

**FEASIBILITY STUDY AND IMPLEMENTATION SUPPORT ON THE
CAVITE-LAGUNA EAST-WEST NATIONAL ROAD PROJECT**

FINAL REPORT

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ABBREVIATIONS AND ACRONYMS

AADT	Annual Average Daily Traffic
AAGR	Average Annual Growth Rate
ADB	Asian Development Bank
ADT	Average Daily Traffic
AFMA	Agriculture and Fisheries Modernization Act
AICP	American Institute of Certified Planners
Aj:	Attracted trips to zone (j)
APP 1 - APP 4	Assignment for Priority Project (number)
B/C	Benefit/Cost Ratio
BCDA	Bases Conversion Development Authority
Blvd	Boulevard
BOD	Biological Oxygen Demand
BOT	Build-Operate-Transfer
BSWM	Bureau of Soils and Water Management
BTO	Build-Transfer-Operate
BP	Batas Pambansa
C1 - C6	Circumferential Road (number)
CALA EW	CALA East-West Highway (Project)
CALA	Cavite-Laguna
CALABARZON	Cavite, Laguna, Batangas, Rizal and Quezon
CBD	Central Business District
CDF	Country-wide Development Fund
CE	CALA Expressway
CHED	Commission on Higher Education
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
CLMMDS	CALA Urban Development and Environmental Management
CLUP	Comprehensive Land Use Plan
CMMTC	Citra Metro Manila Tollway Corporation
CMP	Community Mortgage Program (or PAG-IBIG)
CN	Camarines Norte
CO	Carbon Monoxide
COPE	Community Organization of the Philippines Enterprises Foundation, Inc.
CRC	Coastal Road Corporation
CTMO	Cavite Traffic Management Office
DAO	Department Administrative Order
DB	Decibels
DBB	Dasmariñas Bagong Bayan
DENR	Department of Environment and Natural Resources
DENR-EMB	DENR – Environmental Management Board
DH	Daang Hari
Dij	Distance from zone to zone
DILG	Department of Interior and Local Government
DO	Dissolved Oxygen
DOF	Department of Finance
DOJ	Department of Justice
DOTC	Department of Transportation and Communications
DPWH	Department of Public Works and Highways
DTI	Department of Trade and Industry
E/W	East/West
EDSA	Epifanio De Los Santos Avenue
EIA	Environmental Impact Assessment

EIRR	Economic Internal Rate of Return
EIS	Environmental Impact Statement
EMB	Environmental Management Bureau
EMMP	Environmental Management and Monitoring Plan
EO	Executive Order
ESC	Environmental and Social Consideration
ESE	East South East
ESRV	Environmental Survey Report Volume
ESSO	Environmental and Social Services Office
FCIE	First Cavite Industrial Estate
F/S	Feasibility Study
FGD's	Focus Group Discussions
FIES	Family Income and Expenditure Survey
FTI	Food Terminal Inc.
GDP	Gross Domestic Product
GEA	General Emilio Aguinaldo
Gi:	Generated trips from zone (i)
GIS	Geographic Information Systems
GMA	General Mariano Alvarez
GOP	Government of the Philippines
ha	Hectare
HIGC	Home Insurance Guarantee Corporation
HLURB	Housing and Land Use Regulatory Board
HOV	High Occupancy Vehicle
Hr	Hour
I/A	Implementing Arrangement
IBRD	International Bank for Reconstruction and Development
IEE	Initial Environmental Examination
IIRR	International Institute of Rural Reconstruction
ILO	International Labor Organization
IRAP	Integrated Rural Accessibility Project
IUCN	International Union for the Conservation of Nature and Natural Resources
JBIC	Japan Bank for International Cooperation
Jct	Junction
JICA	Japan International Cooperation Agency
JVA	Joint Venture Agreement
KIIs	Key Informant Interview
Km	Kilometer
Km/h	kilometer per hour
LARC	Land Acquisition Resettlement Cost
LARR	Land Acquisition Resettlement and Rehabilitation
LFS	Labor Force Survey
LGUs	Local Government Units
LISRND	Luzon Island Strategic Road Network Development Project
LTO	Land Transportation Office
LRT	Light Rail Transit
LRTA	Light Rail Transit Authority
LTFRB	Land Transportation Franchising and Regulatory Board
MCTC	Manila Cavite Tollway Corporation
MCTE	Manila – Cavite Toll Expressway
MGB	Mines and Geosciences Bureau
Mla	Manila
MM	Metro Manila

MMDA	Metro Manila Development Authority
MMS	Metro Manila Skyway
MMUTIS	Metro Manila Urban Transportation Integration Study
MNTC	Manila North Tollway Corporation
MNR	Manila North Road
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPDC	Municipal Planning and Development Coordinator
MPN	Most Probable Number
MTPDP	Medium Term Philippine Development Plan
MTIPI of DPWH	Medium Term Public Investment
MWSS	Metropolitan Waterworks and Sewerage System
N/S	North South
NAMRIA	National Mapping and Resource Information Authority
Ncm	Normal cubic meter
NCR	National Capital Region
NDC	National Development Company
NEDA	National Economic Development Authority
NEDA-ICC	National Economic Development Authority-Investment and Coordination Committee
NG	National Government
NGOs	Non-Government Organizations
NHA	National Housing Authority
NIPAS	National Integrated Protected Areas System
NLEX	North Luzon Expressway
NOx	Nitrogen Oxide
NPCC	National Pollution Control Commission
NPV	Net Present Value
NSCB	National Statistical Coordination Board
NSO	National Statistics Office
NSP	National Shelter Program
OD	Origin Destination
ODA	Official Development Assistance
PAF	Project Affected Families
PAGASA	Philippine Atmospheric Geophysical and Astronomical Services Administration
PAG-IBIG	Pagtutulungan sa Kinabukasan: Ikaw, Bangko, Industriya at Gobyerno
PAWB	Protected Areas and Wildlife Bureau
PCCI	Philippine Chamber of Commerce & Industry, Inc
PCI	Pacific Consultants, Inc.
PCU	Passenger Car Unit
PEA	Public Estate Authority
PEQR	Philippine Environmental Quality Report
PEZA	Philippine Economic Zone Authority
PHILSSA	Partnership of Philippine Support Service Agencies Inc
PIC	Philippine Infrastructure Company
PIF	Philippine Infrastructure Fund
PMO-FS	Project Management Office – Feasibility Studies
PNCC	Philippine National Construction Corporation
PNP	Philippine National Police
PNR	Philippine National Railways
PPFP	Provincial Physical Framework Plan
PPP	Public-Private Partnerships
PRA	Participatory Rapid Appraisal

PSP	Private sector participation
QC	Quezon City
R1	Radial Road (number)
RA	Republic Act
RAP	Resettlement Action Plan
RIS	Resident Interview Survey
RDC	Regional Development Council
ROW	Right of Way
SAFPs	Strategic Agricultural & Fisheries Planning Zones
SIDC	Star Infrastructure Development Company
SLE / SLEX	South Luzon Expressway
SLEE	South Luzon Express Extension
SPC	Special Project Corporation
SLTC	South Luzon Tollway Corporation
SOE	State-owned Enterprise
SOx	Sulfur (Di) oxide Concentration
SRA	Society for Risk Analysis
SSH	South Superhighway
ST	Street
STAR	Southern Tagalog Arterial Road
STM	Stakeholders Meeting
STOA	Supplemental Toll Operation Agreement
STRDP	Southern Tagalog Regional Development Plan
TEAM	Traffic Engineering and Management
TMC	Trece Martirez City
TOR	Terms of Reference
TRB	Toll Regulatory Board
TSP	Total Suspended Particulates
TSR	Traffic Survey Report
TVCS	Traffic Volume Count Survey
TWG	Technical Working Group
UDHA	Urban Development and Housing Act
µg	Microgram
UNESCO	United Nations Educational, Scientific and Cultural Organization
v/c	volume/capacity
W/R	The ratio of employment at workplace/ at residence
WB	World Bank

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Background and Objectives of the Study

The study area includes most of Cavite Province and a part of Laguna Province and Metro Manila (CALA Region). The increasingly deteriorating traffic conditions of the CALA area is being addressed by the Government of the Philippines in coordination with international donor agencies such as JICA and the World Bank. This Study aims to alleviate the traffic congestion in the CALA area; to improve the living environment of local residents; to promote dispersion of urban function of Metro Manila; as well as to further encourage the improvement of investment environment in the area given its strategic location vis-à-vis the international port in Batangas City. Based on these priority aims, the Study will be implemented with the following objectives:

- (1) Review of CALA regional traffic network development scenario;
- (2) Examination of the feasibility of CALA East-West road and related projects and preparation of project implementation plan; and
- (3) Capacity development for staff of counterpart agency and other related agencies.

Development Scenario of the Study Area

In view of the past related studies, existing plans such as PFPs and the current conditions of the study area, three scenarios were first prepared and compared in terms of social/economic activities and transport demand. These were:

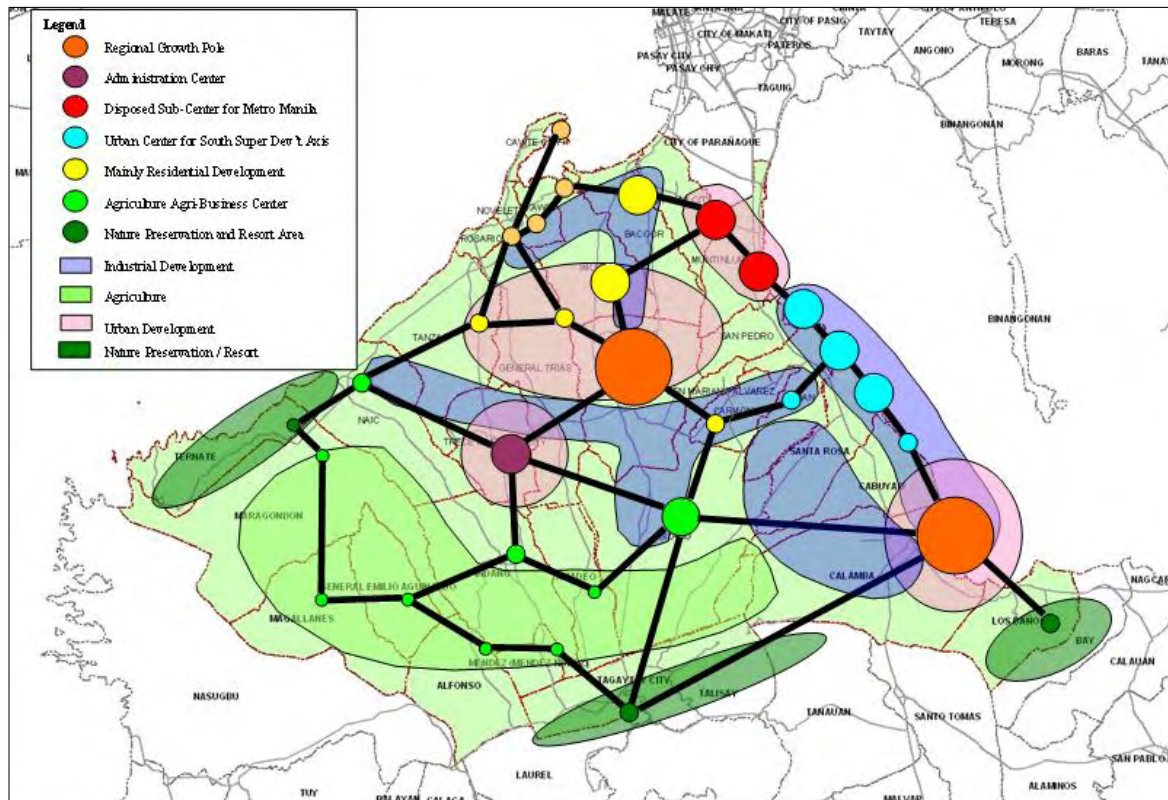
Scenario 1: Metro Manila Dependency Development (Trend)

