26 August 2019,
Anantara Siam Bangkok Hotel

Market Sounding Seminar

Public Private Partnership for the

Utraphimuk Elevated Tollway Extension Intercity Motorway

Rangsit – Bang Pa-In Section

Seminar Outline

- Market Sounding Objective
- Project Overview and Scopes
- Project Phases and Costs
- Project Development Timeline
- Traffic Demand and Toll Revenue Forecast
- Economic Feasibility analysis
- Preliminary Performance
- PPP Framework
- 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 Structure

Market Sounding Seminar

26 August, 2019

Anantara Siam Bangkok hotel

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

9-13 September, 2019

The Sukosol Bangkok hotel

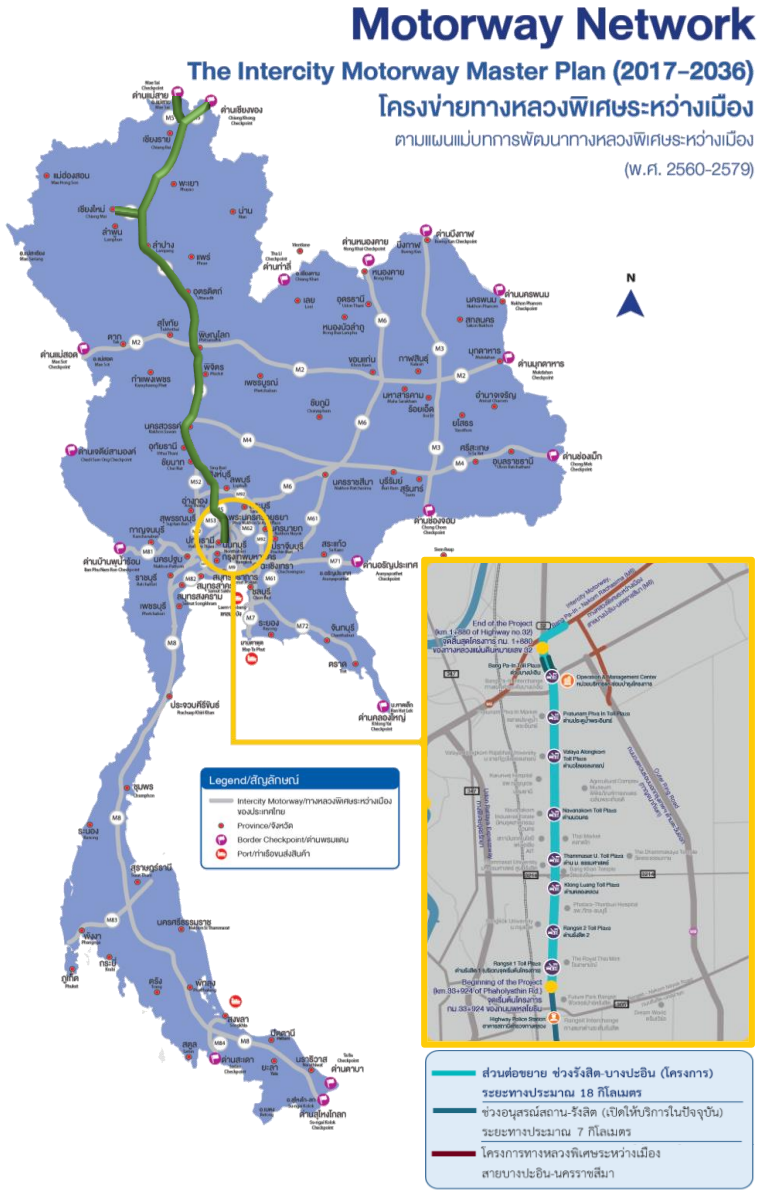
Key objectives :

- 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

- The Rangsit-Bang Pa-In section is the **part of motorway No.5 (M5)**
- The Rangsit-Bang Pa-In section is one of the high priority projects under the **20-year Intercity Motorway Master Plan (2017-2036)**
- The Rangsit Bang Pa-In section is an **extension of Utraphimuk Elevated Tollway which is currently open to traffic,** is able to divide into 2 phases as follows:
  1) National Memorial - Rangsit Section (DOH)
  2) Din Daeng - National Memorial Section (Tollway)
- The project aims to **connect the Inner Bangkok to its northern area** and **alleviate traffic congestion on Phahonyothin Road and Vibhavadi-Rangsit Road**
- **Connect to the Bang Pa-In - Nakhon Ratchasima Intercity Motorway Project (M6),** the project will be an elevated tollway system that directly links Inner Bangkok to the Northeastern regions.



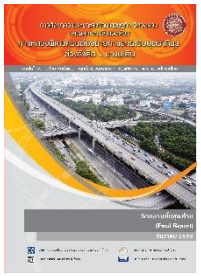
History and Current Status

The Utraphimuk Elevated Tollway Extension Intercity Motorway
Rangsit – Bang Pa-In Section

