

## **Part 1 Business Operations**

### **1. Business Policy and Overview**

Bangkok Expressway and Metro Public Company Limited (the “Company”) was incorporated from the amalgamation, pursuant to the Public Limited Company Act, between Bangkok Expressway Public Company Limited (“BECL”) and Bangkok Metro Public Company Limited (“BMCL”) on December 30, 2015, and the Company has assumed all assets, rights, duties and responsibilities of both companies by operation of law. As at December 31, 2017, the Company’s registered and paid-up capital amounted to Baht 15,285,000,000, divided into a total of 15,285,000,000 ordinary shares, at the par value of Baht 1 per share.

The Company’s main businesses are the provision of the expressway and metro services, including commercial development relating to the expressway and metro systems, which will lay a foundation for business expansion through future extension of the routes and the service network, both in the expressway and metro systems, thereby enabling the Company to be a leading mass rapid transit and transportation service operator in Thailand and in the region. In addition, the Company may extend its businesses to other fast-growing businesses with good returns, such as, other infrastructure projects, commercial development or real estate development, both at home and abroad, etc.

#### **1.1 Vision, Mission, Goals, Business Strategies and Overview of Business Operations**

##### **Vision**

The Company’s vision is:

“To become a leading, fully-integrated transportation service provider in Thailand and ASEAN.”

##### **Mission**

The Company is committed to:

1. Providing services of the expressway and metro systems with safety, convenience, rapidity, reliability, punctuality and efficiency, in order to improve the quality of people’s life;
2. Improving the quality and efficiency of the modern and full service transportation network in order to alleviate traffic problems, preserve the environment, and improve society and the country;
3. Creating value added and utmost benefit to shareholders based on fairness to all stakeholders.

##### **Goals and Business Strategies**

To achieve the Company’s objectives and mission, the Company has formulated major strategies in its business operations, as follows:

1. To invest in the transportation system projects, expressway and connecting road projects, metro system projects, and related projects under the government policy for public private partnership (PPP) in respect of infrastructure, including related business, such as, various commercial development, taking into consideration the projects which are beneficial to society and the country, with reasonable business yields;
2. To strengthen the businesses by generating revenues for continued growth, and managing costs and expenses efficiently, in order to maintain good financial standing;
3. To build relationships with stakeholders through the corporate social responsibility process and communicate with internal and external personnel about it;
4. To develop personnel ready for provision of quality services of the expressway and metro systems;
5. To build social recognition of the corporate good image.

## **Business Overview of the Company**

The Company is committed to being a leading, fully-integrated transportation service provider, which builds up good journey for a better living. The Company's businesses comprise the provision of the expressway and metro services, including commercial development directly related to the main businesses. The Company's business overview is divided into 4 main businesses, as follows:

### **1.1.1 Expressway Business**

The Company and one of its subsidiaries, namely, Northern Bangkok Expressway Company Limited ("NECL"), have been granted concessions for construction and operation of a total of four expressways, comprising:

#### **1) The Si Rat Expressway**

The Si Rat Expressway (Second Stage Expressway) under the Second Stage Expressway Agreement with the Expressway Authority of Thailand ("EXAT") for a concession period of 30 years from March 1, 1990; and the Si Rat Expressway, Sector D, under the Agreement for the Extension of the Second Stage Expressway System, Sector D, with EXAT for a period of 30 years from April 22, 1997.

The Company and EXAT jointly invested in the expressway system in Bangkok and its vicinity. The Company was responsible for investment in the construction and operation of the Si Rat Expressway, comprising 4 Sectors, namely, Sector A (Rama 9 - Ratchadapisek), Sector B (Phayathai-Bangkhlo), Sector C (Ratchadapisek-Chaeng Watthana) and Sector D (Rama 9-Srinagarindra), covering a total distance of 38.5 kilometers. EXAT invested in the construction and operation of the Chalerm Mahanakorn Expressway (First Stage Expressway), covering a total distance of 27.1 kilometers.

As for toll collection, expressway users shall pay tolls at the booths around the on-ramps of the Expressway. EXAT is responsible for the collection of all tolls and shares such toll revenue with the Company as specified in the Second Stage Expressway Agreement with effect from the Priority Component Opening Date. The toll revenue from the Chalerm Mahanakorn Expressway and the Si Rat Expressway shall be encompassed and shared as per rules of area zoning. This is to say that in the urban network, for the first nine years, the Company and EXAT shall receive the revenue sharing at 60 percent and 40 percent, respectively. For the last nine years, the Company and EXAT shall receive the revenue sharing at 40 percent and 60 percent, respectively. As for the period between the first nine years and the last nine years, the Company and EXAT shall receive the revenue sharing at 50 percent each. For the suburban network, namely, Sector C and Sector D of the Si Rat Expressway, all toll revenue shall belong to the Company throughout the period of the Agreement.

#### **2) The Si Rat-Outer Ring Road Expressway**

The Si Rat - Outer Ring Road Expressway under the Concession Agreement for Investment, Design, Construction, Operation, Service and Maintenance of the Si Rat - Outer Ring Road Expressway Project, with EXAT for a concession period of 30 years from December 15, 2012.

The Company shall have the duty in design and construction, supply and installation of various equipment and systems, including the operation, service and maintenance of the expressway, together with toll collection, whereby the Company shall be responsible for investment and all operating expenses throughout the concession period, and share consideration with or provide benefits to the State to be agreed upon in the Concession Agreement.

The project is an elevated expressway with six traffic lanes, for a distance of 16.7 kilometers, with 10 toll plazas. The route starts from the Outer Ring Road (Khanapisek Road around Mahasawat Water Treatment Plant) heading eastbound along the right of way of the existing Southern railway, crossing the Chao Phraya River around the Rama VII Bridge, ending around Bang Sue Grand Station (Chatuchak), connecting with the Si Rat Expressway around the Bus Terminal (Mo Chit 2), and running down to at-grade level around Kamphaeng Phet 2 Road.

In management of this project, the Company is responsible to collect tolls and shall have the right to receive all toll revenue and other revenues (if any) throughout the concession period, whereby the toll rates and revisions shall be agreed upon in the Agreement. This expressway was opened for service on August 22, 2016.

### 3) The Udon Ratthaya Expressway

The Udon Ratthaya Expressway (Bang Pa-in-Pak Kret Expressway), operated by NECL under the Bang Pa-in-Pak Kret Expressway Agreement with EXAT for a period of 30 years from September 27, 1996.

NECL constructs and operates the Udon Ratthaya Expressway, comprising 2 Stages, namely, Stage 1, Chaeng Watthana - Chiang Rak, and Stage 2, Chiang Rak - Bang Sai, connecting to the Si Rat Expressway around Chaeng Watthana Road, covering a total distance of 32 kilometers. As for the inbound route, expressway users shall pay tolls at the booths around the on-ramps of the expressway while in respect of the outbound route, expressway users shall pay tolls at the off-ramps. EXAT is responsible to collect and deliver all tolls to NECL. All toll revenue in respect of the Udon Ratthaya Expressway shall belong to NECL.

## 1.1.2 Rail Business

The Company has been granted concessions for operation of two mass rapid transit rail system projects from the Mass Rapid Transit Authority of Thailand (“MRTA”), namely:

- 1) The MRT Blue Line Project, comprising the M.R.T. Chaloem Ratchamongkhon Line Project (Hua Lamphong Station - Bang Sue Station), which is the first underground metro project of Thailand, covering a total distance of 20 kilometers, with 18 underground stations, opened for train operation service on July 3, 2004; and the MRT Blue Line Extension Project (Hua Lamphong - Lak Song and Bang Sue - Tha Phra Sections), covering a total distance of 27 kilometers, comprising 5-kilometer underground track and approximately 22-kilometer elevated track, with 20 stations, 4 of which are underground stations and 16 of which are elevated stations, with a connection to the M.R.T. Chaloem Ratchamongkhon Line Project at Bang Sue Station and Hua Lamphong Station, and a connection to the MRT Purple Line Project at Tao Poon Station.

As for the MRT Blue Line Extension Project, the operations during supply and installation of the M&E Equipment for opening for service are divided into 3 phases, namely, Phase 1: Bang Sue Station - Tao Poon Station, was opened for service on August 11, 2017; Phase 2: Hua Lamphong Station - Lak Song Station, by September 2019; and Phase 3: Tao Poon Station - Tha Phra Station, by March 2020.

The Company is entitled to fare box revenue and undertake activities and commercial development, including advertising, leasing space and telecommunications services in the metro stations and in the trains of the MRT Blue Line Project, for a period of 30 years from the date of opening for service of the whole route; and

- 2) The M.R.T. Chalong Ratchadham Line Project or the MRT Purple Line Project, Bang Yai - Rat Burana, Bang Yai - Bang Sue Section (Klong Bang Phai Station - Tao Poon Station), Contract 4: Concession for Supply of M&E Systems and O&M Services, on a PPP Gross Cost basis, whereby MRTA invests in all civil works and the Company invests in the M&E Systems and the rolling stocks, as well as provides the operation and maintenance services in accordance with the specified service standards. MRTA is entitled to all fare box revenue and commercial development revenue from the utilization of the civil infrastructure and the railway systems and MRTA shall make a gradual repayment of the M&E Equipment to the Company on a monthly basis for a period of 10 years, and shall engage the Company for the O&M Services throughout the concession period of 30 years from September 4, 2013.  
The M.R.T. Chalong Ratchadham Line Project is an elevated metro project, for a distance of 23 kilometers, with 16 stations and a connection to the MRT Blue Line Project at Tao Poon Station of the MRT Purple Line Project, which was opened for service on August 6, 2016.

### 1.1.3 Commercial Development Business

The Company and one of its subsidiaries, namely, Bangkok Metro Networks Limited (“BMN”), operate the commercial development business of the MRT Blue Line Project, as follows:

- 1) Procurement and/or production of advertising media of various forms in the trains and metro stations;
- 2) Lease of retail spaces in the MRT Blue Line stations and spaces in the basement level of the Lat Phrao park and ride facility;
- 3) Provision of service and maintenance of telecommunications system equipment inside the metro stations.

In addition, as for the expressways, the Company and NECL allowed private entities and individuals to use spaces for commercial operation for installation of Intelligent Traffic Signs and various advertising boards, including retail spaces around toll plazas, and other business activities, such as, the use of the expressway areas for installation of 3G signal boosters, etc.

### 1.1.4 Investment in Other Companies

The Company invests in the companies operating the public utility businesses, as follows:

- (1) CK Power Public Company Limited (“CKP”) operates its core business by holding shares in other companies (Holding Company) operating the energy business;
- (2) TTW Public Company Limited (“TTW”) operates the business of production and distribution of tap water to the Provincial Waterworks Authority and invests in companies which operate the business of other public utilities; and
- (3) Xayaburi Power Company Limited (“XPCL”) carries out construction and operation of the Xayaburi Hydroelectric Power Project.

## 1.2 Significant Changes and Developments

The Company was incorporated from the amalgamation, under the Public Limited Company Act, between BECL and BMCL on December 30, 2015. It operates the businesses of construction and operation of the expressways and operation of the metro system, including commercial development relating to the expressway and metro systems, whereby such businesses were transferred from BECL and BMCL by operation of law.

### Significant Changes and Developments prior to the Amalgamation

- BECL registered its incorporation on December 23, 1987 and was listed on the Stock Exchange of Thailand (“Stock Exchange”) since August 31, 1995. Prior to the amalgamation, BECL’s registered and paid-up capital amounted to Baht 7,700,000,000, divided into 770,000,000 ordinary shares, at the par value of Baht 10 per share.
- On December 22, 1988, BECL entered into the Second Stage Expressway Agreement with the Expressway Authority of Thailand (EXAT) for construction and operation of the Si Rat Expressway for a concession period of 30 years from the construction commencement date, namely, March 1, 1990.
- On September 25, 1996, BECL established Northern Bangkok Expressway Company Limited (NECL), whereby NECL entered into the agreement with EXAT for construction and operation of the Udon Rattaya Expressway (Bang Pa-in - Pak Kret Expressway) for a period of 30 years from the execution date of the agreement, namely, September 27, 1996.
- On April 17, 1997, BECL entered into the Agreement for the Extension of the Second Stage Expressway System, Sector D, for construction and operation of the Si Rat Expressway, Sector D, with EXAT for a period of 30 years from the construction commencement date, namely, April 22, 1997.
- On September 14, 2012, BECL entered into the Concession Agreement for Investment, Design, Construction, Operation, Service and Maintenance of the Si Rat - Outer Ring Road Expressway Project with EXAT for a concession period of 30 years from the date of EXAT’s Notice to Proceed, namely, December 15, 2012.

- BMCL registered its incorporation on February 18, 1998, and was listed on the Stock Exchange since September 21, 2006. Prior to the amalgamation, BMCL's registered and paid-up capital amounted to Baht 7,585,000,000, divided into 20,500,000,000 ordinary shares, at the par value of Baht 0.37 per share.
- BMCL entered into the Agreement for the M.R.T. Chaloe M Ratchamongkhon Line Project with MRTA on an AOT (Acquire, Operate and Transfer), PPP Net Cost basis, whereby BMCL was entitled to fare box revenue and undertaking activities and commercial development, including advertising, leasing space and telecommunications services in the metro stations and in the trains for a period of 25 years, from July 2, 2004 to July 1, 2029. Under such Agreement, BMCL was obliged to make payment of remuneration from fares and commercial development to MRTA at the rates as mentioned in the Agreement.
- On February 25, 2009, BMCL established Bangkok Metro Networks Limited (BMN) for operating the commercial development business, by the amalgamation of three companies, namely, BMCL Network Limited, Metro Mall Development Limited, and Triads Networks Co., Ltd. BMN accepted the transfer of all three companies' businesses, as well as all rights, duties, assets, liabilities and staff.
- On September 4, 2013, BMCL entered into the Agreement for the MRT Purple Line Project with MRTA for a period of 30 years on an ATO (Acquire, Transfer and Operate), PPP Gross Cost basis, namely, MRTA invested in all civil works and BMCL invested in the M&E Systems and the rolling stocks, provided that MRTA shall make a gradual repayment of the M&E Equipment to BMCL, and BMCL shall provide the O&M services in accordance with the service provision standards as specified in the Agreement. In this regard, MRTA is entitled to all fare box revenue and commercial development revenue from the utilization of the civil infrastructure and the railway systems and MRTA shall make payment to BMCL in the form of service fee for the O&M Services from the date of BMCL's operation service until the end of the Concession Agreement.

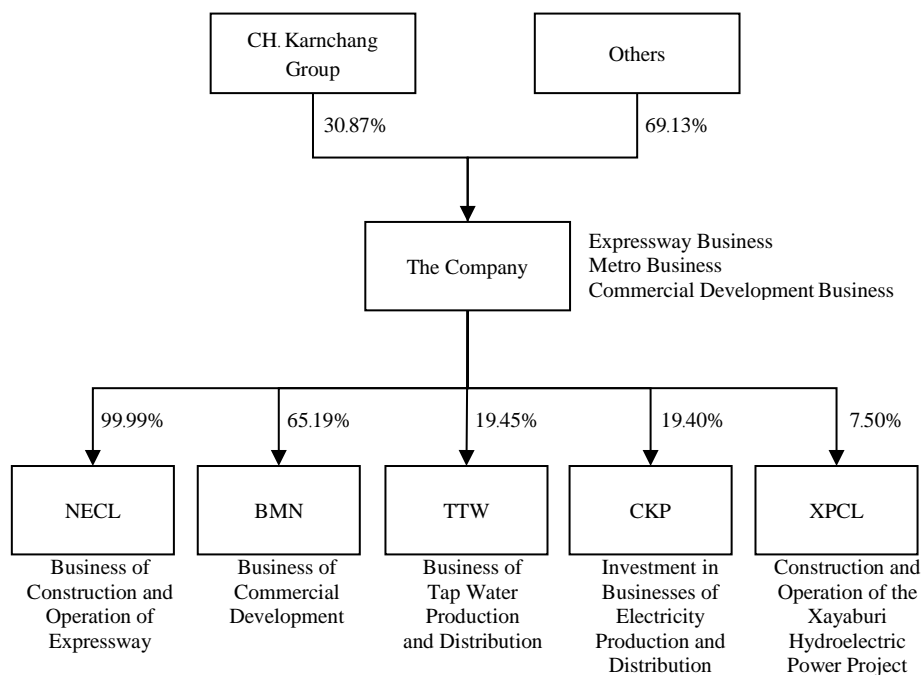
#### Significant Changes and Developments of the Company in 2017

February 27, 2017	The Company was granted the Issuer of the Year 2016 Award by the Thai Bond Market Association as the outstanding private-sector debenture issuer in the bond market fund raising in 2016, which met the demands of the Company and investors in an appropriate time, with operations pursuant to the good corporate governance principles, ensuring confidence of both debenture holders and shareholders.
March 31, 2017	<p>The Company entered into the Concession Agreement for the MRT Blue Line Project with MRTA, for a period of 33 years, on a PPP Net Cost basis, divided into 2 phases, as follows:</p> <p>Phase 1: Supply, installation, and testing of the M&amp;E Equipment for the MRT Blue Line Extension Project, for a period of 3 years;</p> <p>Phase 2: Provision of train operation service for the M.R.T. Chaloe M Ratchamongkhon Line Project and the MRT Blue Line Extension Project as Through Operation, for a period of 30 years.</p> <p>The MRT Blue Line Project comprises the M.R.T. Chaloe M Ratchamongkhon Line Project (Hua Lamphong Station - Bang Sue Station), currently in service; and the MRT Blue Line Extension Project (Hua Lamphong Station - Lak Song Station and Bang Sue Station - Tha Phra Station), for a total distance of 47 kilometers, with 38 stations, whereby the Company is entitled to fare box revenue and to commercial development throughout the concession period.</p>
June 21, 2017	The Company received a credit rating at "A", with "Stable" outlook from TRIS Rating Co., Ltd.

July 19, 2017	The Company executed the Amendment (No. 2) to the Concession Agreement for the Si Rat - Outer Ring Road Expressway Project with EXAT for construction of a connection between the Si Rat - Outer Ring Road Expressway and the northern part of the Si Rat Expressway (heading to Chaeng Watthana), with the value of Baht 275,000,000, for a construction period of 18 months, commencing in August 2017.
August 11, 2017	The Company opened the MRT Blue Line Extension Project for service, Tao Poon Station - Bang Sue Station, under the concept of “Come Together to Integrate Happiness for People”, linking the train operation among the M.R.T. Chaloem Ratchamongkhon Line (the existing MRT Blue Line), the MRT Blue Line Extension, and the M.R.T. Chalong Ratchadham Line (the MRT Purple Line) as a through operation, in order to ensure more rapid, convenient and safe commute between Bangkok and its surrounding provinces, whereby this linked route covers a distance of 1.2 kilometers.
September 7, 2017	The Company issued and offered the debentures No. 1/2017, with a maturity of 5-7 years, in the amount of Baht 5,000 Million, at the fixed interest rates of 2.65 percent to 3.10 percent per annum, for use in project investment and for use as working capital.
October 11, 2017	The Company was announced by the Stock Exchange to be in a group of the listed companies that sustainability operate their businesses by taking into account with Environmental, Social and Governance (ESG) or Thailand Sustainability Investment of the group of listed companies on the Stock Exchange with market capitalization of more than Baht 100,000 Million.
November 28, 2017	The Company was granted the Best Deal of the Year Award for 2017 by the Stock Exchange and Money & Banking Magazine in the “SET Award 2017” event, as a result of the amalgamation between BECL and BMCL.

### 1.3 Shareholding Structure of Company Group

**Chart of Shareholding Structure and the Company’s Shareholding Percentage as at December 31, 2017**



**Remark :** CH. Karnchang Group comprises 1) CH. Karnchang Public Company Limited, 2) CH. Karnchang-Tokyu Construction Company Limited



### 1.3.1 Investment in Subsidiaries and Other Companies

The Company has a policy on investment in businesses of infrastructure or businesses supporting the Company's operations and creating opportunity and long-term yields to the Company. The Company's investment as at December 31, 2017 was as follows:

#### (1) Names of Companies invested by the Company and its Shareholding Percentage

Unit: Million Baht

Names of Companies	Nature of Business	Registered Capital	Paid-up Capital	Shareholding Percentage	Investment Value at Cost
<b>Subsidiaries</b>					
Northern Bangkok Expressway Company Limited	Construction and operation of the Udon Ratthaya Expressway	6,000	5,250	99.99%	2,604
Bangkok Metro Networks Limited	Operation of the commercial development business	254	254	65.19%	166
<b>Other Companies</b>					
CK Power Public Company Limited	Investment by holding shares in other companies (Holding Company) operating a business of electricity production and distribution	9,240	7,370	19.40%	3,223
TTW Public Company Limited	Tap water production and distribution	3,990	3,990	19.45%	4,277
Xayaburi Power Company Limited	Construction and operation of the Xayaburi Hydroelectric Power Project	26,861	22,065	7.50%	1,238

#### (2) Details of Companies Invested by the Company

##### Expressway Business

#### 1. Northern Bangkok Expressway Company Limited ("NECL")

NECL's registered capital amounts to Baht 6,000 Million, divided into 294 million ordinary shares and 306 million preferred shares, at the par value of Baht 10 per share, with the paid-up capital of Baht 5,250 Million. As at December 31, 2017, the Company's shareholding was 99.99 percent of its registered capital. NECL entered into the Agreement with EXAT for construction and operation of the Udon Ratthaya Expressway for a period of 30 years from September 27, 1996. The Udon Ratthaya Expressway is northbound and continues from the Si Rat Expressway around Chaeng Watthana Road and passes Bang Phun, Chiang Rak and ends at Bang Sai.