Scenario 2: Urban Core Development

Scenario 3: Industrialization-Driven Development

The foreseen regional development vision is the interplay of various growth components which are basically found in the above three scenarios mentioned. Several sectors are regarded to contribute in the symphonic development of the area rather than just one or two particular sectors leading growth in the study area. Thus, elements of scenarios 1 to 3 are combined to formulate this future vision of regional growth of the CALA Region. The future regional development of the CALA Region in terms of spatial development is envisioned as shown in Figure ES-1:

Figure ES-1 Holistic Development (Scenario 4)



Regional Transport Network Alternatives

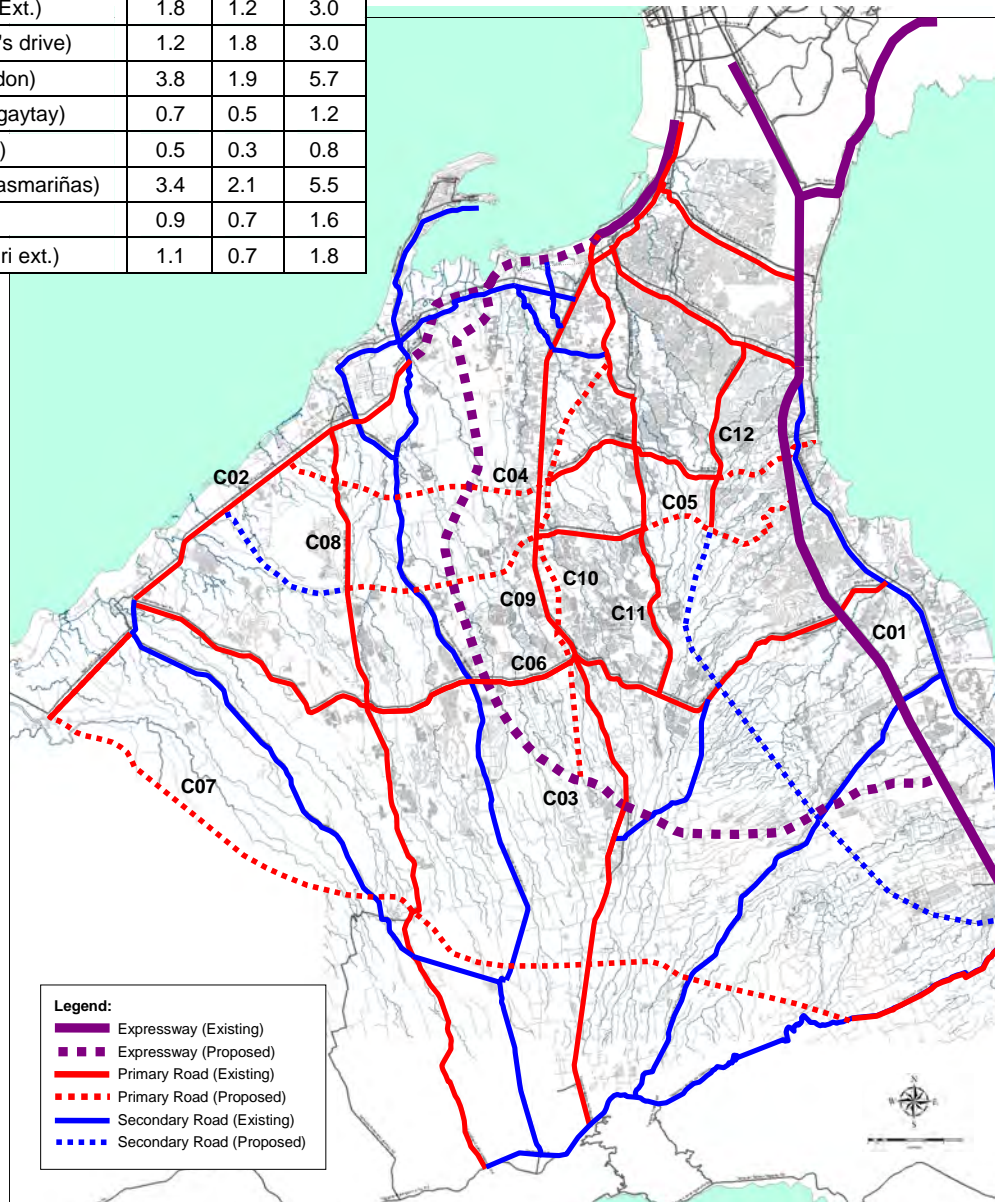
The alternative network scenarios have been prepared for the selected regional development scenario based on the physical and socioeconomic conditions so as to quantitatively analyze the advantages and disadvantages of each alternative scenario. Those were:

- Existing Network Zero-option (Alternative 0)
- Arterial Grid-Pattern Economic Road Structures and Balanced Development (Alternative 1)
- Metro Manila – Laguna Transport Corridor Enhancement (Two North-South Axis) (Alternative 2)
- East-West and North-South Axis Scenario (Strategic Industrialization and Urbanization in the region) (Alternative 3)

The alternatives above were compared with each other in terms of projected traffic volume, cost, magnitude of relocation, economic viability, and other social/environmental factors. After a series of consultations during the stakeholder meetings, Alternative 3 has been selected. The road project components included in this alternative are shown in Figure ES-2:

Figure ES-2 Road Project Components in the Selected Road Network Alternative

		Cost Estimates (Billion Pesos)		
		Const.	ROW	Total
C01	South Luzon Expressway	4.9	0.0	4.9
C02	West Coastal Road	2.2	0.7	2.9
C03	CALA Expressway	10.6	4.4	15.0
C04	E/W 1 (Daang Hari Ext.)	2.5	2.1	4.6
C05	E/W 2 (Calibuyo Ext.)	1.8	1.2	3.0
C06	E/W 3 (Governor's drive)	1.2	1.8	3.0
C07	E/W 4 (Maragondon)	3.8	1.9	5.7
C08	N/S 1 (Tanza-Tagaytay)	0.7	0.5	1.2
C09	N/S 2 (Aguinaldo)	0.5	0.3	0.8
C10	N/S 3 (Bacoor-Dasmariñas)	3.4	2.1	5.5
C11	N/S 4 (Molino)	0.9	0.7	1.6
C12	N/S 5 (Daang Hari ext.)	1.1	0.7	1.8



Note: Estimated preliminarily using unit costs per km.

Road Projects Selected for FS

In order to guarantee transport levels of service ideal to the Region, all 12 roads listed above are necessary to be implemented by 2020. However, due to the present financial difficulties of the Government, it is unrealistic to assume all these roads will be completed by 2020. Hence, the minimum requirement was sought to ensure, at least, the present

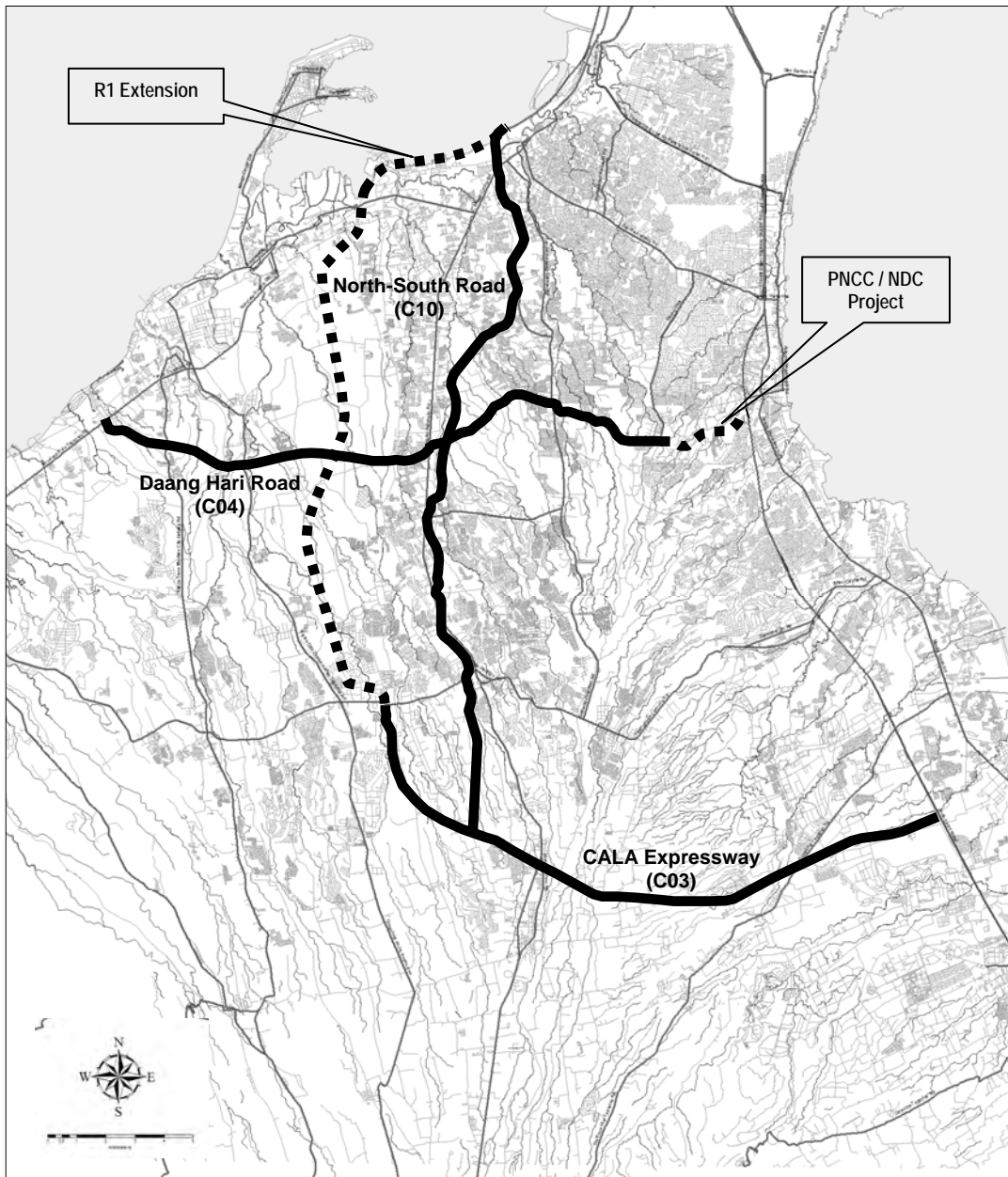
levels of service of road traffic by 2020. After a series of traffic analyses, three (3) road projects were identified, as follows:

- (1) North-South Road (C10)
- (2) Daang Hari Road (C04)
- (3) CALA Expressway (C03)

Though not satisfactory yet, the forecast traffic situation in 2020 could be maintained at the current levels of service.

