



กระทรวงคมนาคม

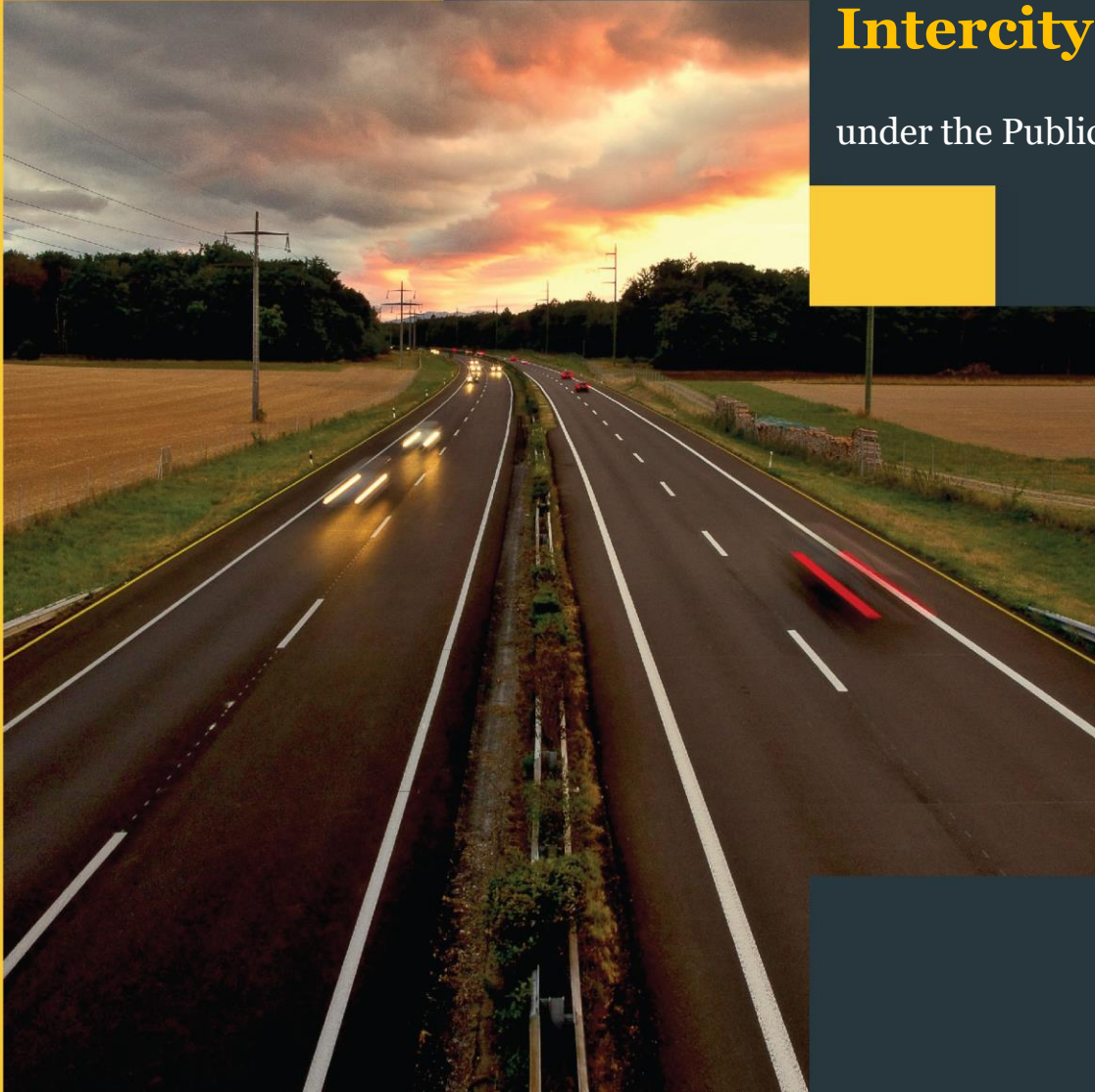


กรมทางหลวง

# M8

## Market Sounding Seminar for **the Nakhon Pathom – Cha Am** **Intercity Motorway Project**

under the Public Private Partnership [PPP] Scheme



## Market Sounding Seminar

19 August 2022

- ☐ **Market Sounding Objective**
- ☐ **Project Overview**
- ☐ **Project Phases and Costs**
- ☐ **Project Development Timeline**
- ☐ **Traffic Demand and Toll Revenue Forecast**
- ☐ **Economic Feasibility analysis**
- ☐ **Preliminary Performance**
- ☐ **PPP Framework**
- ☐ **Project Scope and Contract Period**
- ☐ **Project Readiness**
- ☐ **Project Risk Analysis**
- ☐ **Laws and Regulations**

# Market Sounding Objectives

# Market Sounding Objectives



- ❑ As the private sector has more **expertise, experience, and technology in developing project**, Department of highways would like to maximize the private sector's participation in the project.
- ❑ Essentially, the purpose of the market sounding is **to inform the private sector of this investment opportunity**, and to gather the private sector's **feedbacks**.
  - Project Cost
  - Traffic Demand and Toll Revenue Forecast
  - PPP Model
  - Project Risk
  - Risk Allocation between Government and Private Sectors
  - PPP Promotional Measures and Risk Reducing Measures
  - Project Financial Assumptions
  - Payment Mechanism
  - Private Party's Qualification for Investment





## Market Sounding Seminar



19 August, 2022

08:30 a.m. – 12:00 p.m.-noon



Zoom Meeting



Key objectives :

- To inform the private sector of an investment opportunity
- To provide the private sector with brief project information
- Group Q&A session – To briefly gather private sector's interest in the project and concerns

## Market Sounding Interview



19 August, 2022

01.00 – 05.00 p.m.



Zoom Meeting



Key objectives :

- To provide the private sector with detailed project information (e.g. financial assumptions, financial return, and etc.)
- To gather detailed comments and feedbacks which the private sector may not want share in a group session

# Project Overview and Scopes

# Project Background and Objectives



## Background :

- Nakhon Pathom – Cha Am motorway Project is the part of motorway No.8
- To be the 20-Year Master Plan of the Intercity Motorways (2017-2036)
- To be the Intercity Motorway Development Phase 1
- To be the strategic plan for private investment in state affairs 2015– 2019 prescribed by State Enterprise Policy Office

## Objective :

- To develop the Motorway Network to southern region
- To be an alternative route to the southern region
- To facilitate freight transportation and encourage travelling
- To promote Thailand to be the transportation hub of region

## Nakhon Pathom – Cha Am (M8) Intercity Motorway Project

1997



Master Plan for  
Intercity Motorway  
Approved by Cabinet

2009



Technical  
and Economic  
Feasibility Study  
Completed

2012



- Approval of EIA Report
- Currently, being prepared the revised EIA report.

2014



Detailed  
Engineering  
Design  
Completed

2018 - 2021



2018

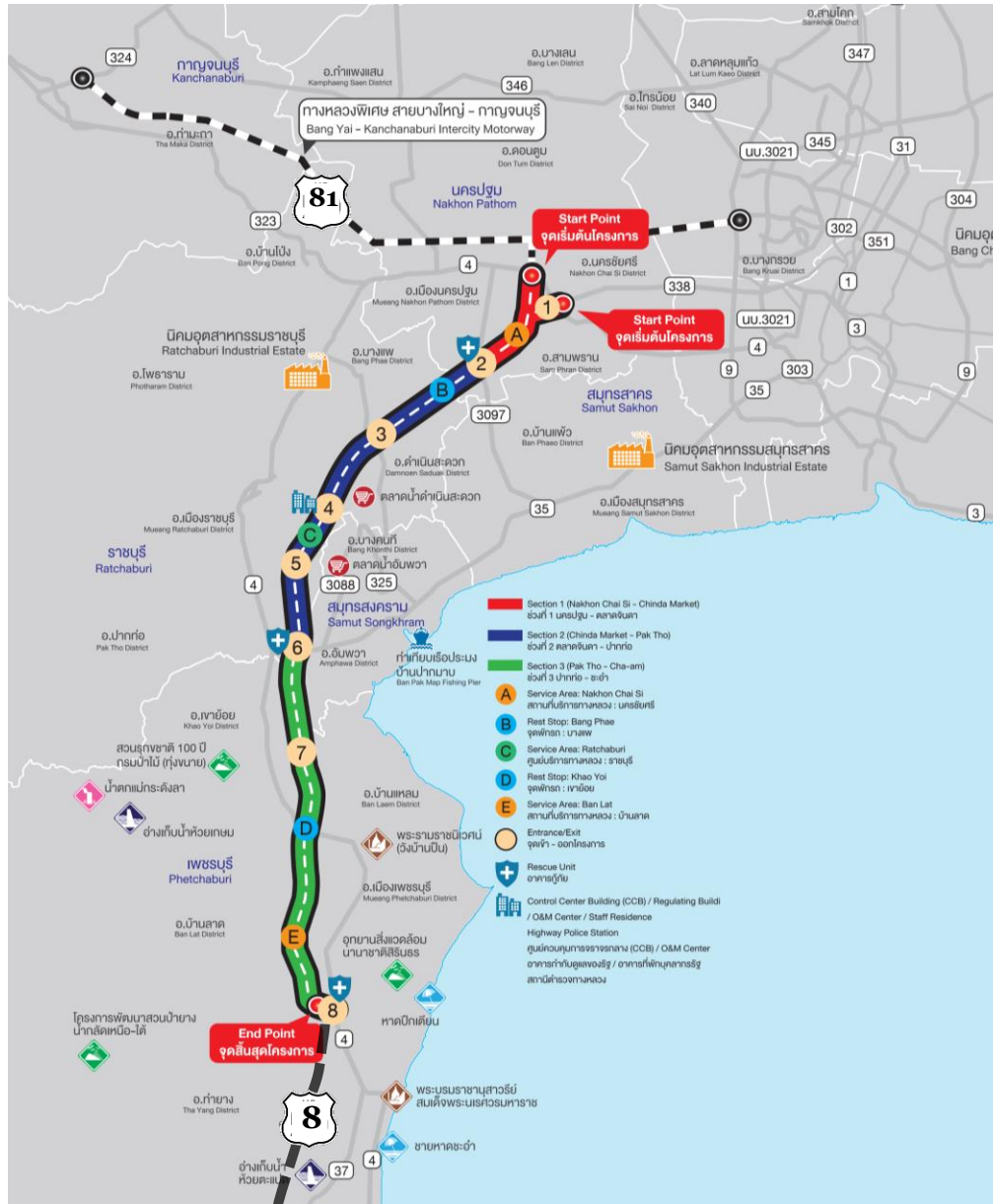
- DOH sent the project to PPP Board (Policy committee) for considering
- PPP Board approved the project principle

2021

- PPP Board assigned DOH and ministry of transportation to review the results of the study and analyze the project in accordance with the present



# Route Alignment



- **Beginning of project :** connecting from Bangyai – Kanchana Buri Intercity motorway (M81)
- **End of project :** connecting to Cha Am – Chumphon Intercity motorway (M8)
- **Total Distance :** 109 km. (approx.)

