

Socialist Republic of Vietnam
Ministry of Transport (MOT)
Ministry of Finance (MOF)
Vietnam Expressway Corporation (VEC)

Preparatory Survey
on Operation and Maintenance of
Ho Chi Minh City – Long Thanh – Dau
Giay Expressway Project
Final Report

December 2021

Japan International Cooperation Agency (JICA)

Index Consulting, Inc.
Maeda Corporation

OS
JR (P)
21-047

This page intentionally left blank

List of Abbreviation

(In Alphabetical Order)

ACV	Airports Corporation of Vietnam
ADB	Asian Development Bank
ARC	Aichi Road Concession Co., Ltd.
CMSC	Commission for the Management of State Capital at Enterprises
Cuu Long CIPM	Cuu Long Corporation for Investment, Development and Project Management of Transportation Infrastructure
IFC	International Finance Corporation
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JOIN	Japan Overseas Infrastructure Investment Corporation for Transport and Urban Development
MOF	Ministry of Finance
MONRE	Ministry of Natural Resources and Environment
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
NEXCO	Nippon Expressway Company Limited
VEC	Vietnam Expressway Corporation
VECE	Vietnam Expressway Services Engineering Joint Stock Company

Contents

1. Basic data of current operation and maintenance.....	1
1.1 The current status/standard of operation and maintenance	1
1.1.1 Relevance of the HCMC-LT-DG section and Aichi Toll Road	1
1.1.2 Impact on finance of the government of Vietnam	1
1.2 The current status of operation and maintenance	1
1.2.1 Management and governance structure of VEC.....	1
1.2.2 Maintenance standards	1
1.2.3 Staff allocation in toll collection work	2
1.2.4 Operation process in toll collection work by VEC.....	2
1.2.5 Revenue of toll collection	2
1.2.6 Cost of toll collection work.....	2
1.2.7 O&M data of the HCMC-LT-DG section.....	2
1.2.8 Implementation of Japanese technology in the HCMC-LT-DG section.....	3
1.3 Room for improvement of the current status/standard of operation and maintenance with Japanese O&M know-how and technologies	3
1.3.1 Management governance structure.....	3
1.3.2 Road maintenance and management systems	3
1.3.3 Service capability	3
1.3.4 Technical capability.....	4
1.3.5 Advantages of concession (O&M) scheme.....	4
2. Implementation of new technologies for the current operation and maintenance.....	5
2.1 Potential implementation of Japanese new technologies under concession scheme	5
2.1.1 Outline of the high-tech list and new technologies under the PPP Law in Vietnam ..	5
2.1.2 Potential technology proposals from the Aichi prefecture road concession.....	5
2.1.3 Building a 'New "Aichi Model"' by combining the Aichi Road Concession with innovative technology from start-ups.....	6
2.2 Potential implementation of Japanese new technologies under concession scheme	6
2.3 The current road operation and maintenance by ARC	7
2.3.1 Road patrol	7
2.3.2 Traffic volume observation	7
2.3.3 Response to Rainy Weather.....	7
2.3.4 Bridge section.....	7
2.3.5 Road data registration	7
2.3.6 Management of trespassing and reverse driving at connections with other road sections.....	7
2.3.7 Operations and standards for maintenance and repair.....	7
2.4 Qualitative advantages of concession management by Japanese companies	7
3. Data collection and analysis for business planning	8

3.1	Basic information on the existing rest areas along the HCMC-LT-DG section for the possibility of SA/PA development.....	8
3.1.1	The existing rest areas.....	8
3.1.2	The possibility of SA/PA development.....	8
3.2	Basic information of the peripheral infrastructure of the section including ports, airports roads, transport vehicles, etc.....	8
3.2.1	Existing Transportation Network.....	8
3.2.2	Future Transportation Network.....	9
3.3	Possibility of collaboration with other local companies.....	9
4.	Data collection and analysis for financial planning	11
4.1	Demand forecast.....	11
4.1.1	Current traffic volume.....	11
4.1.2	Methodology.....	12
4.1.3	Zone system.....	12
4.1.4	Growth rate of traffic volume.....	12
4.2	Current road asset status and its associated plan stipulated by the government of Vietnam.....	13
4.3	Estimated investment cost for the 8-lane expansion.....	14
4.3.1	Estimated construction cost of HCMC-LT-DG section.....	14
4.3.2	Estimate of additional construction cost.....	14
4.3.3	Estimate of large-scale repair cost.....	14
4.4	OPEX required for concession scheme, separately from the CAPEX in 4.3 above....	15
5.	Financial analysis and business planning.....	16
5.1	Comparison of the revenue and expenditure of the government of Vietnam between public O&M and concession (private O&M), with an estimation of Economic IRR (Economic Internal Rate of Return).....	16
5.1.1	Concept of economic cost.....	16
5.1.2	Concept of economic benefits.....	16
5.1.3	The calculation result of economic cost ant economic benefits.....	16
5.2	Examination of multiple financial schemes under concession with its advantages and disadvantages.....	16
5.2.1	Prerequisites for financing schemes.....	16
5.2.2	Comparison of the possible options.....	16
5.3	Income and expenditure plan and cashflow model for concession scheme.....	17
5.3.1	Assumptions for operating income and cash flows.....	17
5.3.2	Results of calculation of operating income and cash flows.....	17
5.4	Estimation of a concession fee from the perspective of both the public and private sectors (project viability and improvement of balance of payment).....	17

5.4.1	Consideration for the right of operation considered necessary for VEC.....	17
5.4.2	Concession fee considered to be payable by the private sector	17
5.4.3	Analysis of profitability of private business operators according to the level of concession fee	18
5.4.4	Sensitivity analysis of operating income and cash flows	18
5.4.5	Analysis of the VEC's cash flow associated with the receipt of management rights consideration	18
5.5	Financing plan necessary to make the project viable including the negotiations with relevant stakeholders of Japan and Vietnam.....	19
5.5.1	Assumed funding needs	19
5.5.2	Approach to fund procurement by investors and financial institutions.....	19
5.5.3	Repayment of principal and interest of loans	19
5.6	Formulation of business planning	19
6.	Legal analysis.....	20
6.1	Confirmation of legal basis and procedures for establishment of business under the PPP Law and related laws.....	20
6.1.1	Outline of the legal framework of PPP in Vietnam	20
6.1.2	Outline of Procedures Until PPP Project Offering (PPP Law Chapter 2)	20
6.1.3	Investor Selection Procedures (PPP Law Chapter 3)	20
6.1.4	Establishment and Operation of the PPP Project Enterprise and the PPP Project Contract (PPP Law Chapter 4)	20
6.1.5	Other Major Points Related to the PPP Law	20
6.2	Listing of legal issues in VEC realignment, confirmation of various scenarios and legal measures	20
6.2.1	Entitlement of business right/ownership of the HCMC-LT-DG section	20
6.2.2	Loan agreements between ADB and JICA.....	21
6.3	Confirmation of the tax system	21
6.3.1	Types of tax	21
6.3.2	Type of incentive.....	21
7.	Risk analysis	22
7.1	Identification of various risks associated with concession scheme with its preliminary risk assessment and analysis	22
7.2	Initial consideration of risk sharing	22
7.2.1	Consideration of risks requiring attention in the common phase	22
7.2.2	Consideration of risks that require attention in the operation phase	22
7.2.3	Consideration of risks that require attention in the project termination phase.....	22
7.2.4	Consideration of risks that require attention in the construction phase.....	22
7.3	Consideration of risk mitigation for VEC by introducing the proposed concession ...	22
8.	Environmental and social consideration	23

8.1	Environmental and social consideration in accordance with the local guidelines stipulated by the government of Vietnam.....	23
8.2	Initial environmental and social impact assessment (screening).....	25