Note that a part of these three roads was excluded from the JICA FS due to the recent changes in implementation framework as shown below.

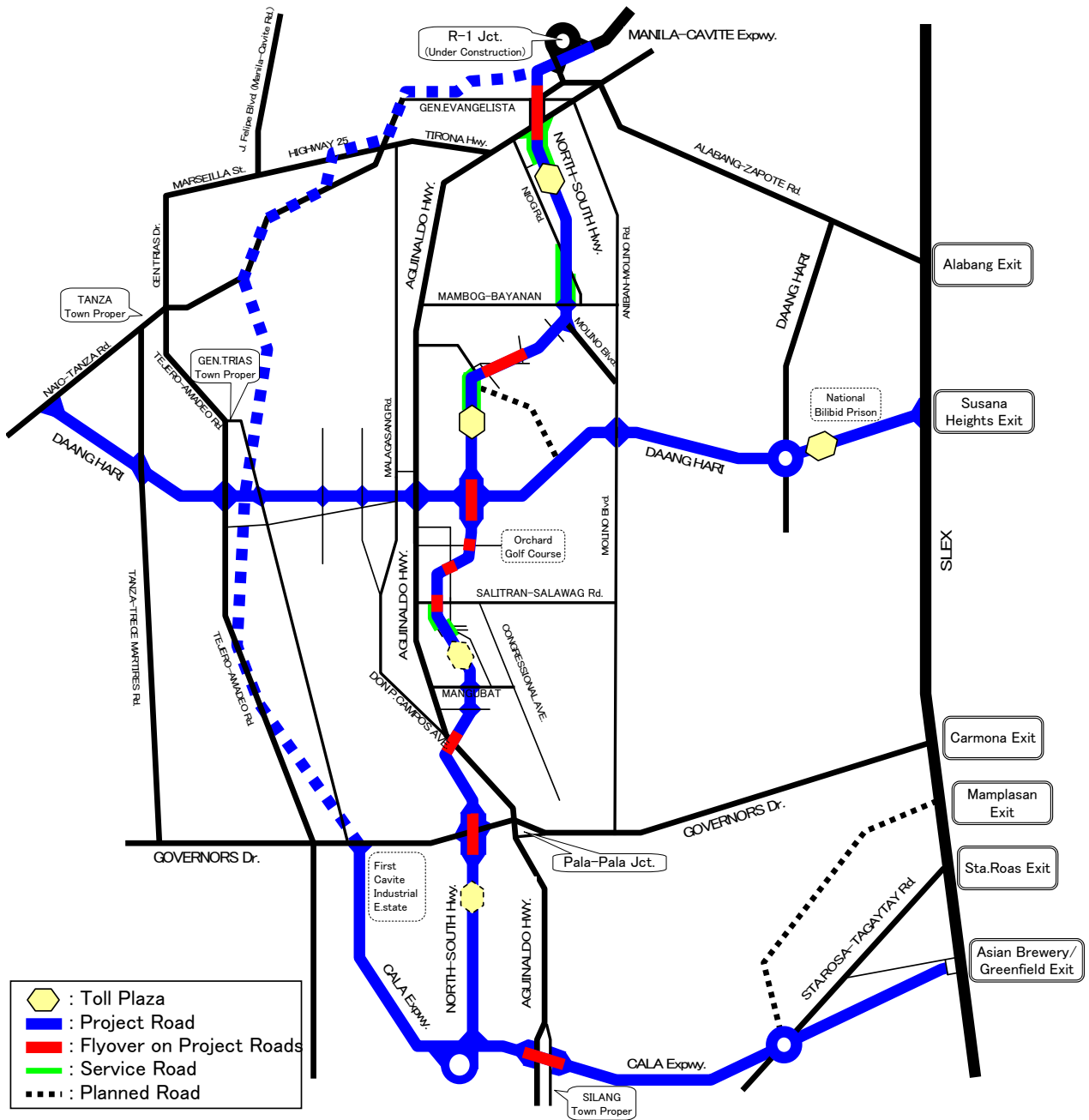
Figure ES-3 Target Roads for JICA's Feasibility Study



Outline of the Project Roads

The main features of the project roads and related existing road network is shown in Figure ES-4.

Figure ES-4 Outline of the Project Roads and Related Existing Road Network



North-South Road (NS)

The North-South Road (NS Road) will be linked with the existing Manila-Cavite Coastal Road and after running south, it will be connected with the proposed CALA Expressway (CE) at the southern end at Silang. Total length is 27.8 km, which is the longest among the proposed three routes. The design speed is established at 60 km/hr. This road will be a toll road using a PPP scheme (in the south of Daang Hari Road, toll road is still an option).

Daang Hari Road (DH)

The Daang Hari Road (DH) will start from the border between Muntinlupa City (National Capital Region) and the municipality of Imus, Cavite, where it will be connected with the existing Daang Hari Road which is at present under construction. The DH Road will end at the Coastal Road in the Municipality of Tanza. The proposed design speed is 60 km/hr, and the total length of DH is 21.0 km.

CALA Expressway (CE)

The proposed CALA Expressway (CE) starts at the Asia Brewery Inc. / Greenfield interchange on South Luzon Expressway (SLEX) in Santa Rosa, Laguna, and will be connected with Governor's Drive at the west of First Cavite Industrial Estate (FCIE), Dasmariñas. Total length is 22.7 km. Since the design speed of CE is 100 km/hr, horizontal and vertical curve radius shall be larger, as compared to the ones of the other two routes whose design speed is 60 km/hr.

Table ES-1 Estimated Project Cost

Unit: Million Pesos

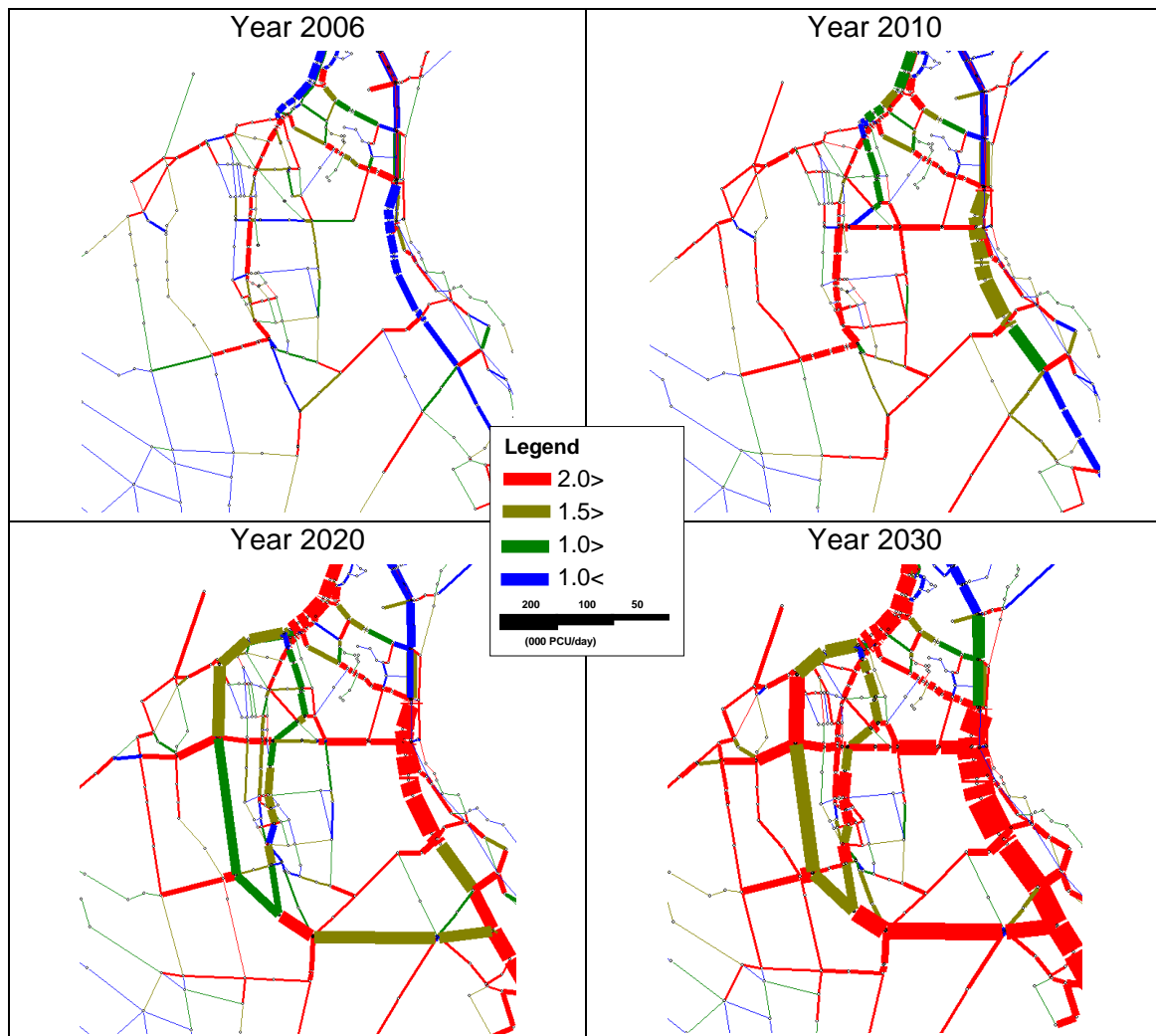
	Construction Cost (CC)	Engineering Service Cost (ESC)	Land Acquisition and Resettlement Cost (LARC)	Project Administration Cost (PAC)	Grand Total (Base Case)
NS1	1,595	191	107	54	1,947
NS2	456	55		15	526
NS3	1,968	236	444	77	2,725
Subtotal (NS1-NS3)	4,019	482	551	146	5,198
NS4	3,325	399	410	119	4,253
NS5	3,464	415	408	123	4,410
Total (NS1-NS5)	10,808	1,296	1,369	388	13,861
DH3	580	70		18	668
DH4	1,755	211	419	69	2,454
Total (DH)	2,335	281	419	87	3,122
CE1	450	54	85	17	606
CE2	4,841	580	284	163	5,868
CE3	1,614	194	47	53	1,908
CE4	983	119	346	42	1,490
Total (CE)	7,888	947	762	275	9,872
Grand Total	21,031	2,524	2,550	750	26,855

Demand Forecast and Economic/Financial Analysis

The toll rate of NS Road was set at a flat rate of ₱18 (for car) at each toll gate based on the current toll rate of existing expressways, user benefit and the interrelationship between economic and financial returns.