1997

Master Plan for Intercity Motorway Approved by Cabinet

2016

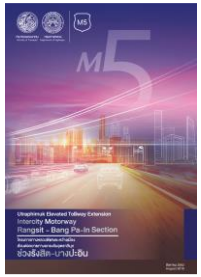


Technical and Economic Feasibility Study Completed

Detailed Engineering Design Completed

- **EIA Report Completed**
- **Under consideration of ONEP**

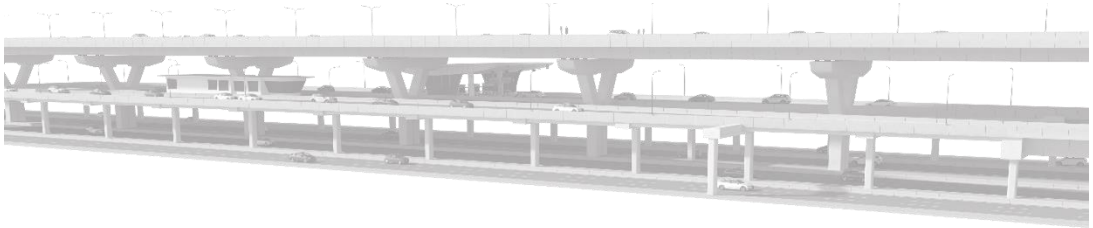
2018 - present

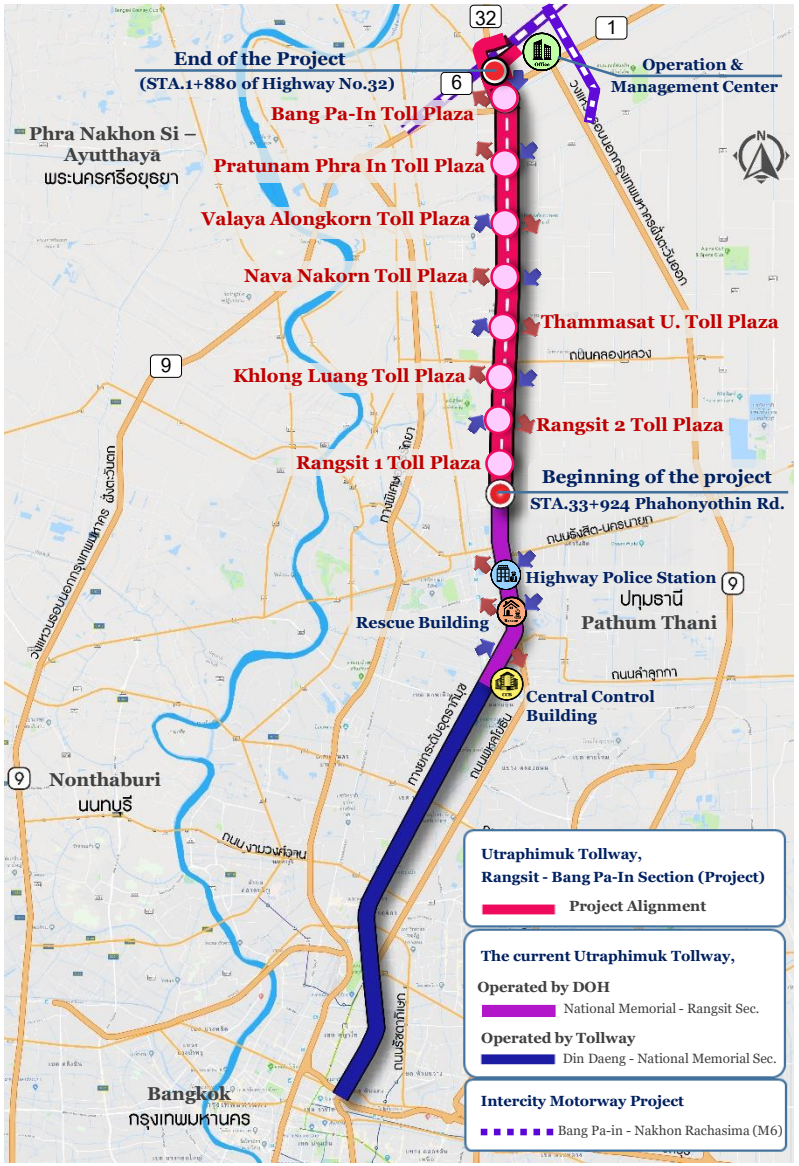


PPP Appraisal

Summary of Project Elements

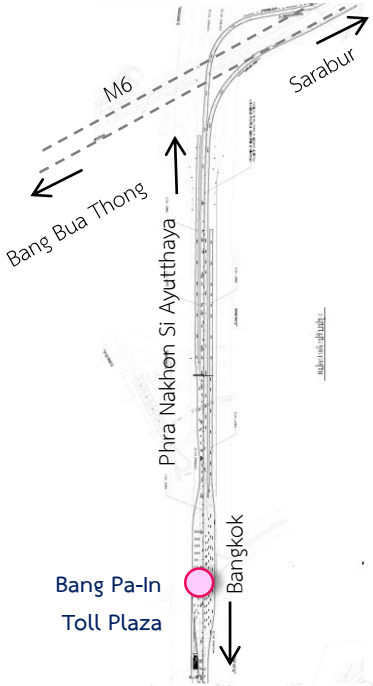
- **Beginning of the Project :** STA.33+924 Phahonyothin Rd.

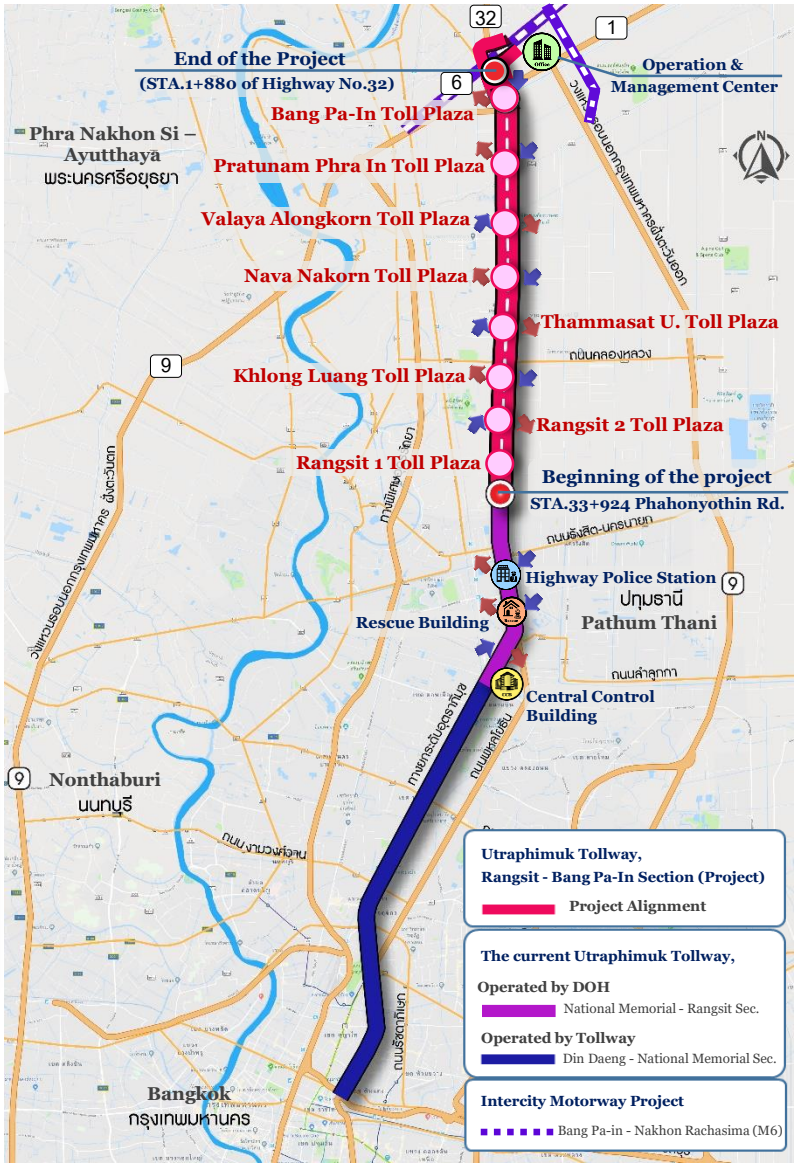




Summary of Project Elements

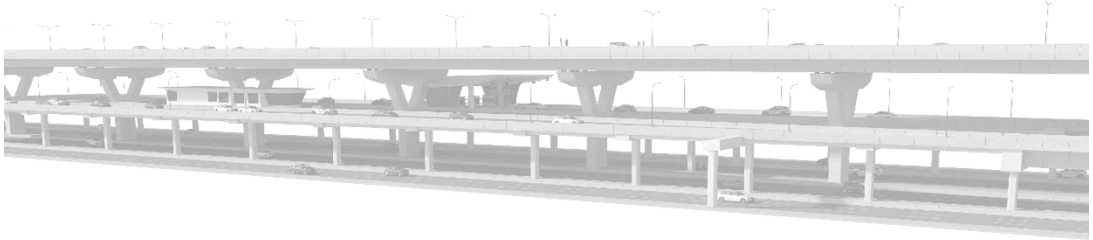
- **Beginning of the Project :** STA.33+924 Phahonyothin Rd.
- **End of the Project :** STA.1+880 of Highway No.32
- **Connection :** The current Utraphimuk Tollway, HW no.1, HW no.32 and M6