Table of Contents

Table 1-1 Outline of Aichi Toll Road Concession Project	1
Table 1-2 Relevance of the HCMC-LT-DG section and Aichi Toll Road	1
Table 1-3 Standard for road management	1
Table 1-4 Standard for maintenance and repair.....	1
Table 1-5 Standard for management of bridges up to 300m in length	1
Table 1-6 Standard for maintenance and repair of bridges up to 300m in length	2
Table 1-7 Personnel allocation in toll collection work of VEC.....	2
Table 1-8 Operation process in toll collection work by VEC	2
Table 1-9 Classification of vehicle types (VEC).....	2
Table 1-10 Revenue of toll collection at the toll booths of HCMC-LT-DG section (2019).....	2
Table 1-11 Total annual cost of toll collection work in three toll booths (2018)	2
Table 1-12 Total O&M cost of HCMC-LT-DG section.....	2
Table 1-13 Comparison of expenditures for VEC (all sections), ARC, and NEXCO Central Japan	3
Table 1-14 Comparison of expenditures for VEC (HCMC-LT-DG section), ARC, and NEXCO Central Japan	3
Table 1-15 Comparison of profit before tax for VEC, ARC, and NEXCO Central Japan	3
Table 1-16 Information disclosure comparison of ARC and VEC.....	3
Table 1-17 Work system under VEC.....	3
Table 1-18 Operation responsibilities under ARC	3
Table 1-19 Number of toll collectors and number of lanes at each toll booth in the HCMC-LT-DG section.....	3
Table 1-20 Number of toll collectors and number of lanes at each toll booth in ARC	3
Table 1-21 Number of toll collectors if direct toll collection in the HCMC-LT-DG section is reduced by 50%.....	4
Table 1-22 Training programs for ARC employees	4
Table 1-23 Comparison of maintenance level between ARC and VEC	4
Table 2-1 Vietnam’s High-tech List (partial)	5
Table 2-2 Proposed technologies that have already been put to practical use in the Aichi prefecture road concession	5
Table 2-3 Technology package for autonomous driving	6
Table 2-4 Number of road patrols by ARC traffic control team members	7
Table 2-5 Bridge soundness classification	7
Table 2-6 Qualitative advantages of concession management by Japanese companies.....	7
Table 3-1 Comparison of SA/PA development plans	8
Table 3-2 Existing Transportation Network in 2021	8
Table 3-3 Toll Fees at the new interchange Highway 319B.....	9
Table 3-4 Future transportation network.....	9
Table 3-5 Construction projects of new interchanges	9
Table 3-6 List of local companies shortlisted for the North-South Expressway	9
Table 3-7 Examination of local companies for potential collaboration	9
Table 3-8 List of local companies with investment experience in PPP project.....	10
Table 3-9 North-South Expressway project contracted under PPP method	10
Table 4-1 Annual traffic volume at three toll gates in HCMC-LT-DG section (FY2015-2020) .	11
Table 4-2 Traffic volume of HCMC-LT-DG section in August/December 2019	11
Table 4-3 Traffic volume of HCMC-LT-DG section by direction in August/December 2019....	11
Table 4-4 Classification of vehicle type (TEDI)	11
Table 4-5 Traffic survey in Bien Hoa - Vung Tau Expressway Construction Project, 2020	11
Table 4-6 Average daily vehicle counting result (4 vehicle types) in Bien Hoa - Vung Tau Expressway Construction Project, 2020.....	11

Table 4-7 Traffic Survey in Bien Hoa - Vung Tau Expressway Construction Project, 2019	11
Table 4-8 Average daily vehicle counting result (4 vehicle types) in Bien Hoa - Vung Tau Expressway Construction Project, 2019	11
Table 4-9 Traffic survey in project of constructing Ring-Road 3 from Tan Van to Nhon Trach, 2017	11
Table 4-10 Average daily vehicle counting result (4 vehicle types) in project of constructing Ring-Road 3 from Tan Van to Nhon Trach, 2017	12
Table 4-11 Attractive zoning of the region by administrative boundaries	12
Table 4-12 Economic growth rate in the study area from 2015 to 2019	12
Table 4-13 GDP growth rate in the study area	12
Table 4-14 Statistics of traffic volume in NH.51 - Long Phuoc - Long Thanh - Dong Nai	12
Table 4-15 GDP growth rate and future traffic volume of NH.51	12
Table 4-16 Forecast of passengers and cargo of Long Thanh Airport	13
Table 4-17 Forecast of employee and well-wishers of Long Thanh Airport	13
Table 4-18 Forecast of daily access traffic of Long Thanh Airport	13
Table 4-19 Estimated the additional traffic volume from Long Thanh International Airport	13
Table 4-20 Traffic volume generated / attracted by zones in 2025	13
Table 4-21 Traffic volume generated / attracted by zones in 2030	13
Table 4-22 Traffic volume generated / attracted by zones in 2040	13
Table 4-23 Traffic demand of HCMC-LT-DG section by 3 vehicle types (HCMC-LT section)	13
Table 4-24 Traffic demand of HCMC-LT-DG section by 8 vehicle types (HCMC-LT section)	13
Table 4-25 Traffic demand of HCMC-LT-DG section by 5 vehicle types (HCMC-LT section)	13
Table 4-26 Traffic demand of HCMC-LT-DG section by 3 vehicle types (LT-DG section)	13
Table 4-27 Traffic demand of HCMC-LT-DG section by 8 vehicle types (LT-DG section)	13
Table 4-28 Traffic demand of HCMC-LT-DG section by 5 vehicle types (LT-DG section)	13
Table 4-29 Total cost estimate of 8 lanes expansion of HCMC-LT-DG section	14
Table 4-30 Breakdown of the construction cost of expansion	14
Table 4-31 The problems of the estimation cost	14
Table 4-32 Comparison of construction cost of HCMC-LT-DG section	14
Table 4-33 Additional construction cost for the Proposed Section (No Price Increase)	14
Table 4-34 Large-scale Repair Expenses for the Proposed Section (No Price Increase)	14
Table 4-35 Construction Cost Reduction Effect of Blanket Orders for Civil Work in Japan	15
Table 4-36 Ordinary costs for HCMC-LT-DG section (assuming 4 lanes, with price increase)	15
Table 4-37 Ordinary cost for the proposed section (assuming 8-lane widening, no price increase)	15
Table 5-1 Economic cost ant economic benefits of road damage inspection technology	16
Table 5-2 Economic cost ant economic benefits of Non-destructive testing technology	16
Table 5-3 Economic benefits of SA/PA redevelopment	16
Table 5-4 Economic benefits of ETC2.0	16
Table 5-5 Comparison of options corresponding to inflation risk	16
Table 5-6 Comparison of options corresponding to demand fluctuation risk	17
Table 5-7 Common prerequisites	17
Table 5-8 Assumptions underlying income and expenditure of road management business	17
Table 5-9 Assumptions underlying revenues and expenditures for SA/PA operations	17
Table 5-10 Summary of business income and cash flows (excluding revision of toll rate)	17
Table 5-11 Summary of business income and cash flows (including revision of toll rate)	17
Table 5-12 Yen loan and ADB loan requirements for 2020 – 2049 (Include the burden of interest)	17
Table 5-13 Results of sensitivity analysis to price fluctuation risk	18
Table 5-14 Results of sensitivity analysis to demand fluctuation risk	18
Table 5-15 Results of sensitivity analysis to business period	18

Table 6-1 Timetable for the acquisition of business rights when applying Type II Competitive Negotiation.....	20
Table 6-2 Comparison of Type I Competitive Negotiation and Type II Competitive Negotiation	20
Table 7-1 Risk allocation of the Project.....	22
Table 7-2 Risk mitigation potential of VEC when concession is introduced.....	22
Table 8-1 Overview of the HCMC-LT-DG section	23
Table 8-2 Overview of the existing SA/PA	23
Table 8-3 Environmental and Social Considerations Checklist	28