The projected traffic flow is shown below. By 2020, the road network will be marginally sustainable. However, new roads should be added after then.

Figure ES-5 Traffic Distribution (Base Case)



Economic viability is very high for all the proposed projects. NS Road shows an EIRR of about 23-24% as a whole, and an EIRR of more than 35% for the northern sections. Daang Hari Road and CALA Expressway also show very high EIRRs.

NS Road also shows high financial performance. Its project FIRR always exceeds the 12% threshold in real terms except for the southernmost section. As a whole, the NS Road project seems highly profitable.

Environmental and Social Considerations

As a part of “Implementation Support,” a full-scale EIA was conducted following the official EIS procedure of the Philippine Government and the JICA’s Guidelines on Environmental and Social Considerations. These activities included the following:

- (1) Initial Environmental Examination and Scoping
- (2) Study on present environmental conditions
- (3) Environmental impact forecasts and estimates
- (4) Evaluation of environmental impacts on optimum route alignments
- (5) Examination of environmental mitigation measures and social consideration measures
- (6) Preparation of environmental management and monitoring plan (EMMP)
- (7) Preparation of draft Environmental Impact Statement
- (8) Preparation of Preliminary Resettlement Action Plan (Pre-RAP)

In parallel to these activities, consensus building process was rigorously pursued in close coordination with DPWH, DENR, LGUs, and related NGOs, POs, and residents. Such consensus building process was documented in the eight (8) stakeholder meetings, numerous LGU consultations and focus group discussions conducted during the course of the study. Each LGU, through its respective provincial/city/municipal councils, issued a resolution which endorses the proposed project and reserves ROW needed for the project.

The record of all these EIA activities may be accessed through the project website (www.cala-ew.info). So far, no serious problem is seen regarding the project.

The following shall be conducted to adequately implement the EIS after the JICA Study.

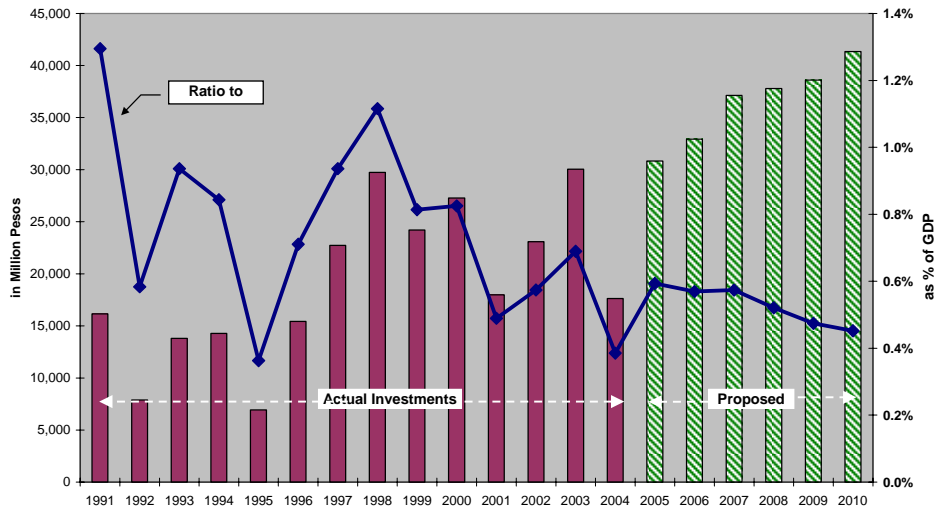
- In the preparation of the Environmental Management and Monitoring Plan (EMMP) during the Detailed Design (D/D) stage, the conduct of new and/or supplementary baseline study for some environmental and social parameters, subject to monitoring during both construction and operational stages of the project, would be necessary at the adequate locations based on detailed monitoring plan.
- The environmental and social impact mitigation/enhancement measures proposed in the EIS shall be confirmed if those are integrated in the detailed design, construction supervision management plan and operational plan to secure the implementation of the proposed measures as well as responsible bodies for each measures.

Financial Constraints and Opportunities

The figure below illustrates the level of investments on roads in the past 14 years and the prospects to year 2010. In terms of road investments as a ratio of GDP; the trend has been on a downward trend – from a peak of 1.3% in 1991 to 0.6% in 2005. This has

forced a deferment in the implementation of many vital road projects; with new big-ticket projects (like the CALA target roads) unable to be accommodated earlier than 2008.

Figure ES-6 DPWH Historical and Prospective Investments in Roads



ODA sources to finance road projects are still available, but availments had slowed down due to the lack of counterpart peso funds.

Private-financed infrastructure offered promise from 1992 onwards. But after the 1997 Asian financial crisis, the outlook also dimmed – with three concluded toll road projects (Skyway, Star Expressway, and R-1 Expressway) unable to get financing for their respective next phases.

To wriggle out of such a bleak prospect and to arrest the country’s declining global competitiveness ranking, the government opted to tap the domestic bond market without exceeding the self-imposed limits on the national budget. The strategy called for the National Development Company to float bonds (to the tune of Php20 billion/year) that would be channeled through the Philippine Infrastructure Corporation (PIC), which in turn, shall invest the proceeds into financially-viable infrastructure projects. A secondary benefit of such a strategy is to regain private sector confidence (which has been badly shaken by the NAIA 3 fiasco) in financing Philippine infrastructure. To be eligible for this new source of financing, as much of the CALA target roads as possible have to be transformed into toll roads. The JICA Study Team determined that NS-1 to NS-3 could be implemented under such a scheme.

Implementation Scenarios

The financing opportunities offered by PIC and IBRD create three implementation possibilities for DPWH and the CALA target roads. Differentiated as to timing, risks and probable outcomes, the three implementation scenarios are:

- Track A – tender the concession for North-South Road following the BOT Law and along the lines, but learning from the mistakes, of Star Expressway. The winning

bidder shall then form a special project company (SPC) that will be granted a Toll Concession Agreement (TCA) by TRB, conduct detailed engineering, secure financing, build the roads, operate and maintain the toll roads for a prescribed period before turnover to government. Under this scheme, the participation of PIC is residual; the amount and form of its contribution shall come out of the bidding.

- Track B – same procedure as Track A, but without the participation of PIC. DPWH shall then fund the acquisition of right-of-way from its annual budget, and neither can the SPC expect supplementary funding from PIC.
- Track C – envisages a more aggressive role for PIC, who will immediately form a SPC that shall be granted a TCA and finance ROW acquisition concurrently with the conduct of detailed engineering. It will be followed by a privatization tender for the SPC together with its TCA.

Of the three, Track A and C offers the earliest possibility for completing NS-1 – about the 1st Q2011 - but with higher risk of delay for Track A. The best that could be expected from Track B is 4thQ2011, premised on overcoming two high-risk propositions: DPWH is able to finance and acquire ROW from its own budget in 2008, and concessionaire achieves financial closure on time. Track C avoids most of the pitfalls that befell previous BOT/PSP projects in the Philippines, but relies for success on an entity bereft of track record in undertaking such a complex enterprise. A common thread across the three scenarios is NEDA-ICC evaluation and approval. This may take 4 to 6 months - from preparation of documents by DPWH to final imprimatur from NEDA-ICC. However, tendering for North-South Road can be expected to commence only after the May 2007 elections.

Implementation Support

Regardless of implementation track, DPWH has to designate and constitute a Project Management unit under the PMO for foreign-assisted projects - with personnel drawn from the PMO pool. Some road segments or tasks may be assigned and executed by the District Engineering Office of the DPWH. DPWH would also need outside technical assistance (possibly, to be provided by IBRD not later than January 2007) to achieve the following timetable for executing Stage 1 of North-South Road:

- 1st semester 2007 – preparation of bid and other supporting documents for NEDA-ICC evaluation;
- 2nd semester 2008 – prequalification, bid and award of concession

Learning from past toll roads, the concession agreement should contain the following features:

- A fixed toll fee, as determined from the feasibility study, but in no case higher than the highest toll rate prevailing in other expressways. This is meant to avoid the bad experience with Star Expressway.

- An endogenous concession period, instead of fixed at 25-years as in existing toll road concessions. In this manner, the concession period is shortened if traffic and revenues are higher than forecasted; or lengthened, if revenues get anemic.
- Rights to the implementation of NS2 and NS3 will have an expiry period, reckoned from the completion of NS1. In this manner, the conundrum that hit R-1, Star, and Skyway will be avoided.
- Costs of ROW, or part of it, shall be incorporated in the project cost to be covered by the toll fee. Start date of construction shall be reckoned from free possession of land, or completion of design, whichever is later.

The selection of the winning private bidder should be on the basis of minimum government exposure (from either NDC-PIC or DPWH) in the toll road venture. Aside from the cost of ROW, PIC may invest in the project company if so required by the winning bid. Financial capability shall be a key qualifying criterion. If no financing is secured within 3 months of completion of DE or after possession of ROW is conveyed, the PIC shall be granted the right to step in, invest, or takeover the project, in addition to cancellation of performance bond and surrender of the DE documents. The bidding consortium must include a design firm as one of its members, and the cost and schedule for DE shall be stipulated in the bid. The output shall become the property of DPWH in the event of failure to proceed to construction, with a waiver for its use by the successor toll concessionaire. Start date of construction will be reckoned from completion/approval of the detailed design by DPWH (rather than TRB).

Conclusion

The road transportation network of Cavite and Laguna has failed to catch up with the region's rapid growth, thus resulting in increasing traffic congestion. Since this growth has been closely intertwined with Metro Manila, the congestion is more severe on roads that link the provinces to the national capital. This north-south pattern is likely to continue over the medium term – with congestion getting worse before it gets better.

Beyond the medium-term horizon, the high growth rate can be sustained (and influenced) by shifting the orientation of commuting trips inward and east-west, i.e., within the CALA region. Two new arterial roads need to be built over the next 10 years: (a) a North-South Expressway that connects with R-1 Expressway on the north, intersects Daang Hari midway and moves farther south of Governor's Drive; (b) an east-west arterial anchored on extending Daang Hari eastward (labeled as DH-2) to connect to SLEX and westward (DH -4). Both arterials have been found to be economically and technically feasible – with EIRR exceeding 80% for stage 1 of the North-South Road, and 60% for DH-4.

In some short sections of the foregoing roads, the level of service had to be scaled down due to right-of-way constraints. These constraints may worsen, if implementation gets delayed farther – thus the need to accelerate implementation and to reserve immediately the right-of-way of these future roads.

In order to realize the projects sooner, public sector resources need to be leveraged with private sector investments. The aggregate cost for all the road segments (NS + DH + CE) is ₱26.9 billion. Stage 1 of North-South Road is estimated to require ₱5.2 billion, and stage 2 another ₱8.7 billion. If dependent on DPWH resources only, completion would be delayed by 3 years, at least. The North-South Road can be built on a 'two-in-one' PPP model that combines public and private resources - Stage 1 relying principally on private funds and Stage 2 tapping ODA and public funds. The full cost of DH2 is already being lined up for a BTO scheme by PIC and PNCC, and need not impinge on DPWH budget.