## Commercial Development Business

### 1. Bangkok Metro Networks Limited (“BMN”)

BMN has a total registered capital of Baht 254 Million, divided into 25.4 million ordinary shares, at the par value of Baht 10 per share, with the paid-up capital of Baht 254 Million. As at December 31, 2017, the Company’s shareholding in BMN was 65.19 percent of its registered capital.

BMN was established by the amalgamation of three companies, namely, BMCL Network Limited, Metro Mall Development Limited, and Triads Networks Co., Ltd. BMN accepted the transfer of all three companies’ businesses, as well as all rights, duties, assets, liabilities and staff.

BMN currently operates the business of procurement and production of advertising media of various forms in the metro stations and trains, lease of retail spaces in stations of the M.R.T. Chaloem Ratchamongkhon Line Project and at the basement level of the park and ride facility at the Lat Phrao Station, as well as providing service and maintenance of telecommunications system equipment in the stations and tunnels.

## Other Infrastructure Businesses

### 1. CK Power Public Company Limited (“CKP”)

CKP is a listed company on the Stock Exchange, operating its main business by investing in other companies (Holding Company) which operate the business of electricity production and distribution. CKP has a total registered capital of Baht 9,240 Million, divided into 9,240 million ordinary shares, at the par value of Baht 1 per share, with the paid-up capital of Baht 7,370 Million. As at December 31, 2017, the Company’s shareholding was 19.40 percent of its registered capital. CKP invests in companies operating the business of electricity production and distribution from three types of energy, namely, hydropower business, by investing in SouthEast Asia Energy Limited and Xayaburi Power Company Limited; thermal power business (cogeneration system), by investing in Bangpa-in Cogeneration Limited; and solar power business, by investing in Bangkhengchai Company Limited, Nakhon Ratchasima Solar Limited, and Chiangrai Solar Limited.

### 2. TTW Public Company Limited (“TTW”)

TTW is a listed company on the Stock Exchange, having a total registered capital of Baht 3,990 Million, divided into 3,990 million ordinary shares, at the par value of Baht 1 per share, with the paid-up capital of Baht 3,990 Million. As at December 31, 2017, the Company’s shareholding was 19.45 percent of its registered capital. TTW operates the business of production and distribution of tap water to the Provincial Waterworks Authority in the areas of Nakhon Pathom Province and Samut Sakhon Province, under the Water Purchase and Sale Agreement with the Provincial Waterworks Authority for a period of 30 years from July 21, 2004. In addition, TTW invests in Pathum Thani Water Co., Ltd., representing 98 percent of its registered capital, which operates the business of tap water production and distribution in the areas of Pathum Thani and Rangsit, under the Water Purchase and Sale Agreement with the Provincial Waterworks Authority for a period of 25 years from October 15, 1998, and also invests in Thai Water Operations Company Limited, which operates the business of management and operation of tap water production and distribution systems and water treatment system, as well as invests in the energy business by holding shares in CKP representing 25 percent of its registered capital.

### 3. Xayaburi Power Company Limited (“XPCL”)

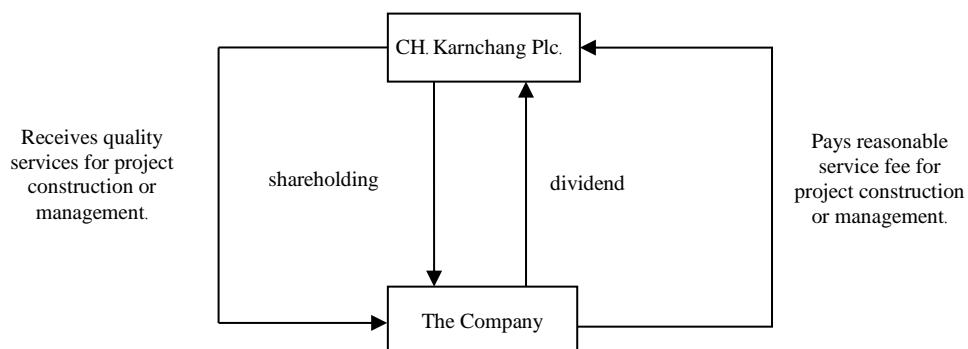
XPCL’s total registered capital is Baht 26,861 Million (at the exchange rate of USD 1 to Baht 34), with the paid-up capital of Baht 22,065 Million. As at December 31, 2017, the Company’s shareholding was 7.50 percent of its registered capital. XPCL’s main business is to operate the Xayaburi Hydroelectric Power Project, located on the Mekong River. The Xayaburi Hydroelectric Power Project is a run-of-river hydroelectric project, without water diversion from the Mekong River and without water impounding like other reservoir dams.



### 1.3.2 Relationship with Business Alliance of Major Shareholder

CH. Karnchang Plc. is the Company's major shareholder. As at December 31, 2017, CH. Karnchang Plc. was holding 4,582,121,829 shares in the Company, representing 29.98 percent of the Company's paid-up capital. From the past until the present, the Company engaged CH. Karnchang Plc. for construction and operation of various projects, as CH. Karnchang Plc. is a large construction company in Thailand, with potential, knowledge and expertise, and is familiar with the civil infrastructure of the expressway and metro projects, as well as M&E Equipment. In addition, CH. Karnchang Plc. has experience in the operation on a Lump Sum Turnkey basis, which enables it to deliver quality works timely, and is also the Company's strategic investment partner, and as a result, CH. Karnchang Plc. has responsibility and commitment to operating the projects with success. Therefore, in the future, it is possible that the Company will engage CH. Karnchang Plc. for project construction or management. However, in the execution of transactions with CH. Karnchang Plc., which may have a conflict of interests, the Company will comply with its policy on execution of connected transactions per details as disclosed in Item 12. Connected Transactions.

#### Chart of Relationship with Business Alliance of Major Shareholder



## 2. Nature of Business Operations

The Company and its subsidiaries have operated the businesses as concessionaires awarded by the government sector, as follows: 1) concessionaires for the expressway construction and operation, namely, the Si Rat Expressway, the Si Rat - Outer Ring Road Expressway and the Udon Rathaya Expressway; 2) concessionaires for operation of the MRT Blue Line Project and the MRT Purple Line Project. Other than serving as the concessionaire, the Company has also operated the commercial development business pursuant to the relevant Concession Agreements. Currently, the revenue structure of the Company and its subsidiaries is set forth below.

(Unit : Million Baht)

	Operated by	Shareholding Percentage of the Company	Consolidated Financial Information					
			For Year Ended December 31, 2017		For Year Ended December 31, 2016		For Year Ended December 31, 2015 <sup>(1)</sup>	
Total revenue structure			Million Baht	%	Million Baht	%	Million Baht	%
Revenue from expressway business			9,957	64.7%	9,301	70.3%	8,815	67.3%
Toll revenue	Company		8,573	55.7%	7,978	60.3%	7,606	58.0%
Toll revenue	Subsidiary (NECL)	99.99 <sup>(2)</sup>	1,384	9.0%	1,323	10.0%	1,209	9.3%
Revenue from rail business			4,521	29.3%	3,230	24.4%	2,374	18.1%
Fare box revenue and metro operation service charges	Company		4,521	29.3%	3,230	24.4%	2,374	18.1%
Commercial development revenue			675	4.4%	573	4.3%	549	4.2%
Commercial development revenue	Company		75	0.5%	78	0.6%	81	0.6%
Commercial development revenue	Subsidiary (BMN)	65.19	600	3.9%	495	3.7%	468	3.6%
Gain on investments <sup>(3)</sup>			42	0.3%	31	0.2%	1,298	9.9%
Other income <sup>(4)</sup>			198	1.3%	98	0.8%	69	0.5%
<b>Total revenues</b>			<b>15,393</b>	<b>100%</b>	<b>13,233</b>	<b>100%</b>	<b>13,105</b>	<b>100%</b>

Remarks: (1) Pro forma consolidated financial information.

(2) The Company (formerly BECL) acquired additional shares in NECL in November 2015, as a result, the Company's shareholding in NECL increased from 53.33 percent to 99.99 percent of its registered capital.

(3) Gain on investments includes gain on sales of investment in BMCL, TTW and CKP.

(4) Other income comprises interest income, gain on fair value adjustment of investment, and flood compensation.

## **2.1 Expressway Business**

### **2.1.1 Nature of Services**

The Company and one of its subsidiaries, i.e., NECL, construct and operate the expressways, namely, the Si Rat Expressway, the Si Rat - Outer Ring Road Expressway, and the Udon Ratthaya Expressway, as per the following details:

#### **1) The Si Rat Expressway**

The Si Rat Expressway is the first large-scale construction project in Thailand on the basis of public private partnership to help alleviate the traffic congestion problems in Bangkok and its vicinity. This project is implemented on a BTO (Build Transfer Operate) basis, namely, the Company (formerly BECL) invested in the design, construction and operation of the Si Rat Expressway, comprising 4 Sectors, namely, Sector A (Rama 9-Ratchadapisek), Sector B (Phayathai-Bangkhlo), Sector C (Ratchadapisek-Chaeng Watthana), and Sector D (Rama 9-Srinagarindra), covering a total distance of 38.5 kilometers. In this regard, the title to various permanent constructions pertaining to or useful for the Si Rat Expressway shall be vested in EXAT. EXAT invested in the construction and operation of the Chalerms Mahanakorn Expressway (First Stage Expressway), covering a total distance of 27.1 kilometers. The Company has the right to receive toll revenue sharing in respect of the Chalerms Mahanakorn Expressway and the Si Rat Expressway in such proportions as specified in the Second Stage Expressway Agreement for the concession period of 30 years from March 1, 1990, and the Agreement for Extension of the Second Stage Expressway (Sector D) for the concession period of 30 years from April 22, 1997.

#### **2) The Si Rat - Outer Ring Road Expressway Project**

The Company has the duties to carry out design and construction, supply and installation of various equipment and systems, together with operation and maintenance of the expressway, including toll collection, in consideration of the right to receive toll revenue and other revenues (if any). This expressway starts from Kanjanapisek Road and connects to the Si Rat Expressway at the North of the Mo Chit 2 Bus Terminal, for a total distance of 16.7 kilometers. In this regard, the Company is responsible for investment and all operating expenses, and share returns with or provides benefits to EXAT as specified in the Agreement, for the concession period of 30 years from December 15, 2012. The project was opened for service on August 22, 2016.

On June 27, 2017, the Council of Ministers' Meeting resolved to approve the construction of a connection between the Si Rat - Outer Ring Road Expressway and the Si Rat Expressway in the north (heading to Chaeng Watthana) to solve the problem of the people's travelling from the Si Rat Expressway - Outer Ring Road Expressway to the north side of the Si Rat Expressway. In this regard, the Company signed with the EXAT on July 19, 2017 to effect the construction of such connection, for the construction period of 18 months. The route is an elevated connection with 1-2 lanes, starting at the off-ramp from the Si Rat Expressway - Outer Ring Road Expressway on the inbound side in the area of Bang Sue at EMU Depot, turning left northwards to connect with the Si Rat Expressway on the outbound side heading to Chaeng Watthana, covering a distance of approximately 360 meters. The Company expected that it would be completed by 2018.

#### **3) The Udon Ratthaya Expressway**

The Company holds shares in NECL, which engages in the business of construction and operation of the Udon Ratthaya Expressway, connecting to the Si Rat Expressway at Chaeng Watthana Road and ending at Amphoe Bang Pa-in, Phra Nakhon Si Ayutthaya Province, covering a total distance of approximately 32 kilometers. This project is implemented on a BTO (Build Transfer Operate) basis like the Si Rat Expressway, namely, NECL invested in the design, construction, and operation of the Udon Ratthaya Expressway, whereby the title to various permanent constructions pertaining to or useful for the expressway shall be vested in EXAT, and EXAT is responsible to collect and deliver all tolls to NECL as specified in the Agreement, for the concession period of 30 years from September 27, 1996.

The details of the expressway network connections are as follows:

Expressway Systems	Length (kilometers)	Constructed and Operated by
1. Chaierm Mahanakorn Expressway (First Stage Expressway) (Bang Na - Din Daeng - Dao Khanong)	27.1	EXAT
2. Si Rat Expressway (Second Stage Expressway) 2.1 Urban Network (Prachachuen - Phayathai - Bangkhlo - Asoke) 2.2 Suburban Network (Prachachuen - Chaeng Watthana and Asoke - Srinagarindra)	38.5	Company
3. Udon Rattaya Expressway (Bang Pa-in - Pak Kret)	32.0	NECL
4. Uttaraphimuk Elevated Way (Don Muang Tollway)	28.0	Don Muang Tollway Public Company Limited
5. Chalong Rat Expressway including its Extension (Ramindra - At Narong and Ramindra - Outer Ring Road)	42.4	EXAT
6. Burapha Withi Expressway (Bang Na - Chonburi)	56.7	EXAT
7. Kanjanapisek Expressway (Bang Pli - Suksawad) and Highway No. 37 (Suksawad - Bang Khun Thien Section) including a connecting road to the Industrial Ring Road	42.3	EXAT
8. Si Rat - Outer Ring Road Expressway	16.7	Company
8.1 Connection of the Si Rat - Outer Ring Road Expressway with the Si Rat Expressway in the north (heading to Chaeng Watthana)	0.36	Company
<b>Total Length</b>	<b>284.06</b>	

### 2.1.2 Toll Revenue Sharing

Effective from March 1, 2011, the Company and EXAT have received the toll revenue sharing in respect of the urban network at 40 percent and 60 percent, respectively, while the Company has received all toll revenues for the suburban network, in accordance with the terms of the Agreements.

Expressway	Network	Length (km.)	Opening Date	Revenue	Revenue Sharing Company : EXAT
<b>Chalerm Mahanakorn</b>					
Din Daeng - Port	Urban	8.9	January 4, 1981	Company and EXAT	- 60:40 for the first nine years
Bang Na - Port	Urban	7.9	January 17, 1983		- 50:50 for the period between the first nine years and the last nine years
Port - Dao Khanong	Urban	10.3	August 8, 1987		- 40:60 for the last nine years
<b>Si Rat</b>					
Sector A: Rama 9 - Ratchadapisek	Urban	12.4	September 2, 1993	Company and EXAT	- 60:40 for the first nine years
Sector B: Phayathai - Bangkhlo	Urban	9.4	October 6, 1996		- 50:50 for the period between for the first nine years and the last nine years
					- 40:60 for the last nine years
Sector C: Ratchadapisek - Chaeng Watthana	Suburban	8.0	September 2, 1993 Section 1	Company	- 100:0
Sector D: Rama 9 - Srinagarindra	Suburban	8.7	December 2, 1998		
			Section 2 March 1, 2000		
<b>Si Rat - Outer Ring Road</b>	Suburban	16.7	August 22, 2016	Company	- 100:0
<b>Udon Ratthaya</b>					
Chaeng Watthana - Chiang Rak	Suburban	22	December 2, 1998	Subsidiary (NECL)	- 100:0
Chiang Rak - Bang Sai	Suburban	10	November 1, 1999		

### 2.1.3 Toll Rates

Expressway/Toll Plaza	Toll Rates (Baht/Trip)		
	4 wheels	6-10 wheels	More than 10 wheels
<b>Chalerm Mahanakorn Expressway (First Stage Expressway)</b>	50	75	110
Except: At Narong 1 Toll Plaza (to Bang Na)	40*	65*	100*
<b>Si Rat Expressway (Second Stage Expressway)</b>	50	75	110
Except: Srinagarindra / Ramkhamhaeng Toll Plazas Rama 9 / Asoke 3 Toll Plazas Rama 9-1 Toll Plaza (Si Rat)	25	55	75
Prachachuen Toll Plaza (inbound)	60	90	140
Prachachuen Toll Plaza (outbound)	10	15	30
Prachachuen 1 Toll Plaza (from Prachachuen Road) Prachachuen 2 Toll Plaza (to Prachachuen Road) Ngam Wong Wan 1 Toll Plaza (outbound) Ngam Wong Wan 2 Toll Plaza (inbound)	15	20	35
<b>Si Rat - Outer Ring Road Expressway</b>	50	80	115
<b>Udon Ratthaya Expressway</b>	45	100	150
Except: Muang Thong Thani Toll Plaza	35**	90**	140**
Bang Pa-in Toll Plaza	55	120	180

**Remarks :** \* This is the rate after Baht 10 discount for all types of vehicles.

\*\* This rate is the rate after Baht 10 discount for all types of vehicles.

The revision of the toll rates of the Chalerm Mahanakorn Expressway and the Si Rat Expressway is in accordance with the Second Stage Expressway Agreement, which shall be made every five years, and the calculation and revision shall be based on the most recent increase of the Consumer Price Index of Bangkok as issued by the Ministry of Commerce. Each increase shall be rounded up to the nearest whole multiple of Baht 5, provided that such revision shall not increase by more than Baht 10 during the first 15 years of the Contract Period. If there is an unusually high rate of inflation or an occurrence of Force Majeure or Exceptional Event, the Company and EXAT shall consider the toll revision as appropriate. The most recent toll revision was made on September 1, 2013 and the next toll revision is scheduled to be made on September 1, 2018.

The revision of the toll rates of the Si Rat - Outer Ring Road Expressway is in accordance with the Concession Agreement for Investment, Design, Construction, Management, Operation and Maintenance of the Si Rat - Outer Ring Road Expressway Project, which shall be made every five years from the date of service operation of the project for five years, at the rates of Baht 15, Baht 25 and Baht 35 for four-wheeled vehicles, six-wheeled to ten-wheeled vehicles; and more than ten-wheeled vehicles, respectively, as specified therein.

With respect to the Udon Ratthaya Expressway, the revision of toll rates every five years shall be based on the most recent increase of the Consumer Price Index of Bangkok as issued by the Ministry of Commerce. Each increase shall be rounded up to the nearest whole multiple of Baht 5, provided that such revision shall not increase by more than Baht 15 during the first 15 years of the Contract Period. The first toll revision was made on November 1, 2003 and the latest toll revision was made on November 1, 2013. The next toll revision is scheduled to be made on November 1, 2018.

Despite EXAT's issuance of the Notifications of the Ministry of Transport for toll revisions with approval of the Deputy Minister of Transport in charge, namely, the toll rates for the Chalerm Mahanakorn Expressway and the Si Rat Expressway were revised on September 1, 2013 and the toll rates for the Udon Ratthaya Expressway were revised on November 1, 2013, the Company and one of its subsidiaries (NECL) were of the view that the revised toll rates under the said Notifications did not comply with the provisions of the relevant Agreements.



## 2.1.4 Marketing and Competition

### 2.1.4.1 Customer Characteristics and Target Customers of the Expressway Business

Target customers of the Chalerm Mahanakorn Expressway, the Si Rat Expressway, the Si Rat - Outer Ring Road Expressway and the Udon Rattaya Expressway refer to those motorists who desire a convenient and rapid transportation or who desire to shorten the traveling distance to their destinations as well as to avoid the traffic congestion along the normal roads in Bangkok and its vicinity. The customers by the types of vehicles using the expressways may be divided into four-wheeled vehicles; six-wheeled to ten-wheeled vehicles; and more than ten-wheeled vehicles, which in 2017, accounted for 97.79 percent, 1.78 percent and 0.25 percent, respectively. The traffic volume during January 1 to December 31, 2017 using the expressways may be described by areas as follows:

Expressway Systems	Average Traffic Volume (trips/day)	%
1. Chalerm Mahanakorn Expressway (First Stage Expressway) (Bang Na - Din Daeng - Dao Khanong)	373,218	30.74
2. Si Rat Expressway (Second Stage Expressway)		
2.1 Urban Network (Prachachuen - Phayathai - Bangkhlo - Asoke)	325,873	26.84
2.2 Suburban Network (Prachachuen - Chaeng Watthana and Asoke - Srinagarindra)	378,842	31.21
3. Udon Rattaya Expressway (Bang Pa-in - Pak Kret)	86,154	7.10
4. Si Rat - Outer Ring Road Expressway (opened for service on August 22, 2016)	49,946	4.11
<b>Total Traffic Volume</b>	<b>1,214,033</b>	<b>100</b>

Given the fact that the provision of the expressway services is considered a form of public service for motorists requiring convenient, rapid and safe traveling, as target customers of the expressway systems, customers are broad depending on their destinations, residences and workplaces. In this respect, the revenue of the expressway systems will not depend on any particular group of customers.

### 2.1.4.2 Marketing Policy and Strategies

#### Marketing Strategies

The marketing highlight is that the Si Rat Expressway is designed to respond to the transportation needs through the expressway network which connects to and covers major areas in Bangkok, whether from the Chalerm Mahanakorn Expressway and the Si Rat Expressway, as well as the Chalong Rat Expressway (Ramindra - At Narong) which cover the areas from the North to the South and from the West to the East of Bangkok. Motorists may use the expressway to connect to the Burapha Withi Expressway (Bang Na - Chonburi), and the Chalerm Mahanakorn Expressway and the Chalong Rat Expressway, thereby rendering the service of the expressway systems to become more complete for users to reach their destinations more conveniently and rapidly than using at-grade roads.