Figure of Contents

Figure 1-1 Overview of Aichi Toll Road.....	1
Figure 1-2 Organization structure of VEC.....	1
Figure 1-3 Location of toll booths on HCMC-LT-DG section.....	2
Figure 1-4 Toll map.....	2
Figure 2-1 Image of digital display board.....	5
Figure 2-2 Image of Smart Interchange in SA/PA.....	5
Figure 2-3 Image of facilities and technology for the disabled in SA/PA.....	5
Figure 2-4 Image of digital signage.....	5
Figure 2-5 Image of interactive digital signage.....	5
Figure 2-6 Image of electric vehicle charging facilities.....	5
Figure 2-7 Image of measurement of bridge deformation using only a camera shot from a distance.....	5
Figure 2-8 Image of technology for estimating road surface properties from vehicle driving sounds.....	5
Figure 2-9 Image of demonstration of "social infrastructure x IoT" using 5G.....	6
Figure 2-10 Image of creating 3D images by simply looking around.....	6
Figure 2-11 Image of evaluating the soundness of bearings by taking photographs from a distance.....	6
Figure 2-12 Image of technology to grasp road surface condition from commercial video camera images.....	6
Figure 2-13 Image of reverse driving detection system using three-dimensional laser radar.....	6
Figure 2-14 Image of remote monitoring system of slope using inclination sensor and web.....	6
Figure 2-15 Image of reverse driving detection system using quasi-millimeter wave radar.....	6
Figure 2-16 Future vision of HCMC – DG Expressway (draft only).....	6
Figure 2-17 Autonomous driving implementation image (draft only).....	6
Figure 2-18 Cross-sectional energy management system (draft only).....	6
Figure 3-1 Location of rest areas along the HCMC-LT-DG section.....	8
Figure 3-2 Rest areas along the Long Thanh - Dau Giay section.....	8
Figure 3-3 Comparison of SA/PA development plans.....	8
Figure 3-4 Potential site of Plan B.....	8
Figure 3-5 Development area of Amata City Long Thanh.....	8
Figure 3-6 Map of existing transport networks in 2021.....	8
Figure 3-7 Location of new interchange Highway 319B.....	9
Figure 3-8 Photo of the connection of Highway 319B and HCMC-LT-DG section.....	9
Figure 3-9 Future transportation network in 2040.....	9
Figure 3-10 Location of new interchanges.....	9
Figure 3-11 Location of Long Thanh Golf Club.....	9
Figure 3-12 Location of Bien Hoa New City.....	9
Figure 3-13 Location of KN Paradise.....	9
Figure 3-14 Section of North-South Expressway project contracted under PPP method.....	10
Figure 4-1 Location of each survey.....	11
Figure 4-2 Attractive zoning of the region by administrative boundaries.....	12
Figure 4-3 Economic growth rate in the study area from 2015 to 2019.....	12
Figure 4-4 Correlation between GDP and traffic volume (car).....	12
Figure 4-5 Correlation between GDP and traffic volume (bus).....	12
Figure 4-6 Correlation between GDP and traffic volume (truck).....	12
Figure 4-7 Asset status of HCMC-LT-DG road.....	14
Figure 4-8 Asset status of toll booths in HCMC-LT-DG section.....	14
Figure 4-9 Asset status of SA/PA in HCMC-LT-DG section.....	14
Figure 4-10 Vietnam's Consumer Price Index (CPI).....	14

Figure 5-1 Cash Flow in the Proposed Section When VEC Continues Operations	18
Figure 5-2 Cumulative Cash flow for 4 segments excluding the proposed segment	18
Figure 5-3 Cumulative cash flow for all five sections and the four sections other than HCMC-LT-DG section when VEC continues to operate	18
Figure 5-4 Cumulative and single-year cash flows for all five sections when VEC continues to operate	18
Figure 5-5 Cumulative and single-year cash flows for the other four sections when VEC continues to operate	18
Figure 5-6 VEC cash flow when HCMC-LT-DG section is under concession	18
Figure 5-7 Cumulative cash flow for the HCMC-LT-DG section and the other 4 sections (Concession).....	19
Figure 5-8 Image of the concession scheme	19
Figure 6-1 Sequence of PPP projects	20
Figure 6-2 General structure of road concession	20

1. Basic data of current operation and maintenance

The current status/standard of operation and maintenance

Undisclosed due to confidential business information

1.1.1 Relevance of the HCMC-LT-DG section and Aichi Toll Road

Undisclosed due to confidential business information

Table 1-1 Outline of Aichi Toll Road Concession Project

Undisclosed due to confidential business information

Table 1-2 Relevance of the HCMC-LT-DG section and Aichi Toll Road

Undisclosed due to confidential business information

Figure 1-1 Overview of Aichi Toll Road

Undisclosed due to confidential business information

1.1.2 Impact on finance of the government of Vietnam

Undisclosed due to confidential business information

The current status of operation and maintenance

Undisclosed due to confidential business information

1.1.1 Management and governance structure of VEC

Undisclosed due to confidential business information

Figure 1-2 Organization structure of VEC

Undisclosed due to confidential business information

1.1.2 Maintenance standards

Undisclosed due to confidential business information

Table 1-3 Standard for road management

Undisclosed due to confidential business information

Table 1-4 Standard for maintenance and repair

Undisclosed due to confidential business information

Table 1-5 Standard for management of bridges up to 300m in length

Undisclosed due to confidential business information

Table 1-6 Standard for maintenance and repair of bridges up to 300m in length

Undisclosed due to confidential business information

1.1.3 Staff allocation in toll collection work

Undisclosed due to confidential business information

Figure 1-3 Location of toll booths on HCMC-LT-DG section

Undisclosed due to confidential business information

Table 1-7 Personnel allocation in toll collection work of VEC

Undisclosed due to confidential business information

1.1.4 Operation process in toll collection work by VEC

Undisclosed due to confidential business information

Table 1-8 Operation process in toll collection work by VEC

Undisclosed due to confidential business information

1.1.5 Revenue of toll collection

Undisclosed due to confidential business information

Table 1-9 Classification of vehicle types (VEC)

Undisclosed due to confidential business information

Figure 1-4 Toll map

Undisclosed due to confidential business information

Table 1-10 Revenue of toll collection at the toll booths of HCMC-LT-DG section (2019)

Undisclosed due to confidential business information

1.1.6 Cost of toll collection work

Undisclosed due to confidential business information

Table 1-11 Total annual cost of toll collection work in three toll booths (2018)

Undisclosed due to confidential business information

1.1.7 O&M data of the HCMC-LT-DG section

Undisclosed due to confidential business information

Table 1-12 Total O&M cost of HCMC-LT-DG section

Undisclosed due to confidential business information

Table 1-13 Comparison of expenditures for VEC (all sections), ARC, and NEXCO Central Japan
Undisclosed due to confidential business information

Table 1-14 Comparison of expenditures for VEC (HCMC-LT-DG section), ARC, and NEXCO Central Japan
Undisclosed due to confidential business information

Table 1-15 Comparison of profit before tax for VEC, ARC, and NEXCO Central Japan
Undisclosed due to confidential business information

1.1.8 Implementation of Japanese technology in the HCMC-LT-DG section
Undisclosed due to confidential business information

Room for improvement of the current status/standard of operation and maintenance with Japanese O&M know-how and technologies
Undisclosed due to confidential business information

1.1.1 Management governance structure
Undisclosed due to confidential business information

Table 1-16 Information disclosure comparison of ARC and VEC
Undisclosed due to confidential business information

1.1.2 Road maintenance and management systems
Undisclosed due to confidential business information

Table 1-17 Work system under VEC
Undisclosed due to confidential business information

Table 1-18 Operation responsibilities under ARC
Undisclosed due to confidential business information

1.1.3 Service capability
Undisclosed due to confidential business information

Table 1-19 Number of toll collectors and number of lanes at each toll booth in the HCMC-LT-DG section
Undisclosed due to confidential business information

Table 1-20 Number of toll collectors and number of lanes at each toll booth in ARC
Undisclosed due to confidential business information

Table 1-21 Number of toll collectors if direct toll collection in the HCMC-LT-DG section is reduced by 50%

Undisclosed due to confidential business information

Table 1-22 Training programs for ARC employees

Undisclosed due to confidential business information

1.1.4 Technical capability

Undisclosed due to confidential business information

Table 1-23 Comparison of maintenance level between ARC and VEC

Undisclosed due to confidential business information

1.1.5 Advantages of concession (O&M) scheme

Undisclosed due to confidential business information

2. Implementation of new technologies for the current operation and maintenance

Potential implementation of Japanese new technologies under concession scheme

Undisclosed due to confidential business information

2.2.1 Outline of the high-tech list and new technologies under the PPP Law in Vietnam

Undisclosed due to confidential business information

Table 2-1 Vietnam's High-tech List (partial)