DH3 and DH4 is estimated to need ₱3.1 billion, and has to be put in the DPWH capital program beginning 2008. Right-of-way cost for North-South Road is ₱1.4 billion and ₱419 million for DH3 and DH4. The ROW cost can be reduced if private property developers can be persuaded to convey at book or acquisition value, if not donate for one peso

Recommendations

The Study Team recommends the following:

- Designation of a Project Steward within DPWH to keep the momentum going for the CALA target roads, and to bridge the gap between study completion and implementation;
- Decide on which of the three implementation tracks to pursue, and accordingly resolve the pending Memorandum of Understanding with NDC-PIC;
- Bid out stage 1 of North-South Road, on or before June 2007, and secure NEDA-ICC clearance before then;
- For the LGUs, to implement small scale traffic improvement measures on existing corridors, in order to alleviate congestion while new roads are not yet completed;
- Tweak the existing public transport system - consisting of buses, jeepneys, and tricycles – to improve efficiency and slow down modal shift to car use in commuting trips;
- Conduct further study on the 2nd SLEX link of the CALA arterial roads (the eventual alignment of CE-1), since consensus among stakeholders has so far been elusive.

MAIN TEXT

1 INTRODUCTION

1.1 Background

In the Philippines, traffic congestion and deterioration of urban environment in Metro Manila has become a serious problem. Thus, the necessity to disperse its city function is advocated in the Medium Term Philippine Development Plan (MTPDP). In particular, the Cavite and Laguna subregion (hereinafter referred to as CALA area), which adjoins to the south of the Metro Manila, is now considered an important area which can accommodate such dispersed city function. In addition, due to the prohibition of establishing factories within the 50 km radius of Metro Manila, factories started to be established in this area. This area, which is strategically located in the vicinity of the international port in Batangas City, therefore has attracted industrial locators thus becoming an industrial accumulation area.

This Study is developed based on the recommendations of the following studies:

- **Metro Manila Urban Transportation Integration Study (MMUTIS) (JICA)**
This study formulated a traffic master plan for Metro Manila and its neighboring areas. It recommended the strengthening of the public transport system between the CALA area, where the wave of sudden suburbanization deteriorated the traffic conditions in the subregion and Metro Manila. This study was implemented from 1996 to 1999.
- **CALA Transport Strategy and Short-term Programs and Policies (a component of the Cavite-Laguna (CALA) Urban Development and Environmental Management Project of the World Bank):** This study recommended a development strategy for the region adjacent to Metro Manila which receives strong influence from the metropolitan area. It also formulated the traffic infrastructure development strategy as well as selected traffic improvement projects to support the proposed regional strategy. This study was implemented in 1999 in accordance with the basic concept of the MMUTIS study and, in particular, recommended the construction of the East-West highway and the North-South busway, as well as formulated traffic management measures for some primary corridors in the CALA area.

In order to improve the increasingly deteriorating traffic conditions of the CALA area, various measures have already been taken not only by the Government of the Philippines but also by JICA, the World Bank and other international donor agencies. Since the 1999 MMUTIS study, which has particularly raised these concrete problems, preparation for project implementation has been favourably taking place such as the World Bank study and the Feasibility Study on the Proposed Cavite Busway System by JICA. However, the delay of the LRT Line 1 extension, which was regarded as a prerequisite of the Cavite busway, as well as the serious financial deficits of the national government, has necessitated the deferment, if not the total discontinuance, of the initiated project preparation to get the relevant projects into operation.

However, in response to the growing concern on continuing deterioration of traffic conditions that affects the regional economy, a “Review of the Cavite Busway Road Project” has been implemented by the JICA Philippines Office. This review investigated the possibility of modifying the function of the proposed Cavite busway system into an alternative trunk road to serve the north-south movement in Cavite, thus improving the general road traffic conditions in the area, while waiting for the materialization of the LRT Line 1 extension project.

This Study is based on the past study outcomes and related agencies’ efforts for project realization. Formulation of concrete measures such as reaffirmation of investment scale according to current financial capability of the Philippines or a re-examination of optimum network under a limited national budget cover was considered. In addition, this Study also addressed the issue of consensus building not only among national and local government-related agencies but also among international agencies including donors.

In the World Bank’s CALA study and the JICA’s busway study, all concerned local government units (LGUs, which include provincial, city and municipal governments) participated in the planning process. During the course of the conduct of the previous studies, several plenary meetings and seminars/workshops in each related projects have been conducted. Thus, relevant central government agencies (especially NEDA and DPWH) as well as LGUs are highly informed and knowledgeable about this Study; therefore, a significant level of cooperation has already been put in place.

1.2 Study Objectives

As mentioned earlier, relevant concerned government agencies are already familiar with this Study. The study objective therefore is not only to conduct a feasibility study of the road, but also to conduct a review of the regional development concept and the transport masterplan. In particular, this Study aims to alleviate the traffic congestion in the CALA area; to improve the living environment of local residents; to promote dispersion of urban function of Metro Manila; as well as to further encourage the improvement of investment environment in the area given its strategic location vis-à-vis the international port in Batangas City. Based on these priority aims, the Study will be implemented with the following objectives:

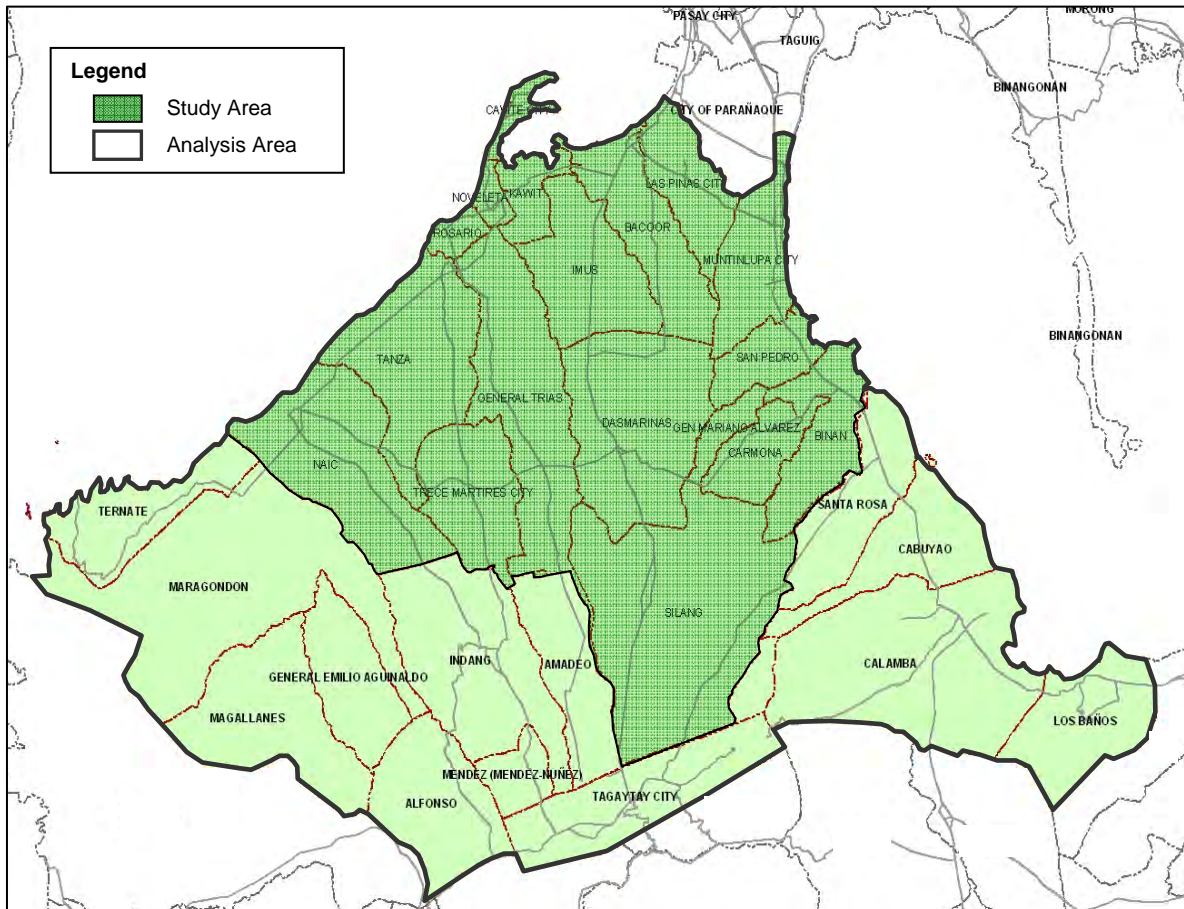
- i) Review of CALA regional traffic network development scenario;
- ii) Examination of the feasibility of CALA East-West road and related projects and preparation of project implementation plan; and
- iii) Capacity development for staff of counterpart agency and other related agencies.

1.3 Study Area

The proposed CALA East-West road is expected to have a direct impact on Cavite Province and part of Laguna Province and Metro Manila. The coverage of the

study area is shown in Figure 1.3.1.

Figure 1.3.1 Study Coverage Area



1.4 Major Meetings / Consultations / Workshops Held

Major meetings/consultations and project activities shown in Table 1.4.1 were conducted in accordance with the study framework shown in Figure 1.4.1.