On August 22, 2016, the Company opened for service the Si Rat - Outer Ring Road Expressway, a route connecting between Bangkok - Thonburi sides, starting at the off-ramp from the Second Stage Expressway at Mo Chit (Chatuchak) and across the Chao Phraya River at the Rama VII Bridge, and continuing along in parallel to the Southern railway via the districts of Bang Phlat, Bang Bamru, Taling Chan, connecting to the Boromarajonani Elevated Road passing Ratchaphruek Road, and ending at the Outer Ring Road (the West). As such, such route enables motorists to conveniently and rapidly commute from and to Bangkok-Thonburi sides.

The marketing disadvantage is the physical limitation which prevents the release of traffic around the expressway exits during rush hour, which depends on the traffic on at-grade roads, representing an uncertain factor beyond the Company's control. However, the Company continuously coordinates with traffic police in police stations of such areas, including linking video signal from CCTVs on the expressways to police stations of such areas, to provide assistance in releasing and facilitating traffic flow in the expressway systems by improving various on-ramps and off-ramps for motorists to save time and facilitate motorists with more convenience and better quality of living in their commute in the downtown. Motorists should then appreciate these benefits over price factor.

In view of various marketing strategies, the Company has proceeded as follows:

#### **1) Products and Services Strategies**

- The prime location and connections to major roads in the city allow the expressway network to respond to the transportation needs of motorists to reach their desired destinations. In this regard, the Company has improved the quality of the routes and its services and given priority to the customers' needs, which will be integrated as key strategies to efficiently accommodate the traffic volume flowing in the system.
- The feasibility study on improvement of the on-ramps and off-ramps of the expressways serves as another measure to facilitate the traveling and to continually maintain the quality of the expressways in terms of engineering safety to meet international standards.
- The Company has continuously monitored the traffic volume statistics to enhance the efficiency of its Easy Pass service as appropriate in order to improve the service provision and accommodate the increased volume of expressway users. The Company has added Easy Pass lanes at various Toll Plazas on the Si Rat Expressway and the Si Rat-Outer Ring Road Expressway to accommodate the increased volume of Easy Pass users. In addition, the Company has moved the Easy Pass lanes for more convenience and safety of the Easy Pass service users and to minimize the cross traffic between the cash lanes and the Easy Pass lanes, which will mitigate the traffic congestion at the front of the toll plazas.
- The study on new routes in response to the urbanization in the future, particularly in Bangkok, as well as the study on traveling behavior of motorists are conducted to prepare for the expansion of the scope of the expressway services, and serve well as additional channels of services in response to needs of the motorists in the future.
- The Company has added communication channels on traffic information via Smart Traffic and Variable Message Signs (VMS) to keep motorists informed of the traffic conditions on expressways, as well as suggesting routes on expressways for more convenience and rapidity.
- The Company has also improved signboards regarding the expressway usage on the at-grade main road and various alleys in Bangkok and its vicinity so as to facilitate motorists and boost confidence to access and use the expressways. To this effect, the Company focuses on introducing such landmarks adjacent to the on-ramps and off-ramps of the expressways on the website and various public relations media to ensure that customers, as the expressway users, would travel more conveniently and rapidly.

## 2) Price Strategies

- Toll rates are agreed upon and specified in the Agreements, including the calculation for revisions of toll rates ahead of time. It is mutually agreed that the rates are considered reasonable and based on the feasibility study for investment of each project. Under the Second Stage Expressway Agreement, the Agreement for the Extension of Second Stage Expressway (Sector D), and the Bang Pa-in - Pak Kret Agreement, toll rates shall be revised at every five years interval in accordance with changes in Consumer Price Index of Bangkok as announced by the Ministry of Commerce, which serves as the basis of calculation for the intrinsic value of the toll rates during the given periods under the Agreements. Furthermore, the revision of the toll rates of the Si Rat - Outer Ring Road Expressway is in accordance with the Concession Agreement, which shall be made every five years from the date of service operation of the project at the rates specified therein.
- The Company continues to provide discount on tolls on certain routes for a limited period of time to attract motorists to increasingly use the expressway services, especially such routes with connections between the expressway systems, e.g., At Narong 1 Toll Plaza (from the Chalong Rat Expressway to enter the Chalerm Mahanakorn Expressway around Bang Na), and Muang Thong Thani Toll Plaza of the Udon Rattaya Expressway, which the Company, together with EXAT, continued to provide discount.

## 3) Selling and Distribution Channels Strategies

- Payment of Tolls
  - Users of the Chalerm Mahanakorn Expressway and the Si Rat Expressway may choose to use the expressway services from various on-ramps and off-ramps covering major areas in Bangkok throughout the total distance of 65.6 kilometers. Expressway users shall pay tolls at the on-ramps of toll plazas, totaling 52 locations, 20 toll plazas of the Chalerm Mahanakorn Expressway (e.g., Din Daeng, Bang Na, Dao Khanong, Sukhumvit, Rama 4 Toll Plazas, etc.) and 32 toll plazas of the Si Rat Expressway (e.g., Asoke, Rama 9, Srinagarindra, Yommaraj, Surawong, Hua Lamphong, Khlong Prapa, Yan Phahon Yothin, Prachachuen, Rama 3, etc.). Users may pay tolls in two channels, in cash, or via Easy Pass.
  - Users of the Udon Rattaya Expressway which connects to the expressway system towards the North of Bangkok has a total distance of 32 kilometers, with 10 toll plazas, shall pay tolls at the on-ramps for the inbound direction and at the off-ramps for the outbound direction. There are five on-ramps and five off-ramps. Users may pay tolls in cash or via Easy Pass
  - Users of the Si Rat - Outer Ring Road Expressway which connects to the Si Rat Expressway System towards the West of Bangkok has a total distance of 16.7 kilometers, with 9 toll plazas, shall pay tolls at the on-ramps in cash or via Easy Pass.
- Electronic Toll Collection System
 

The Company, in association with EXAT, introduces the Electronic Toll Collection system in the toll collection, in order to serve as an alternative channel for motorists and facilitate and speed up the toll payment at the front of the Toll Plazas during rush hour, as well as accommodating the increasing traffic volume in the future. Currently, there are Easy Pass users representing approximately 38.32 percent.

In the interest of convenience to the Easy Pass users, the Company has arranged for the Easy Pass Fast Service, including film cutting service for Easy Pass installation and testing, whereby the expressway users are able to bring their cars to use the services at the Easy Pass Fast Service, free of charge, at the Si Rat Expressway Control Center, Asoke - Dindaeng Road, every day during the office hours from 9:00 - 17:00 hours.

To ensure more benefits of the Easy Pass users, the Company, in association with EXAT and the Department of Highways, improved the efficiency of the toll collection via the Electronic Toll Collection System by way of integration between the Easy Pass system and the M-Pass system to enable the service users to pay tolls with only one pass for seven expressway routes and two of the Intercity Motorway Projects (Motorways) of the Department of Highways from November 1, 2016.

#### **4) Sales Promotion and Public Relations Strategies**

The Company provides discount on tolls on certain routes within a limited period of time, aimed at attracting target customers to continue to use the expressway services and eventually become regular customers. In 2017, the Company continued to provide a discount on the Udon Rathaya Expressway of one of its subsidiaries (NECL), to motorists at Muang Thong Thani Toll Plaza.

Furthermore, during the remarkable festivals, such as, Songkran Festival and New Year's Festival, the Company also holds activities promoting the use of the expressways for motorists by cooperating with EXAT to distribute souvenirs to motorists, including arranging for motorist service points, which demonstrated our positive image and relationship with motorists under the theme that we provide the best services to customers throughout the routes, as well as educating them about applicable traffic laws during Songkran Festival. In addition, on the occasion of the New Year's Eve, the Company jointly supported the EXAT to offer discounts on application fee for Easy Pass to encourage the expressway users to use more Easy Pass, thereby reducing traffic congestion at the front of the toll plazas.

The Company, as a private company that provides the expressway services, responds to the government policy to promote the "No Phone While Driving", "No Drowsing Driving" and "No Drunk Driving" campaigns for drive safety, campaigns for keeping safety belt fasten at all times while driving, including campaigns for giving way to ambulances to save lives of accident victims and emergency patients.

The Company also implemented public relations to convince target customers of the convenient, rapid, economical and safe usage of the expressways; various quality services on the expressways; and various sales promotion of the Company, such as, special activities for lucky motorists, discount on tolls, dissemination of expressway network map, connections between the expressways and various routes to facilitate motorists.

The channels of public relations used by the Company to disseminate information comprise documentary programs on radio and television, radio spot, leaflets, Variable Message Signs (VMS), and our website : [www.bemplc.co.th](http://www.bemplc.co.th), as well as social media ([www.facebook.com/bangkokexpresswayandmetro](https://www.facebook.com/bangkokexpresswayandmetro)), including Si Rat bimonthly newsletters as a medium for sharing information and news between the Company and motorists, and to educate, satisfy and attract new customers to use the services more, as well as organizing various social activities throughout the year to ensure the positive attitude of our services towards customers and society.

### **2.1.4.3 Industrial Outlook and Competition**

In 2017, Thai economic situation started to gain positive momentum; income of consumers of certain groups rose as a result of an increase in minimum labor wage; and the government's projects highly expanded, particularly when the financial institutions started to become less strict with extending credit, sales of the Thailand automobile industry were then slightly rising. At this point, if it was divided into regions, the automobile industry was more growing in the northern and the southern regions than other regions, resulting from adjustments of the agricultural and tourism sectors, and meanwhile, in Bangkok, the overall automobile industry was thus expanding, both personal and commercial vehicles, thanks to the government's infrastructure projects, (Thansettakij Newspaper, December 28, 2017 Issue).

As a result of the aforesaid factors, Bangkok and its surrounding provinces had encountered traffic congestion problems. Currently, there were 10 million registered vehicles but there were only 5,500 kilometers of roads in Bangkok, resulting in accumulated traffic congestion problems in all areas of Bangkok, not to mention the fact that construction of the government's infrastructure projects, including other significant construction, caused the volume of vehicles in excess of the road capacity in Bangkok. In addition, others factors, for instance, heavy rain and flooding, led to slow traffic flow, reducing the average speed of vehicles on Bangkok's roads. According to the summary information of the Office of Transport and Traffic Policy and Planning (OTP), the average speed of vehicles on Bangkok's roads reduced, particularly on main roads and inner ring roads, by 0.3 kilometer/hour during rush hours in the morning or 1.9 percent, and by 2.3 kilometers/hour in the evening or 12.8 percent (Prachachat Newspaper, January 5, 2018 Issue), thereby affecting the growth of traffic volume on the expressways as a whole.

## **2.1.5 Procurement of Products and Services**

### **2.1.5.1 Nature of Procurement of Products**

EXAT is an authority responsible for the construction of expressways to provide service for convenient, rapid and safe traffic, as well as to mitigate traffic problems. EXAT invited interested parties to submit investment proposals; the Company then conducted feasibility study and submitted its proposals for investment in projects with appropriate return and conditions.

The expressway projects under the Second Stage Expressway Agreement, the Bang Pa-in - Pak Kret Expressway Agreement, the Agreement for Extension of the Second Stage Expressway (Sector D), and the Concession Agreement for the Si Rat - Outer Ring Road Expressway Project are implemented on a BTO basis. According to the essence of the Agreements, EXAT shall have the duty to determine the characteristics of the expressways, expressway routes and areas to be used for construction and arrange for land expropriation for delivery to the Company for construction within the time specified in the Agreements. Thereafter, the Company would carry out construction in accordance with the designs approved by EXAT, subject to the supervision of the quality of construction work by EXAT's Consulting Engineer, Independent Certification Engineer and Independent Design Checker. Upon completion of the construction, the Independent Certification Engineer shall inspect the work and issue Certificate of Completion to evidence that the construction work is completed in accordance with the specified standards and is ready for service, at which time, the Company shall be entitled to obtain toll revenue under the conditions of the Agreements. In the previous constructions, the Company engaged project managers to carry out construction and operate the Expressway Projects on a lump sum turnkey basis. This was due to the fact that the expressway projects are large-scale projects, which may sustain cost overrun issues and delayed completion of the construction. The lump sum turnkey engagement is intended to prevent such risk. In the engagement of project managers, the Company will select specialists with experience to act as project managers and construction contractor to ensure the accomplishment of quality work on time.

With respect to the Si Rat - Outer Ring Road Expressway Project, the Company and EXAT executed the Concession Agreement for Investment, Design, Construction, Operation, Service and Maintenance of the Project on September 14, 2012, for a concession period of 30 years from December 15, 2012 to December 15, 2042, and with a construction period of not exceeding 48 months. EXAT shall determine the expressway route and areas to be used for construction and arrange for land expropriation for delivery to the Company within the specified time. The Company shall have the duty to carry out the design and construction in accordance with the designs approved by EXAT, subject to the supervision of the quality of construction work by EXAT's Engineer and Independent Certification Engineer. Upon completion of the construction, the Independent Certification Engineer shall inspect the work and issue Certificate of Completion to evidence that the construction work is completed in accordance with the specified standards and is ready for service. The Company engaged CH. Karnchang Public Company Limited, which specializes and has extensive experience in construction and management of all expressway projects under the concessions of the Company, to act as project manager and construction contractor as well as operator of the project on a lump sum turnkey basis.

Under this Concession Agreement, the Company shall have the right to manage and provide service, e.g., toll collection, rescue operation and maintenance, whereby the Company shall be entitled to receive all tolls throughout the concession period.

#### **2.1.5.2 Environmental Impact**

The Company and its subsidiaries have been environmentally responsible in operating its expressway business, and will continue to adhere to the practices of the Company and its subsidiaries. The business guidelines can be summarized as follows:

In the construction of the expressways, the Company and its subsidiaries complied with the measures to prevent pollution in accordance with the regulations of the National Environment Committee and other relevant laws, which form an integral part of the Agreements. The Company and the subsidiaries implemented the measures and procedures as appropriate for the construction carried out in the urban areas with high populations. In so doing, the Company employed the Segmental Box Girder construction technique, which allowed it to complete the construction faster than other techniques in those days, so as to prevent any impact to nearby communities and affect the at-grade traffic at the least possible extent during the construction. Furthermore, the Company had no records of committing any environment-related offenses.

Even during the course of the operation of the expressway systems, the Company remained concerned about the eco-friendly business operations affecting the quality of life of staff, motorists and communities surrounding the expressways, including all groups of stakeholders. The Company improved and reviewed its internal procedures to conform to the environmental requirements to apply for the Certificate of ISO 14001 Environmental Management System. The Company's commitment to ensuring the environmental management in line with the following guidelines:

1. To give priority to pollution prevention and control by managing and maintaining the expressways to meet international standards and keeping in mind the environmental impact on motorists, staff and communities;
2. To instill and encourage our staff with an awareness of efficient use of energy and natural resources;
3. To comply with the environment-related laws and regulations;
4. To review the purposes and goals for continued improvement of the environmental management system;
5. To communicate our environmental policy to the public and all parties concerned.



Whereby the Company obtained the certificates from SGS (Thailand) Limited for :

- ISO 9001 : 2015 Quality Management System
- ISO 14001 : 2015 Environmental Management System

In 2017, the Company continued to maintain the ISO 14001 Environmental Management System, by monitoring possible environmental issues, as well as optimizing the use of natural resources through its continued energy management measures. In so doing, the Company did change to use more efficient lamps on the expressways and around toll plazas, as follows:

1. The lamps in the Si Rat - Outer Ring Road Expressway Control Center Building were replaced by LED lamps as follows:
  - Replacement of canopy lights above toll booths with LED lamps, thereby saving up to 60 percent of energy.
  - Replacement of wheel-shine downlights at toll lanes with LED lamps, thereby saving up to 80 percent of energy.
2. The existing high pressure floodlight lamps were replaced by LED lamps at the front and back areas of toll plazas on the Si Rat - Outer Ring Road Expressway, thereby saving up to 40 percent of energy although such LED lamps were brighter than the existing lamps, as well as minimizing the dispersed light.
3. The pilot project to install solar cells on the Srisaman Toll Plaza (outbound), the Udon Rattaya Expressway, thereby saving up to 20 percent of energy from the Metropolitan Electricity Authority.

With respect to the safety management, the Company had an engineering analysis agency comprising knowledgeable and skilled personnel in traffic engineering and safety on the expressways to conduct studies on impacts from various factors. A traffic simulation was made for study of the suitability in the improvement of physical characteristics at the front areas of toll plazas, as well as inspection of road safety; analysis of risk areas on expressways; study of features and patterns in the installation of safety equipment, in order to improve the expressways to ensure the maximum safety for motorists, as well as to minimize environmental impact. The Company applied such study results as follows:

- The safety on expressways was improved by inspecting and assessing the safety of the gore areas and installing safety equipment, e.g., crash cushions, cushion tanks, flexible guide posts, red-colored cold plastic road paint to alert for high accident risk areas.
- More Easy Pass lanes were added in response to the increased traffic volume in the Easy Pass lanes. After EXAT's policy on cancellation of the Easy Pass card deposit, the use of Easy Pass service has increased, which necessitates more Easy Pass lanes to accommodate the increased traffic volume, and as a result, motorists can save their commute time and fuels.
- Easy Pass lanes at Asoke Toll Plaza 4, Prachachuen Toll Plazas (inbound) and (outbound), were relocated to the farthest right lane for motorists to more efficiently and rapidly access the Easy Pass lanes.
- Easy Pass signboards were improved to provide convenient and rapid passage to expressway motorists through the Easy Pass lanes.
- All Easy Pass lanes on the Si Rat Expressway were improved as fast lanes to accommodate more rapid passage and minimize slow traffic in front of the Easy Pass lanes.
- As for the project to enhance the efficiency of Easy Pass lanes, the Company installed the second antennas in Easy Pass lanes to suit the convenience of the Easy Pass users in the event that a barrier gate is not opened despite their remaining credit adequate for passing through, in that case, the system will have the barrier gate opened without waiting staff to open it. Such system helps expedite the motorists' travelling, save time waiting in a queue and reduce traffic congestion in front of the toll booths, as well as minimizing air pollution. Such installation was made at all Easy Pass lanes of the Si Rat Expressway and completed on May 19, 2017.

The Company continued to provide training for staff and executives on know-how and techniques for environmental management in accordance with the ISO 14001 : 2015 Environmental Management System, as well as various activities to raise an awareness of environmental protection in the organization and social contributions in association with the communities nearby.

Moreover, the Company sets a policy to improve the toll collection system for control centers to ensure compliance with the standard of information security management system of the ISO/IEC 27001:2013 in order to tighten the information security of the toll collection system for the control centers, and to lay down a standard for management of significant information to ensure the continued business operations, enhancing the organization's worldwide reputation for reliability. For that reason, the Company did apply for accredited certification of the ISO/IEC 27001:2013 for development of process and information security management system (ISMS) in accordance with the ISO/IEC 27001:2013 for the toll collection system of the Si Rat Expressway Control Center (CCB2) and the Si Rat - Outer Ring Road Expressway Control Center (CCB7) as well as developing its personnel in line of information security management so that they were able to fulfill work under the process/system so developed.

## 2.2 Rail Business

### 2.2.1 Nature of Services

The Company has been granted concessions for two mass rapid transit rail system projects by MRTA, as per the following details:

- 1) **The MRT Blue Line Project**, comprising the M.R.T. Chaloem Ratchamongkhon Line (Hua Lamphong - Bang Sue Section) and the MRT Blue Line Extension Project (Hua Lamphong - Lak Song Section and Bang Sue - Tha Phra Section), under the Concession Agreement executed by the Company with the MRTA on March 31, 2017, for a period of 33 years from the MRTA's Notice to Proceed.
  - (1) **The M.R.T. Chaloem Ratchamongkhon Line Project** (Hua Lamphong - Bang Sue Section), covering the distance of 20 kilometers, with 18 stations. The Company is entitled to fare box revenue as well as undertaking activities and commercial development, including advertising, leasing space and telecommunications services in the metro stations and in the trains. Currently, there are 19 a total of 19 trains in service every day without holiday from 6.00 hours - 24.00 hours.
  - (2) **The MRT Blue Line Extension Project** (Hua Lamphong - Lak Song Section and Bang Sue - Tha Phra Section), covering the distance of 27 kilometers, with 20 stations, starting a connection from the M.R.T. Chaloem Ratchamongkhon Line at Hua Lamphong Station and Bang Sue Station. The Company is responsible for investment, supply, installation, testing and commissioning of the M&E Equipment of the MRT Blue Line Extension Project, and provision of the service for the M.R.T. Chaloem Ratchamongkhon Line Project and the MRT Blue Line Extension Project to ensure the Through Operation. The Company is entitled to fare box revenue and commercial development throughout the concession period. On August 11, 2017, the MRT Blue Line Extension Project, Tao Poon - Bang Sue Section, covering a distance of 1.2 kilometers, was opened for service, to ensure the Through Operation among the M.R.T. Chaloem Ratchamongkhon Line (the existing MRT Blue Line), the MRT Blue Line Extension, and the M.R.T. Chalong Ratchadham Line (MRT Purple Line).

## 2) The M.R.T. Chalong Ratchadham Line (“MRT Purple Line Project”) Khlong Bang Phai Station - Tao Poon Station

The Company has been granted the concession for investment, supply of M&E Systems and O&M Services. MRTA invests in all civil works and the Company invests in the M&E Systems and the rolling stocks, as well as provides the operation and maintenance services in accordance with the specified service standards. MRTA is entitled to all fare box revenue and commercial development revenue from the utilization of the civil infrastructure and the railway systems and MRTA shall make repayment to the Company in the form of service fee for the O&M Services and the M&E Systems throughout the concession period of 30 years from September 4, 2013. Currently, Khlong Bang Phai Station - Tao Poon Station Section of the Project, covering a distance of 22 kilometers, with a total of 16 stations, has been in service. There are a total of 21 trains available every day without holiday, from 5.30 - 24.00 hours on Mondays - Fridays, and from 6.00 - 24.00 hours on Saturdays - Sundays and public holidays.