## Typical Section without Service Road



- 4 lane highway, width 3.60 meters per lane
- outer shoulder 3.00 meters, inner shoulder 1.00 meters
- depressed median

## Typical Section with Service Road



- The service road is a 2 lane highway, width 3.00 meters per lane
- shoulders on each side 1.50 meters

## 4-lane elevated with Service Road





# Entrance / Exit Point

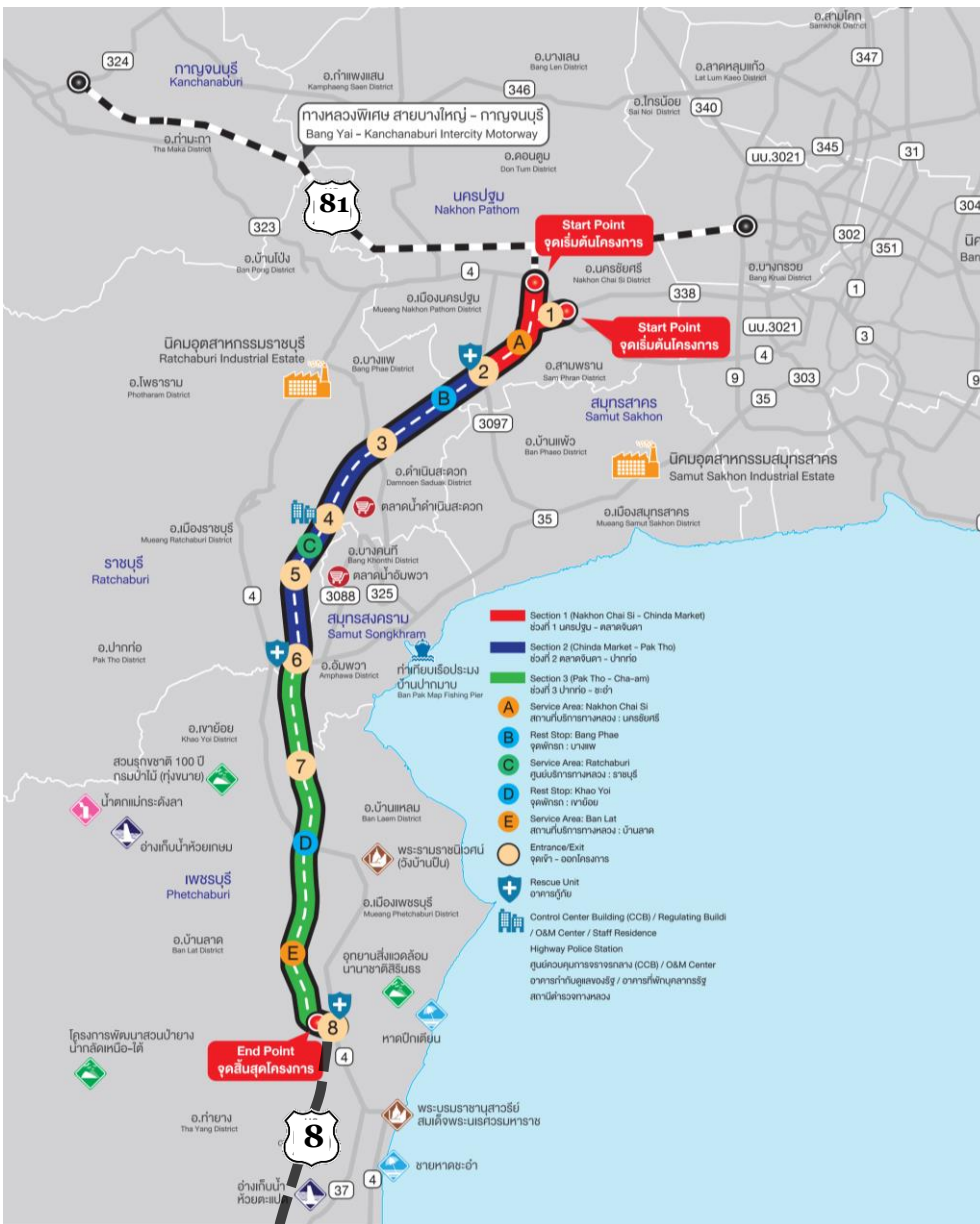


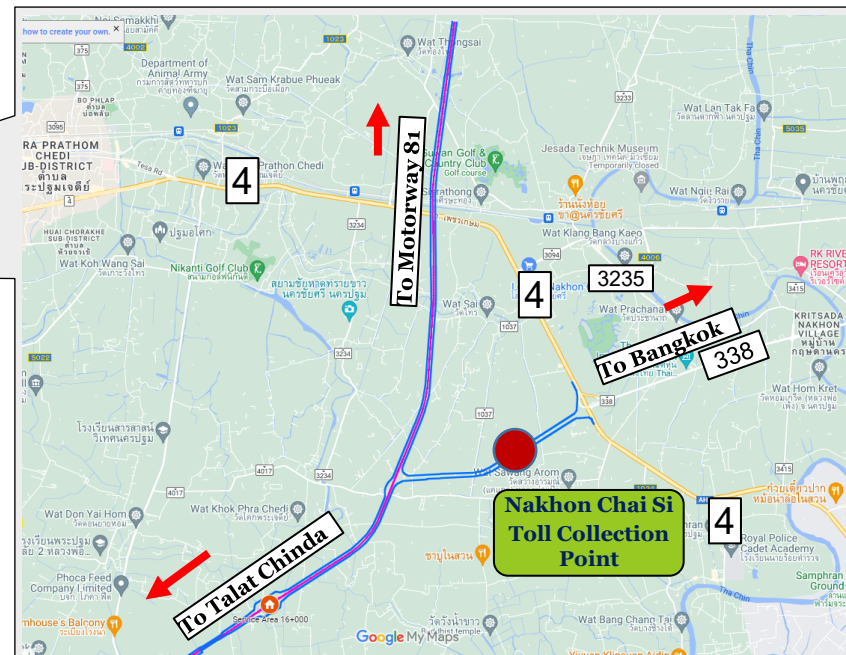
## 8 Entrance / Exit Points

1. Nakhon Chai Si Interchange
2. Talat Chinda Interchange
3. Bang Phae Interchange
4. Ratchaburi Interchange
5. Wat Phleng Interchange
6. Pak Tho Interchange
7. Khao Yoi Interchange
8. Tha Yang Interchange

## 2 Motorway Connections

1. Bang Yai – Kanchanaburi (M81)
2. Cha Am – Chumphon (M8)

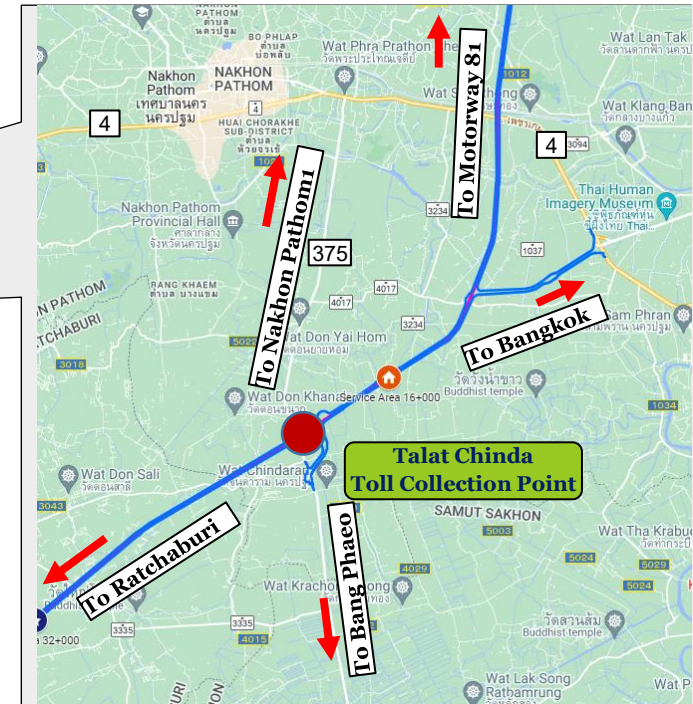




- ## Market Sounding Seminar for The Nakhon Pathom - Cha Am Intercity Motorway Project under the Public Private Partnership [PPP] Scheme

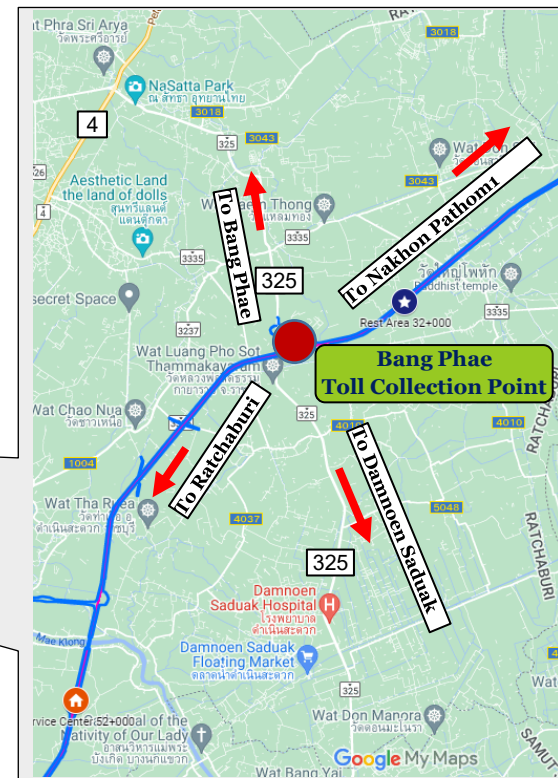


# Talat Chinda Interchange



- This is the interchange connecting to Highway No.375.
- Its function is to serve traffic in Mueang and Sam Pran districts of Nakhon Pathom province, and Banphaeo districts of Samut Sakhon province.

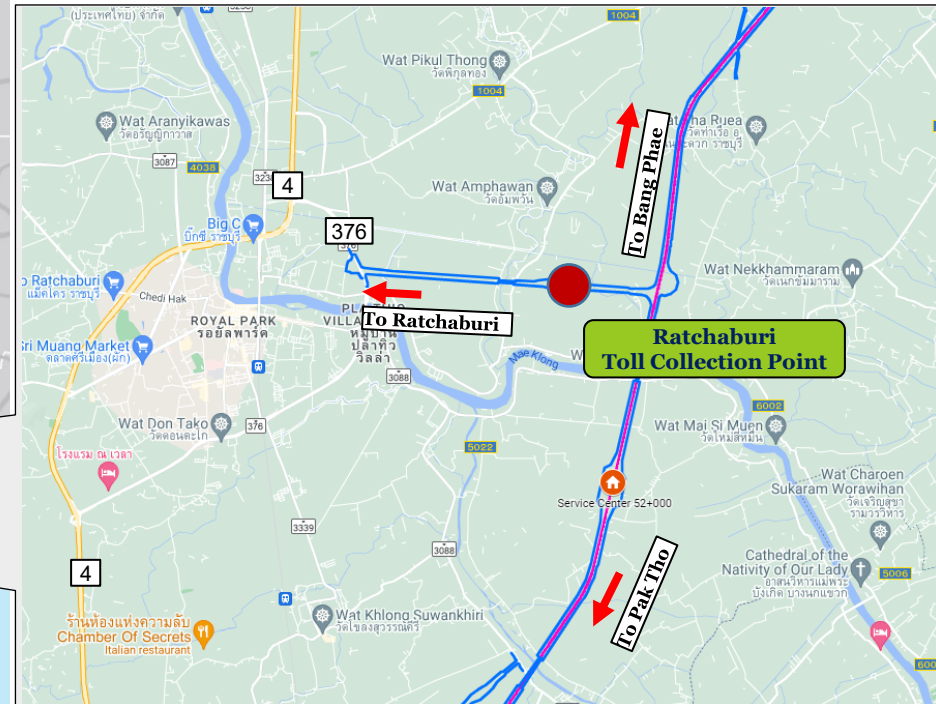
# Bang Phae Interchange



- This is the interchange connecting to Highway No.325.
- Its function is to serve traffic in Bang Phae and Damnoen Saduak districts of Ratchaburi province.

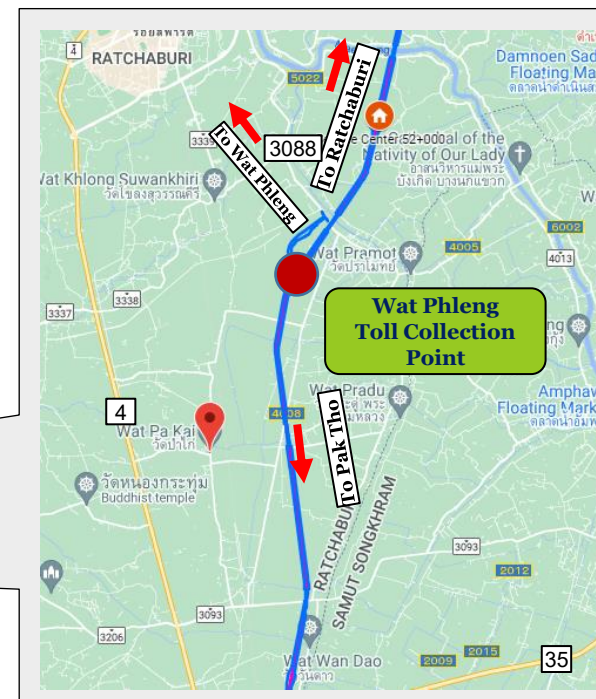


# Ratchaburi Interchange



- This is the interchange connecting to Ratchaburi Bypass Road.
- Its function is to serve traffic in Mueang districts of Ratchaburi province.