Undisclosed due to confidential business information

2.2.2 Potential technology proposals from the Aichi prefecture road concession

Undisclosed due to confidential business information

Figure 2-1 Image of digital display board

Undisclosed due to confidential business information

Figure 2-2 Image of Smart Interchange in SA/PA

Undisclosed due to confidential business information

Figure 2-3 Image of facilities and technology for the disabled in SA/PA

Undisclosed due to confidential business information

Figure 2-4 Image of digital signage

Undisclosed due to confidential business information

Figure 2-5 Image of interactive digital signage

Undisclosed due to confidential business information

Figure 2-6 Image of electric vehicle charging facilities

Undisclosed due to confidential business information

Table 2-2 Proposed technologies that have already been put to practical use in the Aichi prefecture road concession

Undisclosed due to confidential business information

Figure 2-7 Image of measurement of bridge deformation using only a camera shot from a distance

Undisclosed due to confidential business information

Figure 2-8 Image of technology for estimating road surface properties from vehicle driving sounds

Undisclosed due to confidential business information

Figure 2-9 Image of demonstration of "social infrastructure x IoT" using 5G

Undisclosed due to confidential business information

Figure 2-10 Image of creating 3D images by simply looking around

Undisclosed due to confidential business information

Figure 2-11 Image of evaluating the soundness of bearings by taking photographs from a distance

Undisclosed due to confidential business information

Figure 2-12 Image of technology to grasp road surface condition from commercial video camera images

Undisclosed due to confidential business information

Figure 2-13 Image of reverse driving detection system using three-dimensional laser radar

Undisclosed due to confidential business information

Figure 2-14 Image of remote monitoring system of slope using inclination sensor and web

Undisclosed due to confidential business information

Figure 2-15 Image of reverse driving detection system using quasi-millimeter wave radar

Undisclosed due to confidential business information

2.2.3 Building a 'New "Aichi Model"' by combining the Aichi Road Concession with innovative technology from start-ups

Undisclosed due to confidential business information

Table 2-3 Technology package for autonomous driving

Undisclosed due to confidential business information

Figure 2-16 Future vision of HCMC – DG Expressway (draft only)

Undisclosed due to confidential business information

Figure 2-17 Autonomous driving implementation image (draft only)

Undisclosed due to confidential business information

Figure 2-18 Cross-sectional energy management system (draft only)

Undisclosed due to confidential business information

Potential implementation of Japanese new technologies under concession scheme

Undisclosed due to confidential business information

The current road operation and maintenance by ARC
Undisclosed due to confidential business information

2.2.1 Road patrol
Undisclosed due to confidential business information

Table 2-4 Number of road patrols by ARC traffic control team members
Undisclosed due to confidential business information

2.2.2 Traffic volume observation
Undisclosed due to confidential business information

2.2.3 Response to Rainy Weather
Undisclosed due to confidential business information

2.2.4 Bridge section
Undisclosed due to confidential business information

2.2.5 Road data registration
Undisclosed due to confidential business information

2.2.6 Management of trespassing and reverse driving at connections with other road sections
Undisclosed due to confidential business information

2.2.7 Operations and standards for maintenance and repair
Undisclosed due to confidential business information

Table 2-5 Bridge soundness classification
Undisclosed due to confidential business information

Qualitative advantages of concession management by Japanese companies
Undisclosed due to confidential business information

Table 2-6 Qualitative advantages of concession management by Japanese companies
Undisclosed due to confidential business information

3. Data collection and analysis for business planning

Basic information on the existing rest areas along the HCMC-LT-DG section for the possibility of SA/PA development

Undisclosed due to confidential business information

3.1.1 The existing rest areas

Undisclosed due to confidential business information

Figure 3-1 Location of rest areas along the HCMC-LT-DG section

Undisclosed due to confidential business information

Figure 3-2 Rest areas along the Long Thanh - Dau Giay section

Undisclosed due to confidential business information

3.1.2 The possibility of SA/PA development

Undisclosed due to confidential business information

Table 3-1 Comparison of SA/PA development plans

Undisclosed due to confidential business information

Figure 3-3 Comparison of SA/PA development plans

Undisclosed due to confidential business information

Figure 3-4 Potential site of Plan B

Undisclosed due to confidential business information

Figure 3-5 Development area of Amata City Long Thanh

Undisclosed due to confidential business information

Basic information of the peripheral infrastructure of the section including ports, airports roads, transport vehicles, etc.

Undisclosed due to confidential business information

3.1.1 Existing Transportation Network

Undisclosed due to confidential business information

Table 3-2 Existing Transportation Network in 2021

Undisclosed due to confidential business information

Figure 3-6 Map of existing transport networks in 2021

Undisclosed due to confidential business information

Table 3-3 Toll Fees at the new interchange Highway 319B

Undisclosed due to confidential business information

Figure 3-7 Location of new interchange Highway 319B

Undisclosed due to confidential business information

Figure 3-8 Photo of the connection of Highway 319B and HCMC-LT-DG section

Undisclosed due to confidential business information

3.1.2 Future Transportation Network

Undisclosed due to confidential business information

Table 3-4 Future transportation network

Undisclosed due to confidential business information

Figure 3-9 Future transportation network in 2040

Undisclosed due to confidential business information

Table 3-5 Construction projects of new interchanges

Undisclosed due to confidential business information

Figure 3-10 Location of new interchanges

Undisclosed due to confidential business information

Possibility of collaboration with other local companies

Undisclosed due to confidential business information

Figure 3-11 Location of Long Thanh Golf Club

Undisclosed due to confidential business information

Figure 3-12 Location of Bien Hoa New City

Undisclosed due to confidential business information

Figure 3-13 Location of KN Paradise

Undisclosed due to confidential business information

Table 3-6 List of local companies shortlisted for the North-South Expressway

Undisclosed due to confidential business information

Table 3-7 Examination of local companies for potential collaboration

Undisclosed due to confidential business information

Table 3-8 List of local companies with investment experience in PPP project

Undisclosed due to confidential business information

Table 3-9 North-South Expressway project contracted under PPP method

Undisclosed due to confidential business information

Figure 3-14 Section of North-South Expressway project contracted under PPP method

Undisclosed due to confidential business information

4. Data collection and analysis for financial planning

Demand forecast

Undisclosed due to confidential business information

4.1.1 Current traffic volume

Undisclosed due to confidential business information

Table 4-1 Annual traffic volume at three toll gates in HCMC-LT-DG section (FY2015-2020)

Undisclosed due to confidential business information

Table 4-2 Traffic volume of HCMC-LT-DG section in August/December 2019

Undisclosed due to confidential business information

Table 4-3 Traffic volume of HCMC-LT-DG section by direction in August/December 2019

Undisclosed due to confidential business information

Table 4-4 Classification of vehicle type (TEDI)

Undisclosed due to confidential business information

Figure 4-1 Location of each survey

Undisclosed due to confidential business information

Table 4-5 Traffic survey in Bien Hoa - Vung Tau Expressway Construction Project, 2020

Undisclosed due to confidential business information

Table 4-6 Average daily vehicle counting result (4 vehicle types) in Bien Hoa - Vung Tau Expressway Construction Project, 2020

Undisclosed due to confidential business information

Table 4-7 Traffic Survey in Bien Hoa - Vung Tau Expressway Construction Project, 2019

Undisclosed due to confidential business information

Table 4-8 Average daily vehicle counting result (4 vehicle types) in Bien Hoa - Vung Tau Expressway Construction Project, 2019

Undisclosed due to confidential business information

Table 4-9 Traffic survey in project of constructing Ring-Road 3 from Tan Van to Nhon Trach, 2017

Undisclosed due to confidential business information

Table 4-10 Average daily vehicle counting result (4 vehicle types) in project of constructing Ring-Road 3 from Tan Van to Nhon Trach, 2017