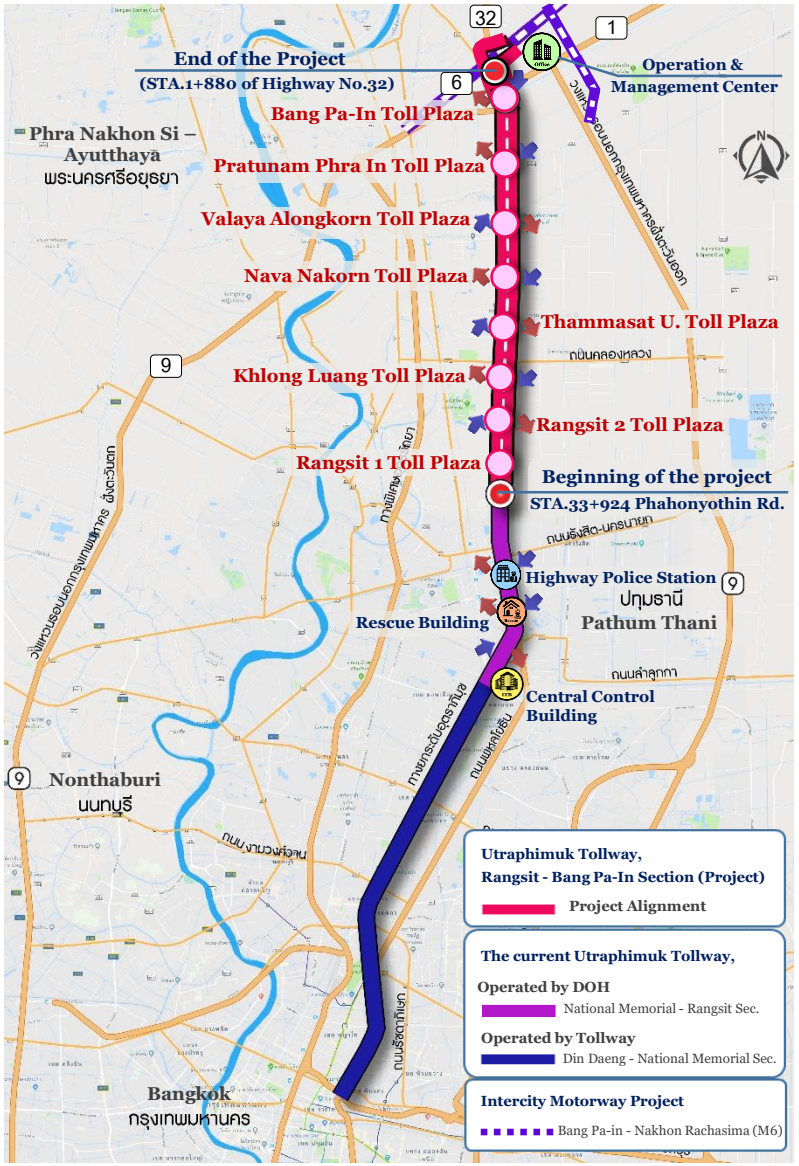




Summary of Project Elements

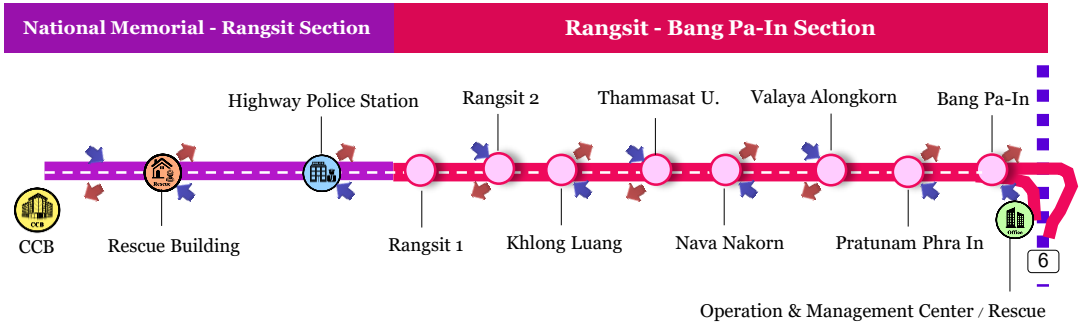
- **Beginning of the Project :** STA.33+924 Phahonyothin Rd.
- **End of the Project :** STA.1+880 of Highway No.32
- **Connection :** The current Utraphimuk Tollway, HW no.1, HW no.32 and M6
- **Distance :** approximate 18 km. with 6 lanes
- **Project Type :** Elevated throughout the project
- **On-Off Ramp :** 7 points with U-turn bridge
- **Toll Plaza :** 8 points
- **Toll Collection System :** Open System, Pay at the exit ramp
- **Type of Toll Collection :** 2 types (MTC, ETC)
- **Building of the Project :**
  - Central Control Building 1 point
  - Toll Surveillance Building (TSB) 8 points
  - Rescue Building 1 point
  - Highway Police Station 1 point
  - Operation & Management Center 1 point





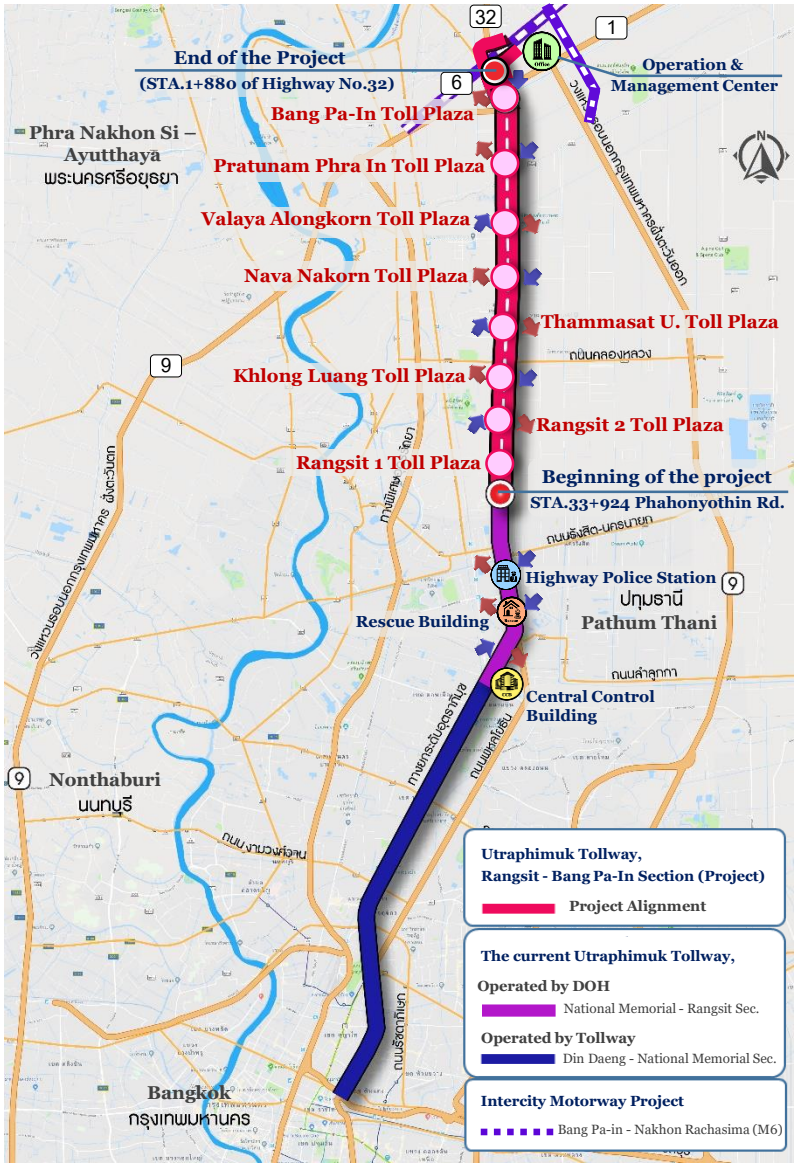
Project Scopes and Contract Period

Project Scope of Investment



	National Memorial – Rangsit Section	Rangsit - Bang Pa-In Section
Land Acquisition and Compensation	-	DOH
Civil Work Construction	-	DOH / Private Sector
System Work Construction and Installation	Private Sector	Private Sector
Operation and Maintenance	Private Sector	Private Sector

The Contract period is within **10-30 years** after the commencement of commercial operation date