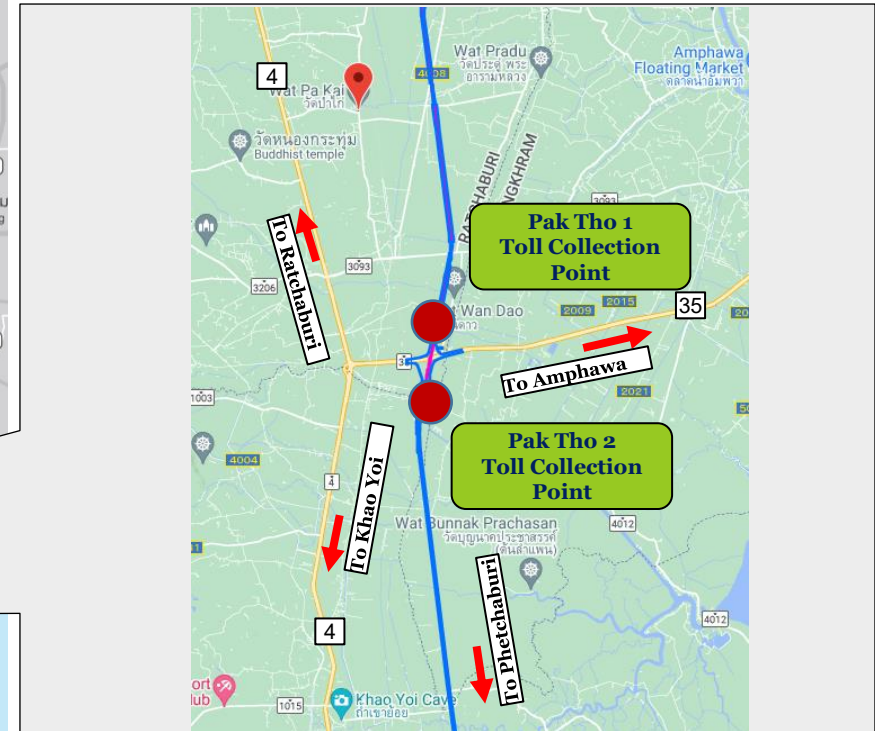
# Wat Phleng Interchange



- This is the interchange connecting to Highway No.3088.
- Its function is to serve traffic in Wat Phleng and Mueang districts of Ratchaburi province.

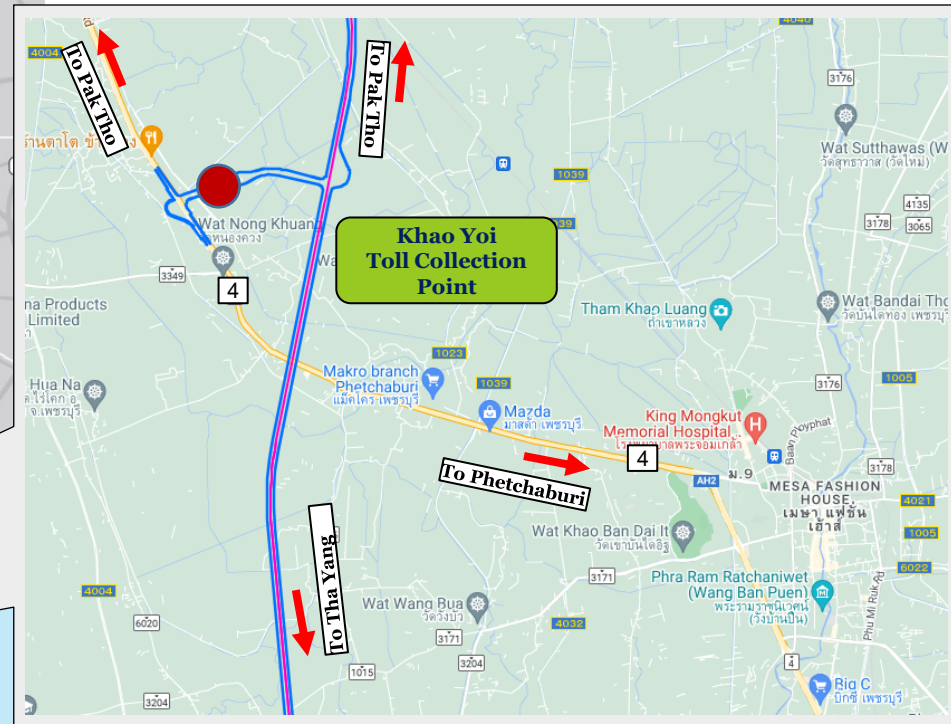


# Pak Tho Interchange



- This is the interchange connecting to Highway No.35 (Rama 2 Road).
- Its function is to serve traffic in Pak Tho and Mueang districts of Samut Songkhram province.

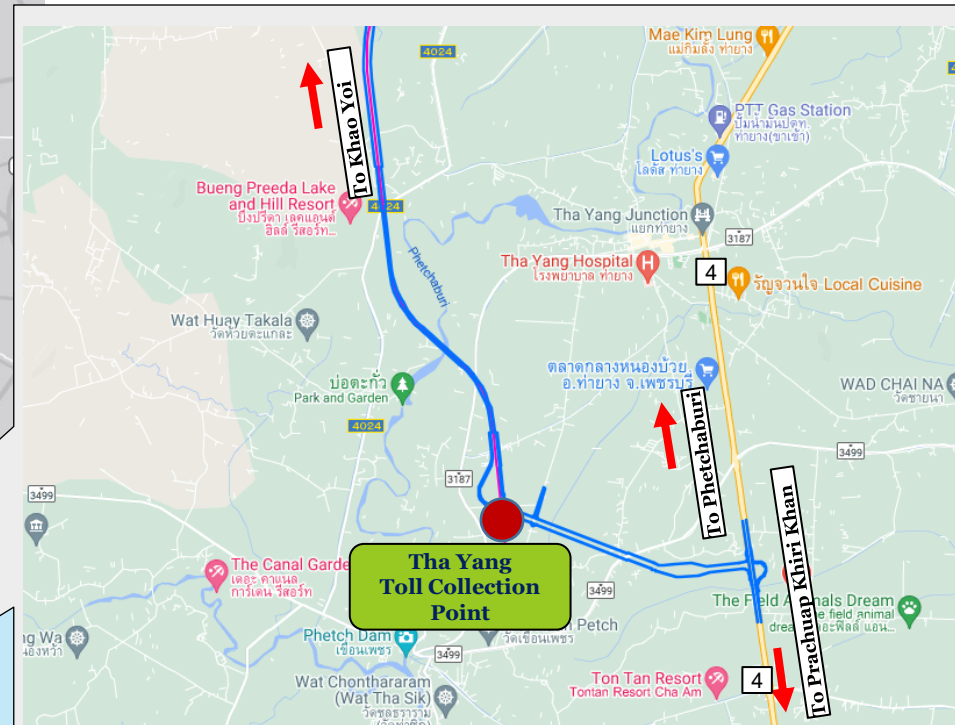
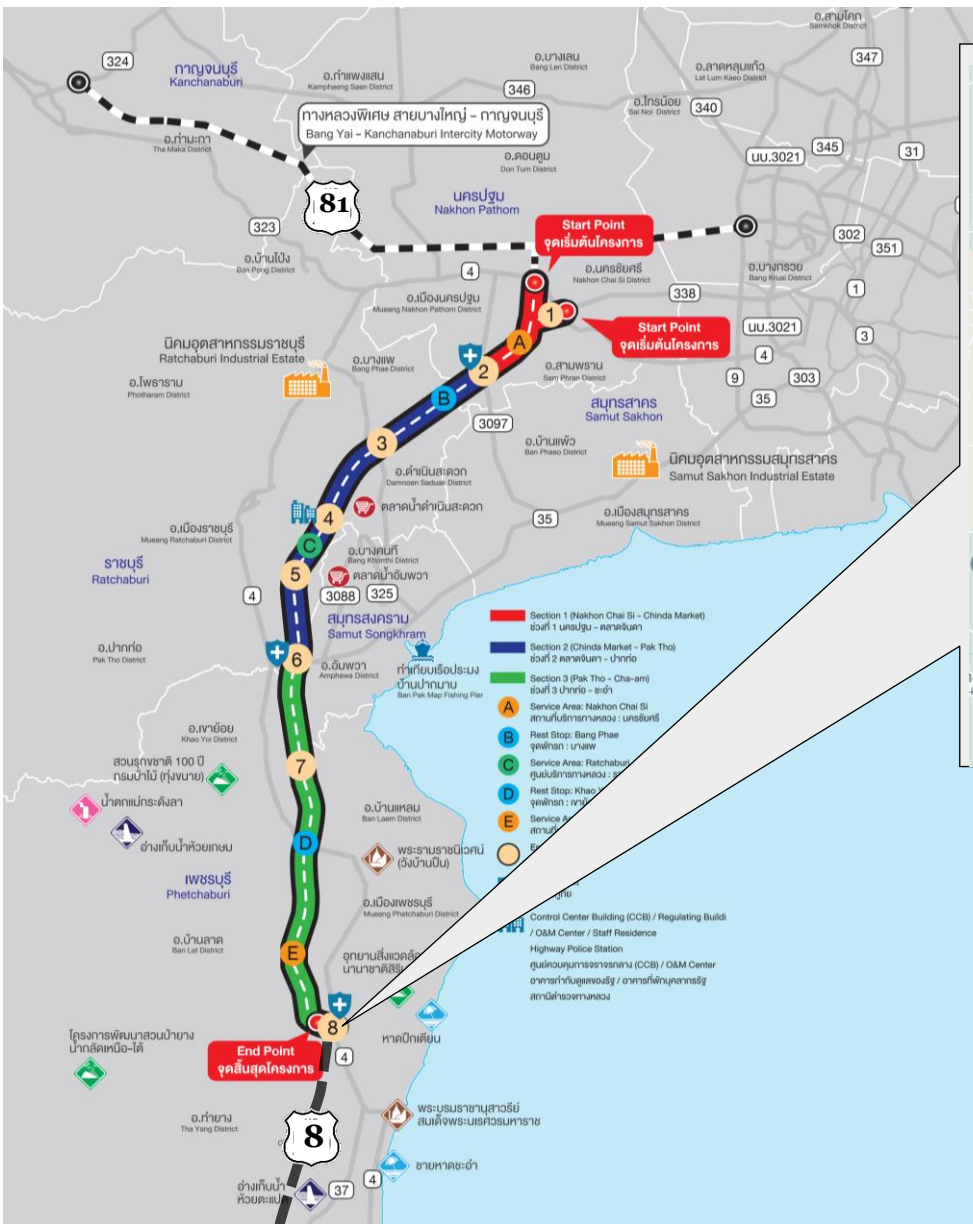
# Khao Yoi Interchange



- This is the interchange connecting to Phet Kasem Road.
- Its function is to serve traffic in Khao Yoi districts of Phetchaburi province.



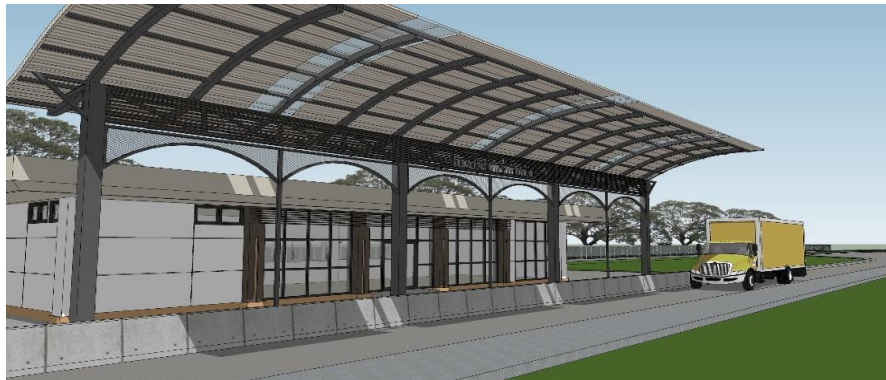
# Tha Yang Interchange



- This is the interchange connecting to Phet Kasem Road.
- Its function is to serve traffic in Tha Yang districts of Phetchaburi province.