Undisclosed due to confidential business information

4.1.2 Methodology

Undisclosed due to confidential business information

4.1.3 Zone system

Undisclosed due to confidential business information

Figure 4-2 Attractive zoning of the region by administrative boundaries

Undisclosed due to confidential business information

Table 4-11 Attractive zoning of the region by administrative boundaries

Undisclosed due to confidential business information

4.1.4 Growth rate of traffic volume

Undisclosed due to confidential business information

Table 4-12 Economic growth rate in the study area from 2015 to 2019

Undisclosed due to confidential business information

Figure 4-3 Economic growth rate in the study area from 2015 to 2019

Undisclosed due to confidential business information

Table 4-13 GDP growth rate in the study area

Undisclosed due to confidential business information

Table 4-14 Statistics of traffic volume in NH.51 - Long Phuoc - Long Thanh - Dong Nai

Undisclosed due to confidential business information

Figure 4-4 Correlation between GDP and traffic volume (car)

Undisclosed due to confidential business information

Figure 4-5 Correlation between GDP and traffic volume (bus)

Undisclosed due to confidential business information

Figure 4-6 Correlation between GDP and traffic volume (truck)

Undisclosed due to confidential business information

Table 4-15 GDP growth rate and future traffic volume of NH.51

Undisclosed due to confidential business information

Table 4-16 Forecast of passengers and cargo of Long Thanh Airport

Undisclosed due to confidential business information

Table 4-17 Forecast of employee and well-wishers of Long Thanh Airport

Undisclosed due to confidential business information

Table 4-18 Forecast of daily access traffic of Long Thanh Airport

Undisclosed due to confidential business information

Table 4-19 Estimated the additional traffic volume from Long Thanh International Airport

Undisclosed due to confidential business information

Table 4-20 Traffic volume generated / attracted by zones in 2025

Undisclosed due to confidential business information

Table 4-21 Traffic volume generated / attracted by zones in 2030

Undisclosed due to confidential business information

Table 4-22 Traffic volume generated / attracted by zones in 2040

Undisclosed due to confidential business information

Table 4-23 Traffic demand of HCMC-LT-DG section by 3 vehicle types (HCMC-LT section)

Undisclosed due to confidential business information

Table 4-24 Traffic demand of HCMC-LT-DG section by 8 vehicle types (HCMC-LT section)

Undisclosed due to confidential business information

Table 4-25 Traffic demand of HCMC-LT-DG section by 5 vehicle types (HCMC-LT section)

Undisclosed due to confidential business information

Table 4-26 Traffic demand of HCMC-LT-DG section by 3 vehicle types (LT-DG section)

Undisclosed due to confidential business information

Table 4-27 Traffic demand of HCMC-LT-DG section by 8 vehicle types (LT-DG section)

Undisclosed due to confidential business information

Table 4-28 Traffic demand of HCMC-LT-DG section by 5 vehicle types (LT-DG section)

Undisclosed due to confidential business information

Current road asset status and its associated plan stipulated by the government of Vietnam

Undisclosed due to confidential business information

Figure 4-7 Asset status of HCMC-LT-DG road

Undisclosed due to confidential business information

Figure 4-8 Asset status of toll booths in HCMC-LT-DG section

Undisclosed due to confidential business information

Figure 4-9 Asset status of SA/PA in HCMC-LT-DG section

Undisclosed due to confidential business information

Estimated investment cost for the 8-lane expansion

Undisclosed due to confidential business information

4.1.1 Estimated construction cost of HCMC-LT-DG section

Undisclosed due to confidential business information

Table 4-29 Total cost estimate of 8 lanes expansion of HCMC-LT-DG section

Undisclosed due to confidential business information

Table 4-30 Breakdown of the construction cost of expansion

Undisclosed due to confidential business information

Table 4-31 The problems of the estimation cost

Undisclosed due to confidential business information

Table 4-32 Comparison of construction cost of HCMC-LT-DG section

Undisclosed due to confidential business information

Figure 4-10 Vietnam's Consumer Price Index (CPI)

Undisclosed due to confidential business information

4.1.2 Estimate of additional construction cost

Undisclosed due to confidential business information

Table 4-33 Additional construction cost for the Proposed Section (No Price Increase)

Undisclosed due to confidential business information

4.1.3 Estimate of large-scale repair cost

Undisclosed due to confidential business information

Table 4-34 Large-scale Repair Expenses for the Proposed Section (No Price Increase)

Undisclosed due to confidential business information

Table 4-35 Construction Cost Reduction Effect of Blanket Orders for Civil Work in Japan

Undisclosed due to confidential business information

OPEX required for concession scheme, separately from the CAPEX in 4.3 above

Undisclosed due to confidential business information

Table 4-36 Ordinary costs for HCMC-LT-DG section (assuming 4 lanes, with price increase)

Undisclosed due to confidential business information

Table 4-37 Ordinary cost for the proposed section (assuming 8-lane widening, no price increase)

Undisclosed due to confidential business information

5. Financial analysis and business planning

Comparison of the revenue and expenditure of the government of Vietnam between public O&M and concession (private O&M), with an estimation of Economic IRR (Economic Internal Rate of Return)

Undisclosed due to confidential business information

5.1.1 Concept of economic cost

Undisclosed due to confidential business information

5.1.2 Concept of economic benefits

Undisclosed due to confidential business information

5.1.3 The calculation result of economic cost ant economic benefits

Undisclosed due to confidential business information

Table 5-1 Economic cost ant economic benefits of road damage inspection technology

Undisclosed due to confidential business information

Table 5-2 Economic cost ant economic benefits of Non-destructive testing technology

Undisclosed due to confidential business information

Table 5-3 Economic benefits of SA/PA redevelopment

Undisclosed due to confidential business information

Table 5-4 Economic benefits of ETC2.0

Undisclosed due to confidential business information

Examination of multiple financial schemes under concession with its advantages and disadvantages

Undisclosed due to confidential business information

5.1.1 Prerequisites for financing schemes

Undisclosed due to confidential business information

5.1.2 Comparison of the possible options

Undisclosed due to confidential business information

Table 5-5 Comparison of options corresponding to inflation risk

Undisclosed due to confidential business information

Table 5-6 Comparison of options corresponding to demand fluctuation risk

Undisclosed due to confidential business information

Income and expenditure plan and cashflow model for concession scheme

Undisclosed due to confidential business information

5.1.1 Assumptions for operating income and cash flows

Undisclosed due to confidential business information

Table 5-7 Common prerequisites

Undisclosed due to confidential business information

Table 5-8 Assumptions underlying income and expenditure of road management business

Undisclosed due to confidential business information

Table 5-9 Assumptions underlying revenues and expenditures for SA/PA operations

Undisclosed due to confidential business information

5.1.2 Results of calculation of operating income and cash flows

Undisclosed due to confidential business information

Table 5-10 Summary of business income and cash flows (excluding revision of toll rate)

Undisclosed due to confidential business information

Table 5-11 Summary of business income and cash flows (including revision of toll rate)

Undisclosed due to confidential business information

Estimation of a concession fee from the perspective of both the public and private sectors (project viability and improvement of balance of payment)

Undisclosed due to confidential business information

5.1.1 Consideration for the right of operation considered necessary for VEC

Undisclosed due to confidential business information

Table 5-12 Yen loan and ADB loan requirements for 2020 – 2049 (Include the burden of interest)

Undisclosed due to confidential business information

5.1.2 Concession fee considered to be payable by the private sector

Undisclosed due to confidential business information

5.1.3 Analysis of profitability of private business operators according to the level of concession fee

Undisclosed due to confidential business information

5.1.4 Sensitivity analysis of operating income and cash flows

Undisclosed due to confidential business information

Table 5-13 Results of sensitivity analysis to price fluctuation risk

Undisclosed due to confidential business information

Table 5-14 Results of sensitivity analysis to demand fluctuation risk

Undisclosed due to confidential business information

Table 5-15 Results of sensitivity analysis to business period

Undisclosed due to confidential business information

5.1.5 Analysis of the VEC's cash flow associated with the receipt of management rights consideration

Undisclosed due to confidential business information

Figure 5-1 Cash Flow in the Proposed Section When VEC Continues Operations

Undisclosed due to confidential business information

Figure 5-2 Cumulative Cash flow for 4 segments excluding the proposed segment

Undisclosed due to confidential business information

Figure 5-3 Cumulative cash flow for all five sections and the four sections other than HCMC-LT-DG section when VEC continues to operate

Undisclosed due to confidential business information

Figure 5-4 Cumulative and single-year cash flows for all five sections when VEC continues to operate