Project Phases and Costs

Project Phases

Phase 1

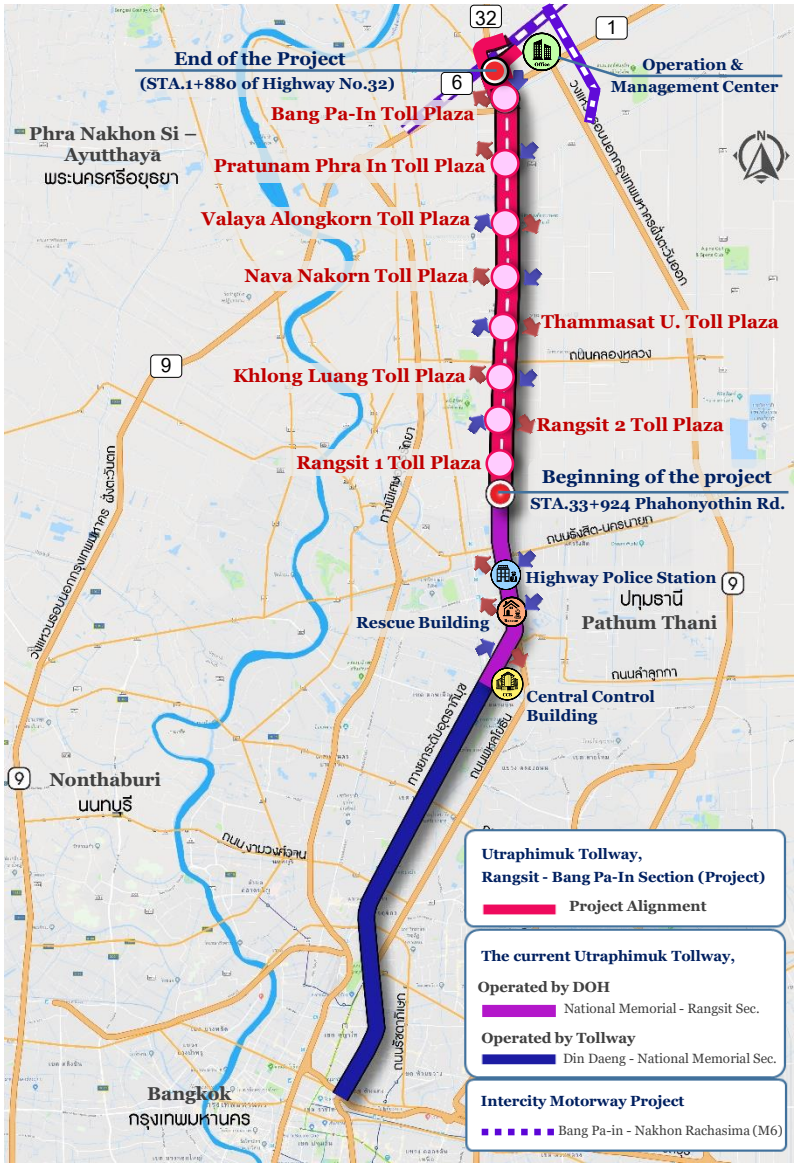
Design and Construction (3 years)

Rangsit - Bang Pa-In Section

Phase 2

Operation and Maintenance (Maximum of 30 years)

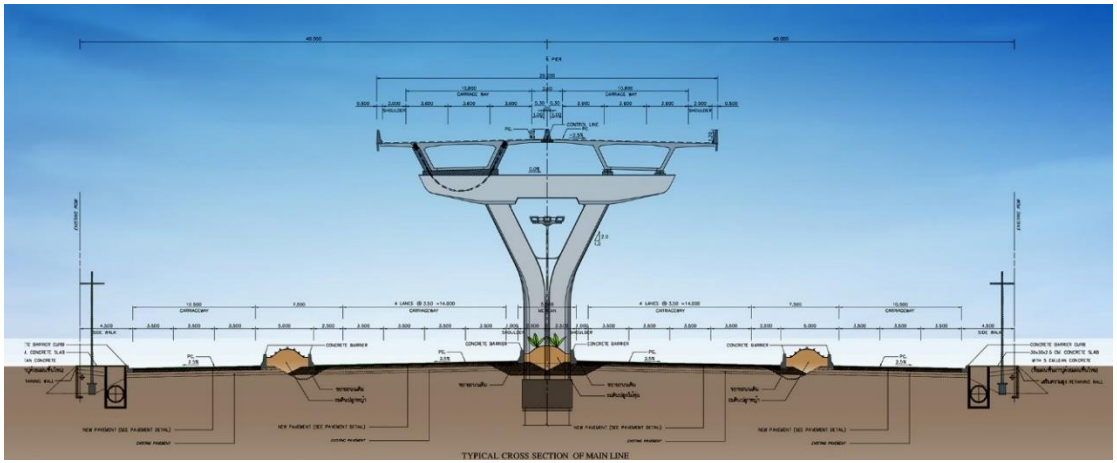
National Memorial - Rangsit - Bang Pa-In Section



Phase 1 : Design and Construction

Phase 1 : Civil Work Construction

- The project design is an **elevated tollway on Phahonyothin Road** (HW no.1) from Rangsit to Bang Pa-In, with a total length of **18 km.**



- The project design is a **6-lane elevated tollway**, with 3.5 meters lane width, 2.0 meters outer shoulder, and 1.0-meter inner shoulder.

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

Toll collection system

Rangsit 1 Toll Plaza (Inline toll plaza)

Toll Plaza on Existing Ramp

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

- Manual Toll Collection System **(MTC)**
- Electronic Toll Collection System **(ETC)**

There are **8 Toll Plazas** as follow :

- Rangsit 1 Toll Plaza
- Rangsit 2 Toll Plaza
- Khlong Luang Toll Plaza
- Thammasat U. Toll Plaza
- Nava Nakorn Toll Plaza
- Valaya Alongkorn Toll Plaza
- Pratunam Phra In Toll Plaza
- Bang Pa-In Toll Plaza

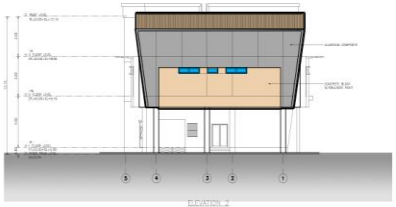
Traffic Management and Control System

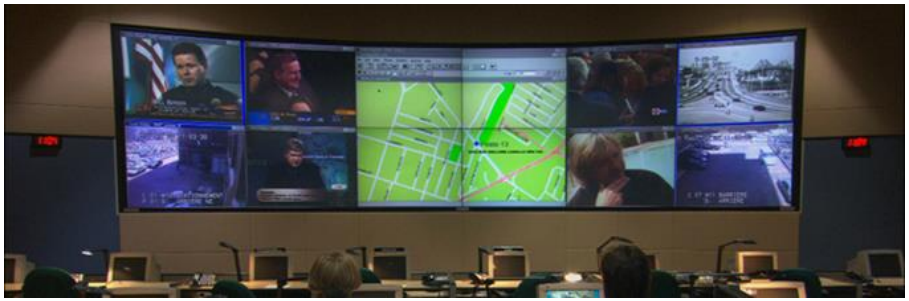
Designed to **ensure efficiency and safety for road users**, which shall include but not limited to the following;

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

Central Control Building (CCB)

- the Central Control Building (CCB) shall be located **in DOH's right of way**.