## Toll Collection System :

- ❑ Distance Base Toll Collection System (Closed System)
- ❑ Type of Toll Collection :  
Multilane Free Flow (M-Flow)



## Weighing Station :

- ❑ Weigh in Motion System (WIM)
- ❑ Static Weighing System (SWS)



# Rest Area



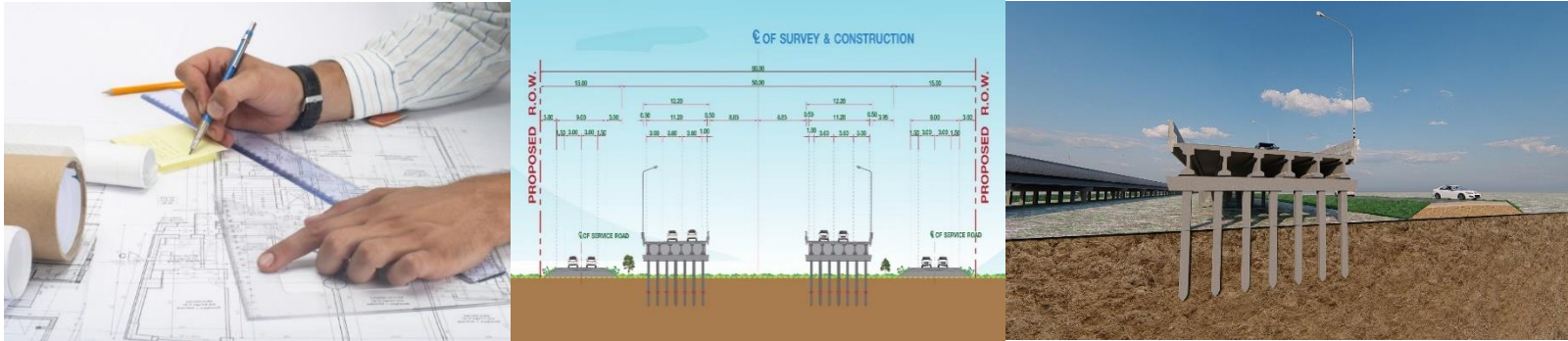
- A** **Service Area : Nakhon Chai Si**
- B** **Rest Stop : Bang Phae**
- C** **Service Center : Ratchaburi**
- D** **Rest Stop : Khao Yoi**
- E** **Service Area : Ban Lat**



# Project Phase and Cost

## Phase 1 : Design and Construction (3 years)

1



## Phase 2 : Operation and Maintenance (Maximum of 30 years)

2





# **Project Phase and Cost**

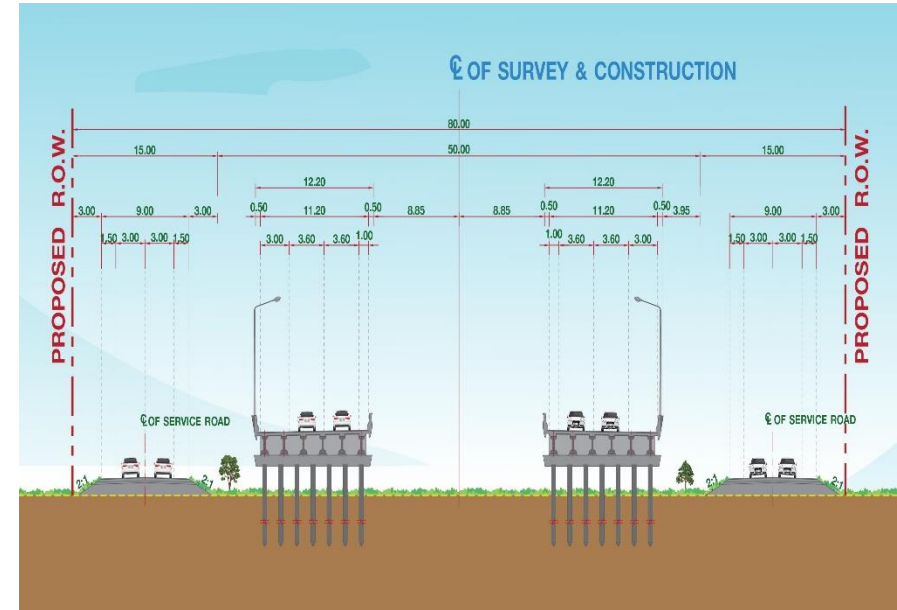
## **Phase 1 : Civil work Construction**



# Phase 1 : Civil work Construction



- ❑ The project design is a **4-lane at-grade and elevated motorway**, with 3.6 meters lane width, 3.0 meters outer shoulder, and 1.0 meter inner shoulder, **with 2 lane service roads along the route** with 3.00 meters lane width, and 1.5 meter shoulder



- ❑ The structure can be **redesigned according to DOH' standard**

## Toll collection system



There are **9 Toll Collection Point** as follow :

- 1. Nakhonchaisri
- 2. Talat Chinda
- 3. Bang Phae
- 4. Ratchaburi
- 5. Wat Phleng
- 6. Pak Tho-1
- 7. Pak Tho-2
- 8. Khao Yoi
- 9. Tha Yang

Toll collection system : **Close System**, in which users pay at the exiting ramps and the toll fees are classified based on vehicle types.

### ➤ **Multi lane free flow System (M-Flow)**





## Traffic Management and Control System

Designed to **ensure efficiency and safety for road users**, which shall include but not limited to the following;

- Traffic Data Collection System
- Radio Communication System
- Emergency Telephone System
- Closed-Circuit Television System (CCTV)
- Variable Message Sign
- Automated Speed Enforcement System





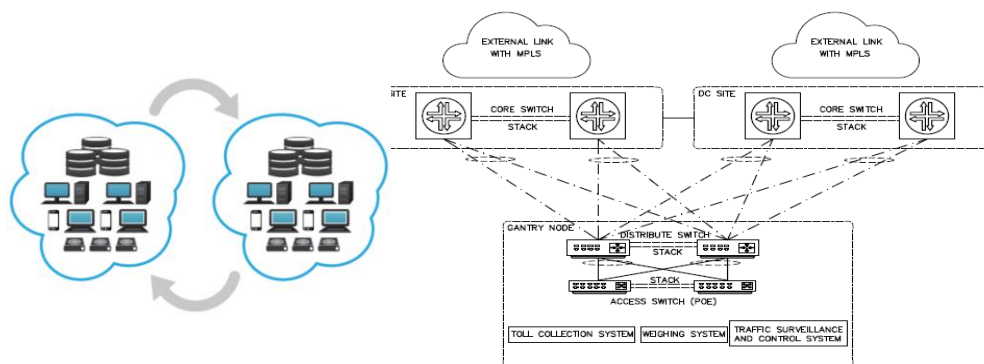
# Phase 1 : System Work Construction and Installation



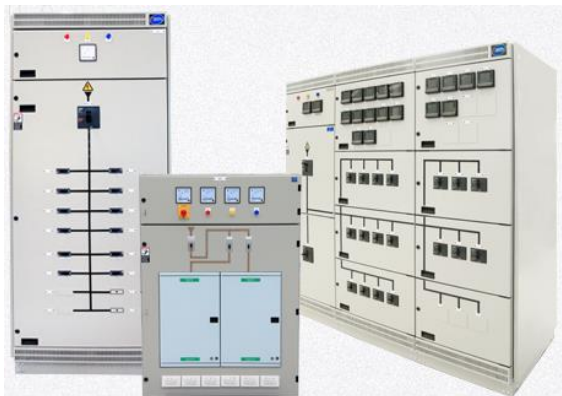
## Asset Management System



## Communication Network System



## Power Distribution System



## Central Control Building (CCB)



- ❑ The Central Control Building (CCB) shall be **located in Ratchaburi Toll Collection Point.**



- ❑ It will serve as a central traffic control center for **managing traffic flow** and **facilitating motorists** to ensure their safety.

## Operation and Maintenance Center

**The Operation and Maintenance Center shall be located in Ratchaburi Interchange, The Private Sector shall provide for**

- **overall management and administration.**
- **for storage** of maintenance and repair materials, equipment, machine, as well as the yard area for stacking or heaping of materials to be used.



**Operation And Maintenance Center**



**Operation And Maintenance Unit**



## Agency Buildings

The Private Party shall design and construct the Agency Buildings including various buildings as follows



**(a) DOH's Superintendent office at Ratchaburi toll Collection Point**



**(b) Highway Police Station at Ratchaburi toll Collection Point**



**(c) Rescue Building at Talat Chinda, Pak Tho-1 and Tha Yang toll Collection Point**



**(c) Agency Residence at Ratchaburi Interchange**

## Rest area

The Private Party shall design and construct the Rest Area according to DOH' standard as follows

1. Service Area : Nakhon Chai Si
2. Rest Stop : Bang Phae
3. Service Center : Ratchaburi
4. Rest Stop : Khao Yoi
5. Service Area : Ban Lat





# **Project Phase and Cost**

## **Phase 2 : Operation & Maintenance**



# Phase 2 : Operation



## Toll Operation & Management

The private sector shall be responsible for toll operation and management using **opened toll collection system** with a capability of **vehicle classification**, and toll fees will be **collected at the exits**.



## Automated Speed Enforcement

the private sector shall **provide and operate automated speed detectors**, as well as facilitate and coordinate with government officers



## Customer Service Center

shall be operated by the private sector to **provide all necessary services of the project**, such as M-Flow registration, providing traveler information, receiving and managing any transaction complaints.



## Traffic Surveillance and Detection and Dynamic Traveler Information

The private sector shall perform the action of **observing traffic conditions**, detecting incidents, and assembling information through automated processes for traffic operation efficiency and analysis.



## Traffic Incident Management

The private sector shall **offer traveler assistance service for all incident and emergency cases** to ensure safety and convenience of travelers



## Highway Police Support

The private sector shall provide supporting staffs, vehicles, and related equipment to **support the highway police's operations, as specified.**



## Call Center Service

Call Center Services / Emergency Telephone Number shall be **available all the time (24/7)** in order to provide all necessary emergency messages, such as route guidance and traffic information, and to receive any emergency messages from travelers.

## Civil Work Maintenance



### Highway Maintenance

The private sector shall **maintain all the roadway in a good condition**. A preventive maintenance shall be applied to ensure safety and serviceability of the project.

### Super and Sub Structure Maintenance

The private sector shall **maintain both super and sub structure of the project**, aligned with DOH's standards and protocols, to ensure their sufficient and safe conditions.



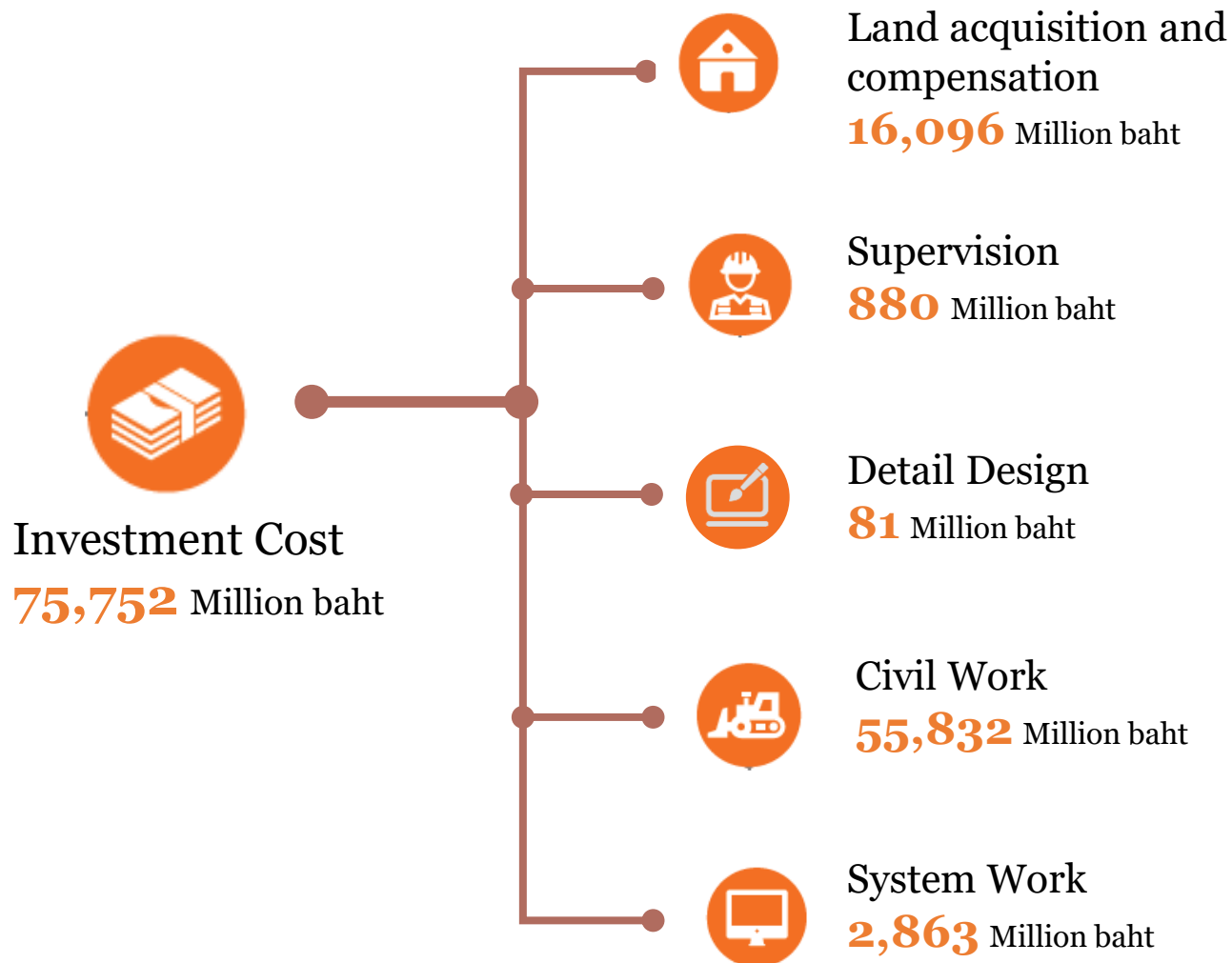


## System Work Maintenance

The private sector shall **consistently implement system work maintenance**, together with a preparation of **maintenance plan** to ensure system work serviceability. The system work **spare parts** shall be sufficiently maintained to the demand for replacement and ensure operation service level.