Undisclosed due to confidential business information

Figure 5-5 Cumulative and single-year cash flows for the other four sections when VEC continues to operate

Undisclosed due to confidential business information

Figure 5-6 VEC cash flow when HCMC-LT-DG section is under concession

Undisclosed due to confidential business information

Figure 5-7 Cumulative cash flow for the HCMC-LT-DG section and the other 4 sections (Concession)

Undisclosed due to confidential business information

Financing plan necessary to make the project viable including the negotiations with relevant stakeholders of Japan and Vietnam

Undisclosed due to confidential business information

5.1.1 Assumed funding needs

Undisclosed due to confidential business information

5.1.2 Approach to fund procurement by investors and financial institutions

Undisclosed due to confidential business information

5.1.3 Repayment of principal and interest of loans

Undisclosed due to confidential business information

Formulation of business planning

Undisclosed due to confidential business information

Figure 5-8 Image of the concession scheme

Undisclosed due to confidential business information

6. Legal analysis

Confirmation of legal basis and procedures for establishment of business under the PPP Law and related laws

Undisclosed due to confidential business information

6.1.1 Outline of the legal framework of PPP in Vietnam

Undisclosed due to confidential business information

Figure 6-1 Sequence of PPP projects

Undisclosed due to confidential business information

6.1.2 Outline of Procedures Until PPP Project Offering (PPP Law Chapter 2)

Undisclosed due to confidential business information

6.1.3 Investor Selection Procedures (PPP Law Chapter 3)

Undisclosed due to confidential business information

Table 6-1 Timetable for the acquisition of business rights when applying Type II Competitive Negotiation

Undisclosed due to confidential business information

Table 6-2 Comparison of Type I Competitive Negotiation and Type II Competitive Negotiation

Undisclosed due to confidential business information

6.1.4 Establishment and Operation of the PPP Project Enterprise and the PPP Project Contract (PPP Law Chapter 4)

Undisclosed due to confidential business information

6.1.5 Other Major Points Related to the PPP Law

Undisclosed due to confidential business information

Listing of legal issues in VEC realignment, confirmation of various scenarios and legal measures

Undisclosed due to confidential business information

6.2.1 Entitlement of business right/ownership of the HCMC-LT-DG section

Undisclosed due to confidential business information

Figure 6-2 General structure of road concession

Undisclosed due to confidential business information

6.2.2 Loan agreements between ADB and JICA

Undisclosed due to confidential business information

Confirmation of the tax system

Undisclosed due to confidential business information

6.1.1 Types of tax

Undisclosed due to confidential business information

6.1.2 Type of incentive

Undisclosed due to confidential business information

7. Risk analysis

Identification of various risks associated with concession scheme with its preliminary risk assessment and analysis

Undisclosed due to confidential business information

Table 7-1 Risk allocation of the Project

Undisclosed due to confidential business information

Initial consideration of risk sharing

Undisclosed due to confidential business information

7.1.1 Consideration of risks requiring attention in the common phase

Undisclosed due to confidential business information

7.1.2 Consideration of risks that require attention in the operation phase

Undisclosed due to confidential business information

7.1.3 Consideration of risks that require attention in the project termination phase

Undisclosed due to confidential business information

7.1.4 Consideration of risks that require attention in the construction phase

Undisclosed due to confidential business information

Consideration of risk mitigation for VEC by introducing the proposed concession

Undisclosed due to confidential business information

Table 7-2 Risk mitigation potential of VEC when concession is introduced

Undisclosed due to confidential business information

8. Environmental and social consideration

In this Pre-F/S, JICA Study Team screened environmental and social considerations for the HCMC-LT-DG section under concession scheme. The following table summarizes the sections subject to this Pre-F/S.

Table 8-1 Overview of the HCMC-LT-DG section

Content	Description	Notes
Project site	Section from An Phu intersection in Ho Chi Minh City, Vietnam to the intersection with National Highway No. 1 in Dau Giay, Vietnam	
Road category	Tolled expressway	
Length of section	Approx. 55km	
Lane count	4 lanes (2 lanes in each direction)	Ho Chi Minh - Long Thanh section to be widened to 8-lane and 10-lane by 2025 and 2040 respectively
Composition of the structure	Mainly embankments, elevations and bridges	
Start of operation	Partially opened in January 2014 (fully opened in February 2015)	
Traffic volume	1) Approx. 52,000 vehicle / day (Long Phuoc Toll Booth - National Highway 51 section) 2) Approx. 14,500 vehicle / day (NH.51 - Dau Giay section)	Source: VEC press release, January 2019
Interchanges	3	
Toll	HCMC-LT-DG (whole section): VND 100,000 (Approx. JPY 460)	For ordinary cars

Source: JICA Study Team

In addition, to examine the possibility of SA/PA development in this study, the existing SA/PA information within the section is summarized below.

Table 8-2 Overview of the existing SA/PA

Content	Area/with or without	Notes
Total land	Approx. 20,000m ²	
Parking lot	Approx. 5,000m ²	
Public lavatory	Approx. 150m ²	
Driver's Rest Area	Approx. 40m ²	Temporarily closed
Rest Area	N/A	Under construction (Approx. 1,000m ²)
Information Center	N/A	Under construction (Approx. 20m ²)
Food and Beverage Area	N/A	Under construction
Product Shops	N/A	Under construction
First Aid Booth	Yes	Temporarily closed (Approx. 40m ²)

Source: JICA Study Team

Environmental and social consideration in accordance with the local guidelines stipulated by the government of Vietnam

Under the Environmental Protection Law of 2014 (hereinafter referred to as the "Current Law"), it is mandatory to conduct an Environmental Impact Assessment (EIA) for certain projects (Article 19 of the Current Law), and an EIA is mandatory for some highway construction projects. In addition, the Environmental Protection Law was recently amended, and the amended

Environmental Protection Law (the "New Law") is scheduled to take effect on January 1st 2022. Neither the current Environmental Protection Law of 2014 (the "Current Law") nor the New Law requires O&M contracts to have an Environmental Impact Assessment (EIA). Specifically, the Annex II list of the Current Law and its subordinate regulation, Decree 18/2015/ND-CP, lists the projects for which an EIA is required, and projects that fall under these categories are required to conduct an EIA. In the same Annex, a total of 113 types of projects are listed for each industry category, and while the construction of Grade 1 through 3 highways is included as number 20, the type of "O&M of highways only" is not included. In addition, the New Law does not judge whether an EIA is necessary for a project by type of project, but more practically classifies projects into four categories according to the degree of risk they pose to the environment, with 1 being the riskiest and 4 being the least risky. Category 1 projects, projects involving the development of mines and water resources, and some Category 2 projects such as those requiring large-scale resettlements are subject to EIA.

Based on the above, JICA Study Team asked the VEC whether the Current Law requires an EIA to be conducted for O&M contracts and has confirmed that "new investment projects basically require an EIA, however, since there is no precedent in Vietnam for concession projects (O&M projects), there is no appropriate regulation on whether EIA is required or not". In addition, MONRE (Department of EIA Appraisal and Evaluation) has stated that "a concession project itself is unprecedented in Vietnam, hence, should refer to Decree 54/2021/ND-CP dated May 21st 2021 and Decree 40/2019/ND-CP dated May 13th 2019 to determine whether or not an EIA is required".

Considering the above-mentioned related laws and regulations, although it is not clearly stipulated that an EIA is required for this project at this point in time, it should be re-examined at the Feasibility Study stage after the new law comes into effect, in line with the timeline of this project, in light of the fact that the subordinate regulations of the new law have not yet come into effect.

According to the "Viet Nam: Ho Chi Minh City-Long Thanh-Dau Giay Expressway Construction Project" report issued by the ADB in 2019, the EIA was prepared by the government and updated by the ADB. According to the EIA, the project area does not include any areas such as national parks, protected areas, special areas, etc., and no endangered species or rare flora and fauna have been found.

In addition, although we are considering SA/PA development as an ancillary project of this concession project, as described above in "3.1 Basic information on the existing rest areas along the HCMC-LT-DG section for the possibility of SA/PA development ", industrial park development plans by local developers are already underway along HCMC-LT-DG, and it is not realistic to acquire a new land. Therefore, it is assumed that the existing SA/PA will be redeveloped or repaired, and there is no need for a public agency to acquire any new land.