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

Asset Management System

asset management system shall be provided by the private sector to

- asset inventory data
- record asset maintenance and replacement
- collect statistical data
- analyze data at the network level for a maintenance plan

Communication Network

The private sector shall provide a sufficient communication network, a fiber optical network system with the required specification

Power Distribution System

The private sector shall provide power supply / distribution system that connects from local PEA provided system

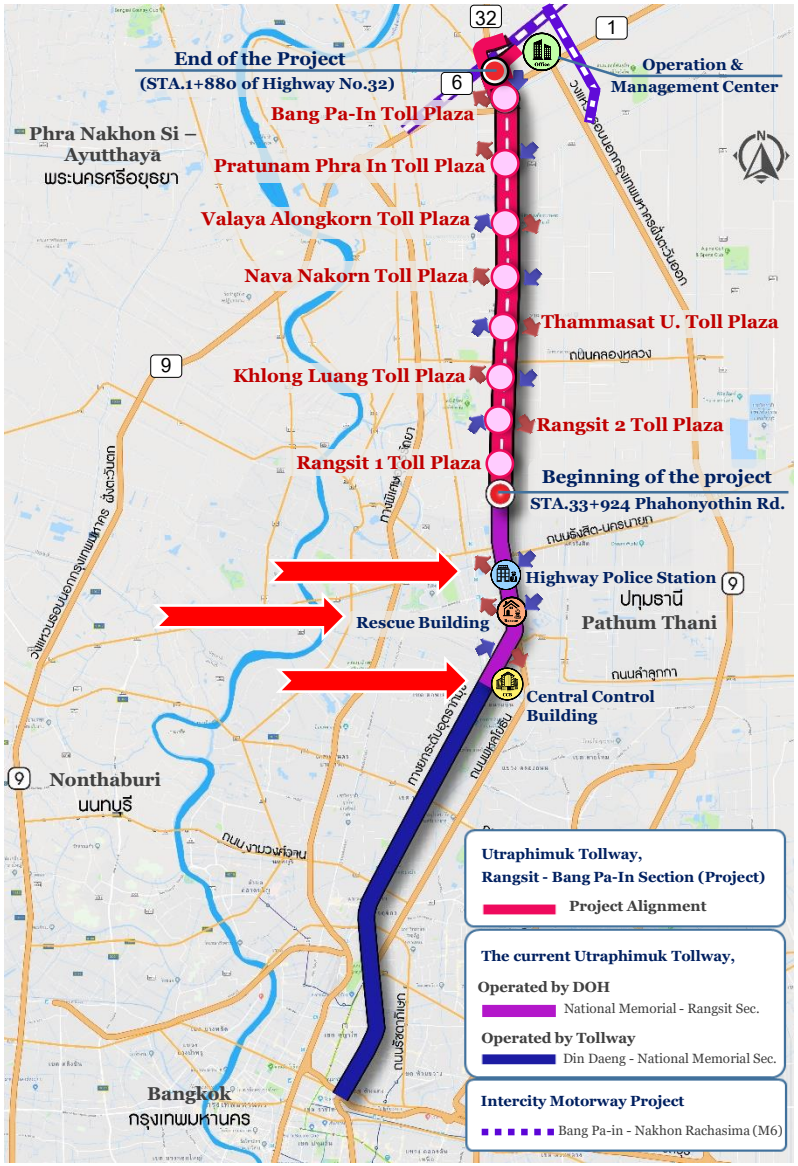
Agency Buildings

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

(a) DOH' s Superintendent office at CCB

(b) Highway Police Station (Renovate)

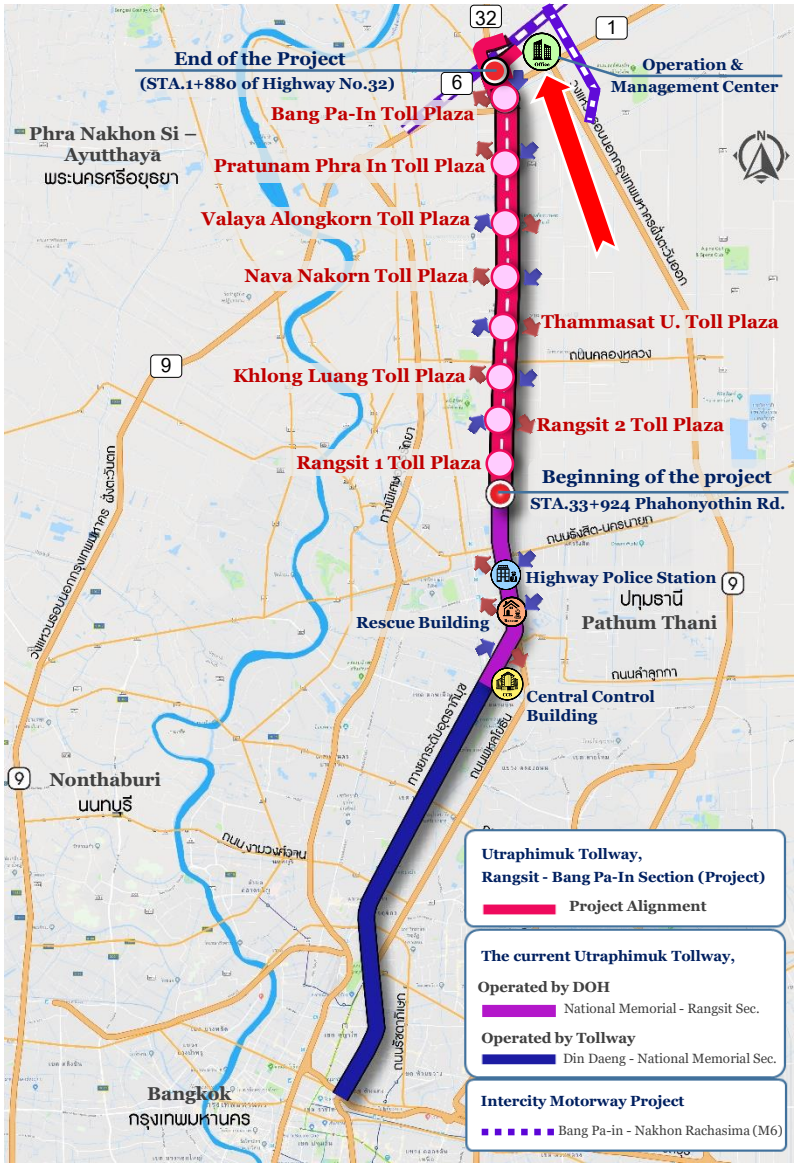
(c) Rescue Building (Renovate)



Operation and Maintenance Center

The DOH's has prepared an area for Operation and Maintenance Center, 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.
- The Private Sector shall provide **Patrol Unit** for purposes of rescue operation, incident management, chain of guards for observation, inspection, and maintenance of security over the project.



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-Pass Transponder Tag distribution, providing traveler information, receiving and managing any transaction complaints.

Phase 2 : Operation

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

Phase 2 : Operation

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.

