, and effective operation is required from the private operator.
	Independence	It is necessary that independent initiatives be undertaken to create a secure, safe, and comfortable environment for the users of the underground shopping mall, and to improve the attractiveness to customers.

Next, the proposal for setting the operational indicators and effectiveness indicators for continuously evaluating the project effect, taking into consideration the possibility of obtaining data, etc., are shown in Figure 6.1.

In addition, the reasons for selection of these indicators and examples of setting target values, etc., are shown in Table 6.6.

The proposal for setting the indicators is draft at the present stage, and it will be necessary to change it at the time of seeking the operator, taking into consideration the progress in the content of the project and trends in the area around Ben Thanh Station, etc. Also, it will be necessary to set the target values in Table 6.6 at the time of seeking the operator.

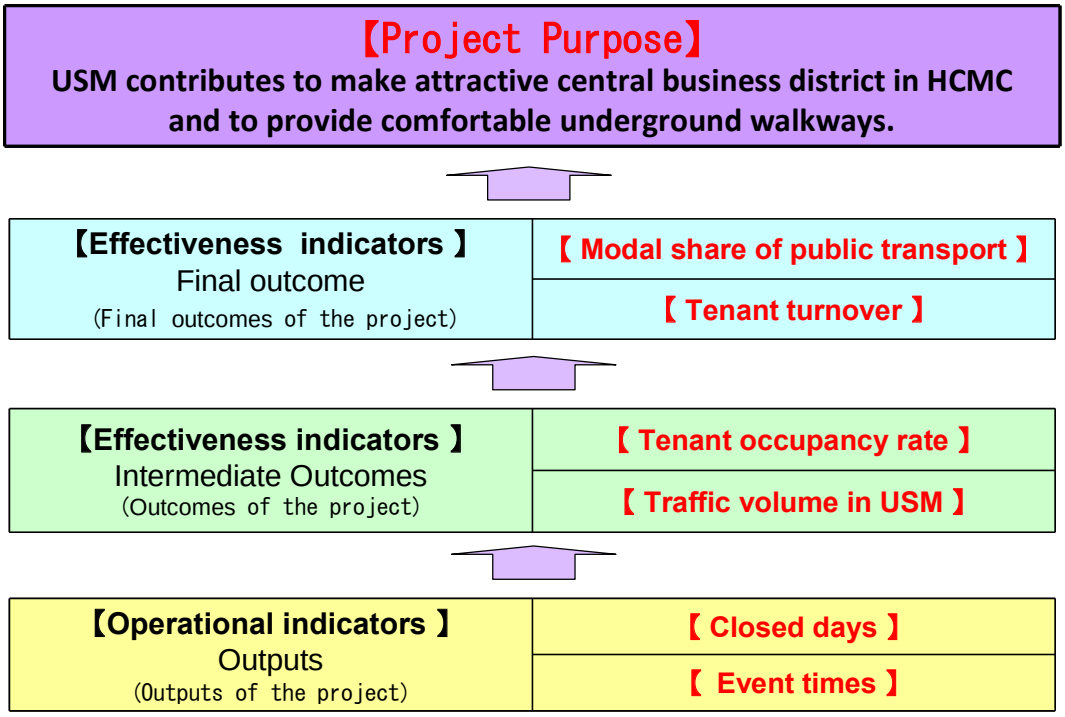


Figure 6.1 Concept of continuous evaluation of the project effect

Table 6.6 Reasons for selection of indicators and example of setting of target values

Kind of Indicators	Indicators (per year) (per day)	Reasons for selecting indicators	Target Value <Reference> Kawasaki Azalea USM
【Effectiveness indicators】 Final outcome	Modal share of public transport	The higher modal share of public transport contributes to good urban transportation environment	–
	Tenant turnover	The higher sales attract people to Commercial area in USM	About 157 billion JPY
【Effectiveness indicators】 Intermediate outcomes	Traffic volume in USM	Traffic volume is related to safety and comfort of pedestrian network and Tenant turnover	401,290 (persons／day)
	Tenant occupancy rate	Tenant occupancy rate is related to Tenant turnover	100(%)
【Operational indicators】 Outputs	Closed days	Increase working days is related to performance	0(days)
	Event times	Event times is related to performance	180(times)

In addition, besides the operational indicators and the effectiveness indicators, it is considered useful to check the financial condition of the operator, as this is a project that uses ODA funds. Also, as a qualitative evaluation of the effect of the operation of the underground mall itself, it is considered beneficial to periodically (about once per year) carry out a survey of the satisfaction of

the visitors and the tenants, and to publish the results and the policy for response to the results. It will be necessary to re-examine the necessity of these measures at the time of seeking the operator.

Table 6.7 Financial condition and qualitative evaluation of operator

Operator's financial condition	Changes in Income Changes in Payment Changes in Benefit
Customer's satisfaction	Survey to visitors Survey to tenant owners (Once a year, By Questionnaire)

6.2.2 Proposal for setting target values for this project

The following is the proposal for setting the target values at the present time, based on the results of studies to date, etc., in connection with Table 6.6 above.

The conditions for the calculation are shown below. [Modal share of public transport] , [Tenant turnover] and [Traffic volume in USM] have been set using the results of studies to date, but for the other indicators, the required items can be obtained when seeking the operator, so the set values of Kawasaki Azalea USM have been used.

It will be necessary to update these set values at the time of seeking the operator in accordance with the progress of the content of the project.

〈Modal Share of Public Transport〉
- Use the estimated number from Chapter 4.1.2(2020,2050).

〈Tenant turnover〉
- Use the estimated number of users per day of USM(2025,2050).
- Set that the holidays are 105 days and the weekday are 260 days.
- Set that 50% of users buy something.
- Set that average sale per customer is 250,000VND/person because range is 100,000- 500,000VND/person from the survey of developer's investment intent.

〈Traffic volume in USM〉
- Use the estimated number of users per day of Underground Facilities(2025,2050).
- Set that the holidays are 105 days and the weekday are 260 days.

〈Tenant occupancy rate〉〈Closed days〉〈Event times〉
- Use the Target values of Kawasaki Azalea USM.

Table 6.8 Draft setting of target indicators in this project

Kind of Indicators	Indicators (per year) (per day)	**Target value (tentative)**
【Effectiveness indicators 】 Final outcome	Modal Share of Public Transport	<2020> 16 (%) <2050> 30 (%)
	Tenant turnover	<2025> 1.1trillion VND／year (4.3billion ／year) <2050> 1.9trillion VND／year (7.1billion/year)
【Effectiveness indicators 】 Intermediate outcomes	Traffic volume in USM	<2025> 71,000(persons／day) <2050> 108,000(persons／day)
	Tenant occupancy rate	100(%)
【Operational indicators 】 Outputs	Closed days	0 (days)
	Event times	180 (times)

*1VND=0.0037JPY

Reference Information

(From the Vietnam Economic Newspaper, Fri 22/04/2011)

http://vnbusiness.vn/articles/ch%C3%A2n-dung-ng%C6%B0%E1%BB%9Di-ti%C3%AAu-d%C3%B9ng-vi%E1%BB%87t

Among those living in Ho Chi Minh City in the age range 20 to 45 with a stable source of income, the average consumption per month on clothes and fashion-related items is 18%. In this age range, 60% of the consumers spend 150,000 to 500,000 dong every month on clothing. In this age range, 70% of the consumers buy fashion-related items on average once in 2-3 months. The trend is that consumers younger than 25 years old go shopping once per month, and consumers 25 years and older go shopping once every 2-3 months.