Projects	M.R.T. Chaloei Ratchamongkhon Line Project (Hua Lamphong Station - Bang Sue Station)	MRT Blue Line Extension Project (Hua Lamphong Station - Lak Song Station and Bang Sue Station - Tha Phra Station)	The M.R.T. Chalong Ratchadham Line Project (Khlong Bang Phai Station - Tao Poon Station)
Concession Type	PPP Net Cost		PPP Gross Cost
Concession Period	33 years (from MRTA’s Notice to Proceed)		30 years (2013-2043)
Number of Stations	18 stations	20 stations	16 stations
Distance	20 kilometers	27 kilometers	22 kilometers

### 2.2.2 Revenue

The Company’s revenues from the rail business can be divided into two categories, comprising fare box revenue and revenue from O&M services.

#### 2.2.2.1 Fare box revenue

Pursuant to the Concession Agreement for the MRT Blue Line Project between the Company and MRTA, the Company has the right to operate the train and collect fare box revenue and undertake commercial development throughout the concession period. The Company is obliged to make payment of remuneration from fares and commercial development to MRTA at the rates as mentioned in the Concession Agreement.

The fare rates of the metro as of the commencement date would be in accordance with the basic reference fare rates in force at the time of the revenue service commencement date. Under the Concession Agreement, the reference fare rates would be adjusted every 24 months based on the actual changes of the Bangkok Non-Food Consumer Price Index compared to the basic reference fare rates.

The Company adjusted the fare rates under the terms of the Concession Agreement accordingly. The current fare rates in force were adjusted on July 3, 2016, which will remain in force until July 2, 2018.

#### 2.2.2.2 Revenue from O&M Services

The Company receives service fees for train operation and maintenance from the MRT Purple Line Project Concession Agreement, Contract 4, Concession for Supply of M&E Systems and O&M Services (Khlong Bang Yai Station - Tao Poon Station), Phase 2 (for a period of approximately 27 years). The service opening commenced on August 6, 2016.

## 2.2.3 Marketing and Competition

### 2.2.3.1 Customer Characteristics and Target Customers

The Company's target customers can be divided into two groups, namely, residents nearby the metro routes and those who need to pass or head for other destinations along the metro routes, and categorized by purposes of journeys as follows:

1. Commute for work;
2. Commute to schools/educational institutes;
3. Commute by tourists/for leisure;
4. Commute for special activities, e.g., seminars or conferences; and
5. Commute for other purposes, e.g., business dealings.

### 2.2.3.2 Marketing Policy and Strategies

#### (1) Service and Product Strategies

##### (1.1) Creativity and Development of Convenient Services for MRT Passengers

At present, the MRT route starts from Hua Lamphong Station and ends at Tao Poon Station, covering a total distance of 21 kilometers, passing through central business districts (CBD), residential areas and connecting with other mass rapid transit systems which may increase the number of passengers, e.g., connection with the Green Line (BTS) at Chatuchak Park Station, connection with Airport Rail Link at Phetchaburi Station heading for Suvarnabhumi Airport, new connection with the MRT Purple Line Project at Tao Poon Station, and connections with Hua Lamphong and Bang Sue Railway Stations. Other connections between the metro stations and four buildings currently include 1) Chamchuri Square (residential, office and edutainment complex) at Sam Yan Station; 2) Union Mall at Phahon Yothin Station; 3) Interchange 21 Tower (office building) and Terminal 21 Tower (shopping center, hotel, office and residential building) at Sukhumvit Station; and 4) Central Plaza Grand Rama 9, G Tower with Phra Rama 9 Station.

Traveling behavior of service users mostly accounts for work, followed by schools, and they usually travel during rush hour, while other purposes account for off-peak journeys with potential higher number of trips. The Company thus strategically increases the number of off-peak journeys, which can be handled by the currently available capacity, to ease the passenger density on off-peak trains, with its effort to encourage passengers to adjust their travelling behavior to leave early to work through the "MRT Lucky Hour for Early Birds" activity, and promotes more journeys by passengers using the metro cards in order to increase revenues and the number of cardholder passengers. This strategy has been continuously implemented since 2013 in alliance with its partners along the routes by way of discounts or special benefits for metro card issuance or top-up, and information services by partners on highlighted events and destinations for the MRT passengers, e.g., Central Plaza Grand Rama 9, Queen Sirikit National Convention Center, etc.

##### (1.2) Quality Services

The Company focuses on quality services on the motto "Service above all else", so that the MRT service becomes "lifestyle of Bangkok residents" under the Company's professional operations. Various activities have been undertaken to promote image of the current MRT services and create value added to Bangkok residents' lifestyle. Based on this policy, the Company sets out the following signs for quality services:

- **Safety:** The MRT passengers' life and property safety is the Company's top priority. All staff must be well aware of and expected to strictly follow the Company's safety requirements. In the past, the Company conducted regular training on safety and supervised to ensure that the Company's services meet Thailand's safety standard requirements and comparable to those of the world's leading mass rapid transit operators.
- **Convenience:** The Company takes care of all equipment and facilities in the MRT system to function properly, and proactively facilitates the passengers' convenient commute during high seasons, such as, festival events and activities or exhibitions along the routes, by arranging for more ticketing points to best serve the passengers.
- **Fast:** The Company keeps the average train speed aligned with the timetable in response to passengers' needs during different periods.
- **Reliability:** The Company maintains the trains and signaling systems in good conditions without any impact on its services.
- **Punctuality:** The Company keeps the timetable and stop time at every station punctual with the least possible deviations.

### (1.3) Metro Cards for Everyone

The Company analyzes the customer characteristics and target customers, both regular and non-regular passengers, and then plans for and produces various styles of metro cards to suit every group of customers and to attract non-regular passengers to increasingly use the MRT service. These arrangements comprise keeping styles of metro cards modern to ensure conformity with technology and increase in efficiency of metro cards, including common utilization of metro cards with the MRT Purple Line; cooperation with financial institutions in issuing co-branded cards for financial transactions and MRT services, namely, in alliance with KASIKORNBANK Public Company Limited and Siam Commercial Bank Public Company Limited, including Chulalongkorn University, Chulalongkorn Hospital, and other institutions or agencies.

### (2) **Price Strategy**

The Company collects distance-related fares in fairness to passengers according to different distance of their journeys, and provides discounts to school/college students, and children/elderly, by taking into account the fare rate collection of other mass rapid transit systems. The fare rates are adjusted in accordance with the relevant Concession Agreements.

### (3) **Marketing Promotion Strategies**

The Company's classification of target customers is intended to draw up a strategy on sales promotion to effectively cover all target customer groups. As such, the Company's sales promotion and marketing plans based on target customers' lifestyle and settings are described as follows:

- To promote the park and ride facilities to encourage more passengers to park their personal cars at the service locations and use the MRT service to commute to such business districts as Sukhumvit Road, Silom Road, Ratchadaphisek Road, in order to help alleviate traffic congestion and minimize global warming.

- To accept credit card payments for passengers' convenience, collaborate with leading companies and banks, namely, AIS, KTC, Citibank, UOB, Bank of Ayudhya, KASIKORNBANK, Muang Thai Life Assurance, FWD Life Insurance, for providing discounts and cash back, including credit card reward points, in order to create value added to the MRT service, and offer special benefits to metro card holders with an aim to change passengers' behavior from using token to using metro cards for the sake of convenience and special benefits.
- To increase the number of passengers or trips in the system through information services on highlighted events along the MRT routes, and offer various types of customized metro cards bearing specific logos or signs of agencies, organizations, office buildings or hotels both along and beyond the routes, for public relations and sales promotion, in order to distribute the metro cards to both current and new target customers.
- To create the Customer Relations Management (CRM) and build a network compatible with the CRM process, which will serve as a central mechanism for loyalty marketing, focusing on efficient and effective response to ensure customers' satisfaction and creation of the MRT Club community for relationship building using social network and communication channels in the MRT stations to organize activities in alliance with partners on the win-win strategy through MRT Club memberships, for instance, watching gala movies with Major Cineplex Group, registering for a chance to win concert tickets from BEC-TERO, etc.
- To create brand loyalty and awareness through various activities to promote marketing campaigns, rewards to customers and society, and corporate image towards young customers and passengers by creating value added collaboration on a regular basis, namely, building relationships with alliances to seek privileges for the cardholder passengers in a form of discounts on shops, restaurants, movie theaters or events surrounding the MRT route.

**(4) Marketing Communication Strategies**

- To select effective channels of communication and public relations which are accessible to target groups of different marketing events through management of space and flows in the MRT system, e.g., standees within the stations, visual display on the token machines, event calendar media on monitors, digital media, social network media, including external public relations media from the alliances to provide service users with journey information in the MRT system. The Company also has emphasized development of the Mobile Application titled Bangkok MRT Application to accommodate travelling plans of the passengers.
- To publicize news and information to new customers at exhibition booths, organize activities to introduce customers as to how to use metro cards, replacement of old-style metro cards with new ones, and various privileges by focusing on punctuality, convenience, fast journey, family time-saving, and definite timetable, in order to stimulate provision of information on services and benefits to the service users.
- To create destinations via regular communication, public relations and journey information along the MRT routes, prepare event calendar, route maps with attractive destinations, e.g., office buildings, schools, hotels, shopping centers, tourist attractions and other landmarks, convenient and rapid links to other mass rapid transit systems via the website and Mobile Application.
- To assure people of the safety of the MRT system through television, radio and other media, and organize safety-related activities at various venues, e.g., schools, office buildings, to present the safety of the MRT system to people for their understanding and confidence in the services.



**(5) Development Strategy**

The Company adopts a strategy for regular development of quality and its services to ensure service users' utmost satisfaction with convenience, rapidity and safety, which would attract more users of the MRT service. At present, the Company collaborates with financial institutions to hold single co-branded cards for multi-transactions.

**(6) Distribution Strategies and Channels**

The Company provides more sales outlets in addition to the ticket vending machines and ticket offices in the stations, by means of direct sales to various agencies, organizations, banks, schools, hotels and private sectors, etc., with customized cards on various occasions, such as, gifts for staff, customers or for brand promotion and public relations materials, as a result, the metro cards become even more flexible for various uses than just for the MRT service.

**2.2.3.3 Industrial Outlook and Competition****Mass Rapid Transit Systems in Bangkok and its Vicinity**

Bangkok is a large capital city, with a dense population and various modes of transportation systems, for example, personal cars, public buses, passenger vans, metro, micro buses, taxis. The traffic problem in Bangkok has extremely intensified due to the increase in population in urban areas and the rising travel demand of people, as a result, the traffic area capacity was not enough to accommodate such increase, which is considered a major problem which is not different from the problem in other highly populated capital cities around the world. Thus, the government adopts a policy focusing on development of various public transport networks to resolve the traffic problem to accommodate an increase in population and the economic growth of the country.

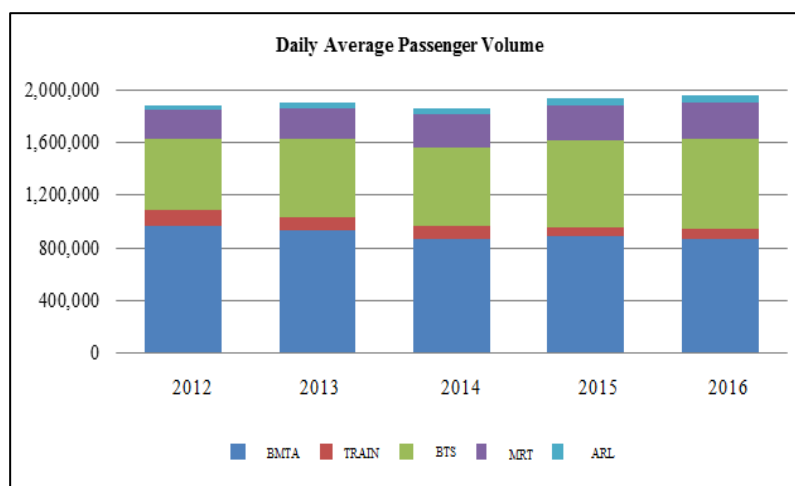
In this regard, traveling by residents in Bangkok can be divided into two modes of transport systems, namely, personal transport system and public transport system.

**(1) Personal Transport System**

People's residences in Bangkok and its vicinity are spread all over, traveling by personal cars thus is popular. The growing number of highly-paid or middle-class people and the inadequacy of the existing transport systems, and travelling expenses as compared with that of travelling by personal cars, as well as the service quality and safety, have also caused personal cars to become essential and convenient for traveling. In this connection, expansion of traffic area in Bangkok remained limited and inadequate to accommodate volume of vehicles.

**(2) Public Transport System**

As a result of the traffic congestion problem, particularly in peak hours, and the growth of the real estate projects surrounding the route, consumers' demand for the public transportation system of certain types was considerably high, especially for the metro system which was significantly expanding by reason of change in the urban people's behaviors of selection of residences and travelling by mainly focusing attention to convenience and rapidity in travelling.



Sources: Ministry of Transport, Bangkok Metro Public Company Limited, BTS Group Holdings Public Company Limited, and State Railway of Thailand.

- Public Bus Service**

At present, there are various types of public buses for service at different service rates, but the number of public buses in service in Bangkok and its vicinity remained inadequate, owing to the fact that a certain number of buses were undergoing improvement and rearrangement of bus routes was made, and let alone the fact that there are more than 5,000 passenger vans, as another popular alternative for commuters because of the convenience and rapidity in travelling. As a result of ongoing traffic congestion on roads, especially during rush hours in the morning from 6:30 to 8:30 hours, and in the evening from 16:30 to 18:30 hours, traveling has become inefficient and time-consuming. In addition, passengers are also affected by safety issues and by pollution caused by the vehicle exhaust system.

- Trains**

In the past, the State Railway of Thailand (SRT) provided train service in Bangkok at a special low rate and free train ride service in certain trains in order to serve low-income earners to travel from the outskirts of Bangkok to downtown in response to the government policy. On October 1, 2017, the SRT cancelled all of such free train tickets all over the country, the low-income earners were then allowed to use the government welfare smart card to which they were entitled instead, in a manner which the cardholders were able to use such card for taking buses, passenger vehicles served by The Transport Co., Ltd. and trains for free in the amount not exceeding Baht 500 per travelling mode per month. However, such train system service is rather inconvenient and unsafe in terms of train condition, non-air conditioning, limited routes which do not cover the entire city, and as a result, the SRT allocated budget for investment in development of dual track rail system for many routes; and a project for supply of 115 new model passenger buses for service, for the purpose of development of the Thai railway system in accordance with Thailand's transportation infrastructure development strategy. In this regard, the SRT's train service is not considered the Company's direct competitor due to different service routes, as the SRT aims to provide the service to suburban areas.

- **BTS**

BTS Skytrain was Thailand's first mass rapid transit rail system on the elevated dual tracks and directions. BTS opened for service on December 5, 1999 on 2 lines, namely, Sukhumvit Line and Silom Line, and currently, has a total distance of 37.9 kilometers, with 35 stations. In 2017, BTS Skytrain had the number of daily average passengers amounting to approximately 660,700 trips, an increase from that of the previous year by 2 percent. As such, traveling by BTS Skytrain was the convenient alternative for commuters. Moreover, BTS Skytrain is intended to provide service to the heart of the city, not to mention the real estate development around the routes and connection with the MRT system, which made it enormously popular, and thus, such factors caused an increase in service user volume.

- **ARL**

The Suvarnabhumi Airport Rail Link or Airport Rail Link or Airport Link is a special mass rapid transit rail system project, as part of the project for construction of suburban and commuter rail systems, carried out and operated by the State Railway of Thailand (SRT). The structure of the Suvarnabhumi Airport Rail Link is both underground and elevated, with the alignment accommodating journeys from the eastern and northern outskirts, and passengers from the Suvarnabhumi Airport, to the center of Bangkok at Phaya Thai Station, covering a total of 8 stations, with a distance of 28.6 kilometers. Airport Link was opened for service on August 23, 2010. For the current service provision, a plan was set up to develop, improve and increase the train capacity, including purchase of new trains, together with a plan to reduce passengers' waiting time for the next incoming train from 12 minutes per train to 10 minutes per train in order to boost efficiency in the service provision. In 2017, the daily average passenger volume was approximately 70,000 persons per day, which increased from 2016 by 10 percent, resulting from an ongoing increase in number of the public transport system service users, reflecting the change in travel behavior of residents in Bangkok and its surrounding provinces from using personal car to use the public transport system. This indicated the development in terms of convenience, rapidity, safety and the extended coverage areas of travelling to ensure transit in the through operation system at present. However, owing to the traffic congestion, air and noise pollution, and potential accidents, the transit rail system is then regarded as a significant milestone for change and development of the mass rapid transit systems in Bangkok and its vicinity, which will help alleviate traffic problems, ensure safe, convenient and rapid journeys of service users, and result in a positive effect on the economy and environment. Therefore, the mass rapid transit system represented a traveling mode, which helped improve the quality of life of urban people and reduce usage of national resources.

### **Industrial Outlook and Government Policy**

Thailand's economic outlook in 2017 grew at approximately 3.9 percent, which was improved from 3.2 percent in the previous year. In 2018, it is expected to grow by 4.1 percent, significantly resulting from acceleration of disbursements and investments by the government sector on a continuous basis, and the stimulating growth of export of goods and services and the continued expansion of the private sector's consumption (Source: Office of the National Economic and Social Development Board).

The government prioritizes its strategic plans for transportation development, particularly investment projects in the metro system, to resolve traffic problems in Bangkok and its vicinity, and as such, speeds up the bidding process for these projects by establishing the Public Private Partnership (PPP) Policy Committee and setting up a PPP Fast Track team by focusing on infrastructure investments in accordance with Thailand's PPP Strategic Plan 2015-2019. There were five megaprojects for transportation infrastructure in the initial phase, which were invested, worth Baht 3.4 Billion. The three metro projects under the PPP Fast Track included the MRT Blue Line Extension, the MRT Pink Line and the MRT Yellow Line Projects, all of which had successfully passed the approval process within nine months only.

From the successful results of the PPP Fast Track in the initial phase, the Ministry of Transport then continued to accelerate the PPP Fast Track in the second phase for the budget year 2018, which would cover a total six projects, with the total value of Baht 6.13 Billion. The priority transportation projects which needed urgent action included Bangkok - Rayong hi-speed rail project (linking three airports, i.e., Don Mueang - Suvarnabhumi - U-Tapao); MRT South Purple Line Project; and MRT Orange Line Project. In this regard, the government sector's role in stimulating the economy through its expenditure and investment was considered the most crucial factor which would have an influence on the future economic situation. Giving priority to investment in infrastructure projects, particularly in transportation system, would help make travelling and transport of goods convenient, which would attract Thai and foreign investments from the private sector and strengthen the economy conducive to the sustainable growth in the future.

#### **Real estate development around the metro routes**

As a result of the continued economic growth in 2017, the real estate market was into recovery mode, especially the real estate market surrounding the metro routes which became more hugely popular. It was evidenced by a diverse selection of new condominium launches, particularly those which were around the MRT Blue Line Extension Project (Hua Lamphong - Bang Khae Section and Bang Sue - Tha Phra Section), which were currently attractive to investors. The development of the public transport system to cover the wide-areas of Bangkok and its surrounding provinces became a key factor in accelerating the real estate development in various forms, such as, condominiums, building offices, shopping centers, markets, most-visited tourist attractions, hotels, apartments, restaurants and supermarkets, to ensure that they were growing rapidly accordingly.