Table 1.4.1 Major Meetings/Consultations Conducted (January 2005 – September 2006)

Date	Activity	Participants	Outcome
Milestone Meetings			
January 28, 2005	1 st Steering Committee Meeting	DPWH, DOTC, NEDA, DILG, Province of Cavite, JICA Advisor to DPWH, JICA Philippine Office, JICA Study Team	Approval of Inception Report. TWG was tasked to coordinate closely with the Study Team and hold regular joint meetings to discuss progress of the Study.
June 24, 2005	1 st Technical Working Group Meeting	DPWH, NEDA, Provinces of Cavite and Laguna, JICA Study Team	Presentation of Alternative Scenarios for Regional Transport Network. The body suggested that further analysis of Scenarios 3 & 4 be made to determine the most efficient road network.
July 15, 2005	2 nd Technical Working Group Meeting	DPWH, NEDA, Province of Cavite, JICA Study Team	Presentation of proposed CALA Package based on Scenario 4. The body agreed on the following: (1) Full F/S of CALA Expressway, (2) Assistance to NDC for implementation of North-South Toll Road; and (3) Support for implementation arrangement of CALA East-West Road (Daang Hari Road)
August 17, 2005	2 nd Steering Committee Meeting	DPWH, JICA Phil. Office, Province of Laguna, JICA Study Team	Submission of the Interim Report and presentation of the development scenarios and proposed priority projects.
August 25, 2005	3 rd Technical Working Group Meeting	DPWH, NEDA, Province of Cavite, JICA Study Team	Presentation on Environmental and Social Considerations for the CALA East-West Project. The body agreed on the following: (1) identification of the exact ROW thru aerial photos and satellite maps; (2) estimation of ROW acquisition cost based on the BIR zonal valuation; (3) identification of the final alignment before the conduct of the RAP; (4) conduct of RAP simultaneously with parcellary survey before the conduct of the FS; (5) active role of ESSO in the EIA portion of the study particularly on RAP monitoring tasks; (6) start of RAP for the existing Daang Hari; (7) joint participation of ESSO, PMO-FS, DPWH Region IV-A and concerned LGUs; (8) no dating on Tags so as not to cause anxiety among the people; (9) regular meetings between ESSO and JICA Study Team; and (10) CALA East-West (Aguinaldo to Tanza) alignment to follow the NIA irrigation canal .
October 27, 2005	4 th Technical Working Group Meeting	DPWH, NEDA, Province of Cavite, JICA Study Team	Presentation on Updates for the Environmental and Social Study Selected Priority Projects; Initial Qualitative Evaluation on Alignments; Initial Quantitative Evaluation on Alignments; and Progress of Environmental/Social considerations. The body agreed on the following: (1) coordination with the local government of Muntinlupa for the NCR section of Daang Hari East Extension; (2) conduct of RAP for the widening of Daang Hari East Extension portion; (3) coordination with concerned agencies like the DOJ, NHA, Muntinlupa City, and HUDCC for the Daang Hari Extension to SLEX; (4) securing cooperation of PMO-IROWR and DPWH-NCR (especially for the Daang Hari section at NCR area) by inviting representatives during TWG meetings; (5) picture-taking of affected structures instead of tagging; (6) start of RAP for sections with existing 20m ROW; and (7) conduct of more focused meetings with concerned LGUs, offices and organizations.

Date	Activity	Participants	Outcome
December 14, 2005	3 rd Steering Committee Meeting	DPWH, NEDA, DOTC, DILG, PEZA, JICA Phil. Office, WB, JICA Study Team	Presentation of the progress of the study focused on selected alignment for F/S and tentative implementation arrangements with the environmental considerations for the proposed priority projects.
March 15, 2006	5 th Technical Working Group Meeting	DPWH, NEDA, Province of Cavite, JICA Study Team	The 5 th TWG meeting was conducted after the SHM meeting in Cavite, thus meeting proceeded to discuss on issues as presented in the SHM. The body reached agreements on the following items: (1) construction/improvement of Daang Hari and Daang Hari Extension; (2) road right-of-way acquisition and (3) parcellary surveys, EIA and ECC.
March 20, 2006	4 th Steering Committee Meeting	DPWH, NEDA, DOTC, DILG, PEZA, Provinces of Cavite and Laguna, JICA Phil. Office, WB, PIC	Discussion on implementation arrangements and environmental and social consideration activities.
July 11, 2006	6 th Technical Working Group Meeting	DPWH, NEDA, Province of Cavite, JICA Study Team	Presentation of progress of the study focused on environmental aspects and resettlement action plan framework. The body reached agreements on the following items: (1) Province to facilitate immediate completion of process of passing of resolutions of concerned LGUs and (2) submission of resolutions and presentation of the F/S to the Regional Development Council meeting to facilitate tabling of project for ICC.
July 31, 2006	5 th Steering Committee Meeting	DPWH, NEDA, DOTC, DILG, PEZA, Provinces of Cavite and Laguna, JICA Phil. Office, PIC	Discussion the updated costs and economic/financial evaluation, implementing arrangements and environmental and social considerations.
September 13, 2006	6 th Steering Committee Meeting	DPWH, NEDA, DOTC, DILG, PEZA, Provinces of Cavite and Laguna, JICA Phil. Office	Discussion on the final results and outputs of the study, in particular demand and cost update, environmental and social aspects, engineering, and implementation arrangement.
Consultations and Presentations to other Concerned Agencies			
March 17, 2005	1 st Stakeholders' Meeting	DPWH, DOTC, NEDA, DENR, PEZA, NDC, Study Area LGUs, JBIC, JICA Study Team	Presentation of the study. LGUs indicated their support for the study. Schedule of future Stakeholders' Meetings were discussed.
June 16, 2005	2 nd Stakeholders' Meeting	DPWH, DENR, PEZA, Study Area LGUs, NGOs, Cavite and Laguna Chambers of Commerce, JICA Philippine Office, Japanese Embassy, JICA Study Team	Presentation of development scenarios as well as the proposed transport network options. Participants requested further analysis of development scenarios.
June 30, 2005	Meeting with NDC	NDC, JICA Study Team	Presentation of Alternative Scenarios for Regional Transport Network. NDC-PIC was keen on financing the Daang Hari extension to SLEX.

Date	Activity	Participants	Outcome
July 1, 2005	Presentation to the Senate President's Committee on Urgent Infrastructure Projects	Senate President, DTI, DOF, NDC, DPWH, PNCC	Presentation of proposed CALA Package based on Scenario 4. Committee indicated priority interest on Daang Hari extension to SLEX and instructed DPWH to prepare DOJ memorandum for necessary steps to be taken for right-of-way acquisition.
July 5, 2005	Meeting with DOF	Usec. Tan, JICA Study Team	DOF indicated that CALA Package may be included in the 27 th or 28 th Yen Package, provided it gets NEDA-ICC approval.
July 13, 2005	Meeting with One Asia	JICA Study Team, One Asia, NDC	One Asia reiterated its interest on the identified CALA priority projects, particularly the North-South Road which will be traversing their property.
July 29, 2005	Meeting with NDC/PNCC	NDC, PNCC, JICA Study Team	PNCC decided to fund the construction of the Daang Hari extension to SLEX. F/S will be initiated by PNCC.
September 23, 2005	3 rd Stakeholders' Meeting	DPWH, DENR, LGUs, NGOs, Business Sector, JICA Study Team	Presentation of development scenarios for CALA, alternative regional transport network and selection of priority roads, target roads for F/S and environmental and social considerations.
December 7, 2005	4 th Stakeholders' Meeting in Cavite	DPWH, LGUs, Large Property Owners, JICA Study Team	Presentation of the environmental and social study and evaluation of road alternative alignments.
December 9, 2006	4 th Stakeholders' Meeting in Laguna	DPWH, LGUs, Large Property Owners, JICA Study Team	Presentation of the environmental and social study and evaluation of road alternative alignments.
January 18, 2006	Coordination Meeting with HUDCC	HUDCC, NDC, JICA Study Team, PROS	Presentation on the proposed Daang Hari extension to SLEC which will traverse the National Bilibid Prison property, the government property now subject to master planning development chaired by HUDCC.
January 25, 2006	Coordination Meeting with NBP	NBP, NDC, JICA Study Team	Presentation on the proposed Daang Hari extension to SLEC which will traverse the National Bilibid Prison property.
March 14, 2006	5 th Stakeholders' meeting in Laguna	DPWH, DENR, LGUs, Large Property Owners, JICA Study Team	Presentation of the Environment and Social Considerations (ESC) Study and Outline of the Study Progress and Further Arrangements to the Laguna Stakeholders.
March 15, 2006	5 th Stakeholders' meeting in Cavite	DPWH, DENR, LGUs, Large Property Owners, JICA Study Team	Presentation of the Environment and Social Considerations (ESC) Study and Outline of the Study Progress and Further Arrangements to the Cavite Stakeholders.
March 17, 2006	Coordination Meeting with World Bank	WB, JICA, EOJ, DPWH, NDC, JICA Study Team	Presentation of the proposed implementation arrangements for the identified priority road projects in CALA.
March 28 – April 3, 2006	Meeting with Congressional Representatives in the CALA districts	Congressmen in the 1 st , 2 nd and 3 rd districts of Cavite, DPWH, JICA Study Team	Presentation of the CALA project, identified priority road projects in their respective districts and proposed implementation arrangements.
June 2, 2006	6 th Stakeholders' Meeting	DPWH, DENR, LGUs, Large Property Owners, JICA Study Team	Presentation of the Follow-up Environmental Impact Assessment (EIA) and Resettlement Action Plan (RAP) Framework and Conceptual Road Design and Present Issues

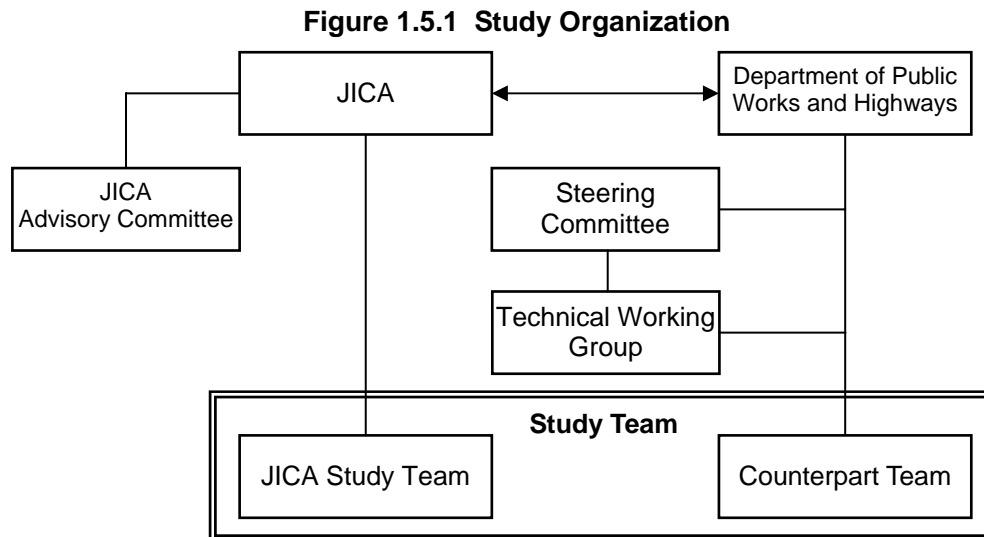
Date	Activity	Participants	Outcome
June 12-19 2006	Meeting with World Bank Mission	WB Mission Team, DPWH, JICA Study Team	Series of meetings/consultations with WB Mission team regarding the progress of the CALA Project.
July-August 2006	7 th Stakeholders' Meeting	DPWH, DENR, LGUs, JICA Study Team	Series of meetings with each LGU regarding RAP and EIA. Confirmation of consensus building process with the submission of resolutions by each LGU in support of the road projects.
September 8, 2006	8 th Stakeholders' Meeting	DPWH, DENR, LGUs, Large Property Owners, JICA Study Team	Presentation and discussion on the overall findings of the study, implementation arrangement and environmental and social aspects.
September 14, 2006	Seminar	DPWH, DOTC, NEDA, DENR, PEZA, NDC, Study Area LGUs, JBIC, JICA Study Team	Presentation on the final results and outputs of the study, in particular demand and cost update, environmental and social aspects, engineering, and implementation arrangement.
Technical Workshops			
February 24, 2005	1 st Technical Workshop (Demand Forecast)	DPWH Counterpart Team, JICA Advisor to DPWH, JICA Study Team	DPWH participants were given a technical exercise on scenario and demand forecasting. Follow-up activity was a site visit to the study area for enhanced study appreciation.
May 26, 2005	2 nd Technical Workshop (GIS)	DPWH Counterpart Team, JICA Advisor to DPWH, JICA Study Team	DPWH participants were presented with the GIS-based road information map being prepared for the Study.
August 26, 2005	3 rd Technical Workshop	DPWH Counterpart Team, JICA Advisor to DPWH, JICA Study Team	DPWH participants were given a technical exercise on traffic simulation using STRADA.