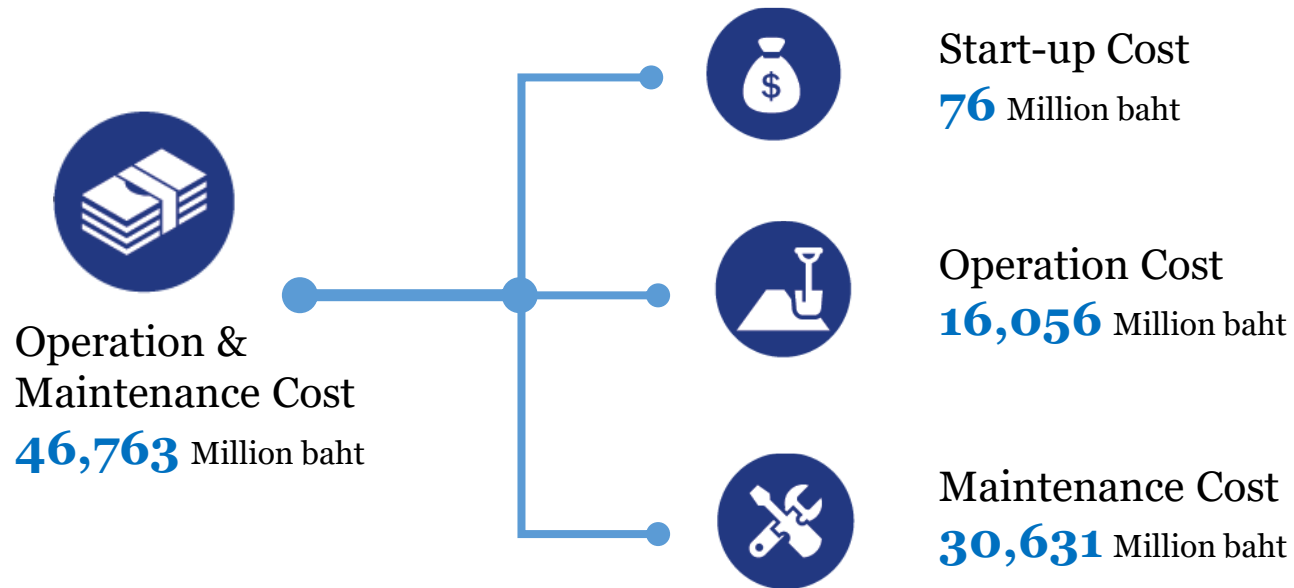
# Investment Cost



Remark: Design and Construction Period 3 Years

Civil work consists of highway, building and rest area.

# Operation & Maintenance Cost

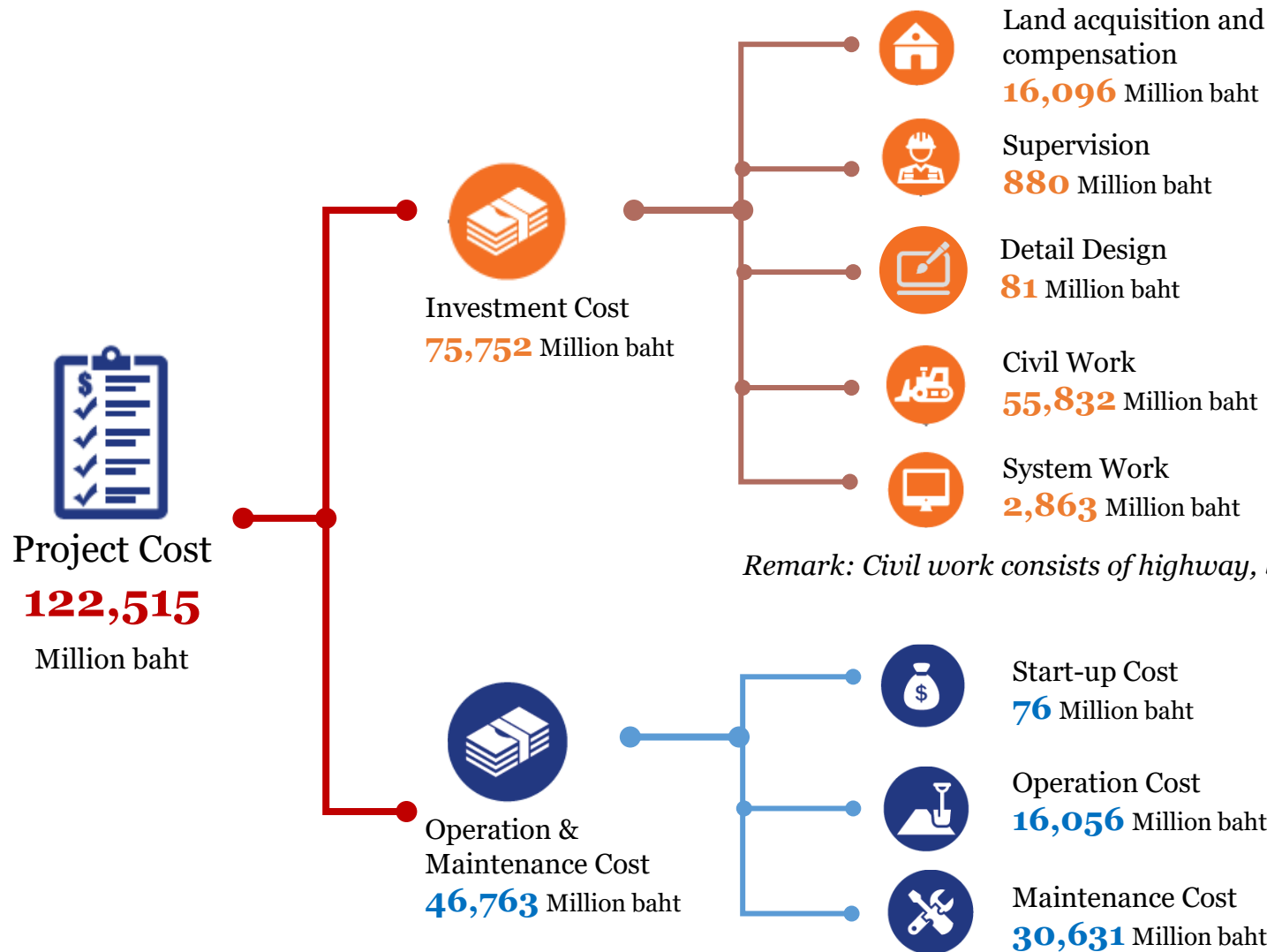


Remark: Figures are of preliminary and indicative only, base on the Public Sector Comparator (PSC) scheme assumption 30 years





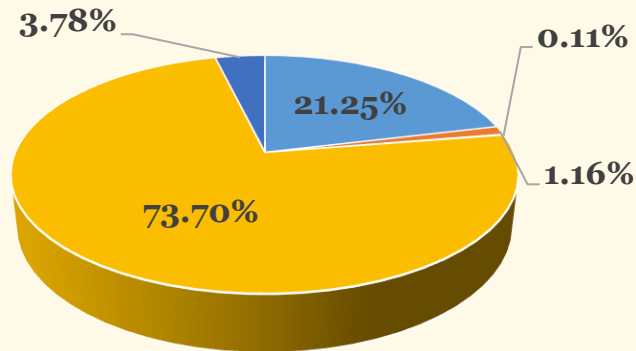
# Project Cost



Remark: Figures are of preliminary and indicative only, base on the Public Sector Comparator (PSC) scheme assumption 30 years

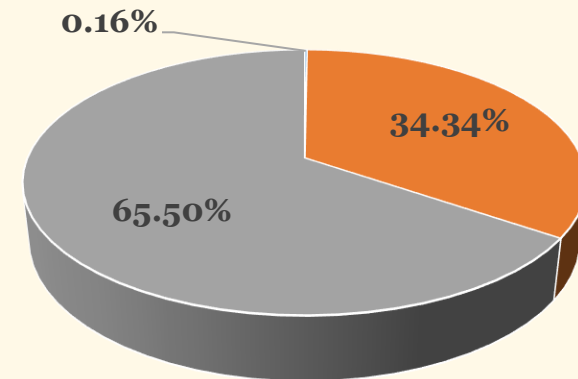
The cost associated with each of the project scope of work.

## Phase 1 : Design & Construction (3 years)



- Land acquisition and compensation
- Supervision
- Detail Design
- Civil Work
- System Work

## Phase 2 : Operation & Maintenance (30 years)



- Start-up Cost
- Operation Cost
- Maintenance Cost

# Project Development Timeline



# Project Development Timeline



**2022**

PPP Appraisal Report  
to be completed

**2022 - 2023**

Project Approval  
and PPP Selection  
Process



**2023 - 2026**

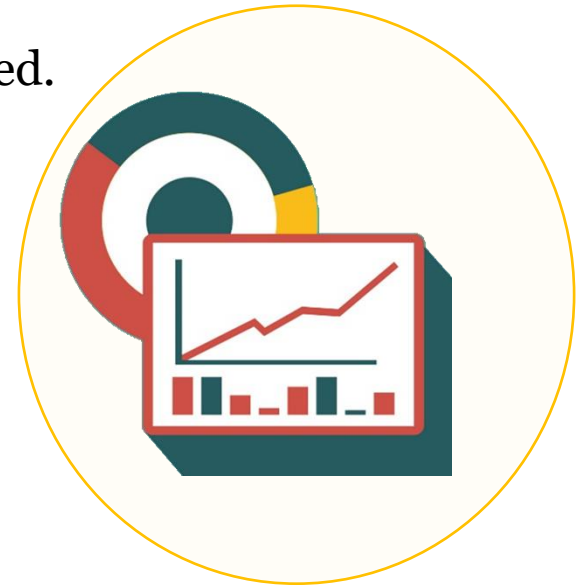
Land Acquisition  
and Compensation  
and Construction

**2027**

Operation  
Commencement

# Traffic Demand and Toll Revenue Forecast

- ❑ The base model was prepared to simulate and replicate existing traffic condition along the corridor was used in the **forecast over 2027 to 2056 with the defined assumptions.**
- ❑ Population growth and economic activity of the area such as **GDP growth.**
- ❑ **All future projects in the study area** are included.
- ❑ Traffic forecasts have been **applied for each type of vehicles.**





# Project in the Study Area



## Future Intercity Motorway Network in the Study Area :

- ① Cha Am – Chumphon
- ② Bangyai – Kanchanaburi
- ③ Kanchanaburi – Phu Nam Ron
- ④ Bang Khun Thian - Ban Phaeo
- ⑤ Ban Phaeo – Pak Tho
- ⑥ Suphanburi - Nakhon Pathom
- ⑦ 3<sup>rd</sup> Ring – Road (West)
- ⑧ 3<sup>rd</sup> Ring – Road (South)