### Progress of Development of the Mass Rapid Transit Systems under the Government Policy

Project	Current Status of Project
<b>SRT Dark Red Line (North - South)</b> Suburban railway system, divided into 4 phases, covering a total distance of 80.5 kilometers: <u>Phase 1</u> : Bang Sue - Thammasat (Rangsit campus) <u>Phase 2</u> : Bang Sue - Hua Lamphong <u>Phase 3</u> : Hua Lamphong - Bang Bon <u>Phase 4</u> : Bang Bon - Mahachai	<b>Bang Sue - Rang Sit, with a distance of 26 kilometers</b> - SRT is proceeding with the following: <u>Contract 1</u> : Civil Work for Bang Sue Station and Depot, SRT executed the agreement for engagement of SU Joint Venture (Sino-Thai Engineering & Construction Public Company Limited and Unique Engineering and Construction Public Company Limited) on January 18, 2013. As at December 2017, the construction was completed by approximately 63.92 %; <u>Contract 2</u> : Civil Work for Bang Sue - Rang Sit Section, SRT executed the agreement for engagement of Italian-Thai Development Public Company Limited on January 31, 2013. As at December 2017, the construction was completed by approximately 94.65 %; <u>Contract 3</u> : M&E System, including supply of carriages As at December 2017, the construction was completed by approximately 19.57%. - On February 17, 2017, the SRT Board approved the suburban railway extension project, Rangsit - Thammasat University (Rangsit Campus) Section.
<b>SRT Light Red Line (West - East)</b> SRT's suburban railway system, Bang Sue - Taling Chan, Taling Chan - Salaya, and Bang Sue - Makkasan - Hua Mak, covering a total distance of approximately 48 kilometers	<b>Bang Sue - Taling Chan, with a distance of 15 kilometers</b> - SRT engaged Unique - Chun Wo Joint Venture to carry out the construction. The construction was 100% completed. - The project was opened for trial run during September 8 to November 30, 2012 for four trips per day (round trip) by diesel railcars in order to inspect the rail condition and systems relating to train operation. - It was opened for temporary service from December 5, 2012. <b>Bang Sue - Phaya Thai - Makkasan - Hua Mak, with a distance of 19 kilometers</b> - On October 21, 2014, the Council of Ministers resolved to approve the project, with the bidding process for contractor expected to start in 2017. <b>Taling Chan - Salaya, with a distance of 14.8 kilometers</b> - On February 17, 2017, the SRT Board approved the SRT Light Red Line Extension Project, Taling Chan - Salaya Section, with the construction expected to be completed by 2021. SRT was making revisions to the detail drawings to ensure implementation and management of the train operation towards Hua Lamphong Station.
<b>MRT Blue Line Extension</b>	<b>Bang Sue-Tha Phra and Hua Lamphong - Bang Khae, with a distance of 27 kilometers</b> - The construction of the civil work by the contractor progressed by approximately 97.52%, (as at December 2017). - On December 2, 2014, the Committee under Section 13 requested BMCL to propose its technical plan to ensure connected transport for the greatest convenience of passengers. - On November 11, 2015, the Public Private Partnership (PPP) Policy Committee resolved to grant approval for the project to be incorporated in the PPP Fast Track measures, the first phase, so as to expedite the process. - On July 21, 2016, the National Council for Peace and Order (NCPO) rendered the Order No. 42/2016 by virtue of the Power of the Head of NCPO under Section 44 expediting negotiation on selection of the private entity to manage the train operation. - On March 28, 2017, the Council of Ministers resolved to approve the results of selection of the private entity. The Company entered into the Concession Agreement for the MRT Blue Line Project with the MRTA, under which the Company shall invest in the M&E Systems and O&M Services. - On August 11, 2017, the MRT Blue Line Extension Project, Tao Poon - Bang Sue Section, covering a distance of 1.2 kilometers, was opened for service. <b>Bang Khae - Phutthamonthon Sai 4 (with a distance of 8 kilometers)</b> It was pending consideration of the Office of the National Economic and Social Development Board (NESDB), in preparation for proposal of the project to the Council of Ministers for consideration by 2018.

Project	Current Status of Project
MRT Green Line	<p><b>Mo Chit - Saphan Mai - Khu Kot, with a distance of 18.4 kilometers</b></p> <ul style="list-style-type: none"> <li>- The construction of the civil works by the contractor progressed by approximately 53.31% (as at December 2017).</li> <li>- MRTA executed the civil work contracts, Contracts 1-4, on April 3, 2015, as follows: <ul style="list-style-type: none"> <li><u>Contract 1:</u> (Civil Works), Mo Chit - Saphan Mai, with a distance of 12 kilometers, operated by Italian-Thai Development Public Company Limited;</li> <li><u>Contract 2:</u> (Civil Work), Saphan Mai - Khu Kot, with a distance of 7.5 kilometers, operated by UN-SH-CH Joint Venture (Unique Engineering and Construction Public Company Limited, Sinothyro Corporation Limited, and China Harbour Engineering Company Limited);</li> <li><u>Contract 3:</u> (Depot and Park &amp; Ride Facilities) operated by STEC-AS-3 Joint Venture (SINO-Thai Engineering and Construction Public Company Limited, A.S. Associated Engineering (1964) Co., Ltd.);</li> <li><u>Contract 4:</u> (Design and Construction of Trackwork) operated by STEC-AS-3 Joint Venture (SINO-Thai Engineering and Construction Public Company Limited, A.S. Associated Engineering (1964) Co., Ltd.).</li> </ul> </li> </ul> <p><b>Bearing - Samut Prakan, with a distance of 12.8 kilometers</b></p> <ul style="list-style-type: none"> <li>- The construction of the civil works by the contractor was 100% completed.</li> <li>- On April 1, 2017, one station, namely, Samrong Station, was opened for service.</li> </ul> <p>It was pending the negotiation with BTSC as train operation contractor to ensure the uninterrupted commute. The service opening was expected to take place in 2020.</p>
MRT Orange Line	<p><b>Thailand Cultural Centre - Min Buri, with a distance of 20 kilometers</b></p> <ul style="list-style-type: none"> <li>- On December 9, 2017, the contract signing ceremony was held for the civil work construction of the MRT Orange Line Project between MRTA and contractors as winning bidders in Contracts 1, 2, 3, 4, 5 and 6, as follows: <ul style="list-style-type: none"> <li><u>Contract 1:</u> (Civil Work), Thailand Cultural Centre - Soi Ramkhamhaeng 12, operated by CKST Joint Venture (CH. Karnchang Public Company Limited and Sino-Thai Engineering &amp; Construction Public Company Limited);</li> <li><u>Contract 2:</u> (Civil Work), Soi Ramkhamhaeng 12 - Hua Mak, operated by CKST Joint Venture (CH. Karnchang Public Company Limited and Sino-Thai Engineering &amp; Construction Public Company Limited);</li> <li><u>Contract 3:</u> (Civil Work), Hua Mak - Khlong Banma, operated by Italian-Thai Development Public Company Limited;</li> <li><u>Contract 4:</u> (Civil Work), Si Yaek Banma - Suwinthawong, operated by Unique Engineering and Construction Public Company Limited;</li> <li><u>Contract 5:</u> (Civil Work), Depot and Park &amp; Ride Facilities, in the area of the MRTA's office, Phra Ram 9 Road, operated by CKST Joint Venture (CH. Karnchang Public Company Limited and Sino-Thai Engineering &amp; Construction Public Company Limited);</li> <li><u>Contract 6:</u> Design and Construction of Trackwork, operated by Unique Engineering and Construction Public Company Limited.</li> </ul> </li> </ul> <p>The construction of the civil works by the contractors progressed by approximately 4.66%.</p> <p><b>Taling Chan - Thailand Cultural Centre, with a distance of 17.5 kilometers</b></p> <ul style="list-style-type: none"> <li>- It was pending study on the type of private-sector investment in construction and train operation, with the conclusion expected to be reached for proposal to the Council of Ministers for approval of the project by 2018.</li> </ul>



Project	Current Status of Project
<b>MRT Yellow Line</b>	<b>Lat Phrao - Samrong, with a distance of 30.4 kilometers</b> <ul style="list-style-type: none"> <li>- On November 11, 2015, the Public Private Partnership (PPP) Policy Committee resolved to grant approval for the project to be incorporated in the PPP Fast Track measures, the first phase, so as to expedite the proposal of the same to the Council of Ministers for consideration, with the bidding process by 2016.</li> <li>- On July 6, 2016, MRTA commenced sale of bidding envelopes for the MRT Yellow Line, with the scheduled bid submission on November 7, 2016 and opening on November 17, 2016.</li> <li>- On May 30, 2017, the Council of Ministers resolved to approve the results of selection of the private entity and draft Concession Agreement for the MRT Yellow Line Project, in collaboration with BSR Joint Venture (comprising BTS Group Holdings Public Company Limited, Ratchaburi Electricity Generating Public Company Limited and Sino-Thai Engineering &amp; Construction Public Company Limited).</li> <li>- On June 16, 2017, MRTA signed the Concession Agreement with BSR Joint Venture.</li> </ul>
<b>MRT Pink Line</b>	<b>Khae Rai - Min Buri, with a distance of 34.5 kilometers</b> <ul style="list-style-type: none"> <li>- On November 11, 2015, the Public Private Partnership (PPP) Policy Committee resolved to grant approval for the project to be incorporated in the PPP Fast Track measures, the first phase, so as to expedite the proposal of the same to the Council of Ministers for consideration, with the bidding process by 2016.</li> <li>- On July 6, 2016, MRTA commenced sale of bidding envelopes for the MRT Pink Line, with the scheduled bid submission on November 7, 2016 and opening on November 17, 2016.</li> <li>- On May 30, 2017, the Council of Ministers resolved to approve the results of selection of the private entity and draft Concession Agreement for the MRT Pink Line Project, in collaboration with BSR Joint Venture (comprising BTS Group Holdings Public Company Limited, Ratchaburi Electricity Generating Public Company Limited and Sino-Thai Engineering &amp; Construction Public Company Limited).</li> <li>- On June 16, 2017, MRTA signed the Concession Agreement with BSR Joint Venture.</li> </ul>
<b>Red Line (Airport Link)</b>	<b>Suvarnabhumi Airport Rail Link Extension Project, Don Mueang - Bang Sue - Phaya Thai Section, with a distance of 21.8 kilometers</b> <ul style="list-style-type: none"> <li>- On December 25, 2015, the Council of Ministers approved the royal decree on land expropriation in Ratchathewi District, Thung Phaya Thai Subdistrict, and Sam Sen Nai Subdistrict, for implementation of the Suvarnabhumi Airport Rail Link Extension Project, Don Mueang - Bang Sue - Phaya Thai Section, which has passed the environmental impact analysis (EIA) study.</li> <li>- SRT was pending review of the appropriateness of the drawings and construction method to ensure that it was suitable to seamlessly combine with the hi-speed rail project linking the three airports (Don Mueang - Suvarnabhumi - U-Tapao).</li> </ul>

Sources: [www.railway.co.th](http://www.railway.co.th), [www.mrta-purpleline.com](http://www.mrta-purpleline.com), [www.bts.co.th](http://www.bts.co.th), [www.bkkmrt.com](http://www.bkkmrt.com), and sources collected by the Company.

## 2.2.4 Procurement of Products or Services

### 2.2.4.1 Nature of Procurement of Products

The mass rapid transit system projects are awarded to the Company by way of concessions from MRTA, a state agency established and existing under the “Mass Rapid Transit Authority of Thailand Act B.E. 2543 (2000)” to operate the mass rapid transit systems in Bangkok and its vicinity, including other designated provinces, with safety and efficiency. MRTA is a state enterprise under supervision of the Minister of Transport. The Company specializes in the metro business, conducts the project feasibility studies, and submits its investment proposals for such projects with appropriate returns and conditions. The existing concession projects were awarded for investment, supply of rolling stocks,

operation and maintenance, whereby the government sector invests in all civil infrastructure, namely, stations and facilities, tunnels, ventilation systems and trackwork, etc., while the Company invests in the railway systems, namely, rolling stocks, signaling and operation systems, communications and SCADA systems, power supply, automatic fare collection, platform screen door, and depot workshop systems, etc.

**The M.R.T. Chaloem Ratchamongkhon Line (Blue Line) (Hua Lamphong Station - Bang Sue Station)**

The Company engaged Joint Venture CKET as the project manager for the MRT project (Project Manager) (from August 2000 to July 2009) to manage technical operations, such as, procurement of the M&E Equipment as ordered from manufacturers and liaison with contractors and relevant authorities regarding the installation of the M&E Equipment. Upon expiration of the engagement agreement of CKET for project management, the Company was able to efficiently administer and manage the MRT Project, as well as improve and develop the efficient service provision on its own. In regard to the supply and maintenance of the M&E Equipment, the Company engaged Lincas and Siemens to manufacture the M&E Equipment. Lincas and Siemens are responsible for the design, manufacture, supply, installation, testing and commissioning of the M&E Equipment. The Company also engaged Siemens as contractor for maintaining the M&E Equipment for a period of 10 years (July 2004 to July 2014), which was extended for another 10 years (to end in July 2024).

**The M.R.T. Chalong Ratchadham Line (MRT Purple Line), Bang Yai - Rat Burana, Bang Yai - Bang Sue Section, (Khlong Bang Phai Station - Tao Poon Station)**

The Company executed the Concession Agreement for the MRT Purple Line Project, Bang Yai - Rat Burana, Bang Yai - Bang Sue Section, (Khlong Bang Phai Station - Tao Poon Station), with MRTA, on a PPP Gross Cost basis, namely, the government sector invests in all civil works and the Company invests in the M&E Systems and the rolling stocks. The government sector shall make repayment in installments to the Company for the costs of the M&E Systems after the delivery of the ownership. In this regard, the Company will provide the operation and maintenance services according to standards as specified in the Agreement. In addition, the government sector is entitled to all fare box revenue and commercial development revenue from the utilization of the civil infrastructure and the railway systems and the government sector shall make repayment to the Company in the form of service fee for the O&M Services, for a contractual period of 30 years, divided into two phases, namely, Works under Phase 1: Design, supply, installation, testing of the M&E Systems and other related systems, including trial run to ensure its readiness for public service until the commencement of the Operation Service, by means of engagement of CH. Karnchang Public Company Limited as Project Manager. As for the implementation of Works under Phase 1 of the Concession Agreement, the Company and CH. Karnchang Public Company Limited engaged MTJV (Marubeni-Toshiba Joint Venture) for supply of rolling stocks, power supply equipment, signaling system, control and communications systems, as well as maintenance service for a period of 10 years.

**2.2.4.2 Environmental Impact**

In respect of the metro business, the Company is committed to continuing its environment-related activities in accordance with ISO 14000 standards, by implementing pollution prevention and control measures, mitigation environmental impact and sustainable use of resources on the basis of three aspects of sustainable development, namely, society, economy, and environment. In addition, the Company reported its operational results in line with the index on the operational results regarding energy conservation and environmental preservation in accordance with the Energy Conservation Promotion Act (No. 2) B.E. 2550 (2007), the ministerial regulations on standards, criteria and procedures for energy management in designated factories and buildings B.E. 2552 (2009), as well as the energy management manual for sustainable development.

Regarding the energy conservation and environmental preservation in the metro business, the Company has strictly complied with the relevant laws governing energy conservation and the environment, and also adopted the Energy Management Systems - Requirements with guidance for use or ISO 50001. It has complied with the International Environmental Management System 01ISO 140 since the opening of its MRT service, and organized activities for participation by and listening to related parties' opinions, to ensure proper understanding which will lead to sustainable development. It was for this reason that the Company received the standard management certifications as follows:

- ISO 9001:2015 Quality Management System;
- ISO 14001:2015 Environmental Management System;
- OHSAS 18001:2007 and TIS 18001:2001 Occupational Health and Safety Management Systems;
- Safety Management System from Lloyd's Register Rail.

In addition, the Company has been paying attention to the potential environmental impact from the MRT services on the environment, quality of life, and lives of people and nearby communities, by strictly monitoring, preventing and mitigating the environmental impact that may arise during the implementation of the MRT projects (Environmental Impact Mitigation Measures and Monitoring Program – EMP) in service, namely, the M.R.T. Chaloem Ratchamongkhon Line, the M.R.T. Chalong Ratchadham Line and the MRT Blue Line Extension, Bang Sue - Tao Poon Section, as well as submitting reports on its compliance with such measures to the Office of Natural Resources and Environmental Policy and Planning (ONEP) for consideration twice a year. The environmental quality measurements were conducted in key environmental issues as follows:

#### **(1) Air Quality**

The results of air quality measurement in atmosphere around the projects showed that the total suspended particulate (TSP), particulate matter (PM10) and carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), and the total hydrocarbons (THC) did not exceed normal level.

#### **(2) Air Quality in MRT Stations and Trains**

The results of air quality measurement in the MRT stations and trains, during both peak and off-peak hours, showed that the total bacterial and fungal volume, ventilation rate, temperature and relative humidity did not exceed normal level.

#### **(3) General Noise Level**

The results of general noise level measurement showed that the average noise did not exceed 70 dBA, with the maximum level not exceeding 115 dBA, which met the standard requirements.

#### **(4) Vibration Level**

The results of vibration level measurement did not exceed normal levels.

#### **(5) Effluent Quality**

The results of effluent quality measurement in stations, depot and administration building did not exceed normal levels. The wastewater treatment system could work efficiently according to its design.

In addition to the environmental quality measurements, maintenance vehicles used in the depot area meet the EURO IV Standard, an emission standard for vehicles, which provides assurance that the use of such maintenance vehicles and the maintenance operations will in no way give rise to pollution at a hazardous level.

## 2.3 Commercial Development Business

### 2.3.1 Nature of Services

#### Commercial Development Relating to Expressway Systems

As for the commercial development in the area of the expressway system, the Company and one of its subsidiaries, namely, NECL, allowed private entities and individuals to take on lease of spaces for commercial operation, as follows:

#### 1. Installation of Intelligent Traffic Signs and Advertising Boards

Private entities were allowed to install Intelligent Traffic Signs on the main routes and in front of toll plazas, and install advertising boards in various areas, such as, in front of toll plazas, toll booths, expressway columns, and expressway barriers, etc.

#### 2. Retail Spaces around Toll Plazas

Private entities and individuals were allowed to take on lease of retail spaces for providing service to expressway service users around Prachachuen, Srinagarindra, and Bang Pa-in Toll Plazas.

#### 3. Other Business Operations

Private entities were allowed use the expressway areas for installation of 3G signal boosters, etc.

#### Commercial Development Relating to Metro System

In regard to commercial development revenue from the M.R.T. Chaloem Ratchamongkhon Line Project, the Company has operated and granted the following rights to its subsidiary, namely, BMN:

- Procurement and/or Production of Advertising Boards

Procurement and/or production of advertising boards or media in all 18 stations and for all 19 trains (MRT metro), comprising advertising media of various forms and sizes, e.g., light boxes, sticker media, platform billboard, advertising media via the Passenger Information Display Systems (PIDs), and digital media. Moreover, a wide range of media has been developed and creative thinking, innovation and new technology have been employed to ensure conformity with change in passengers' commuting behaviors as well as creating lively travelling and beautiful environment within the MRT stations.

- Lease of Retail Spaces in MRT Stations

Lease of retail spaces in 11 MRT stations, comprising Khlong Toei Station, Queen Sirikit National Convention Centre Station, Sukhumvit Station, Phetchaburi Station, Phra Ram 9 Station, Thailand Cultural Centre Station, Ratchadaphisek Station, Lat Phrao Station, Phahon Yothin Station, Chatuchak Park Station and Kamphaeng Phet Station, and spaces in the basement level of the Lat Phrao park and ride facility, covering the total commercial lease spaces of approximately 19,490 square meters (spaces for retail shops and sale promotions). To date, the retail shops are opened in eight stations, namely, Sukhumvit Station, Phahon Yothin Station, Chatuchak Park Station, Kamphaeng Phet Station, Phra Ram 9 Station, Phetchaburi Station, Thailand Cultural Centre Station, and Khlong Toei Station, as a passport office for providing passport service to the public, through cooperation with the Department of Consular Affairs, Ministry of Foreign Affairs. In addition, on September 19, 2017, the spaces in the basement level of the park and ride facility at Lat Phrao Station were developed, in association with the Mall Group, to open for service of "Gourmet Market", the premium supermarket, to respond the urban life and suit the convenience of the MRT service users.

- Provision of Service and Maintenance of Telecommunications System Equipment

Provision of service and maintenance of telecommunications system equipment, particularly mobile phone network, inside the metro stations and tunnels, as well as Hi-speed Internet, the Wi-Fi services, and the telecommunications signal systems in the metro stations and tunnels. Currently, the telecommunications network service is also available covering the 850, 900, 1800 and 2100 MHz frequency bands.

## 2.3.2 Marketing and Competition

### 2.3.2.1 Customer Characteristics and Target Customers

As the commercial development in the M.R.T.Chaloem Ratchamongkhon Line Project comprises procurement and/or production of advertising media of various forms in the metro stations and trains, lease of retail spaces, as well as providing service and maintenance of telecommunications system equipment, with different customer characteristics and target customers varying on service types, therefore, such commercial development can separate customer characteristics and target customers, as follows:

- Procurement and/or Production of Advertising Media of Various Forms

Procurement and/or production of advertising media of various forms serve to communicate information from owners of goods and services to the public, among whom the MRT service users, mainly comprise school and college students as well as office staff. In the public relations and advertising via various forms of media of the MRT system, the business sector that mostly spend budgets for public relations in the advertising industry business include not only consumer goods and commodities, telecommunications, financial institutions, etc., but also those businesses along the MRT routes, such as, real estate, insurance and life insurance, construction industry, etc., including other goods relying on the prominent locations of the metro stations near shopping malls, universities, to publicize goods and services to such specific target groups as movies, clothing and jewelry, tourism, etc.

- Lease of Retail Spaces in MRT Stations

Target customers are different in each station which is opened for service to match with the services users' behaviors. Therefore, the current customers who take on lease of areas diversify, including SME entrepreneurs, up to major brand products and the premium supermarket, with branch expansion in parallel to opening for service of new shop areas in the stations. Moreover, the Company jointly supported and promoted provision of the government sector's services to the public, by opening a passport office center in response to metro service users' lifestyle.

- Provision of Service and Maintenance of Telecommunications System Equipment

The customer characteristics in this group are mobile phone network operators, therefore, target customers are those licensed mobile phone network operators comprising AIS, DTAC, TRUE MOVE, TOT, CAT, etc., all of which are currently the Company's customers.

As for the commercial development in the expressway systems, private entities and individuals are allowed to take on lease of spaces for various business operations, therefore, target customers are operators of such businesses, such as, advertising media producers, telecommunications system service providers, and individual customers' retail shops.