Figure 1.4.1 Overall Project Framework

Month	Task	Data Collection and Survey	Analysis and Evaluation	Planning and Recommendation	Stakeholder Consultation and Seminar	Report
'05/1	1	Formulation of Effective Study Implementation Framework 1-1 Preparation of study implementation plan (including preparation of IC / R) 1-2 Formulation of implementation framework 1) Explanation and consultation of IC/R 2) Verification of survey implementation framework / plan and responsibility sharing, etc. with DPWH of survey implementation framework / plan and responsibility sharing, etc., with DPWH				IC/R
	2	Verification of Prerequisite and Preparation of Transport Network Development Scenarios 2-1 Collection and analysis of the data which becomes prerequisite for scenario 1) Collection and analysis of existing data of study area 2) Collection of environmental baseline information 3) Collection and analysis of traffic-related information Road information map Traffic surveys Basic OD matrices Socio economic Frame Traffic demand forecasting 2-2 Preparation of alternative scenarios relating to regional transport network development				Stakeholder Consultation (1)
3	2					
4						
5	3	Assessment of Alternative Scenarios and Selection of the Optimum Scenario 3-1 The impact assessment of alternative scenarios 1) Examination of evaluation indicators 2) Impact assessment 3-2 Formulation of Optimum Scenario 1) Comprehensive evaluation of the alternative scenarios 2) Stakeholder consultation and review of the Optimum Scenario 3-3 Collection of information related to the optimum scenario 1) Feeder road survey 2) Preparation of aerial photo 3-4 Preparation of the Interim Report				Stakeholder Consultation (2)
6						
7						
8						
9	4	Formulation of the Optimum Project Plan 4-1 Formulation of Alternative Plans 1) Setting of alternative project plans 2) Collection and measurement of each indicators of the alternative project plan 4-2 Formulation of the Optimum Project Plan 1) Evaluation of traffic improvement impact by the project plan 2) Support of Environmental Impact Assessment Examination and preparation of TOR for environmental-social consideration survey Implementing support to the environmental-social consideration survey Support in EIA procedures such as lagging 3) Selection of Optimum Project plan Support of stakeholder meetings Correction / modification				IT/R
10						Stakeholder Consultation (3)
11						Stakeholder Consultation (4)
12						
'06/1	5	Feasibility Study of East-West Road and its Affiliated Works 5-1 Natural condition surveys 1) Preparation of topographical map 2) River Survey 3) Geological survey 4) Boring survey 5-2 Preparation of the Progress Report				Stakeholder Consultation (5)
2						P/R Draft
3						
4						
5		5-3 Basic Design 1) Road 2) Road structure 3) Drainage 4) Pavement 5) Supplementary facilities				Stakeholder Consultation (6)
6		5-4 Intersection design 5-5 Formulation of construction plan 5-6 Formulation of operation and maintenance plan 5-7 Formulation of traffic management plan 5-8 Estimation of project cost				Stakeholder Consultation (7)
7		5-9 Economic/financial analysis 1) Economic appraisal 2) Financial analysis and review 3) Consideration of the benefit of the poor				
8		5-10 Formulation of Financing plan 5-11 Formulation of project implementation plan 5-12 Preparation of relocation action plan				
9		5-13 Presentation of overall appraisal and recommendations 1) Implementation of stakeholder consultation 2) Overall appraisal 3) Conclusion and recommendations				Stakeholder Consultation (8) Seminar
10		5-14 Preparation of the Draft Final Report				DF/R
11						F/R

1.5 Composition of the Study Organization

The study organization is composed of the JICA Advisory Committee and the JICA Study Team on Japan side and the Steering Committee, the Working Group, and the Counterpart Team on the Philippines side, as shown in Figure 1.5.1.



1.6 Members of the Study Organization

The Japan side is composed of the following members:

JICA and JICA Advisory Committee

Mr. OGINO Hiroyuki	Chief Researcher, Traffic Engineering Division, Road Department National Institute for Land and Infrastructure Management, Ministry of Land, Infrastructure and Transport
Mr. OKAZAKI Yuji	Managing Director Social Development Department Japan International Cooperation Agency
Mr. NAKAMURA Akira (Previous)	Group Director, Group III (Transportation) Social Development Department Japan International Cooperation Agency
Mr. MIYAMOTO Hideo (Present)	Group Director, Group III (Transportation and ICT) Social Development Department Japan International Cooperation Agency
Mr. KURASHINA Yoshiro	Team Director, Transportation Team I, Group III (Transportation and ICT) Social Development Department Japan International Cooperation Agency
Mr. UCHIYAMA Takayuki (Previous)	Transportation Team I, Group III (Transportation) Social Development Department Japan International Cooperation Agency

Mr. ISHIHARA Masatoyo (Present)	Transportation Team I, Group III (Transportation and ICT) Social Development Department Japan International Cooperation Agency
Mr. MATSUURA Shozo	Resident Representative JICA Philippine Office
Mr. TAKATA Hirohiko	Deputy Resident Representative (Infrastructure) JICA Philippine Office
Mr. SUGIYAMA Shigeru	Assistant Resident Representative JICA Philippine Office
Mr. MAEHARA Mitsuhiro	Assistant Resident Representative JICA Philippine Office

JICA Study Team

Mr. SHOYAMA Takashi	Team Leader / Transport Planning
Mr. AOKI Tomoo	Deputy Team Leader / Social Environment
Dr. Mohammad Zaman	Social Environment (2)
Mr. KUYAMA Tetsuo	Natural Environment
Ms. Beulah E. Pallana	Relocation Planning
Mr. TAKAGI Michimasa	Deputy Team Leader / Road Planning / Intersection Planning
Mr. TAKAHASHI Kenji	Regional Development / Land Use
Ms. Nanette T. Abilay	Traffic Survey
Mr. ARIKAWA Hideo	Transport Demand Forecasting
Mr. KATSURADA Toshisada	Public Transport
Mr. MATSUOKA Seiya	Traffic Management
Mr. YOKOTA Eiichi	Road Design / Road Planning (2)
Mr. OKUNO Kentaro	Structure Design
Mr. MOTOKI Yoshihiro	River Planning
Mr. WAKUI Tetsuo	Transport Economy
Mr. MAEDA Tetsuya	Construction Planning / Cost Estimate
Mr. IMAI Haruhiko	City Planning
Mr. Rene S. Santiago	Institution / Organization / Finance
Mr. KOKUFU Yutaka	Aerial Photo / Map
Mr. Joel F. Cruz	GIS
Mr. Godofredo Z. Galano	Road Administration
Dr. HOSOMI Akira	Transport Node Planning
Ms. Lynn Sison	LGU Specialist

The Philippine side is composed of the following members:

Steering Committee

Mr. Raul C. Asis Chairman	Assistant Secretary Department of Public Works and Highways
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Ms. Linda M. Templo	Director, Planning Service
Vice-Chairman	Department of Public Works and Highways
Ms. Ma. Catalina E. Cabral	Director, Planning Service
	Department of Public Works and Highways
Members:	
Mr. Faustino N. Sta Maria, Jr.	Project Director, PMO-Feasibility Studies
	Department of Public Works and Highways
Mr. Gilberto S. Reyes	Director, Bureau of Design
	Department of Public Works and Highways
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	National Economic and Development Authority Region IV-A
Mr. Yuji Ikeda	JICA Highway Advisor for Department of Public Works and Highways
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Hon. Teresita S. Lazaro	Governor of Laguna
Mr. Ildelfonso Patdu	Representative from Department of Transportation and Communications
Mr. Rolando G. Tungpalan	Representative from National Economic and Development Authority
Ms. Rolyn Zambales	Representative from Department of Interior and Local Government
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2 EXISTING CONDITIONS AND PROBLEMS IN THE STUDY AREA

2.1 Administrative Set Up

The four levels of local government units (LGUs) in the Philippines in terms of political corporate entities are, in hierarchical order, the provinces, cities, municipalities, and barangays. Provinces are the highest political and corporate unit of local government composed of municipalities and component cities. As a requirement, they should have an annual income of not less than ₱ 20 million, a population of not less than 250,000 residents and a land area of at least 2,000 square kilometers. The provinces are administered by a set of elected officials headed by governors.

Cities are urbanized communities with a population greater than 150,000 inhabitants and an annual income of at least ₱ 20 million. They are composed of several barangays. Their economy is much more varied than the rural communities since they rely less on agricultural outputs. Elected mayors are the chief executive officers of the cities. Municipalities are political corporate bodies also consisting of several barangays. A unit must have at least 25,000 inhabitants and an annual income of more than ₱ 2.5 million. Like the cities, mayors head the municipalities.

Barangays are the smallest political unit of government serving as the primary planning and implementing unit of government policies, plans, programs, and projects. A barangay has at least 2,000 inhabitants residing within the territorial limit of a city or municipality and administered by a set of elective officials, headed by a barangay chairman (*punong barangay*).

The provinces have some limited power over lower levels of governments (i.e. the municipalities), and the same is true for municipalities over the barangays. Only the cities have administrative independence from any other government level.

All of these LGUs have revenue-raising powers through taxes or fees. Only the provinces, cities and municipalities are required to establish government offices. The Local Government Code of 1991 describes in detail the responsibilities and functions of the LGUs.

The LGUs are classified based on their income, which is used, among others, as basis for fixing the maximum tax ceiling imposable by the LGU, for determining administrative and statutory aids, financial grants and other forms of assistance to LGUs, and for the implementation of salary laws and administrative issuances on allowances and emoluments for local government officials and personnel. The recent income classification for LGUs nationwide is based on Department of Finance Department Order No. 32-01, which took effect last November 20, 2001.

2.1.1 Province of Cavite

The Province of Cavite is situated south of Luzon with a total land area of 142,706 hectares. It is bounded by the Province of Batangas in the south, Province of Laguna in the east and Province of Rizal on the northwest (Figure 2.1.1). Metro Manila is on the north of the Cavite and the China Sea is on the west.