## Highway Network in the Study Area :

- ⑨ Boromarajonani – Phat Kasem

## Railway Network in the Study Area :

- ⑩ Nakhon Pathom - Nong Pla Duk - Hua Hin
- ⑪ Bangkok - Hua Hin

## Network Outside the Study Area :

- Motorway Network
- Railway Network

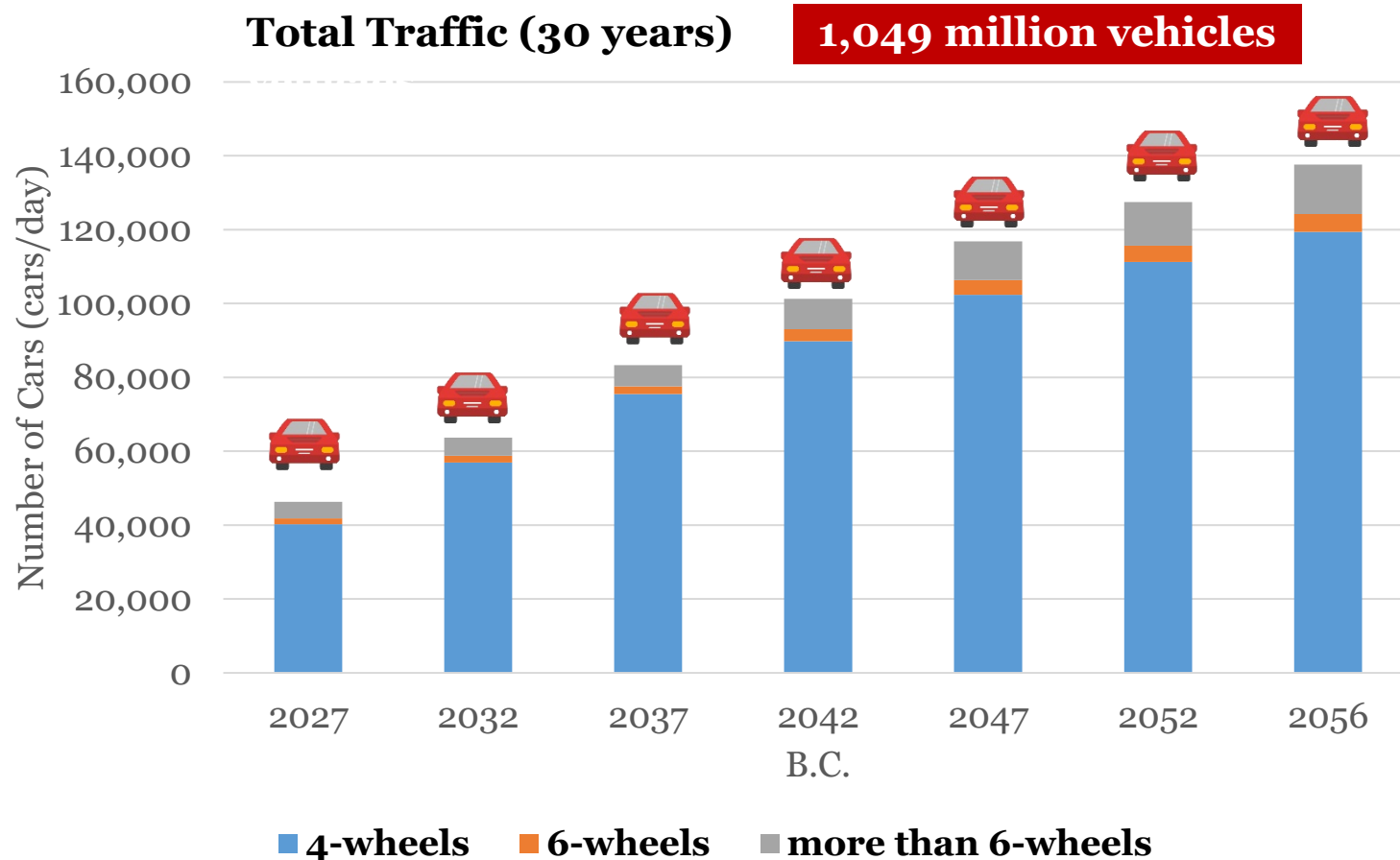
- ❑ The toll collection system shall be an closed toll system, in which users pay at the exiting and the toll fees is classified based on vehicle types



# Traffic Demand Forecast



the project is expected to have an average traffic volume of **46,300 vehicles per day** when its operation starts **(in 2027)**. In **2056**, the traffic is predicted to reach approximately **137,600 vehicles per day**

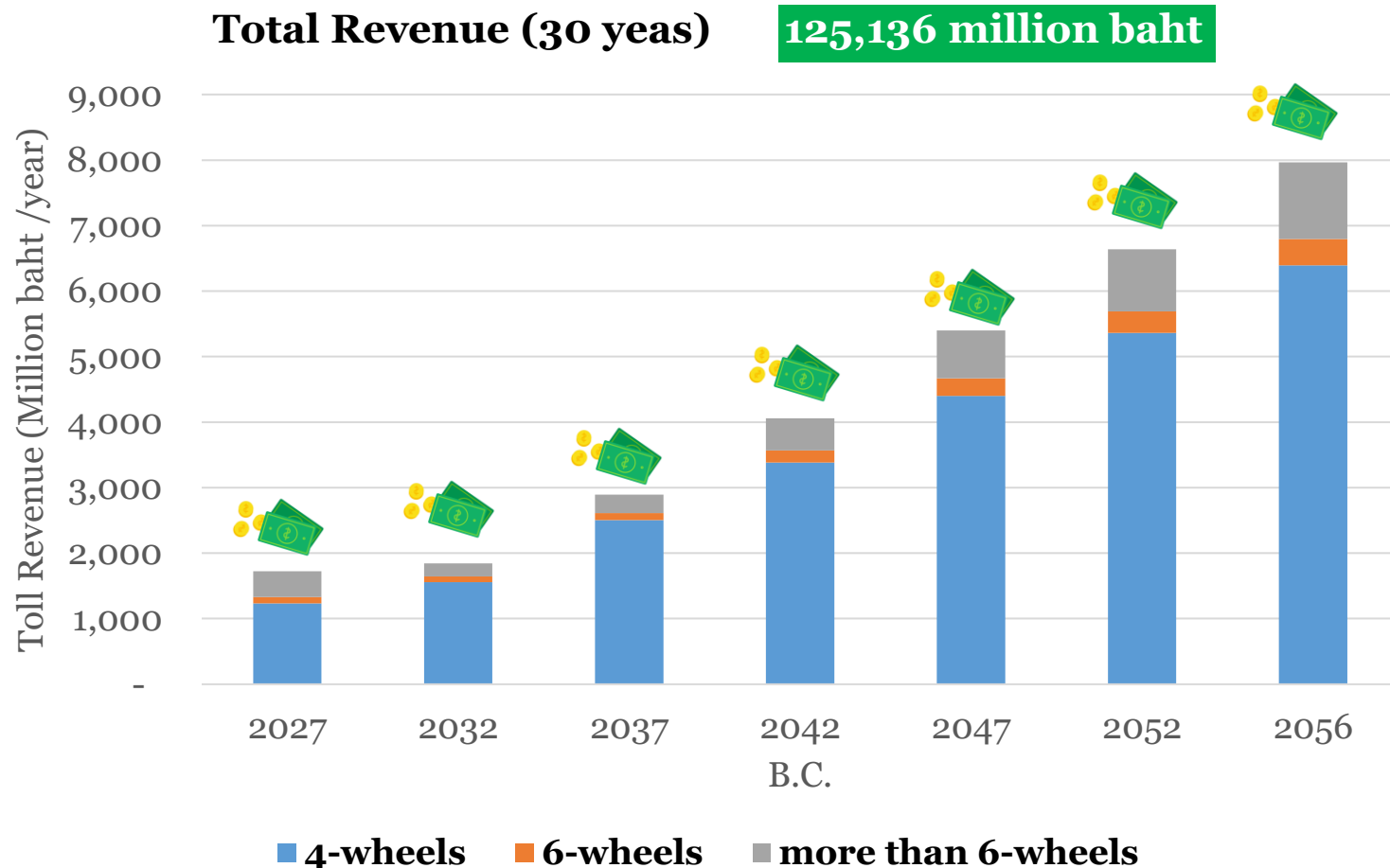




# Toll Revenue Forecast



the project is expected to have the toll revenue of approximately **1,725 million baht per year (in 2027)**. In **2056**, the toll revenue of about **7,965 million baht per year**.



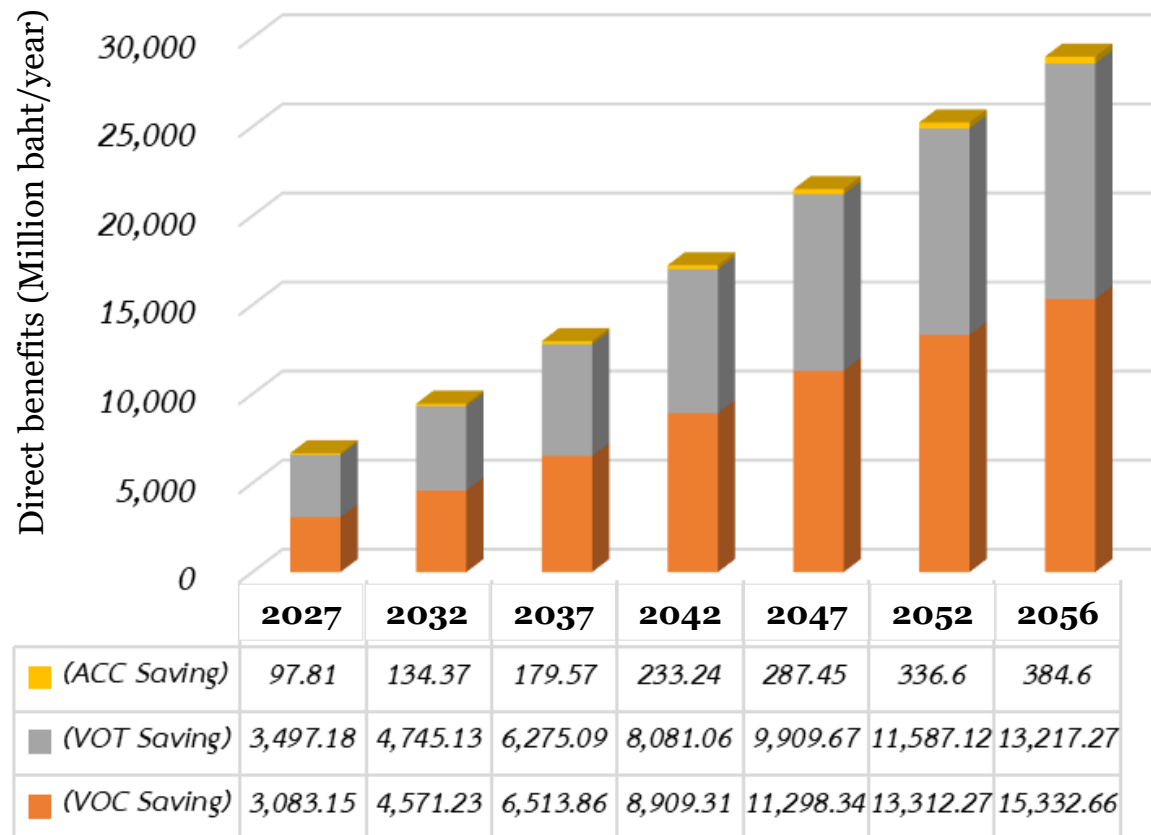
# Economic Feasibility analysis

# Economic Feasibility analysis



## Direct benefits

- Vehicle Operating Cost Saving: VOC Saving
- Travel Time Saving: VOT Saving
- Accident Cost Saving: ACC Saving



- Economic Internal Rate of Return (EIRR) **12.86%**
- Benefit Cost Ratio (B/C ratio) **1.10\***
- Net Present Value (NPV) **5,776 Million baht\***