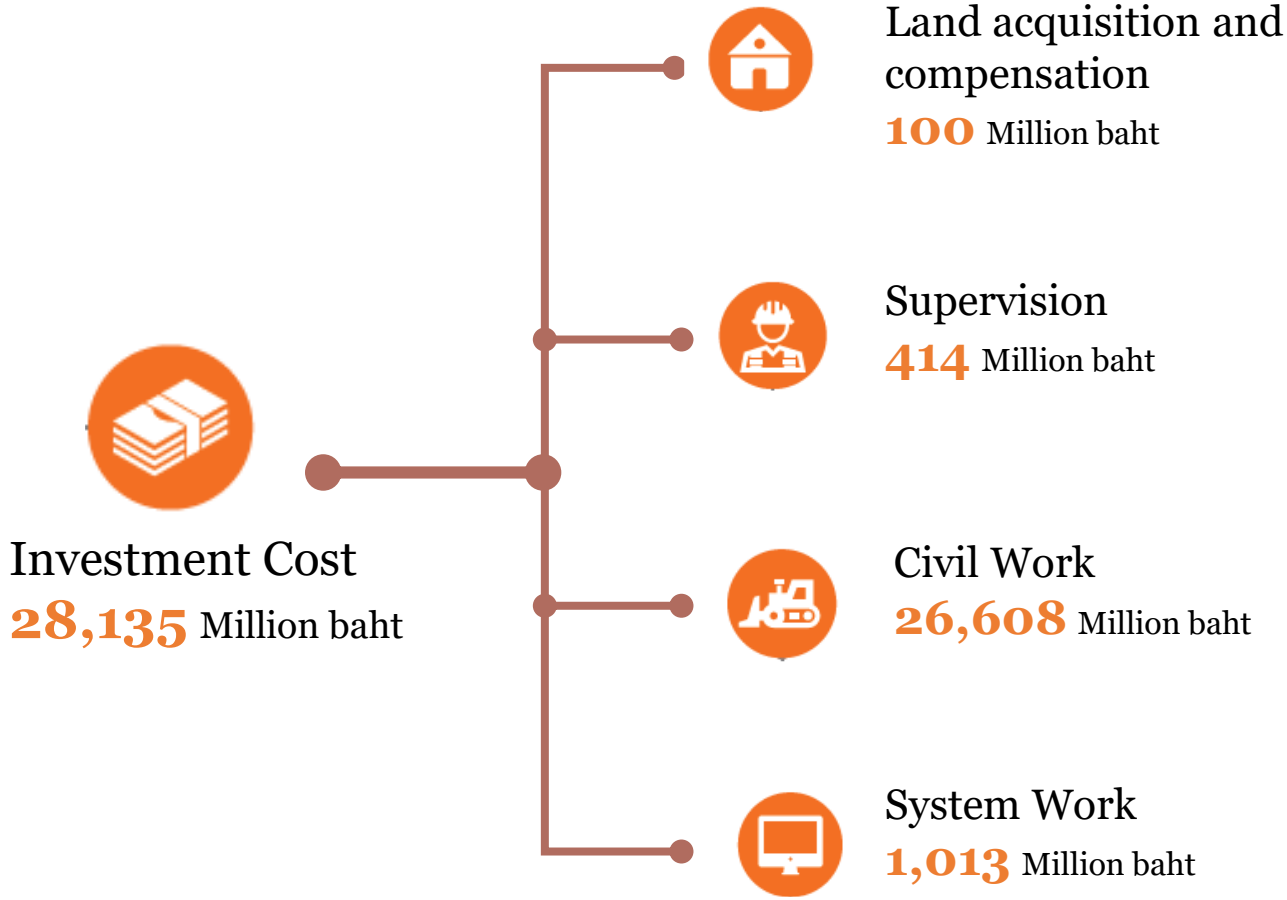
Super and Sub Structure Maintenance

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

Operation & Maintenance Cost

Operation & Maintenance Cost
11,821 Million baht

Start-up Cost
56 Million baht

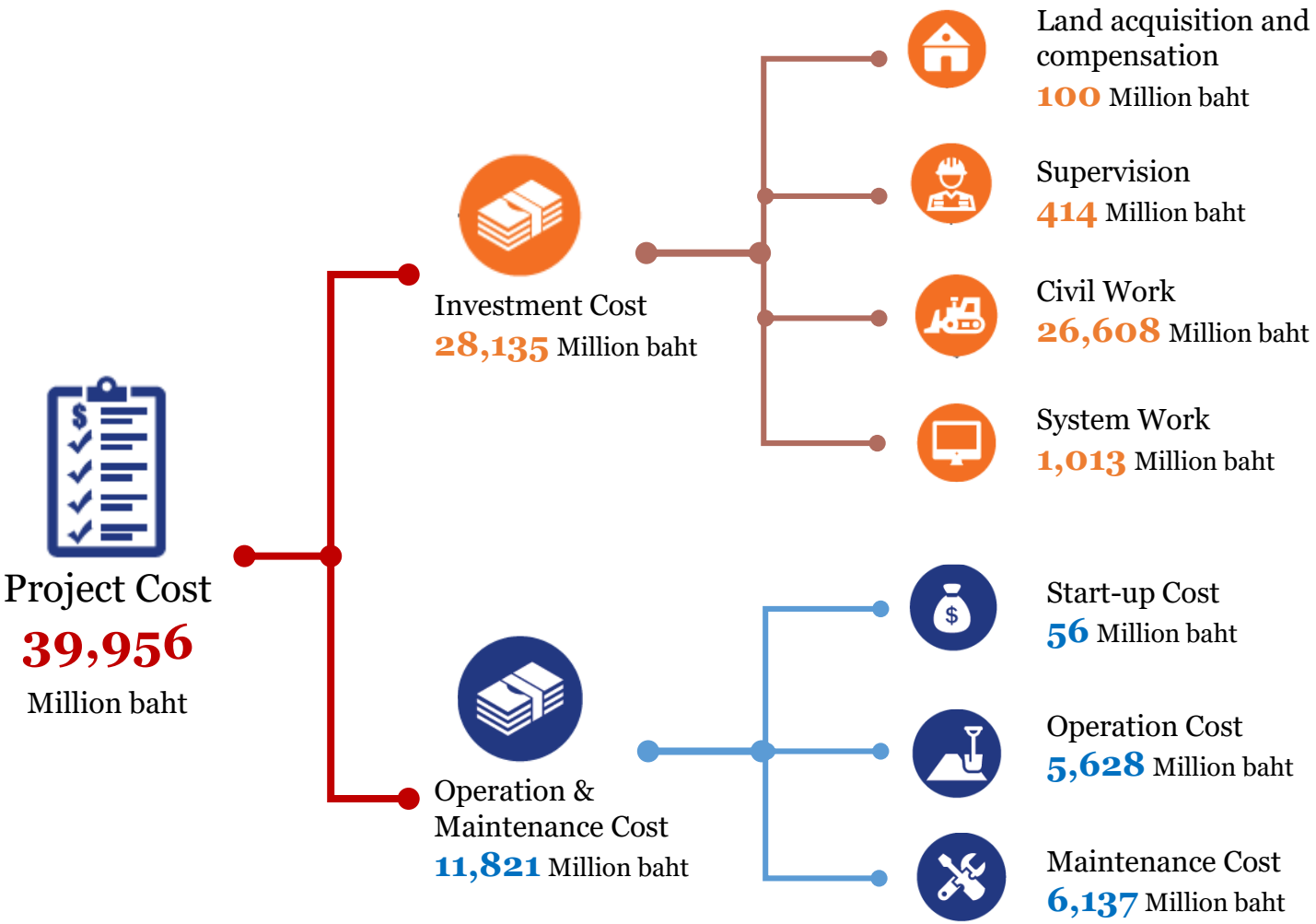
Operation Cost
5,628 Million baht

Maintenance Cost
6,137 Million baht

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




Project Cost

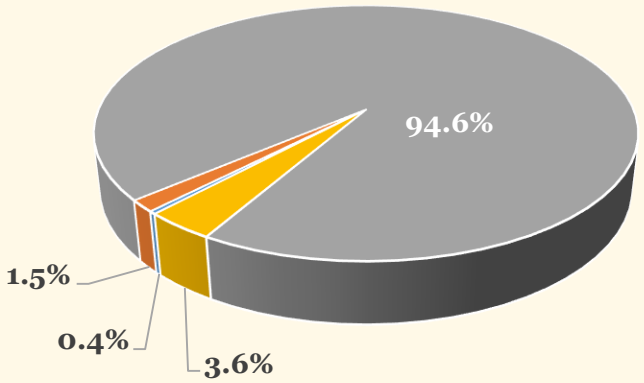


Remark: Figures are of preliminary and indicative only, base on the Public Sector Comparator **(PSC) scheme assumption 30 years**

Project Cost

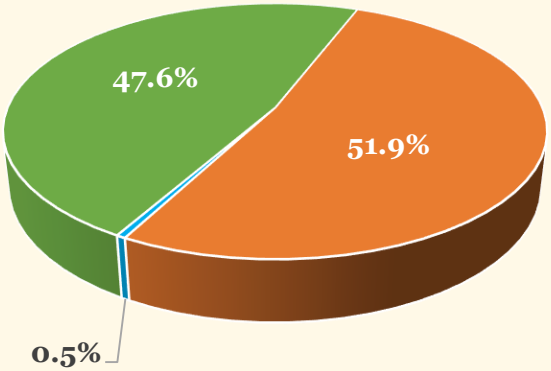
The cost associated with each of the project scope of work.