### 2.3.2.2 Marketing Policy and Strategies

#### (1) Service and Product Strategies

##### Commercial Development Relating to Expressway Systems

- Intelligent Traffic Signs in the form of maps and text messages are provided to give traffic updates to expressway users, including advertising boards in front of toll plazas, barriers, expressway columns, and in front of toll booths, totaling 208 signboards.
- Shops and public restrooms are provided to expressway users in 4 toll plazas of the Si Rat Expressway and the Udon Rattaya Expressway, namely, Srinagarindra Toll Plaza, Prachachuen Toll Plaza (inbound), Bang Pa-in Toll Plaza (inbound), and Bang Pa-in Toll Plaza (outbound).

### Commercial Development Relating to Metro System

The commercial development service is provided for facilitating and ensuring pleasant journeys for MRT service users, including people living in the areas adjacent to the MRT stations, and such commercial development service generates more revenue, as follows:

- Retail areas covering more than 25,000 square meters (including common areas), with retail shops and activity areas for almost 500 shops in 11 MRT stations, and at present, there are eight MRT stations with retail areas in service, comprising Sukhumvit Station, Phahon Yothin Station, Chatuchak Park Station, Kamphaeng Phet Station, Phra Ram 9 Station, Khlong Toei Station, Phetchaburi Station, and Thailand Cultural Centre Station, including the basement level of the park and ride facility at Lat Phrao Station where Gourmet Market has been available.
- Static media in various forms, light boxes and stickers, installed on walls of MRT stations from exit- and entrance-areas of stations up to platform floors and other areas, such as, columns, floors, ceilings, passenger elevators, etc., and in trains. Moreover, development of creative thinking has been made with owners of goods and services or media buying agents to design public relations advertising of customers to ensure dimensions and be more attractive by using 3D-4D, Big Campaign (Integrated Media), innovations and state-of-the-art technology, etc., the advertising media in the MRT system can then respond to the customers' requirements and ensure their good memories.
- Advertising media on hand grips in trains, benches on platform floors, escalator handrails.
- Dynamic media in form of digital display comprises Passenger Information Displays (PIDs) installed from exit- and entrance-areas of the stations up to platform floors and in trains, totaling 607 displays, and MRT-Digital media in different sizes depending on area of each station, and installed in tunnels, totaling 112 positions.
- Communication service, especially mobile phone network in both MRT stations and tunnels, to accommodate 3G-4G signals as currently available covering the 850, 900, 1800 and 2100 MHz frequency bands.
- Automatic Teller Machine (ATM) service, Cash Deposit Machine of banks, and other automatic machines, such as, mobile top-up vending machines of AIS Kiosk, True Kiosk, and mobile top-up vending machine of Boon-term Kiosk, etc.
- Currency exchange booth of Siam Commercial Bank at Phra Ram 9 Station, connection with Central Plaza Grand Rama 9.

### **(2) Marketing Promotion Strategies**

To create brand loyalty and awareness through various activities to promote marketing campaigns, rewards to customers and society, and corporate image towards young customers and passengers by creating value added collaboration on a regular basis, for example, collaborations with alliances and the commercial development licensee (BMN) in organizing GAT Guideline Program by Khun Kru Somsri, under the "Getting Fit Beat GAT by MRT" Project since 2009, promoting the use of spaces and retail shops in Metro Nine at Phra Ram 9 Station, and "Cheewajit" Magazine in promoting various exercises, such as yoga, long-stick danced exercise, etc. In addition, the "M Care" activity was organized for free health checkups for passengers by leading hospitals and institutes, as well as the "Share 2 Child" activity for youths and schools surrounding the Company's MRT routes on a continuous basis. Furthermore, the Company, together with BMN, organized a variety of activities, e.g., educational support activities at the MRT Purple Line depot, etc.

### **(3) Distribution Strategies and Channels**

Distribution channels vary by the forms of commercial development services, mainly by mixed presentation via the Company's strategic partners together with direct presentation to owners of goods and services.



### 2.3.2.3 Industrial Outlook and Competition

#### Advertising Media

Spending budget for buying the advertising media in 2017 was found lower than that of the previous year by six<sup>1</sup> percent, due to a reduction of budget in main media in forms of TV, radio, newspapers, magazines, and Internet, resulting from a decline in purchasing power. In this regard, media which remained steady and able to grow perpetually included out-of-home media, in-store media, transit media, with the higher growth as compared to that during the same period in the previous year.

The growth of the transit media was up to 10<sup>1</sup> percent as compared to that of the previous year, reflecting change in behavior in daily life of people in Thai society, changing their lifestyles to getting start to spend less time at home but spending more time outside, especially spending too much time on commutes. Such adjustment in the people's behavior was an important factor which caused the business operators to turn their attention to advertising media in line with the consumers' everyday life, which preferred out-of-home media, particularly advertising media in the mass rapid transit system. As for mobile media, there were differences in terms of targeted group, route, and number of service users, for instance, MRT, BTS, airports and buses, etc.

The mobile media group had differences in target group, route and number of service users, for example, MRT media, BTS media, airport media and public bus media, etc. Therefore, the budget for purchase of media in each category varied according to objectives of owners of goods and services. Currently, passengers of the mass rapid transit system in form of electric train system continued to grow, including MRT passengers, together with the government sector's policy to promote and support travelling by the electric train system; the projects in service including the MRT Purple Line, and the MRT Blue Line Extension which would connect with the current routes in the future, thereby resulting in growing volume of MRT passengers, which would have a positive impact on the advertising media service in the future.

Source : <sup>1</sup> The results of media industry survey conducted by The Nielsen Company (US), LLC.

#### Space for Lease and Service

Given the fact that consumers' behaviors had been changed rapidly and varied according to each consumer group, the retailers were then driven to adjust themselves at all times to reach each consumer group widely. Currently, Thai society started to be continuously developed to become an urban society, resulting in population density and traffic congestion problems, all of which changed consumers' lifestyle and demands which turned to give priority to convenience and rapidity, evidenced by the fact that ready meals became popular and demand for large-sized goods became less, but increase in purchase frequency. Therefore, the retail business had to adjust itself and develop a distribution channel pattern to harmonize with the people's livelihood or tactfully get involved in travelling behaviors of the urban residents, by way of, for instance, service provision of retail shops within the stations or grab and go roadside convenience stores which were more convenient and rapid for consumer spending, in order to increase distribution channel which directly reached the consumers and generate more sales for the retail business.

Furthermore, given change in consumers' behaviors to on-line shopping, available goods and services of certain kinds were affected and the space rental rate would be reduced accordingly. However, the retail space in MRT stations adjacent to the central retail district, department stores and connected points of the mass rapid transit system, remained attractive to both SME and Brand entrepreneurs, at the space leasing rate of more than 90 percent, such as, retail space at Sukhumvit Station, Phra Ram 9 Station, Chatuchak Park Station, etc.

### **2.3.3 Procurement of Products and Services**

#### **2.3.3.1 Nature of Procurement of Products**

The Company and one of its subsidiaries (BMN) operate the commercial development business of the MRT Blue Line Project for 1) procurement and/or production of advertising media of various forms; 2) lease of retail spaces in the MRT stations; and 3) provision of service and maintenance of telecommunications system equipment.

With respect to the expressways, the Company and one of its subsidiaries (NECL) allowed private entities and individuals to take on lease of expressway areas for installation of Intelligent Traffic Signs and various advertising boards, including retail spaces around toll plazas, and other business activities, such as, the use of the expressway areas for installation of 3G signal boosters, etc.

#### **2.3.3.2 Environmental Impact**

The Company also cares for and takes into account the environmental impact on the retail shop floors in the MRT system in order to prevent any impact on the environment, quality of life, and livelihood of people and communities, per details in Item 2.2.4.2.

### **2.4 Works Pending Delivery**

#### **1. The Project of a Connection between the Si Rat - Outer Ring Road Expressway and the Si Rat Expressway in the north (heading to Chaeng Watthana)**

The Company signed the Amendment (No. 2) to the Concession Agreement for the Si Rat - Outer Ring Road Expressway Project with the EXAT on July 19, 2017 to effect the construction of the connection between the Si Rat - Outer Ring Road Expressway and the Si Rat Expressway in the north, for the construction period of 18 months, with the project value of Baht 275 Million. The route is an elevated connection with 1-2 lanes, starting at the off-ramp from the Si Rat Expressway - Outer Ring Road Expressway on the inbound side in the area of Bang Sue at EMU Depot, turning left northwards to connect with the Si Rat Expressway on the outbound side heading to Chaeng Watthana, covering a distance of approximately 360 meters. As at December 31, 2017, the project's progress was approximately 28.256 percent, which went according to plan, with the construction expected to complete by 2018.

#### **2. The MRT Blue Line Extension Project**

The Company entered into the Concession Agreement for the MRT Blue Line Extension Project (Hua Lamphong Station - Lak Song Station and Bang Sue Station - Tha Phra Station) with the MRTA on March 31, 2017, for the period of 33 years, with the project value of Baht 22,036 Million, on a PPP Net Cost basis, whereby work for supply and installation of the M&E System for service opening divided into three phases, namely, Phase 1: Bang Sue Station - Tao Poon Station Section as opened for service on August 11, 2017; Phase 2: Hua Lamphong Station - Lak Song Station Section to be ready for service by September 2019; and Phase 3 : Tao Poon Station - Tha Phra Station Section to be ready for service by March 2020, covering the total distance of 27 kilometers, with 20 stations. The Company shall be entitled to fare box revenue and commercial development throughout the concession period.

### 3. Risk Factors

The Company realizes the significance of the management of risks from business operations under the changes of internal and external factors affecting its operational results. Risk management is considered a key instrument for business administration to ensure efficient and effective achievements and promote its competitiveness, as well as a key factor of the Good Governance. The Company thus arranges for the systematic risk management, monitoring and measures to minimize risks continuously. The Board of Directors has appointed the Corporate Governance and Risk Management Committee for policy-level consideration on the adequacy and appropriateness, with the Management to supervise the overall risk management process of the organization and perform daily routine work on behalf of the Corporate Governance and Risk Management Committee to monitor, evaluate and prepare a report on risk management to the Board of Directors for information.

In addition, the Company has also prepared an annual risk management plan and a risk management handbook as guidelines in the operations, and regularly monitor, evaluate and review risks to be in line with the ever-changing internal and external circumstances, including a backup plan in case of emergency, in order to ensure prompt action in solving problems and coordination with relevant units at all times. The risk management policy of the Company is as follows:

1. To adopt a risk management process in accordance with international standards or practices to ensure the efficiency of risk management, implementation and development in the same direction on an enterprise level in line with the business operation policy of the Company.
2. To treat the risk management as part of work, significant decision-making regarding management, and strategic planning to achieve the specified objectives, goals, missions and vision of the Company.
3. To carry out a proactive risk management to manage risks which may result in the Company's loss of interests and opportunities.
4. To delegate a risk management as staff's responsibility at all levels and manage risks within their work units and the organization to contain risks at adequate and appropriate level.
5. To determine guidelines for prevention or reduction of risks at a level acceptable to the Company in order to formulate plans to manage and control risks to at an acceptable level. All work units must consider the justification of expenses or costs to implement risk management measures in comparison with expected benefits.
6. To efficiently communicate the risk management within the Company for staff's effective learning, development and compliance.
7. To prepare an annual risk management plan subject to consideration and approval of the Corporate Governance and Risk Management Committee in respect of sufficiency and appropriateness to the current business circumstances.
8. To regularly follow up and assess the results of risk management to make sure that the risk management is duly and properly conducted.

Risk factors which may materially affect the Company's business operations are as follows:

#### 3.1 Systematic Risk

##### 3.1.1 Risk from Business Operations under Agreements with Government Sector and Government Policy

Given that the Company operates its businesses under the relevant Concession Agreements subject to the supervision of the government agencies, namely, MRTA and EXAT, differences in the contractual parties' interpretations on terms and conditions of the Concession Agreement may arise in various matters, such as, revisions of toll or fare rates, consideration to extend the concession periods under the Concession Agreements and responsibility for costs under the Agreements, which may require a certain period of time to come to a solution, and may impact the Company's business operations.

In addition, the political uncertainty and changes in government administration from the political party in charge may result in changes in policies, relevant laws or regulations, that possibly affect consideration to extend the concession periods under the Concession Agreements or terms and conditions stated, thereby rendering EXAT or MRTA unable to perform its obligations under the relevant Agreements or may require the Company to proceed beyond those specified in the relevant Agreements or undertakings.

The Company's core revenue is tolls under the Second Stage Expressway Agreement, which its term of 30 years will end in February 2020. Despite the conditions of the Agreement specifying that prior to the termination of the contract term of 30 years, the Agreement may be renewed twice of 10 years each, subject to the conditions to be agreed upon between EXAT and the Company, the political uncertainty or changes in government policies may affect the consideration to renew the Agreement. In such case, if the Company is not granted approval for renewal of the Agreement, the Company will lose such toll revenue. To minimize such risk, the Company has already submitted an application for renewal of the Second Stage Expressway Agreement, which is currently pending the consideration of EXAT.

In addition, the Company will establish a joint operation system with the government agencies both at the administrative and operation levels, by sharing sufficient information to ensure good understanding towards each other, as well as closely and regularly monitoring the political situations and changes in policies. The Company will review the strategies and operation plans to be reasonably suitable to the situations and for their mutual interest in the long run.

### **3.1.2 Risk Relating to Revenues less than Projections**

As the Company provides both expressway and metro services, therefore, the Company's core revenues are tolls and fares, which may be affected by several external factors beyond the Company's control, such as, metro network expansion, improved feeder systems, fare rates of other available alternative transit systems, road traffic congestion, oil prices, and growth of real estate and condominium projects as well as other businesses surrounding the metro routes, which would serve as people's destinations, etc., all of which will affect the volume of service users. In addition, the Company generates commercial development revenue, which may vary depending upon the local and overseas economic conditions, competition in advertising media and retail space lease business, as well as the progress in opening of retail shops in the stations, several factors of which are beyond the Company's control. Therefore, should the Company's revenues differ from study results or projections, it may affect the liquidity and serviceability management with respect to the existing financial obligations, such as, interest expenses, scheduled repayment of loans, operating expenses under the Agreements, as well as compensation for expressway site acquisition cost or remuneration payable to MRTA, etc.

To minimize such risk, the Company will establish a unit to closely monitor any impact which may affect the initial factors, and formulate appropriate strategies. In addition, the Company can limit potential impacts from risk factors, such as, oil prices, road traffic congestion, and fare rates of other available alternative transit systems, due to the Company's full services of expressways and metro, both of which are considered substitute products. With respect to the commercial development, the Company will develop new advertisement media to increase its commercial development revenue, such as, advertisement media management via the Passenger Information Display System (PIDs), platform billboards, and digital media, including its plans to develop more retail space.

### **3.1.3 Risks from Interest Rate and Foreign Exchange Rate Fluctuations**

Given that the Company remains obliged to service interest-bearing liabilities to lenders, and plans for future investment in several projects, therefore, it may require a large amount of long-term loans. Thus, interest expenses are considered the significant expenditures for the Company. The increased interest rates on loans may affect the Company's operational results due to the fact that the interest cost in respect of the certain credit facility was at the floating interest rate, thereby exposing the Company to a risk from interest rate fluctuation or increase in the money market. However, the Company will manage such risk from interest rate fluctuation, by arranging for the loan structure, divided into loans at floating interest rates and loans at fixed interest rates including plans to issue debt instruments or debentures as suitable to the economic conditions and the Company's view of the future interest rates.

The Company issued the debentures at the fixed interest rate, in order to arrange for the loan structure to ensure appropriate proportion of loans at fixed interest rate and loans at floating interest rates, and to minimize risk from interest rate fluctuation.

In 2017, the Company issued additional debentures in the amount of Baht 5,000 Million, with a maturity of 5-7 years, at the fixed interest rate, in order to invest in projects and for use as working capital. As at the end of 2017, the debt ratio at the fixed interest rate was 78.38 percent.

In addition, the Company incurred expenses in foreign currencies, for example, maintenance cost of the M&E Equipment, and insurance premiums, part of which had to be paid in foreign currencies. Thus, should the Baht value depreciate, the Company's expenses will increase accordingly. However, the proportion of the expenses in foreign currencies is low. Moreover, the Company will set up a policy to minimize risk from exchange rate, such as, negotiations for reduction of foreign currency expenses and buying forward, etc.

### **3.1.4 Risk from Serious Accidents, Public Unrest, or Natural Perils**

The Company's businesses of both construction and management of the expressways and metro are exposed to an event or external factor which results in an emergency, namely, peril, serious accident, earthquake and such events which may be caused by terrorism or sabotage as bombing and riot, including gathering of activities for inciting public unrest, which may cause the Company to suspend its services and lose its revenues. For this reason, the Company has set forth emergency plans in response to any events which may suddenly occur, for example, removal of various significant and essential M&E equipment in the management of the expressways for storage at the safe place, and arranges for staff training to ensure that the staff in charge will be able to immediately take actions to resolve such emergency, for instance, emergency drills of all relevant units inside and outside the Company by way of simulation of such various situations as emergency in the metro stations from bomb threat and bomb blast in the metro stations, train breakdown and stop inside the tunnel, fire in the rolling stock, metro stations or tunnel, etc., as well as establishes a unit for monitoring, alerting and coordinating with relevant agencies to prevent the occurrence of any serious accident and to be ready for rescue operations.

The Company has taken out insurance against property all risks, business interruption, public liability, and terrorism in respect of the metro service business.

### **3.1.5 Risk in respect of Personnel**

As the government realizes the significance for solving problems on traveling and traffic in Bangkok by using the mass rapid transit system, it is thus expedited to expand the metro network and the connecting system to other transportation systems. Therefore, it is highly possible that there will be governmental organizations or private agencies operating the mass rapid transit system business which requires an increase in personnel having knowledge, expertise and skills in the rail business. As a result, it is likely that the Company's main personnel will be enticed away from the Company.

The risk from shortage of competent personnel is considered one of the Company's main risks, as they are key factor to drive our organization to success. The Company gives priority to the personnel risk management, starting from the nomination and selection of good and qualified personnel suitable for the Company; continuous staff training courses to improve knowledge, skills and abilities in various fields necessary for performance of work based on each staff's position and designated duties; encouragement of the staff morale; consideration of appropriate and fair remuneration and welfare; review and revisions of the operation process and work system to ensure readiness at all times, as well as preparation of succession plan, whereby the Company has prepared the succession plan and appointment of a working group comprising high-level executives to set up guidelines in the selection of staff to ensure the availability of personnel, both in the executive and supervisor levels, in order to prevent the risk from shortage of personnel having knowledge, expertise and technical skills for specific work. The Company has arranged for collection of the body of knowledge for specific work and extended the results to the knowledge management program, in order to continuously improve the work process.



## 3.2 Corporate Specific Risk

### 3.2.1 Risk from Legal Disputes

The Company and NECL have a total of 11 disputes with EXAT on different interpretation of several matters, such as, adjustment of toll rates and responsibility for costs under the Agreements. The disputes were referred to the Arbitral Tribunal in accordance with the dispute settlement procedures under the Agreements and in the Administrative Court, divided into the disputes that the Company and NECL referred to the dispute settlement proceedings under the Agreements and demanded for damages with the total amount until the date of submission of the disputes of approximately Baht 28,179.8 Million; and the disputes that EXAT submitted claims for damages with the total amount until the date of submission of the disputes of approximately Baht 1,589.2 Million.

Most of the major claims for high value damages are made by the Company from EXAT. Therefore, the decision should not materially have any negative risk towards the Company's operational results.

### 3.2.2 Risk from Return on Investments in Companies less than Projections

The Company may be exposed to a risk from return on investments in companies less than projections should the operational results of such companies whose shares were held by the Company not meet the projections. To minimize such risk, the Company will take into account the proportion of investments in companies in line with the Company's investment policy, which would enable the Company to participate in setting out policies and monitor the operations of the invested companies.

### 3.2.3 Risks Relating to Fluctuation of Cost of Rail Business

Costs of rail business comprise cost of fare and cost of train service, which are deemed the main expenditure of the Company's business operations, comprising repair and maintenance costs for the metro and civil infrastructure, public utility cost, personnel cost, and payment of remuneration from fare revenue.

As for the maintenance costs under the M&E contract, the Company's contract is in foreign and Baht currencies, subject to adjustment based on the Consumer Price Index as specified in the contract. Given the long-term contract, the Company will be then exposed to risk due to changes in such indices.

The public utility cost mainly comprises the cost of electricity used at the metro stations and for train operations. The cost of electricity may be adjusted according to the electricity rates of the Metropolitan Electricity Authority, which may result in the Company's increased cost.

Therefore, the Company's costs of rail business in respect of cost of fare box vary according to the aforesaid costs. However, in the past, the Company was able to effectively control its cost of fare box. Besides, the cost of fare box is mostly fixed cost, not varying directly according to the increased volume of passengers, provided that there is no material change in the volume of passengers to the extent that the Company is required to add the number of trains for service to enhance the capacity to accommodate the passengers.

In the MRT Purple Line Concession Agreement, the service fees for the O&M Services payable by MRTA to the Company are calculated and based on the projections of operating expenses estimated by the Company, whereby such service fees may be adjusted only based on the actual inflation rate and electricity charge rate under the method specified in the Concession Agreement. Therefore, profits from the Operation Service will vary according to the Company's ability to manage the actual costs and expenses to mirror the specified projections. Should the actual costs and expenses be different from the projections, the Company's operational results may be affected since the Company is not able to request compensation or increase the service fees from MRTA.