Initial environmental and social impact assessment (screening)

An overview of the screening in this Pre-F/S is provided below.

Question 1: Address of project site

Refer to Chapter 8-1.

Question 2: Scale and contents of the project (approximate area, facilities area, production, electricity generated, etc.)

2-1. Project profile (scale and contents)

The Vietnam North-South Expressway (Ho Chi Minh City-Long Thanh-Dau Giay Section) Concession Project aims to implement concession scheme for the operation and maintenance of the said section with 8-lane expansion of HCMC – LT section under public investment.

See also Table 8-1 and Table 8-2 above.

2-2. How was the necessity of the project confirmed? Is the project consistent with the higher program/policy?

Infrastructure development is one of the key growth strategies for the Socialist Republic of Vietnam, and the road occupies as an important transport sector. In this project, the road expansion plan is in line with the description of the North-South Expressway Master Plan (MOT) in anticipation of the opening of Long Thanh International Airport in 2025, which is consistent with the master plan.

2-3. Did the proponent consider alternatives before this request?

In the JICA's 2018 Study, it was expected that the section will be widened to 6 lanes. In this study, JICA Study Team will examine the environmental and social considerations and business feasibility of the operation and maintenance of the road under concession scheme after the expansion to 8-lane under public investment.

2-4. Did the proponent implement meetings with the related stakeholders before this request?

Consultations with relevant ministries (especially MOT and VEC) have already been conducted. The local stakeholder consultations (such as expressway users and local residents) have not yet been carried out.

Question 3: Is the project a new one or an ongoing one? In the case of an ongoing project, have you received strong complaints or other comments from local residents?

There is no information that the project has received strong complaints from the residents, as the targeted section of road has already been operational. On the other hand, in the case of the SA/PA development, which is a part of ancillary project, there are some complaints from the residents for the existing rest areas along the section due to lack of maintenance of the existing infrastructure. In addition, the possibility of constructing a new SA/PA instead of the existing rest area is under consideration, considering the advantages of the location.

Question 4: Is an Environmental Impact Assessment (EIA), including an Initial Environmental Examination (IEE) Is, required for the project according to a law or guidelines of a host country? If yes, is EIA implemented or planned? If necessary, please fill in the reason why EIA is required.

Refer to Chapter 8-1

Question 5: In the case that steps were taken for an EIA, was the EIA approved by the relevant laws of the host country? If yes, please note the date of approval and the competent authority.

Refer to Chapter 8-1. Confirmation will be made with the local government, and if deemed necessary, it will be implemented as appropriate during the F/S phase.

Question 6: If the project requires a certificate regarding the environment and society other than an EIA, please indicate the title of said certificate. Was it approved?

According to the content of Article 3. Strategic environmental assessment (SEA) of REGULATIONS ON ENVIRONMENTAL PROTECTION IN TRANSPORTINFRASTRUCTURE DEVELOPMENT, it is clearly stated that the developer of transportation infrastructure needs to prepare SEA, however, the SPC of this project is not obligated to prepare SEA. The obligation to formulate SEA is imposed in the implementation of administrative plans such as urban planning (Article 25 of the Environmental Protection Law of 2020), and it does not apply to PPP projects. In addition, the obligation to formulate such plans is imposed on government agencies that are obliged to formulate such plans (Article 26.1 of the Environmental Protection Law of 2020), and private enterprises are not included in this obligation.

Question 7: Are any of the following areas present either inside or surrounding the project site?

None of the following areas are applicable to the HCMC-LT-DG section.

- National parks, nationally designated protected areas (nationally designated coastal areas, wetlands, areas for ethnic minorities and indigenous peoples, cultural heritage, etc.).
- Primary forests and tropical natural forests.
- Ecologically important habitats (coral reefs, mangrove swamps, tidal flats, etc.).
- Habitats of valuable species required to be protected by national laws and international conventions.
- Habitats of valuable species that need to be protected under national laws and international conventions, etc. - Areas where large-scale salt accumulation or soil erosion may occur.
- Areas with significant desertification tendencies.
- Areas of unique archaeological, historical, or cultural value.
- Areas of unique archaeological, historical, or cultural value - Living areas of ethnic minorities or indigenous peoples, nomadic peoples with traditional lifestyles, or areas of special social value.

Question 8: Does the project include any of the following items?

Since the main project of this section is the O&M of the existing toll road, the following elements are not assumed at present. However, in the case of the construction of a new SA/PA as an ancillary project, the existence of the above elements must be confirmed with the government of Vietnam and other relevant ministries.

- Scale of the SA/PA to be built

There is no specific plan for the new SA to be built yet. However, the scale of the new SA is expected to be the same as the existing SA (Long Thanh – Dau Giay) in accordance with the SA standards issued by the government of Vietnam.

- Involuntary Resettlement

Currently, there are no houses in the proposed new SA area (KM15+992 to KM18+239 section). However, the development of Amata City Long Thanh by Amata Joint Stock Company, a Thai industrial park developer, is underway within the proposed site, and a specific SA development plan will be formulated through negotiations with Amata Joint Stock Company.

- Groundwater pumping

At present, the details are not known, but visual confirmation at the site indicates that the land is soft due to the presence of a lot of water, therefore, filling may be required for SA development.

- Land reclamation, land development, and/or land-clearing

Currently, some parts of the proposed SA development site are used as agricultural land. Expensive land reclamation could be avoided especially in case of agricultural conversion. The urban planning in Appendix 1 below is also expected to be relevant.

- Logging

There is no large-scale forest in the area, and this section is a mixture of farmland and cleared land, so the possibility of deforestation will be clarified as soon as the detailed location of the new SA is determined.

Question 9: Please describe outline of related environmental and social impacts.

The construction of a new SA/PA is likely to increase the amount of waste, and the construction is likely to generate noise and vibration. In addition, it is necessary to confirm in detail with the government of Vietnam whether or not the expansion project, which is a precondition for this project, and the ancillary projects will have an impact on involuntary resettlement when the new SA/PA is constructed.

Question 10: In the case of a loan project such as a two-step loan or a sector loan, can sub-projects be specified at the present time?

It is assumed that the expansion of the proposed section, which is the premise of this project, will be carried out as a public investment project, and there is a possibility of financing through yen loan. In addition, the concession project after the expansion is designed to utilize JICA's private sector investment finance.

Question 11: Regarding information disclosure and meetings with stakeholders, if JICA's environmental and social considerations are required, does the proponent agree to information disclosure and meetings with stakeholders through these guidelines?

Although consultations with local government agencies have already been conducted, information obtained during this Pre-F/S and future F/S will be disclosed as appropriate. In addition, when environmental and social considerations are necessary, the investors agree to disclose information and consult with local stakeholders in accordance with the environmental and social considerations guidelines of JICA and Government of Vietnam.

A summary of the environmental and social considerations checklist for this study is provided below.

Table 8-3 Environmental and Social Considerations Checklist

Category	Environmental items	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reason, rationale, mitigation measures, etc.)
1 Permits and Explanat ion	(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)N (b)N (c)N (d)N	(a) (b) (c) Regarding whether an EIA is required for O&M contracts, the VEC representative said that it is required for new investment projects, but there is no regulation for O&M projects because there is no precedent. If it becomes necessary in the future, it will be discussed and worked out at the F/S stage. (d) There are no required environmental permits other than EIA.
	(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)Y (b)N	(a) EIA will be required at the new investment stage, not at the concession stage, so the stakeholder briefing on EIA at the construction stage of the project has already been conducted. (b) To be implemented during the F/S.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a)Y	(a) The case where the proposed concession is realized and the case where it is not realized were considered. [In case the proposed concession is realized] As for the introduction of new technologies, the introduction of renewable energy sources such as EVs (electric vehicles) and solar power generation will minimize the impact on the surrounding environment. In addition, when redeveloping SA/PAs, the impact on the environment and society will be minimized as it will not be a new development and shall be carried out in accordance with local regulations and guidelines, taking into consideration the utmost care for pollution control, natural environment, and social environment. In addition, the redevelopment of the SA/PA will have a positive impact on the social environment because of its function to revitalize the community. [In case the proposed concession is not realized] As the status quo O&M will be continued by VEC, there will be no impact on the environment and society.