\* Discount Rate 12%



# Preliminary Performance

# Financial Return under PSC Scheme



## Project Returns



Project FIRR  
0.97%



Project NPV @ 3%  
-23,953.44 Million THB

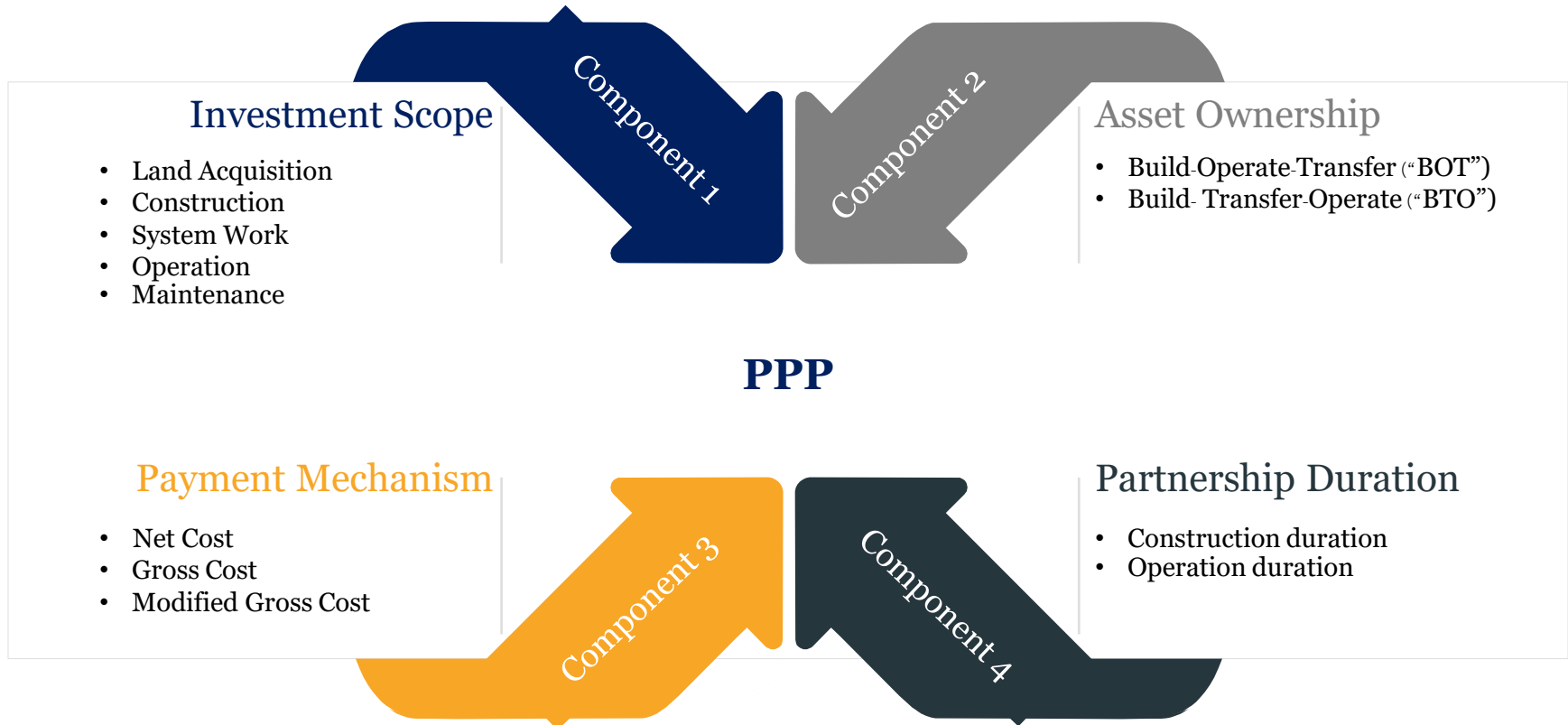


Project Payback Period  
N/A Years

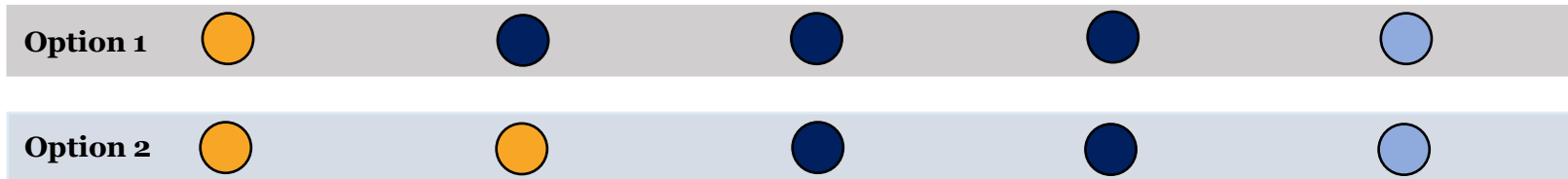
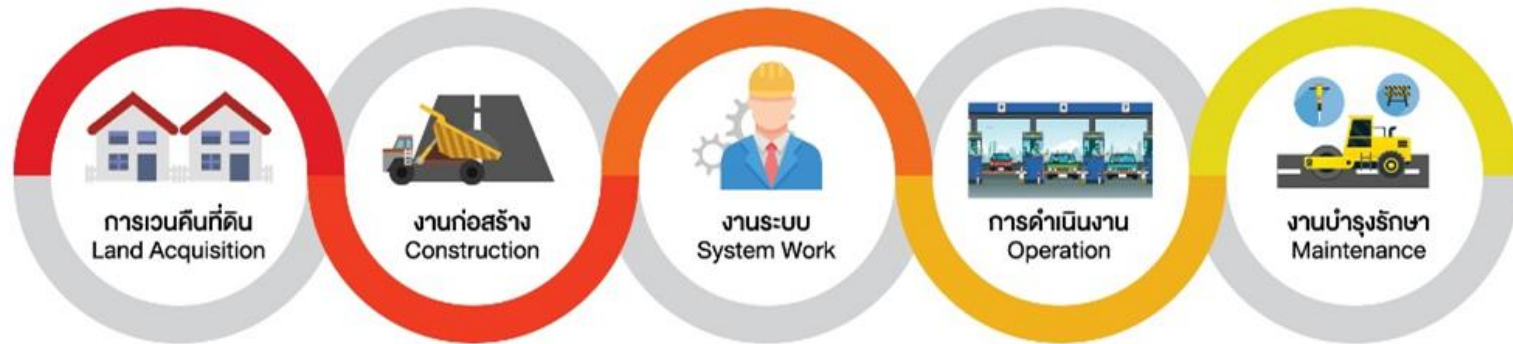
# PPP Framework






The PPP scheme will depend on the following components



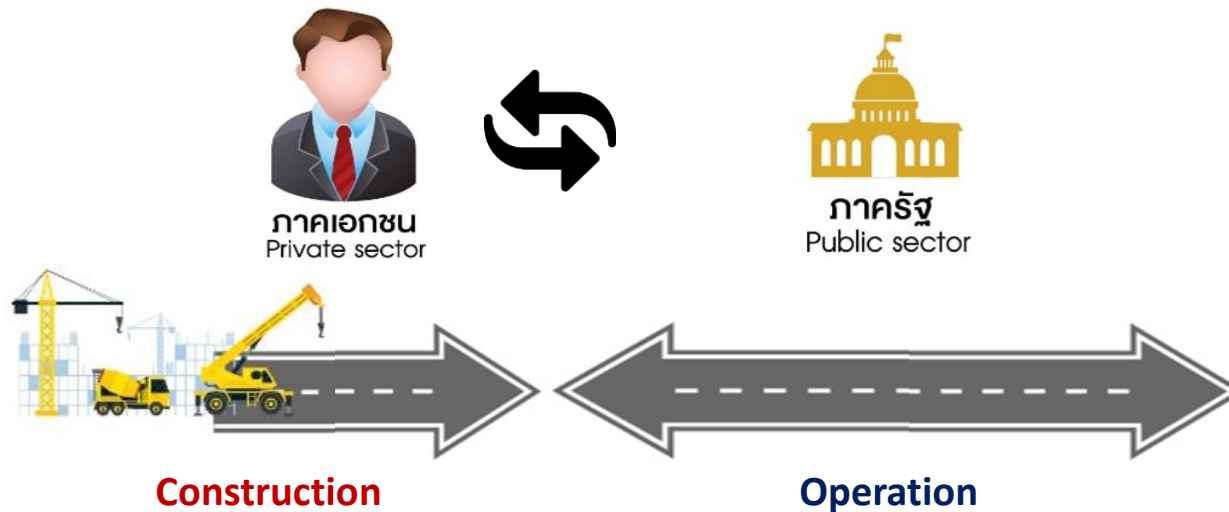
## Investment Scope Options



-  Public/ Private Sector Responsibility
-  Public Sector Responsibility
-  Private Sector Responsibility

## Asset Ownership Options

### Option 1: Build- Transfer- Operate (“BTO”)



Under the **Build-Transfer-Operate (BTO) scheme**: The project’s asset will be transferred to the public sector upon construction completion.



## PPP Payment Options

### Option 1: PPP Net Cost

- The private sector collects toll revenue and non-toll revenue.
- The private sector may be entitled to receive co-investment (subsidy) from the government or share project revenue with the government.



## PPP Payment Options

### Option 2: PPP Gross Cost

- The private sector collects toll revenue on behalf of the government and receives availability payment from the government in return for providing the project.
- The private sector is entitled to non-toll revenue.



## PPP Payment Options

### Option 3: PPP Modified Gross Cost

- The private sector collects toll revenue on behalf of the government and receives availability payment from the government in return for providing the project.
- The private sector is entitled to non-toll revenue **and receives additional incentive payments based on toll revenue collected (i.e. 5% of toll revenue).**

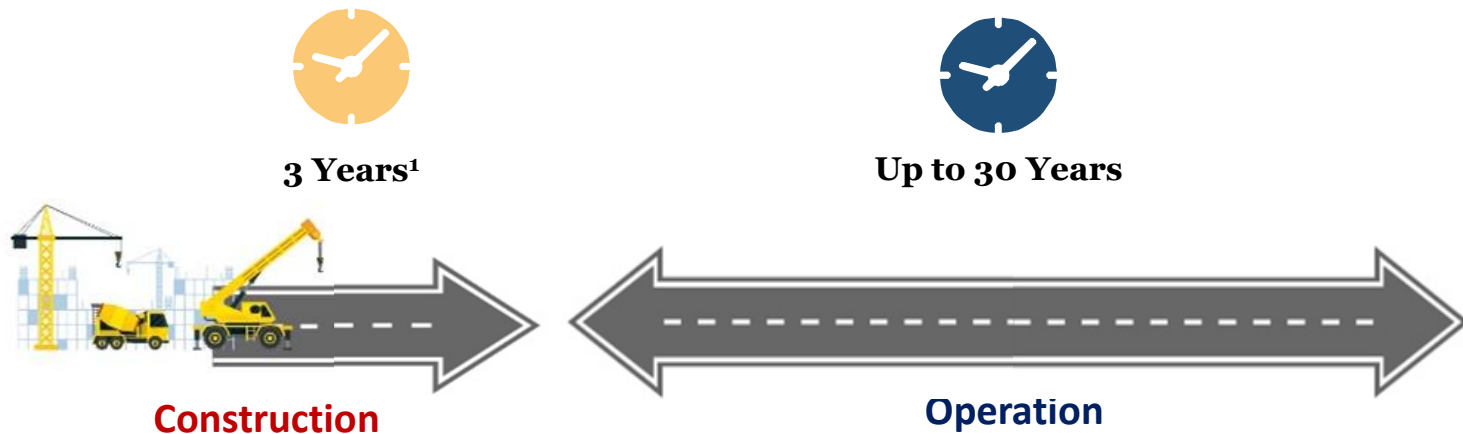




# PPP Partnership Duration



## PPP Partnership Option



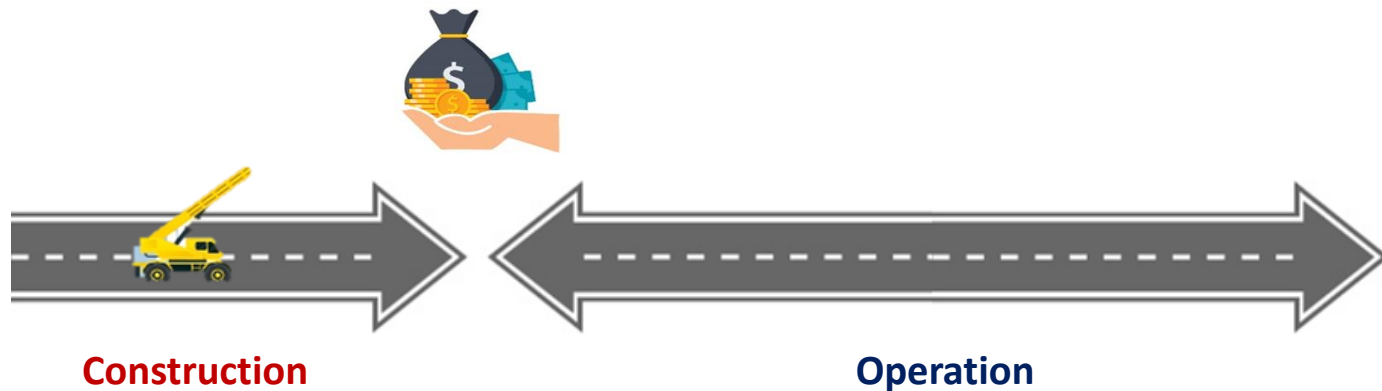
<sup>1</sup> construction period excluding land acquisition

## **Government Contribution Under the PPP Net Cost Scheme**

## Government Contribution Options

- **Option 1: Lump Sum Payment**

- The public sector provides a one-time financial contribution to the private sector when the construction of the project is completed and before the commercial operation date.