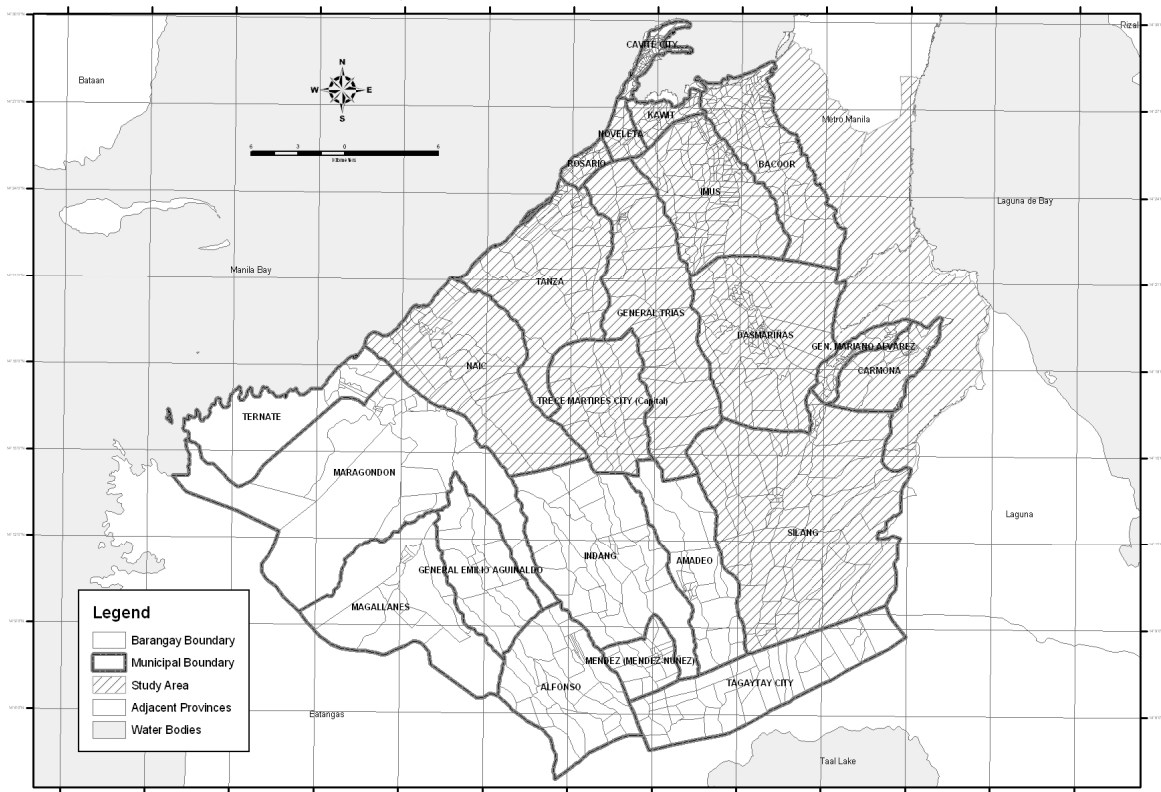
The province is divided into three congressional districts, 20 municipalities and 829 barangays. It has three cities (Trece Martires, Cavite and Tagaytay) and four satellite islands (Corregidor, Caballo, Fraile, and Limbones). Imus is the provincial capital, but the seat of the provincial government is located at Trece Martires City, the former capital. There are three physiographic divisions: the lowland and the coastline areas, the central characterized by rolling and undulating areas and the hilly and mountainous upland areas.

Table 2.1.1 Profile of Cavite Province

City / Municipality	No. of Barangays	Land Area (hectares)	Income Classification
District I			
Cavite City	64	1,183	3 rd
Bacoor	73	5,240	1 st
Kawit	23	1,340	1 st
Noveleta	16	541	4 th
Rosario	20	567	1 st
District II			
Trece Martires City	13	3,917	4 th
Carmona	14	3,092	1 st
Dasmariñas	73	8,234	1 st
Gen. M. Alvarez	27	938	2 nd
Gen. Trias	33	11,768	1 st
Imus	97	9,701	1 st
Tanza	41	9,630	1 st
District III			
Tagaytay City	35	6,615	3 rd
Alfonso	32	6,460	3 rd
Amadeo	26	4,790	4 th
Gen. E. Aguinaldo	14	5,103	5 th
Indang	36	8,920	3 rd
Magallanes	16	7,860	5 th
Maragondon	27	16,549	4 th
Mendez	25	1,667	4 th
Naic	30	8,600	2 nd
Silang	64	15,641	1 st
Ternate	10	4,350	4 th
Province of Cavite	829	142,706	1st

Sources: Provincial Physical Framework Plan: Province of Cavite. 2005 -2010 for land area and number of barangays; and DOF for income class.

Figure 2.1.1 Province of Cavite



2.1.2 Province of Laguna

The Province of Laguna is located some 30 kilometers south of Metro Manila, with a total land area of 175,973 hectares (Figure 2.1.2). Laguna is bounded in the east by the Sierra Madre Range, south by the Province of Quezon and west by the provinces of Batangas and Cavite. The provincial terrain is mainly of narrow plains extending along the shores of the Laguna de Bay. On the northwestern part of the province are few elevated portions with Mount Makiling and Mount Banahaw at more than 1,000 meters above sea level. The province has 27 municipalities, 3 cities and 673 barangays, principally located east and southeast of the Laguna de Bay. Sta. Cruz is the capital town of the province. The 27 municipalities and 3 cities are administratively divided into four political districts (Table 2.1.2).

Figure 2.1.2 Province of Laguna

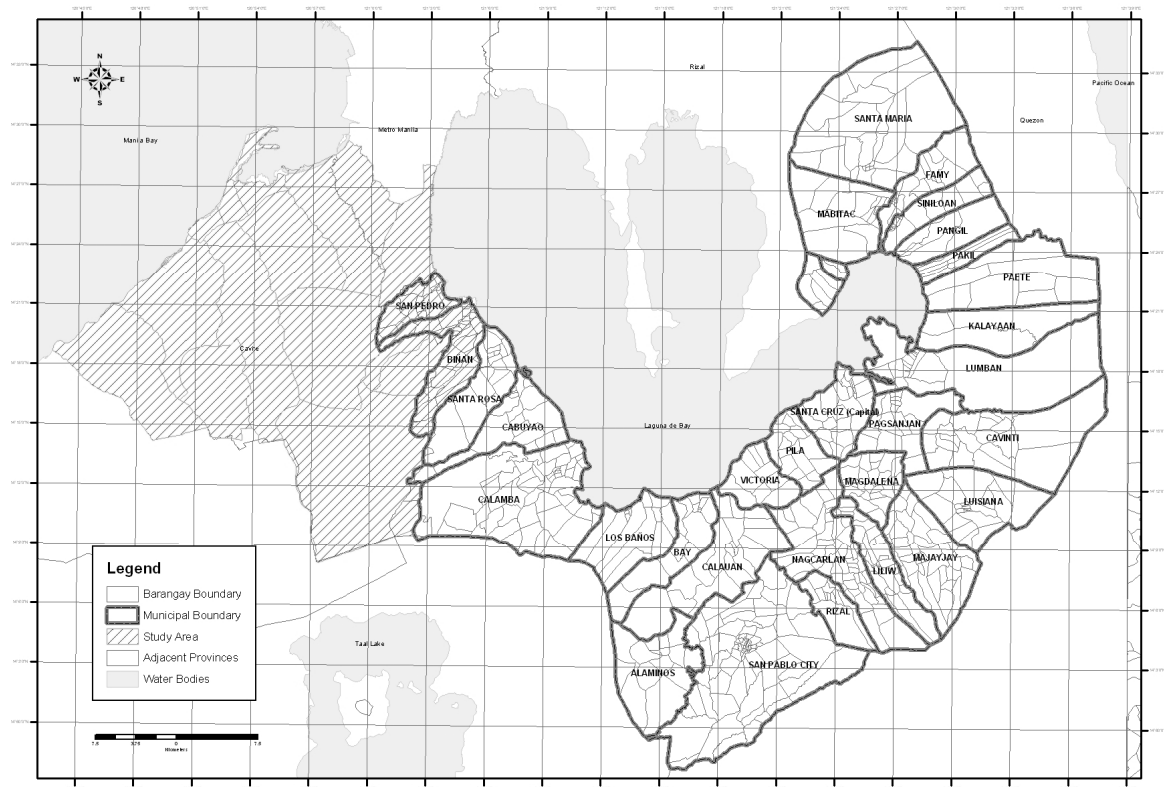


Table 2.1.2 Profile of Laguna Province

City / Municipality	No. of Barangays	Land Area (hectares)	Income Classification
District I			
San Pedro	17	2,800	1 st
Biñan	24	4,350	1 st
Santa Rosa City	18	3,910	1 st
District II			
Cabuyao	18	8,460	1 st
Calamba City	54	14,480	2 nd
Los Baños	13	5,650	1 st
Bay	15	4,690	3 rd
District III			
Calauan	17	6,640	2 nd
Victoria	9	3,300	4 th
San Pablo City	80	21,400	1 st
Alaminos	15	5,473	4 th
Liliw	33	3,910	4 th
Rizal	11	2,790	5 th
Nagcarlan	52	7,810	4 th
District IV			
Pila	17	3,120	4 th
Santa Cruz	26	3,860	1 st
Pagsanjan	16	2,640	4 th
Lumban	16	9,680	4 th
Kalayaan	3	4,660	5 th

Cont. Table 2.1.2

City / Municipality	No. of Barangays	Land Area (hectares)	Income Classification
Paete	9	3,240	4 th
Pangil	8	2,300	5 th
Siniloan	20	4,110	3 rd
Famy	20	1,940	5 th
Mabitac	15	7,300	5 th
Santa Maria	26	12,340	4 th
Luisiana	23	6,380	5 th
Cavinti	19	7,040	4 th
Magdalena	24	3,440	5 th
Majayjay	40	6,960	4 th
Province of Laguna	671	175,973	1st

Source: Provincial Physical Framework Plan: Province of Laguna. 1993-2002 for land area and number of barangays; and DOF for income class.

2.1.3 Cities of Las Piñas and Muntinlupa

Although not located in the Cavite-Laguna area, the cities of Las Piñas and Muntinlupa of Metropolitan Manila are included to form part of the study area due to their proximity and direct link to the provinces of Cavite and Laguna. Both cities of the premier metropolis hold the rank of 1st class cities in terms of income.

The City of Las Piñas is located at the outer fringe of Metro Manila. It is bounded on the south by Imus, Cavite; on the east and southeast by the City of Muntinlupa; on the west and southwest by the Municipality of Bacoor, Cavite; on the north and northeast by the City of Parañaque; and on the northwest by the Manila Bay. It is highly accessible to and from Southern Luzon. The city has a total land area of approximately 3,298.6 hectares. It is divided into two congressional districts and has 20 barangays.

The City of Muntinlupa is also located at the outer fringe of Metro Manila, just adjacent to the City of Las Piñas. It is found on the southwestern coast of Laguna de Bay, bounded on the southwest by the Province of Cavite and on the south by the Province of Laguna. It is also divided into two congressional districts and has 9 barangays. The total land area of the city is 4,670 hectares. In terms of accessibility, it has two trunk roads (i.e., National Highway and the South Luzon Expressway) traversing the city connecting it to Metro Manila and the southern provinces.

Figure 2.1.3 Cities of Las Piñas and Muntinlupa