2 Pollution Control	(1) Air Quality	<p>(a) Is there a possibility that air pollutants emitted from the project related sources, such as vehicles traffic will affect ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken?</p> <p>(b) Where industrial areas already exist near the route, is there a possibility that the project will make air pollution worse?</p>	<p>(a)N (b)N</p>	<p>(a) (b) It is unclear whether environmental standards are being exceeded as no air monitoring has been conducted. However, ADB's environmental monitoring report for 2010-2014¹ reported that the average pollution level of air quality in all sections did not exceed the national standard in Vietnam.</p> <p>Land Characteristics: Most of the land is used for agriculture, however, there are more than 10 industrial parks around the HCMC-LT-DG expressway. In addition, several real estate development areas have been designated, however, development is stagnant.</p>
	(2) Water Quality	<p>(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?</p> <p>(b) Is there a possibility that surface runoff from roads will contaminate water sources, such as groundwater?</p> <p>(c) Do effluents from various facilities, such as parking areas/service areas comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents will cause areas not to comply with the country's ambient water quality standards?</p>	<p>(a)N (b)N (c)N</p>	<p>(a) There is no risk of deterioration in the water quality of the downstream waters because the proposed section is mainly for the operation and maintenance of the existing road, not for construction work.</p> <p>(b) There is no impact on the water source due to drainage from the road surface, as the drainage channel is already in place.</p> <p>(c) When new parking/service areas are constructed or renovated, consistency will be confirmed during the F/S.</p>
	(3) Wastes	<p>(a) Are wastes generated from the project facilities, such as parking areas/service areas, properly treated and disposed of in accordance with the country's regulations?</p>	<p>(a)Y</p>	<p>(a) During the F/S, JICA study team will confirm the regulations regarding the treatment and disposal of waste from parking/service areas, etc. appropriately.</p>
	(4) Noise and Vibration	<p>(a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards?</p>	<p>(a)Y</p>	<p>(a) At present, there is no information that the noise and vibration caused by passing vehicles exceeds the environmental standards, and ADB's environmental monitoring reports for 2010-2014 reported that the average noise and vibration did not exceed the national standards in Vietnam for all sections.</p>

¹ See ADB's report search. ("Ho Chi Minh City-Long Thanh-Dau Giay Expressway: Environmental Monitoring Report")

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)N	(a) The site is not located in a protected area and will not impact one.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site 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? (d) Are adequate protection measures taken to 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 roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (nonnative 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?	(a)N (b)N (c)N (d)N (e)N (f)N	(a)(b)(c)(d) According to the EIA in the ADB report description, the site does not include areas such as national parks, protected areas, or special areas, and no endangered species or rare plants and animals have been identified. (e)(f) The project mainly involves the operation and management of existing toll roads, and does not involve the construction of new roads, so there will be no deforestation or poaching associated with the project.
	(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)N	(a) At present, there is no large-scale alteration of the topography or construction of new structures such as tunnels. However, in the case of new construction or renovation of parking/service areas, detailed confirmation will be conducted during the F/S.
	(4) Topography and Geology	(a) Is there any 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)N (b)N (c)N	(a) In the Pre-F/S phase and visual check, there are no areas with poor geology where landslides or collapses are likely to occur. Field investigations will be carried out at the F/S, and if such areas are found, the development of these areas will be treated using appropriate methods. (b) Although there is no detailed plan for SA/PA at this stage, if there are any areas where landslides or collapses may occur due to civil engineering work such as embankment or cuttings, such development will proceed after taking appropriate measures. (c) If soil runoff occurs due to development, appropriate measures should be taken into account for prevention.

	(1) Resettlement	<p>(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?</p> <p>(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?</p> <p>(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?</p> <p>(d) Are the compensations going to be paid prior to the resettlement?</p> <p>(e) Are the compensation policies prepared in document?</p> <p>(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?</p> <p>(g) Are agreements with the affected people obtained prior to resettlement?</p> <p>(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of resettlement?</p> <p>(j) Is the grievance redress mechanism established?</p>	<p>(a)N (b)N (c)N (d)N (e)N (f)N (g)N (h)N (i)N (j)N</p>	<p>(a)(b)(c)(d)(e)(f)(g)(h)(i)(j) As there are no dwellings in the proposed SA new construction area (section KM15+992 to KM18+239), involuntary resettlement is not expected to occur at this stage.</p> <p>However, according to the long-term urban plan issued by Dong Nai Province, residential development is expected to take place within this section. The urban planning is a multi-decade project and is not expected to affect the project; however, it is necessary to confirm with the relevant agencies in detail whether SA development will be allowed in this section during the F/S.</p>
4 Social Environment	(2) Living and Livelihood	<p>(a) Where roads 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?</p> <p>(b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target population? Are adequate measures considered to reduce the impacts, if necessary?</p> <p>(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?</p> <p>(d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., increase of traffic congestion and traffic accidents)?</p> <p>(e) Is there any possibility that roads will impede the movement of inhabitants?</p> <p>(f) Is there any possibility that structures associated with roads (such as bridges) will cause a sun shading and radio interference?</p>	<p>(a)N (b)N (c)N (d)N (e)N (f)N</p>	<p>(a)(b)(c)(d)(e)(f) The objective of this project is the operation and management of the existing toll road, hence, there will be no significant change in the lives of the local residents or serious adverse effects on road traffic. However, if the project involves the construction of a new SA/PA or existing SA/PA's redevelopment, there may be a possibility that small-scale resettlement will be required depending on the selected location, as shown below.</p> <p>[In the case of Proposal 1 in Chapter 3.1.2] As this is a redevelopment of an existing parking area, it does not involve resettlement.</p> <p>[In the case of Proposal 2 in Chapter 3.1.2] At present, no houses have been built in the area and there is very little possibility of resettlement.</p> <p>[In the case of Proposal 3 in Chapter 3.1.2] As the potential development area is close to Hiep Phuoc town in Dong Nai province, based on the Vietnamese standard for parking area (3,000 sq. m.) and considering the population density in the area (about 2,000 people per square</p>

				<p>kilometer), less than 6,000 residents may need to be relocated. Based on the service area standard (5,000 sq. m.), less than 10,000 residents may need to be relocated.</p> <p>Note that this study assumes Proposal 1 (redevelopment of existing SA/PA), so no resettlement will occur.</p>
	(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)N	(a) There are no archaeological or historic sites within the site and project area of influence.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a)N	(a) There is no landscape to be considered in the site and project area of influence.
	(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 to be respected?	(a)Y (b)Y	(a)(b) According to the ADB report, of the 800 households affected during the construction of the proposed section, 11 were ethnic minority households. However, it is stated that there were no impacts that would disrupt the culture and lifestyle of these indigenous people.
	(6) Working Conditions	(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 being taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a)Y (b)Y (c)Y (d)Y	(a) The project will comply with the laws on working environment of the State of Vietnam. (b) Appropriate safety measures shall be taken in relation to the prevention of extraterritoriality. (c)(d) The project will include safety training for workers and consideration for local residents in the environmental management plan.

5 Others	(1) Impact during construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a)Y (b)Y (c)Y	(a)(b)(c) In the case of new SA/PA construction as an ancillary project, mitigation measures shall be taken to avoid pollution during construction and adverse impact on the natural and social environment.
	(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?	(a)Y (b)Y (c)Y (d)Y	(a)(b)(c)(d) Existing environmental laws in Vietnam do not specify whether monitoring is required for O&M concession. During the F/S phase, direct confirmation will be made with the relevant government agencies, and in case monitoring is required, it will be conducted in accordance with the regulations.
6 Note	Reference 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)N (b)N	(a) Although it is assumed that there will be no deforestation in this project, if deforestation occurs due to the construction of a new SA/PA, detailed confirmation will be made during the F/S. (b) If the construction of power transmission and distribution facilities is necessary for the construction of the new SA/PA, detailed confirmation will be made at the F/S.
	Notes on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a)N	(a) No elements that cause transboundary or global environmental problems.

Source: JICA Study Team