## Government Contribution Options

- **Option 2: Annuity Payment**

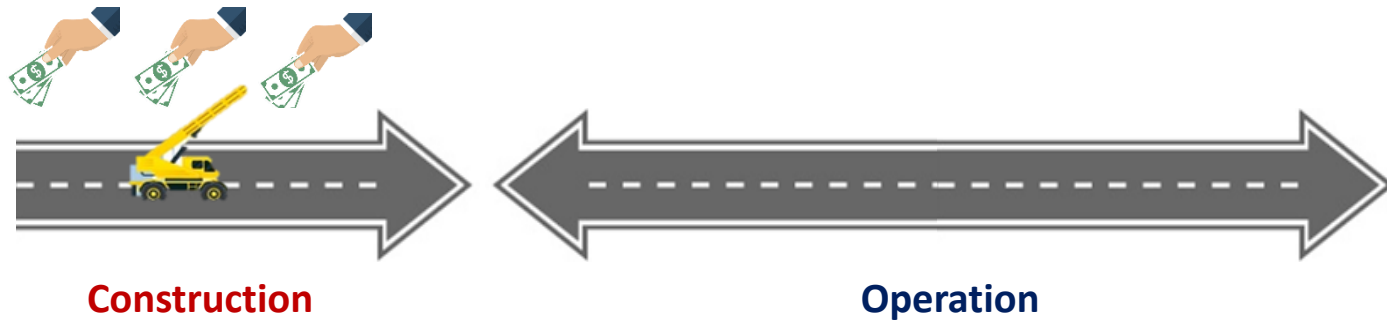
- The public sector provides the annual financial contribution to the private sector for a pre-determined number of years.





## Government Contribution Options

- **Option 3: Milestone payments**
  - The public sector provides periodic financial contributions to the private sector based on the project's construction progress.



# Project Readiness

## **(1) Consistency and Readiness of Other Projects**

- Connect to the Bang Yai - Kanchanaburi Intercity Motorway Project (M81)
- Connect to the Cha Am - Chumphon Intercity Motorway Project (M8)

## **(2) Readiness for Transportation and Related Utilities**

## **(3) Legal Readiness**

## **(4) Environmental Readiness**

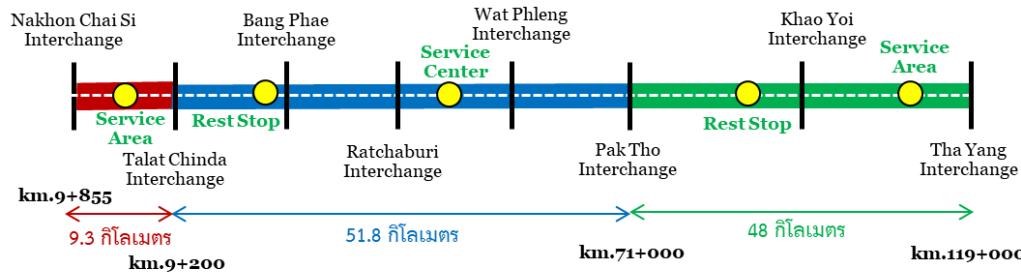
# Project Scopes and Contract Period



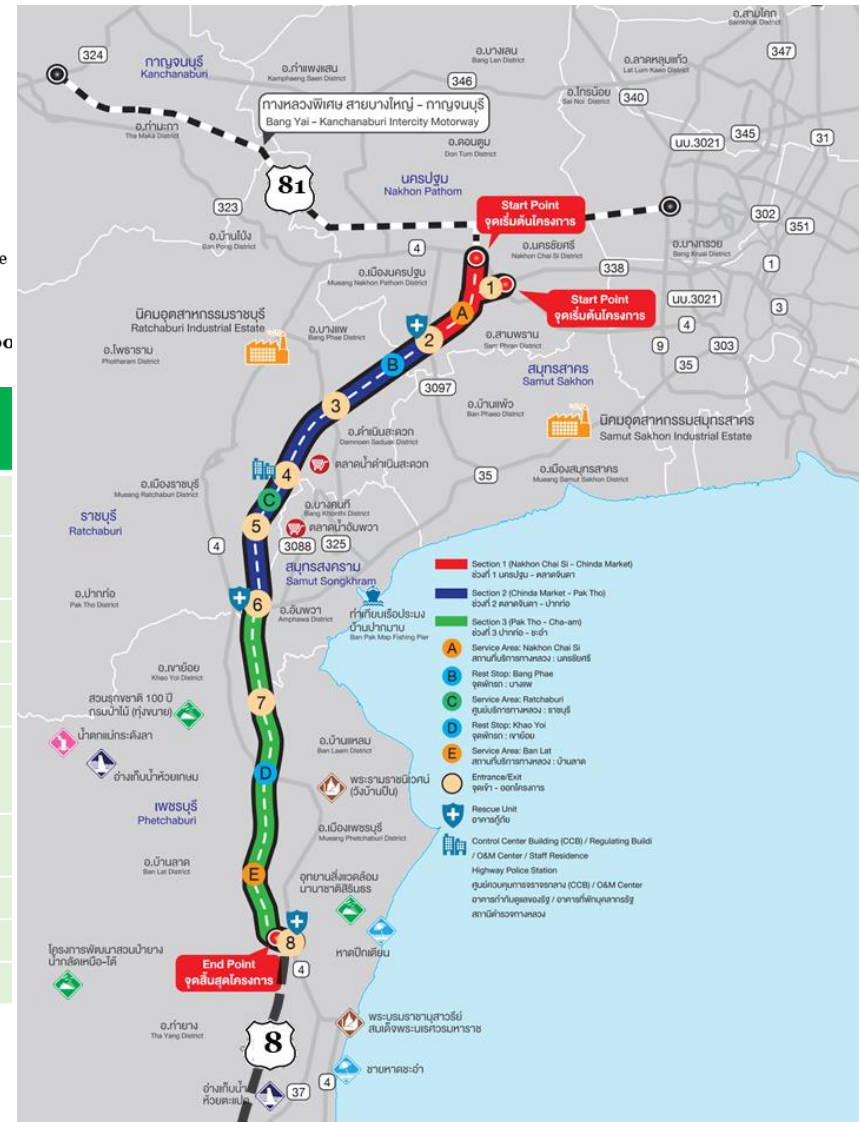
# Project Scopes and Contract Period



## Project Scope of Investment









	Phase 1 (km.9+855 – km.19+200)	Phase 2 (km.19+200 – km.71+000)	Phase 3 (km.71+000 – km.119+000)
<b>1. Land Acquisition and Compensation</b>	DOH	DOH	DOH
<b>2. Civil Work Construction</b>			
2.1 Main Road	DOH / Private Sector	DOH / Private Sector	DOH / Private Sector
2.2 Service Road	DOH / Private Sector	DOH / Private Sector	DOH / Private Sector
2.3 Rest Area	DOH / Private Sector	DOH / Private Sector	DOH / Private Sector
<b>3. System Work Construction and Installation</b>	DOH / Private Sector	DOH / Private Sector	DOH / Private Sector
<b>4. Operation and Maintenance</b>			
4.1 Main Road	DOH / Private Sector	DOH / Private Sector	DOH / Private Sector
4.2 Service Road	DOH	DOH	DOH
4.3 Rest Area	DOH / Private Sector	DOH / Private Sector	DOH / Private Sector



**The Contract period** is within **30 years** after the commencement of commercial operation date

## Project Development Options

- **Base Case :**  
 Nakhon Pathom - Cha Am (2027)
- **Test Case 1 :**  
 Nakhon Pathom – Pak Tho (2027)  
 Pak Tho - Cha Am (2032)
- **Test Case 2 :**  
 Nakhon Pathom – Pak Tho (2027)
- **Test Case 3 :**  
 Nakhon Pathom – Talat Chinda (2027)  
 Talat Chinda – Pak Tho (2032)
- **Test Case 4 :**  
 Nakhon Pathom – Talad Chinda (2027)



# Project Risk Analysis

# Project Risk Analysis



## Construction

- Readiness of Project Risk
- Design Risk
- Delay of land acquisition and compensation
- Possibility of construction
- Construction and commissioning Risk
- Other project developments associated

## Operation

- Revenue and traffic forecasted
- Project implementation plan
- Commercial Risk
- Operation Risk & Maintenance Risk

- Natural disasters
- Legal and Regulatory
- Social impact
- Economic and Financial

- Legal and Regulatory Risk
- Counterpart Risk
- Project Specific Risk



# Laws and Regulations

## Public Private Partnerships, B.E. 2562 (2019)

The Public Private Partnerships, B.E. 2562 (2019) (the “PPP Act”) came into force on 11 March 2019, revoking the Private Investment in State Undertakings Act B.E. 2556 (2013).

### PPP Project under the PPP Act



#### Project

“Project” refers to an investment project of the State in an undertaking in which one or many state agencies collectively have the duty and power to comply with the laws, regulations or the objectives of its establishment.



#### Joint Investment

“Joint Investment” refers to a joint investment with a private entity irrespective of any method, or assigning a private entity to make an investment solely by means of granting permission or a concession, or granting a right therefor in any description.



Other activities as prescribed under the Royal Decree

#### Infrastructure and Public Services Activities

## Public Private Partnerships, B.E. 2562 (2019)

### Calculation of PPP Project Value

The Host Agency must calculate the value of a PPP Project.

Value of from 5bn baht\*

To proceed according to criteria,  
procedures and conditions prescribed in the PPP Act.

Value less than 5bn baht\*\*

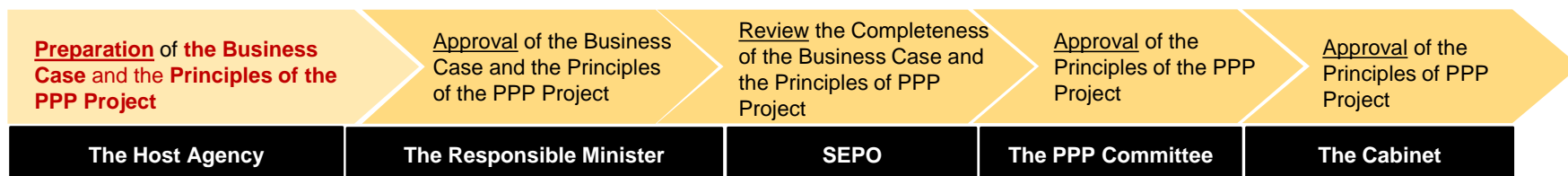
To proceed according to criteria and procedures determined and  
notified by the PPP Committee.

*\*Or other higher values which may be later determined by a ministerial regulation.*

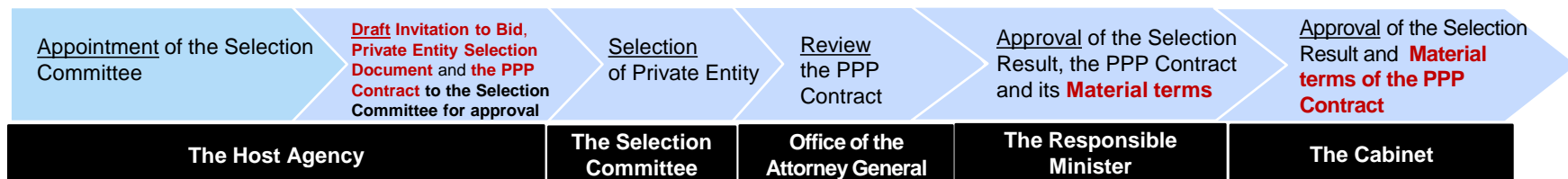
*\*\*However, if the PPP project is essential or is consistent with the partnership project preparation plan, the Commission may require the Host agency to operate in accordance with the rules and procedures prescribed in the PPP Act.*

## Public Private Partnerships, B.E. 2562 (2019)

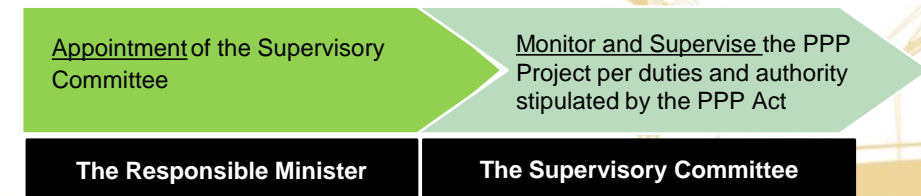
### 1. Proposal of PPP Projects



### 2. Selection of the Private Entity



### 3. Supervision of the PPP Projects





## Public Private Partnerships, B.E. 2562 (2019)

### PPP Promotional Measures

Under the PPP Act, one or more of the following rights and benefits may be granted to the PPP Projects:

- rights and benefits under the law on investment promotion;
- the right to take a lease of land or immovable property in the partnership project for a term not exceeding 50 years;
- other financial and non-financial supporting measures as prescribed in the Notification of the PPP Committee.





## รับฟังความคิดเห็นและตอบข้อซักถาม Q&A session

**The Nakhon Pathom – Cha Am**

**Intercity Motorway Project**

**Under the Public Private Partnership [PPP] Scheme**



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**THANK YOU**