Phase 1 : Design & Construction (3 years)



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

Phase 2 : Operation & Maintenance (30 years)



- Start-up Cost
- Operation Cost
- Maintenance Cost

Project Development Timeline

Project Development Timeline

2019

PPP Appraisal Report to be completed

2020 - 2021

Project Approval and PPP Selection Process

2022 -2024

Construction

2021

Land Acquisition and Compensation

2025

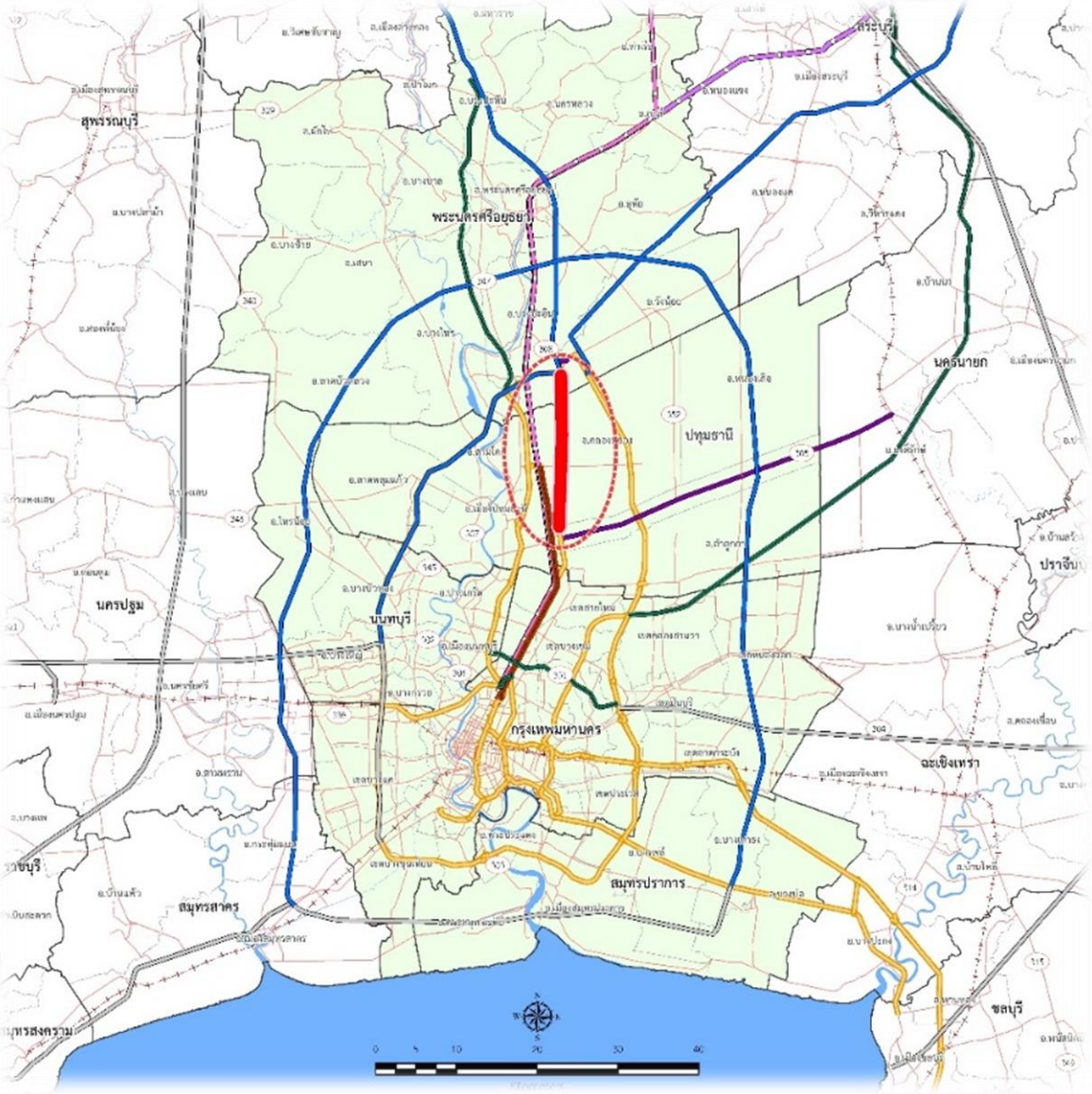
Operation Commencement

Traffic Demand and Toll Revenue Forecast

Assumption

- The base model was prepared to simulate and replicate exciting traffic condition along the corridor was used in the **forecast over 2025 to 2054 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.**

Forecast the Project Traffic

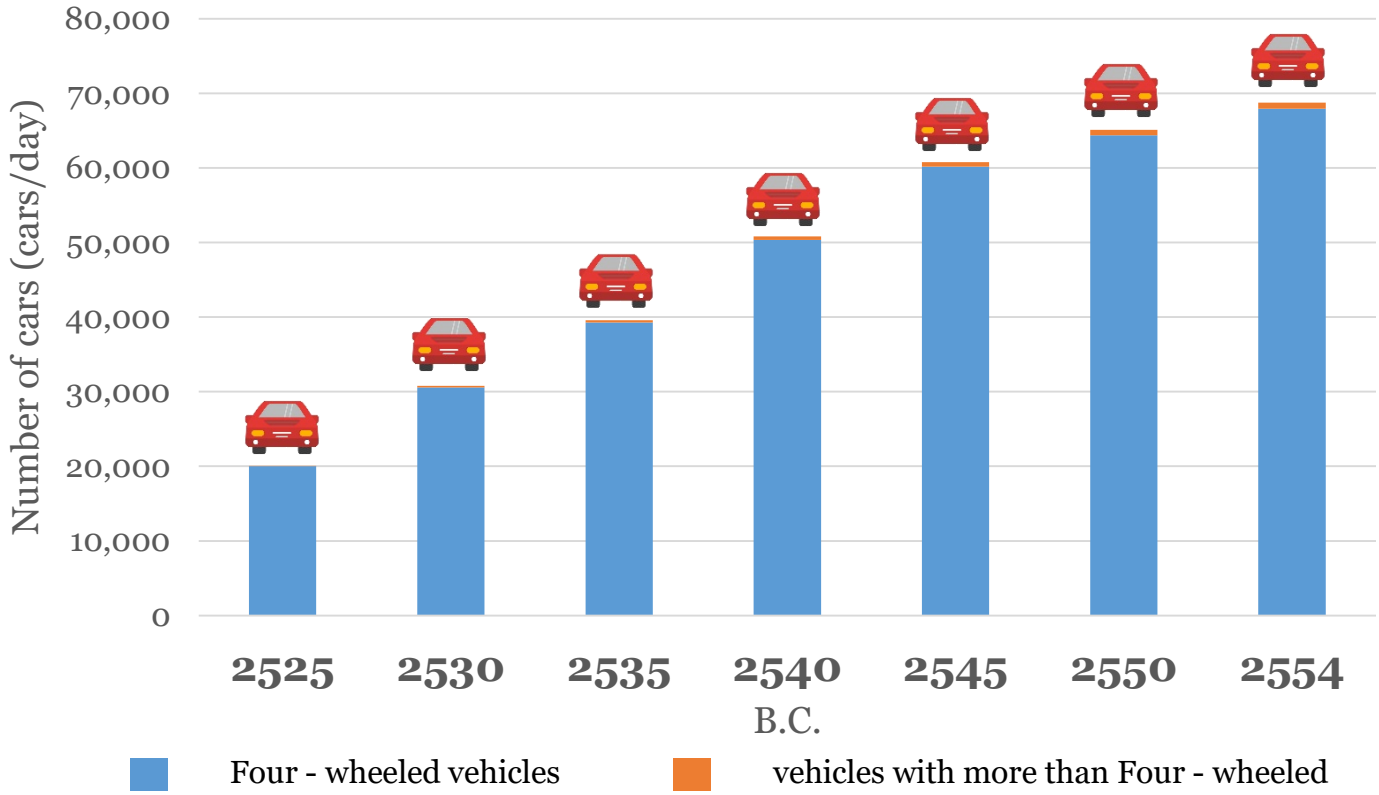


Future network in the study areas

- Motorway network
- Expressway network
- Highway network
- BTS network
- Railway network