However, with the expertise and experience in management of the MRT Blue Line Project, the Company is confident in its ability to efficiently manage costs and expenses for operations to be close to the projections.



### 3.2.4 Risk from Work Operations of Expressway Construction and Management Business

The Company takes into account the risk from operations of expressway construction and management business which may be resulted from primary factors, i.e., personnel, work system, operation system and external factors, which cause error or insufficiency of work procedures, employees, work system or information technology system, including employees' fraud and events or external factors, which may give rise to monetary and non-monetary damage, namely, damage to reputation or security of the Company. Therefore, it is greatly necessary to have a thorough supervision system with due care. The Company has then arranged for a specific unit having duties to monitor and maintain the routes and toll collection system in accordance with the operation standards, which can be assured by the experience and expertise of staff in charge from all divisions, thereby leading to the quality and availability of efficient, complete and continued service.

In addition, the Company has also established the preventive measure for the significant structures of the expressway systems so as to be available for full-time service by way of drawing up a plan for inspection of the structures of both the Si Rat Expressway, the Udon Rathaya Expressway, and the Si Rat - Outer Ring Road Expressway to be in line with the inspection by JMI Pacific Co., Ltd., a designing company with expertise in structural inspection. The monitoring, surveillance and maintenance were conducted to ensure that there would be no impact on the use of the expressways. With respect to the toll collection, communication and traffic control systems, which are important to its operations, the Company has provided the preventive maintenance as well as the data backup system, the standby power system and the management of purchase of spare materials.

Moreover, the Company may be exposed to the risk from non-functional toll collection system equipment which may arise by various causes, such as, non-functional electrical system due to power outage from the Metropolitan Electricity Authority, error processing by the operating system or computer virus infection in the system which destroys data in the operating system, including data and information hacks, thereby causing damage to the system, etc. In this regard, the Company gives high priority to such risk management by arranging for power backup system, security system for access to significant systems by third parties, determination of authorization levels of access to information and equipment, and installation of virus scan software and data backup in the operating system to ensure instant substitution.

### 3.2.5 Risks from Engagement of Outsourced Experts as Main Contractors for Supply and Maintenance of the M&E Equipment

The Company has accepted the transfer of the agreement for procurement of the M&E Equipment and an agreement for maintenance of the M&E Equipment with main contractors, namely, Siemens Limited, Thailand, and Japan Transportation Technology (Thailand). Thus, in the event that such outsourced expert group, as such main contractors, is unable to provide services under the agreements to the Company or there is any change in the maintenance agreement, the Company's business operation may be affected.

According to a study of information from members in the international federations of public transport operators, e.g., UITP, APTA, NOVA Group of Metros, as well as advice from Lloyd's Register Rail, the Company's highly experienced consultant, it is possible to select and procure M&E Equipment from other manufacturers which will be compatible with its existing system. In this regard, the Company has a policy to develop the quality of its personnel to have sufficient capabilities in working with local and overseas equipment manufacturers and contractors in the maintenance and repair of the M&E Equipment and the rail system to improve its efficiency without reliance on the sole existing manufacturer.

### **3.2.6 Risk from Delayed Construction and Operation of the Projects**

On March 31, 2017, the Company executed the Concession Agreement for the MRT Blue Line Extension Project with the Mass Rapid Transit Authority of Thailand (MRTA), whereby the Company shall have duties in supply, installation, and test run and commissioning of the M&E Systems for the MRT Blue Line Extension Project, provided that such M&E Systems shall be connected with those of the M.R.T. Chaloem Ratchamongkhon Line Project in order to provide the train operation service in phases as planned, namely, Phase 1: Bang Sue Station - Tao Poon Station, opened for service by August 15, 2017; Phase 2: Hua Lamphong Station - Lak Song Station, to be opened for service within 30 months (September 2019); and Phase 3: Tao Poon Station - Tha Phra Station, to be opened for service within 36 months (March 2020).

The Company then managed such risk by entering into an agreement engaging CH. Karnchang Public Company Limited as Project Manager, as well as for supply, installation, and test run and commissioning of the M&E Systems for the Project, Phase 1 of which, Bang Sue Station - Tao Poon Station, was completed and opened for service on August 11, 2017. At present, the risk from operation of the MRT Blue Line Project, Phase 1, no longer exists. There remains the risk from operation of Phases 2 and 3, which currently progresses as planned.

### **3.2.7 Risk in Financing the MRT Blue Line Project**

In the operation of the MRT Blue Line Project, the Company requires investment in the amount of approximately Baht 22,000 Million. As for management of risk relating to source of funds, the Company will use funds from internal source, i.e., cash flow as a result of debt repayment from NECL in the amount of approximately Baht 6,000 Million, and the remainder will be derived from the external source by way of taking out loans from financial institutions or issuance of debentures. The Credit Facility Agreement for the MRT Blue Line Project has been executed in January 2018.

## 4. Property Used in Business Operations

### 4.1 Main Assets

As at December 31, 2017, the Company and its subsidiaries had main assets used in business operations, per the following :

(Unit: Million Baht)

Class of Assets	Net Book Value
1. Building and equipment	360
2. Rights to operate completed expressway sectors	38,449
3. Rights to use sites for expressway construction	719
4. Intangible assets under the Concession Agreement for the MRT Blue Line Project	25,954
<b>Total</b>	<b>65,482</b>

The main assets of the Company and its subsidiaries as indicated above can be classified into class of assets and companies, per the following :

#### 4.1.1 Building and Equipment

As at December 31, 2017, the book value of the building and equipment as per the consolidated financial statements of the Company and its subsidiaries were as follows:

(Unit: Million Baht)

Company	Net Book Value	Ownership	Encumbrance
The Company	315	Owner*	None
NECL	32	Owner**	None
BMN	13	Owner	None
<b>Total</b>	<b>360</b>		

Remarks: \* This refers to building, construction improvement and certain structures of the Second Stage Expressway System. Despite the fact that the title to such building is owned by EXAT, the Company is granted the right to use such building to operate the Second Stage Expressway Project under the conditions as specified in the Agreement. The Company takes on lease of a building for use as its head office located at No. 587 Sutthisarnvinitchai Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400. The lease is on a year by year basis at the rental rate of Baht 10,000 per month.

\*\* NECL does not own any property, plant and equipment, but takes on lease of a building for use as its head office located at No. 587 Sutthisarnvinitchai Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400. The lease is on a year by year basis at the rental rate of Baht 10,000 per month. NECL uses the Bang Pa-in - Pak Kret Expressway Control Center Building, which is part of the Bang Pa-in - Pak Kret Expressway Project, to supervise the operations. Despite the fact that the title to such building is owned by EXAT, NECL is granted the right to use such building to operate the Bang Pa-in - Pak Kret Expressway Project under the conditions as specified in the Agreement.

#### 4.1.2 Rights to Operate Completed Expressway Sectors

As at December 31, 2017, the book value of the rights to operate completed expressway sectors as per the consolidated financial statements of the Company and its subsidiary were as follows:

(Unit : Million Baht)

Company	Net Book Value
The Company	32,245
NECL	6,204
<b>Total</b>	<b>38,449</b>

The rights to operate completed expressway sectors are considered the costs of construction of the Si Rat Expressway, the Si Rat - Outer Ring Road Expressway, and the Udon Raththaya Expressway, with the details as at December 31, 2017 comprising:

(Unit : Million Baht)

Class of Assets	Net Book Value	Ownership	Encumbrance
Si Rat Expressway, Sectors A, B and C	4,674	EXAT	None
Si Rat Expressway, Sector D	3,732	EXAT	None
Si Rat - Outer Ring Road Expressway	23,767	EXAT	Loan Security
Udon Raththaya Expressway	6,204	EXAT	*
Project costs during construction	72		
<b>Total Net Book Value</b>	<b>38,449</b>		

Remark : \* NECL provided the rights to operate completed expressway sectors under the Concession Agreement for the Udon Raththaya Expressway Project as security to the Company to secure the loan repayment.

Given that the Expressway Agreements above are on a BTO (Build, Transfer and Operate) basis, the title to all expressways, including various permanent constructions in relation to or used in connection with the expressway systems, shall be vested in EXAT immediately upon construction by the Company and NECL. Upon opening for service, the Company and NECL are entitled to utilize such property and shall have the duty to keep such property maintained throughout the term of the Agreements. The Second Stage Expressway Agreement (Si Rat Expressway) has a term of 30 years from March 1, 1990 and may be renewed twice of 10 years each, subject to the conditions to be further agreed upon. The Agreement for the Extension of the Second Stage Expressway, Sector D, has a term of 30 years from April 22, 1997. The Si Rat - Outer Ring Road Expressway has a term of 30 years from December 15, 2012. The Bang Pa-in - Pak Kret Expressway Project Agreement (Udon Raththaya Expressway) has a term of 30 years from September 27, 1996 and may be renewed twice of 10 years each. These Agreements require the Company and NECL to be responsible for expenses relating to toll collection, traffic management and rescue operation on the expressways, including the costs of maintenance of the expressways under the relevant Agreements throughout the term of the Agreements.

#### 4.1.3 Rights to Use Sites for Expressway Construction

As at December 31, 2017, the book value of the rights to use sites for expressway construction as per the consolidated financial statements of the Company and its subsidiaries were as follows:

(Unit : Million Baht)

Company	Net Book Value
The Company	719

The rights to use sites for expressway construction are considered part of the rights to operate completed expressway sectors. The Company recorded the initial costs of the rights to use sites for expressway construction at the costs equivalent to the present value of the encumbrance in payment of compensation for site acquisition cost to EXAT under the Second Stage Expressway Agreement after initial recognition of the rights to use sites for expressway construction which showed the value at costs, less accumulated amortization. The Company amortized the rights to use sites for expressway construction as expenses in the income statement based on the volume of vehicles using service.

#### 4.1.4 Intangible Assets under the Concession Agreement for the MRT Blue Line Project

As at December 31, 2017, the book value of intangible assets under the Concession Agreement for the MRT Blue Line Project as per the consolidated financial statements of the Company and its subsidiary were as follows:

(Unit : Million Baht)

Company	Net Book Value
The Company	25,608
BMN	346
<b>Total</b>	<b>25,954</b>

The intangible assets under the Concession Agreement for the MRT Blue Line Project are considered the costs of construction of the MRT Blue Line Project, with the details as at December 31, 2017 comprising:

(Unit: Million Baht)

Company	Class of Assets	Net Book Value	Ownership	Encumbrance
The Company	M&E Equipment	17,117	Owner	None
The Company	M&E Equipment and leasehold improvements, telecommunications system equipment, and advertising system equipment in metro stations	503	Owner	None
BMN	M&E Equipment and leasehold improvements, telecommunications system equipment, and advertising system equipment in metro stations	346	Owner	None
The Company	Project costs during construction	7,988	Owner	None
	<b>Total Net Book Value</b>	<b>25,954</b>		

## 4.2 Investments in Other Companies

### 4.2.1 Summary of Investments as per the Consolidated Financial Statements of the Company and its Subsidiaries

As at December 31, 2017, the book value of investments in other companies as per the Company's consolidated financial statements were as follows:

(Unit : Million Baht)

Company	Book Value under Cost Method	Portion of Investment in each Company (percent)	Paid-up Capital	Type of Investments	Nature of Business Operations
1. Northern Bangkok Expressway Company Limited <u>Less:</u> Provision for impairment of investments Net investments	2,604 (2,450) <u>154</u>	99.99	5,250	Subsidiary	- Construction and operation of the Bang Pa-in - Pak Kret Expressway Project
2. Bangkok Metro Networks Limited <u>Less:</u> Provision for impairment of investments Net investments	166 (16) <u>150</u>	65.19	254	Subsidiary	- Development of lease retail spaces in the metro stations and the basement level of the park and ride facility - Procurement of advertising boards or media in the metro stations and inside the trains - Provision of service and maintenance of telecommunications system equipment in the metro stations
3. TTW Public Company Limited	6,976	19.45	3,990	Associated Company	- Production and distribution of tap water
4. CK Power Public Company Limited	3,223	19.40	7,370	Associated Company	- Investment in other companies (Holding Company) operating the energy business
5. Xayaburi Power Company Limited	1,655	7.50	22,065	Other Company	- Construction and operation of the Xayaburi Hydroelectric Power Project

### 4.2.2 Policy on Investment and Management in the Subsidiaries

The Company has a policy to invest in businesses which are related, similar, or beneficial, and support the Company's business operations, in order to provide opportunities and long-term yields, and strengthen the Company's stability and operational results. The investment policy shall be as follows:

1. To invest in projects or acquire ordinary shares in project operators, in a manner of long-term investments;
2. To invest up to the minimum proportion to allow the Company to participate in setting out policies, monitoring and reviewing operations of such companies so invested;
3. Not to invest in any project giving rise to environmental impact or contrary to the good moral of the society.



As at December 31, 2017, the Company invested in subsidiaries and other company, as follows:

**1) Northern Bangkok Expressway Company Limited (“NECL”)**

The Company established NECL in 1996, by holding 99.99 percent of its shares. The benefits to be derived shall be in the form of dividend from investment in shares of NECL. Due to the impact on NECL from the government policy for construction of the competing road, NECL's revenue did not meet its projection. In this regard, NECL's operational results continued to sustain loss to the extent that the accumulated loss exceeded its equity, resulting in shareholders' deficit. In 2003, NECL therefore increased its registered capital by Baht 3,000 Million to become the registered capital of Baht 6,000 Million. At present, NECL called for share payment of 75 percent of the increased registered capital of Baht 3,000 Million. However, NECL's operational results have started to generate profits since 2013 until present. The Company provided a large amount of loans for NECL and also is the major creditor of NECL, the Company has therefore assigned its five executives to be members of NECL's board of directors, from a total of six directors of NECL. In case NECL would take any actions which may significantly affect the Company, NECL would be required to seek prior approval from the Company's Board of Directors' Meeting. Furthermore, the Company is also the service provider for all operations of NECL.

As at December 31, 2017, NECL's registered and paid-up capital was Baht 5,250 Million. The Company's shareholding in NECL was 99.99 percent of its registered capital.

**2) Bangkok Metro Networks Limited (“BMN”)**

The Company established BMN on February 25, 2009 to operate the businesses of procurement and production of advertising media of various forms in the metro stations and inside the trains, lease of retail spaces in the MRT Blue Line stations and spaces in the basement level of the Lat Phrao park and ride facility. To date, the retail shops are opened in nine stations, namely, Sukhumvit Station, Phahon Yothin Station, Chatuchak Park Station, Kamphaeng Phet Station, Phra Ram 9 Station, Thailand Cultural Centre Station, Khlong Toei Station, Lat Phrao Station, and Phetchaburi Station. In addition, BMN also provides service and maintains telecommunications system equipment inside the metro stations. As at December 31, 2017, BMN's registered and paid-up capital was Baht 254 Million, whereby the Company holds shares in BMN representing 65.19 percent of all BMN's shares sold, together with 34.81 percent of shares held by other investors having experience and expertise in the businesses of advertising media, marketing, real estate, and telecommunications technology.

As for the policy on future investment in BMN, the Company continues to maintain its shareholding in BMN of not less than 50 percent of all shares in BMN. The Company will receive the return on investment in the form of revenue sharing and dividend income from investment in BMN. The Company has a control policy or participates in setting out the significant policies on the business operations by assigning its three representatives to be members of BMN's board of directors, from a total of six directors of BMN.

### 3) TTW Public Company Limited (“TTW”)

The Company invested in TTW which operates the business of production and distribution of tap water to the Provincial Waterworks Authority in the vicinity of Nakhon Pathom Province and Samut Sakhon Province, under the Water Purchase and Sale Agreement with the Provincial Waterworks Authority with a 30-year contract term from July 21, 2004. TTW invested in Pathum Thani Water Co., Ltd., representing 98 percent of its registered capital, whereby such company operates the business of production and distribution of tap water in the vicinity of Pathum Thani and Rangsit, under the Water Purchase and Sale Agreement with the Provincial Waterworks Authority with a 25-year contract term from October 15, 1998. TTW also invested in Thai Water Operations Company Limited which operates the business of operation and management of tap water production and distribution systems and wastewater treatment service provision, whereby TTW holds shares representing 68.50 percent of its registered capital. In addition, TTW invested in the energy business by holding 25.31 percent of shares in CK Power Public Company Limited, a company investing in other companies operating the energy business. The benefits to be derived by the Company from investment in TTW shall be in the form of dividend income.

The Company, as a shareholder, assigned its representative to be a member of the board of directors of TTW. As at December 31, 2017, the Company held shares in TTW representing 19.45 percent of its registered capital.

### 4) CK Power Public Company Limited (“CKP”)

The Company jointly invested in the establishment of CKP, which operates core business by investing in other companies (Holding Company) operating the business of production and distribution of electricity from various types of energy. As at December 31, 2017, CKP invested by holding shares representing 56 percent in SouthEast Asia Energy Limited; 30 percent in Nakhon Ratchasima Solar Limited; 30 percent in Chiangrai Solar Limited; 100 percent in Bangkhenchai Company Limited; 65 percent in Bangpa-in Cogeneration Limited; and 30 percent in Xayaburi Power Company Limited. The benefits to be derived by the Company shall be in the form of dividend from investment.

The Company, as a shareholder, assigned its representative to be a member of the board of directors of CKP. As at December 31, 2017, the Company held shares in CKP representing 19.40 percent of its registered capital.

### 5) Xayaburi Power Company Limited (“XPCL”)

The Company invested in XPCL, a company which was awarded the concession from the Government of the Lao People’s Democratic Republic for design, development, construction and operation of the Xayaburi Hydroelectric Power Project, with a 29-year concession period from the Commercial Operation Date. The expected benefits to be derived by the Company shall be in the form of dividend from investment.

The Company, as a shareholder, assigned its representative to be a member of the board of directors of XPCL. As at December 31, 2017, the Company held shares in XPCL representing 7.50 percent of its registered capital. All ordinary shares in XPCL held by the Company have been pledged as security of long-term loan of XPCL.

## 5. Legal Disputes

### 5.1 Disputes with Expressway Authority of Thailand (“EXAT”)

The Company and the subsidiary had a total of 11 disputes with EXAT, which were referred to the Arbitral Tribunal in accordance with the dispute settlement procedures under the Agreements and in the Administrative Court. The essence of each dispute was as follows:

#### 5.1.1 Disputes submitted by the Company and the subsidiary claiming for damages in 8 disputes, with the total amount until the date of submission of the disputes of approximately Baht 28,179.8 Million

##### 1. Priority Component Opening Date under the Second Stage Expressway Agreement

The Company submitted a statement of claim requiring EXAT to compensate for the deficient revenue with interest in the amount of Baht 3,831.4 Million, due to different opinions as to which date was the Priority Component Opening Date, which affected the commencement of the toll revenue sharing with the Company under the Agreement.

The Arbitral Tribunal rendered its arbitral award on the dispute requiring EXAT to pay the toll revenue sharing including interest under the Agreement as required by the Company. EXAT subsequently issued a letter refusing to comply with the arbitral award.

And, on April 20, 2009, EXAT submitted a petition to the Central Administrative Court requesting the Court to revoke the arbitral award or order refusing to enforce compliance with the arbitral award, and on October 19, 2011, the Company submitted a petition to the Central Administrative Court requesting a judgment to enforce compliance with the arbitral award. The interest was calculated up to the date on which the Company submitted the petition to the Court, amounting to Baht 1,189.7 Million, with the total disputed amount of Baht 5,021.1 Million.

On September 13, 2013, the Central Administrative Court adjudged to dismiss EXAT’s petition requesting the Court to revoke the arbitral award and adjudged to enforce the Company’s petition.

On October 11, 2013, EXAT lodged an appeal against the Central Administrative Court’s judgment with the Supreme Administrative Court.

At present, it is pending the Supreme Administrative Court’s scheduling of the hearing date for the reading of the judgment.

##### 2. Competing road with the Udon Ratthaya Expressway

The subsidiary submitted a statement of claim requiring EXAT to compensate for the deficient revenue, based on the ground that the Government granted permission for construction of the Extension of the Don Muang Tollway Project, from the National Memorial to Rangsit Section, which constituted a competing road under the Agreement, and affected the financial position of the subsidiary, thereby rendering such damages until the date of submission of the dispute (excluding interest) to Baht 1,790 Million.

The Arbitral Tribunal rendered its arbitral award on the dispute requiring EXAT to compensate for the deficient revenue with interest under the Agreement as required by the subsidiary. EXAT then issued a letter to the subsidiary refusing to comply with such arbitral award. And, on March 3, 2009, EXAT submitted a petition to the Central Administrative Court requesting the Court to revoke the arbitral award.

On September 1, 2011, the subsidiary submitted a petition to the Central Administrative Court requesting a judgment to enforce compliance with the arbitral award, with the disputed amount of Baht 3,296.7 Million.

On May 3, 2013, the Central Administrative Court adjudged to dismiss EXAT’s petition requesting the Court to revoke the arbitral award and the Central Administrative Court also issued a judgment to enforce compliance with the arbitral award.

On May 31, 2013, EXAT lodged an appeal against the Central Administrative Court’s judgment with the Supreme Administrative Court.

At present, it is pending the Supreme Administrative Court’s scheduling of the hearing date for the reading of the judgment.

**3. Issuance of variation orders by EXAT**

The Company submitted a statement of claim requiring EXAT to compensate the Company for damages caused by EXAT's issuance of additional variation orders for certain construction work of the Si Rat Expressway in the total amount of Baht 209.1 Million (excluding interest).