Traffic Demand Forecast

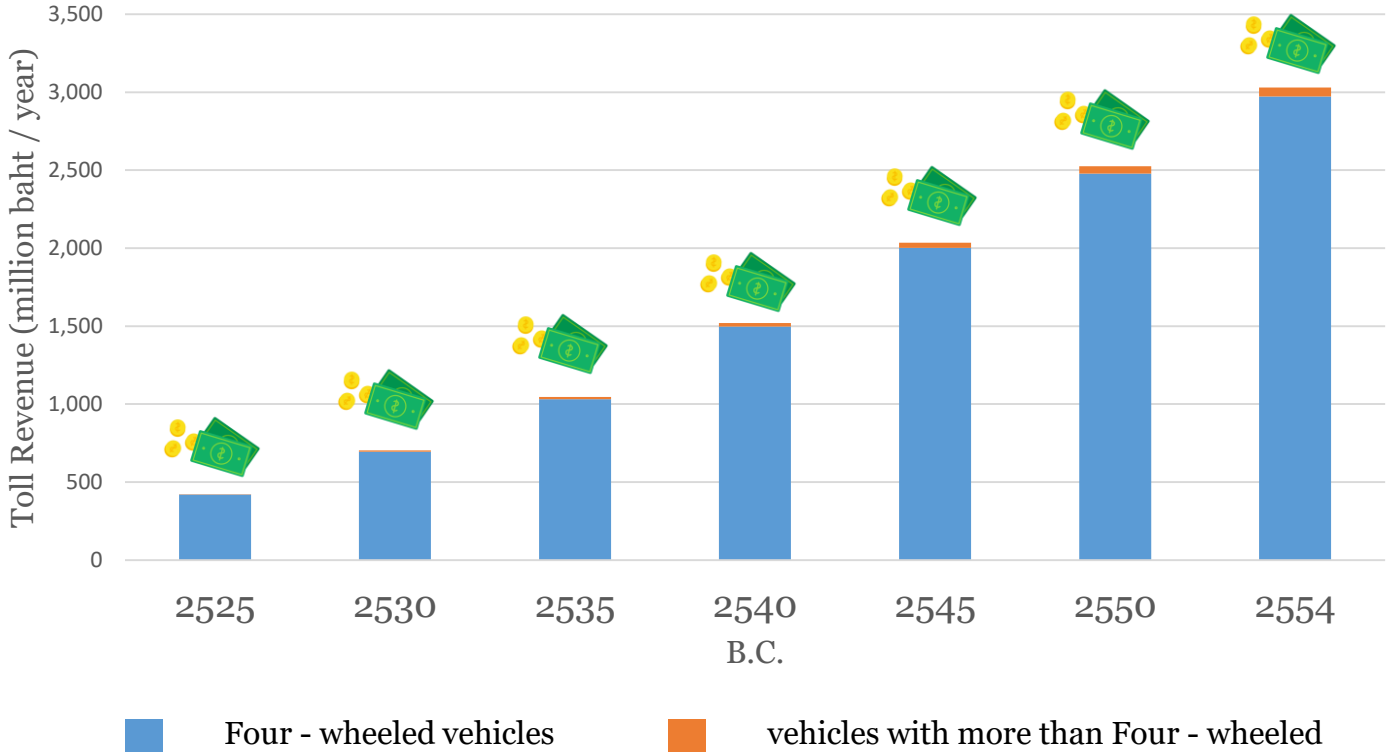
the project is expected to have an average traffic volume of **20,100 vehicles per day** when its operation starts **(in 2025). In 2054**, the traffic is predicted to reach approximately **68,800 vehicles per day**



Remarks: Base on, four - wheeled vehicles 60 Bht./Veh. and
vehicles with more than Four - wheeled 100 Bht./Veh.

Toll Revenue Forecast

the project is expected to have the toll revenue of approximately **423 million baht per year (in 2025). In 2054,** the toll revenue of about **3,031 million baht per year.**

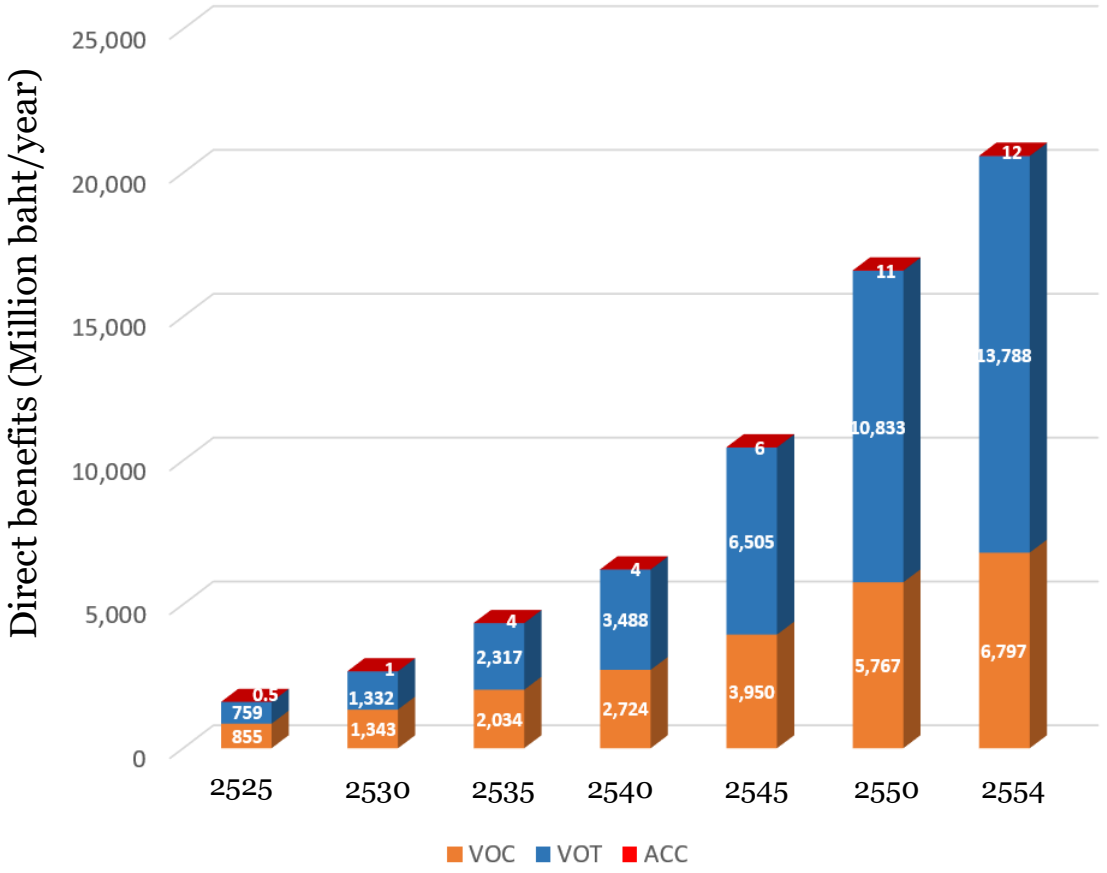


Economic Feasibility analysis

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) **12.75%**
- Benefit Cost Ratio (B/C ratio) **1.1***
- Net Present Value (NPV) **1,677 Million baht***

** Discount Rate 12%*

Market Sounding Seminar

Public Private Partnership for the

Utraphimuk Elevated Tollway Extension Intercity Motorway

Rangsit – Bang Pa-In Section

Thank you