The Arbitral Tribunal unanimously rendered its arbitral award requiring EXAT to pay the construction costs and expenses as per the Notice of Variation in the total amount of Baht 382.5 Million, including interest under the Agreement.

On February 4, 2014, EXAT issued a letter refusing to comply with the arbitral award. And, on March 26, 2014, EXAT submitted a petition to the Central Administrative Court requesting the Court to revoke the arbitral award.

On October 21, 2016, the Company submitted a petition for enforcement of the arbitral award to the Central Administrative Court.

At present, it is pending the Central Administrative Court's consideration.

**4. Revision of toll rates of the Chalerm Mahanakorn Expressway and the Si Rat Expressway for the year 2003**

The Company submitted a statement of claim requiring EXAT to compensate the Company for damages caused by the revision of toll rates of the Chalerm Mahanakorn Expressway and the Si Rat Expressway for 2003, which was not in accordance with the Agreement, thereby causing the damages, including interest, in the total amount of Baht 4,368 Million.

The Arbitral Tribunal, by the majority of votes, rendered its arbitral award requiring EXAT to compensate the Company for damages in the amount of Baht 4,368 Million, including interest under the Agreement.

EXAT then issued a letter refusing to comply with such arbitral award. And, on May 30, 2016, EXAT submitted a petition to the Central Administrative Court requesting the Court to revoke the arbitral award.

On November 4, 2016, the Company submitted its answer to the petition to the Central Administrative Court.

At present, it is pending the Central Administrative Court's consideration.

**5. Revision of toll rates of Sector D of the Si Rat Expressway for the year 2003**

The Company submitted a statement of claim requiring EXAT to compensate the Company for damages caused by the revision of toll rates of Sector D of the Si Rat Expressway for the year 2003, which was not in accordance with the Agreement, in the total amount of Baht 1,048.2 Million.

At present, it is in the process of the Arbitral Tribunal's preparation of the arbitral award.

**6. Revision of toll rates of the Chalerm Mahanakorn Expressway and the Si Rat Expressway for the year 2008**

The Company submitted a statement of claim requiring EXAT to compensate the Company for damages caused by the revision of toll rates (of the Chalerm Mahanakorn Expressway and the Si Rat Expressway) for the year 2008, which was not in accordance with the Agreement, in the total amount of Baht 9,091.8 Million, together with interest under the Agreement.

At present, it is pending the arbitration proceedings.

**7. Revision of toll rates of Sector D of the Si Rat Expressway for the year 2008**

The Company submitted a statement of claim requiring EXAT to compensate the Company for damages caused by the revision of toll rates of Sector D of the Si Rat Expressway for the year 2008, which was not in accordance with the Agreement, together with interest calculated up to May 31, 2013, in the total amount of Baht 4,062.8 Million, including interest under the Agreement.

At present, it is pending the arbitration proceedings.

## 8. Revision of toll rates of the Udon Ratthaya Expressway for the year 2003

The subsidiary submitted a statement of claim requiring EXAT to compensate the subsidiary for damages, together with interest, caused by the revision of toll rates of the Udon Ratthaya Expressway for the year 2003, which was not in accordance with the Agreement, in the amount of Baht 908.7 Million, together with interest under the Agreement.

At present, it is pending the arbitration proceedings.

### 5.1.2 Disputes submitted by EXAT claiming for damages in 3 disputes, with the total amount until the date of submission of the disputes of approximately Baht 1,589.2 Million

#### 1. Cost of arrangements of the entrance - exit and resolution of complaints

EXAT submitted a statement of claim requiring the Company to be responsible for the cost of arrangements of the entrance - exit claimed by complainants, and the cost of free flow drains, in the total amount of Baht 0.4 Million, which the Arbitral Tribunal rendered its arbitral award ruling that EXAT had no right to claim for such costs.

On May 7, 2014, EXAT submitted a petition for revocation of the arbitral award.

On August 30, 2017, the Central Administrative Court rendered the judgment revoking the arbitral award, only in respect of the Arbitral Tribunal's acceptance for consideration of the second dispute in case of free flow drains, as EXAT submitted the statement of claim after the statute of limitations of such dispute had expired.

On September 29, 2017, the Company lodged an appeal against the Central Administrative Court's judgment with the Supreme Administrative Court.

At present, it is pending the Supreme Administrative Court's consideration.

#### 2. Construction of the Udon Ratthaya Expressway, Phase 2

EXAT submitted a statement of claim requiring the subsidiary to complete the construction of the Udon Ratthaya Expressway, Phase 2, in accordance with Clause 8.5 a. of the conditions of the Bang Pa-in - Pak Kret Expressway Agreement, and compensate in the amount of Baht 1,587.7 Million, together with interest under the Agreement. The Agreement specifies that although the conditions under the Agreement have been completed for construction commencement, but should EXAT breach the Agreement that gives rise to the subsidiary's serious financial impact, and as a result, the subsidiary is not yet required to commence the construction. In this regard, EXAT breached the Agreement on the competing road and the revision of toll rates, the subsidiary then shall have the right not to commence the construction yet, and EXAT shall not have the right to claim for any fines.

At present, it is pending the arbitration proceedings.

#### 3. Cost of utilization of the Control Center Building (Bang Phun)

EXAT submitted a statement of claim requiring the subsidiary to be responsible for the cost of utilization of the Control Center Building (Bang Phun) in the amount of Baht 1.1 Million, which the subsidiary was of the view that such cost claimed by EXAT was not within its scope of responsibility under the Agreement.

At present, it is pending the arbitration proceedings.

Given that the disputes are pending the consideration, the Company and the subsidiary therefore have not yet recorded such entries in the financial statements.

---

## 6. General Information and Other Significant Information

### 6.1 General Information

#### (1) General information of the Company

Company Issuing Securities	:	<b>Bangkok Expressway and Metro Public Company Limited (“BEM”)</b>
Business Operation	:	Construction and management of the expressways and the rail mass rapid transit system projects, including other related businesses
Company Registration No.	:	0107558000491
Registered Capital	:	Baht 15,285 Million, which is fully paid up.
Head Office	:	587 Sutthisarnvinitchai Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400
Telephone	:	0 2641 4611 and 0 2354 2000
Fax	:	0 2641 4610 and 0 2354 2040
Website	:	<a href="http://www.bemplc.co.th">www.bemplc.co.th</a>
Branch Office (1)	:	238/7 Asoke-Dindaeng Road, Bangkapi Subdistrict, Huai Khwang District, Bangkok 10310
Telephone	:	0 2641 4611
Fax	:	0 2641 4610
Branch Office (2)	:	189 Rama IX Road, Huai Khwang Subdistrict, Huai Khwang District, Bangkok 10310
Branch Office (3)	:	189/1 Rama IX Road, Huai Khwang Subdistrict, Huai Khwang District, Bangkok 10310
Branch Office (4)	:	189/2 Rama IX Road, Huai Khwang Subdistrict, Huai Khwang District, Bangkok 10310
Telephone	:	0 2354 2000
Fax	:	0 2354 2040

#### (2) Legal entities in which the Company holds 10 percent of shares or more

Company Issuing Securities	:	<b>Northern Bangkok Expressway Company Limited (“NECL”)</b>
Business Operation	:	Construction and management of the Udon Ratthaya Expressway
Head Office	:	587 Sutthisarnvinitchai Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400
Registered Capital	:	Baht 6,000 Million, Baht 5,250 Million of which is paid up.
Shareholding Percentage	:	99.99 percent
Telephone	:	0 2641 4647
Fax	:	0 2641 4646



<b>Company Issuing Securities</b>	<b>: Bangkok Metro Networks Limited (“BMN”)</b>
Business Operation	: 1. Lease of retail spaces in the metro stations and the basement level of the Lat Phrao park and ride facility 2. Procurement and/or production of advertising media in the metro stations and inside the trains 3. Provision of service and maintenance of telecommunications system equipment in the metro stations
Head Office	: 832 Sutthisarn Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400
Registered Capital	: Baht 254 Million, which is fully paid up.
Shareholding Percentage	: 65.19 percent
Telephone	: 0 2690 8200
Fax	: 0 2690 8212
Website	: www.bmn-mrt.com

<b>Company Issuing Securities</b>	<b>: TTW Public Company Limited (“TTW”)</b>
Business Operation	: Production and distribution of water supply to the Provincial Waterworks Authority and investment in companies operating the business of other public utilities
Head Office	: 30/130 Moo 12, Buddhamonthon 5 Road, Tambon Rai Khing, Amphoe Samphran, Nakhon Pathom Province 73210
Registered Capital	: Baht 3,990 Million, which is fully paid up.
Shareholding Percentage	: 19.45 percent
Telephone	: 0 2811 7526
Fax	: 0 2420 6064
Website	: www.ttwplc.com

<b>Company Issuing Securities</b>	<b>: CK Power Public Company Limited (“CKP”)</b>
Business Operation	: Investment by holding shares in other companies (Holding Company) operating the business of production and distribution of electricity from various types of energy
Head Office	: 587 Viriyathavorn Building, 19 <sup>th</sup> Floor, Sutthisarnvinitchai Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400
Registered Capital	: Baht 9,240 Million, Baht 7,370 Million of which is paid up.
Shareholding Percentage	: 19.40 percent
Telephone	: 0 2691 9720
Fax	: 0 2691 9723
Website	: www.ckpower.co.th

---

**(3) Reference****Securities Registrar : Thailand Securities Depository Company Limited**

The Stock Exchange of Thailand  
93 Rachadapisek Road, Dindaeng Subdistrict,  
Dindaeng District, Bangkok 10400  
Telephone : 0 2009 9382  
Fax : 0 2009 9476

**Auditor : EY Office Limited**

193/136-137 Lake Rajada Office Complex, 33<sup>rd</sup> Floor,  
New Rajadapisek Road  
Klongtoey District, Bangkok 10110  
Telephone : 0 2264 0777  
Fax : 0 2264 0789

**Legal Advisors : The Legists Group**

990 Abdulrahim Place, 9<sup>th</sup> Floor  
Rama IV Road, Silom Subdistrict  
Bangrak District, Bangkok 10500  
Telephone : 0 2636 1111  
Fax : 0 2636 0000

**Financial Advisor : Advisory Plus Company Limited**

1550 Thanapoom Tower, 10<sup>th</sup> Floor  
New Petchburi Road, Makkasan Subdistrict  
Ratchathewi District, Bangkok 10400  
Telephone : 0 2652 7858-64  
Fax : 0 2652 7867

**Debenture Registrars : Siam Commercial Bank Public Company Limited**

1060 New Petchburi Road, Makkasan Subdistrict  
Ratchathewi District, Bangkok 10400  
Telephone : 0 2544 3924  
Fax : 0 2937 7783

**: Krung Thai Bank Public Company Limited**

977/2 Phaholyothin Road, Samsen Nai Subdistrict  
Phayathai District, Bangkok 10400  
Telephone : 0 2298 0831  
Fax : 0 2298 0835

**Regularly Contacted  
Financial Institutions**
**: Krung Thai Bank Public Company Limited**

35 Sukhumvit Road, Khlong Toei Nuea Subdistrict  
 Watthana District, Bangkok 10110  
 Telephone : 0 2208 4631-9  
 Fax : 0 2256 8619

**: Siam Commercial Bank Public Company Limited**

9 Ratchadaphisek Road, Chatuchak Subdistrict  
 Chatuchak District, Bangkok 10900  
 Telephone : 0 2256 2323

**: TMB Bank Public Company Limited**

3000 Phaholyothin Road, Chom Thong Subdistrict  
 Chatuchak District, Bangkok 10900  
 Telephone : 0 2299 2511-2  
 Fax : 0 2299 2752

**6.2 Other Significant Information**
**Key Summary of Agreements in the Company's Businesses**
**6.2.1 Expressway Business**
**6.2.1.1 The Second Stage Expressway Agreement**

<b>Execution Date</b>	December 22, 1988
<b>Party</b>	The Expressway Authority of Thailand ("EXAT")
<b>Key Summary</b>	The Company is obliged to carry out construction and operation of the Si Rat Expressway (Second Stage Expressway), as well as related businesses under the Second Stage Expressway Agreement, for a concession period of 30 years from March 1, 1990 until February 29, 2020. The Second Stage Expressway System comprises Sector A (Rama IX - Ratchadapisek), Sector B (Phayathai - Bangkhlo), and Sector C (Ratchadapisek - Chaeng Watthana), covering a total distance of 29.8 kilometers. The Company shall be entitled to receive the toll revenue sharing in respect of both the Si Rat Expressway and the Chalerm Mahanakorn Expressway (First Stage Expressway), as constructed and operated by EXAT, throughout the concession period.

**6.2.1.2 The Agreement for the Extension of the Second Stage Expressway System (Sector D)**

<b>Execution Date</b>	April 17, 1997
<b>Party</b>	The Expressway Authority of Thailand ("EXAT")
<b>Key Summary</b>	The Company is obliged to carry out construction and operation of the Si Rat Expressway (Second Stage Expressway) for the extension of the Second Stage Expressway System, Sector D (Rama IX - Srinagarindra), covering a distance of 8.7 kilometers, for a concession period of 30 years from April 22, 1997 until April 21, 2027. The Company shall be entitled to receive all toll revenues throughout the concession period.

### 6.2.1.3 The Concession Agreement for Investment, Design, Construction, Operation, Provision of Service and Maintenance of the Si Rat - Outer Ring Road Expressway Project

<b>Execution Date</b>	September 15, 2012 (and amendments)
<b>Party</b>	The Expressway Authority of Thailand (“EXAT”)
<b>Key Summary</b>	<p>The Company is obliged to carry out design, construction and operation of the Si Rat - Outer Ring Road Expressway, with the route starting from Kanjanapisek Road and connecting to the Si Rat Expressway around the North of the Mo Chit 2 Bus Terminal, covering a total distance of 16.7 kilometers, for a concession period of 30 years from December 15, 2012 until December 14, 2042. The Company shall be entitled to receive all toll revenues throughout the concession period.</p> <p>On July 19, 2017, the Company executed the Amendment Agreement with EXAT for construction of a connection between the Si Rat - Outer Ring Road Expressway and the northern part of the Si Rat Expressway (heading to Chaeng Watthana), for a design and construction period of not exceeding 18 months.</p>

### 6.2.1.4 The Bang Pa-in - Pak Kret Expressway Agreement

<b>Execution Date</b>	September 27, 1996
<b>Parties</b>	Northern Bangkok Expressway Company Limited (“NECL”) and the Expressway Authority of Thailand (“EXAT”)
<b>Key Summary</b>	NECL is obliged to carry out construction and operation of the Udon Raththaya Expressway (Bang Pa-in - Pak Kret Expressway), connecting to the Si Rat Expressway around Chaeng Watthana Road and ending at Amphoe Bang Pa-in, Phra Nakhon Si Ayutthaya Province, covering a total distance of 32 kilometers, for a concession period of 30 years from September 27, 1996 until September 26, 2026.

## 6.2.2 Rail Business

### 6.2.2.1 The Concession Agreement for the MRTA Initial System Project - Chaloem Ratchamongkhon Line

<b>Execution Date</b>	August 1, 2000
<b>Party</b>	The Mass Rapid Transit Authority of Thailand (“MRTA”)
<b>Key Summary</b>	<p>The Company shall have the duties in design, manufacture, supply, installation, test run and commissioning of the M&amp;E Equipment, including operation and maintenance of M&amp;E Systems throughout the concession period of the M.R.T. Chaloem Ratchamongkhon Line, which covers a total distance of 20 kilometers, with 18 stations. The Company has the exclusive right to collect fare box revenue and undertake any and/or all activities and commercial development as specified in the Agreement, including advertising, retail space leasing in the project and telecommunications services in the metro stations and in the trains. And from March 31, 2017 onwards, this Concession Agreement shall be deemed as integral part of the Concession Agreement for the MRT Blue Line Project.</p>

### 6.2.2.2 The Concession Agreement for the MRT Blue Line Project

<b>Execution Date</b>	March 31, 2017
<b>Party</b>	The Mass Rapid Transit Authority of Thailand (“MRTA”)
<b>Key Summary</b>	<p>The Company is obliged to supply, install and test the M&amp;E Equipment for the MRT Blue Line Extension Project, provide train operation service for the M.R.T. Chaloem Ratchamongkhon Line Project and the MRT Blue Line Extension Project as Through Operation, and the Company is entitled to fare box revenue and to commercial development throughout the concession period, whereby the Company shall be responsible for all investments and operating costs throughout the concession period, with benefits or interests sharing to the MRTA as agreed upon in the Agreement for a period of 33 years from the date of the MRTA’s Notice to Proceed (NTP), divided into:</p> <p><u>Phase 1:</u> Supply, installation, and testing of the M&amp;E Equipment for the MRT Blue Line Extension Project, and trial run, for an operating period of 36 months from the date of MRTA’s Notice to Proceed;</p> <p><u>Phase 2:</u> Operation and maintenance of the MRT Blue Line Project, for a period of 30 years, from the date of service commencement which generates revenue from the whole line of the MRT Blue Line Project.</p> <p>The MRT Blue Line Extension Project is connected with the M.R.T. Chaloem Ratchamongkhon Line Project at Bang Sue Station and Hua Lamphong Station, divided into two sections, covering a total distance of 27 kilometers, namely, Hua Lamphong - Lak Song Section and Bang Sue - Tha Phra Section.</p>

### 6.2.2.3 The Concession Agreement for the MRT Purple Line Project, Bang Yai - Rat Burana, Bang Yai - Bang Sue Section (Khlong Bang Phai Station - Tao Poon Station), Contract 4: Concession for Investment, Supply of M&E Systems and O&M Services

<b>Execution Date</b>	September 4, 2013
<b>Party</b>	The Mass Rapid Transit Authority of Thailand (“MRTA”)
<b>Key Summary</b>	<p>This Agreement is a concession agreement for investment, supply of M&amp;E Systems, and O&amp;M services, for a concession period of 30 years from September 4, 2013 to September 3, 2043, on a PPP Gross Cost basis, or a joint investment between the government sector and the private sector, whereby the government sector invests in all civil works and the private sector invests in the M&amp;E Systems and the rolling stocks, including the O&amp;M Services according to standards as specified in the Agreement. The MRTA is entitled to fare box revenue and commercial development revenue. In this regard, the MRTA shall gradually make repayment of the M&amp;E Equipment costs to the Company on a monthly basis within a period of 6 years, and shall engage the Company for the O&amp;M Services throughout the concession period.</p>

#### 6.2.2.4 The Maintenance Contract for the Maintenance of the M&E Equipment and Additional Equipment for the MRT Blue Line Project

<b>Execution Date</b>	September 7, 2017
<b>Party</b>	Siemens (Thailand) Limited (“Siemens”)
<b>Key Summary</b>	Siemens is obliged to carry out repair and maintenance of the M&E Equipment and Additional Equipment, supply and installation of necessary spare parts for the M&E Systems, planning for inspection for safety, storage and procurement of spare parts, recruitment of necessary personnel for the Company’s maintenance unit, and storage and delivery of adequate spare parts for one-year operation to the Company after the end of the Maintenance Contract, which will expire in December 2029.

#### 6.2.2.5 The Project Management Agreement for Maintenance Service on Civil Infrastructure and M&E Systems for the MRT Purple Line Project, Bang Yai - Rat Burana, Bang Yai - Bang Sue Section (Khlong Bang Phai Station - Tao Poon Station)

<b>Execution Date</b>	November 17, 2015 (and amendments)
<b>Party</b>	CH. Karnchang Public Company Limited (“CH. Karnchang Plc.”)
<b>Key Summary</b>	CH. Karnchang Plc. has main duties under this Agreement as follows: <ul style="list-style-type: none"> <li>To maintain the civil infrastructure, including stations, elevated structures and depot; to maintain the M&amp;E Systems inside stations, elevated structures and depot; to maintain elevators and escalators inside stations and depot; to supply equipment, tools, spare parts, and personnel for maintenance work. Such maintenance service shall be provided for eight years, ending in October 2023, for the contract value not exceeding Baht 1,520 Million.</li> <li>To maintain the civil infrastructure and M&amp;E Systems at Tao Poon Station - Bang Sue Station for the contract value of Baht 155 Million for a period of seven years, whereby the Agreement will expire in October 2023.</li> </ul>



**6.2.2.6 The Project Management Agreement for Maintenance Service on Civil Infrastructure and M&E Systems for the M.R.T. Chaloem Ratchamongkhon Line Project (Hua Lamphong Station - Bang Sue Station)**

<b>Execution Date</b>	November 17, 2015
<b>Party</b>	CH. Karnchang Public Company Limited ("CH. Karnchang Plc.")
<b>Key Summary</b>	<p>CH. Karnchang Plc. has main duties under this Agreement as follows:</p> <ul style="list-style-type: none"> <li>• To maintain the civil infrastructure, including stations, tunnels and depot;</li> <li>• To maintain the M&amp;E Systems inside stations, tunnels and depot;</li> <li>• To maintain elevators and escalators inside stations;</li> <li>• To supply equipment, tools, spare parts, and personnel for maintenance work.</li> </ul> <p>CH. Karnchang Plc. shall provide such maintenance service for eight years, ending in October 2023, for the contract value not exceeding Baht 1,270 Million.</p>

**6.2.2.7 Agreement for the Project Management, Supply, and Installation of M&E Equipment for the MRT Blue Line Project**

<b>Execution Date</b>	June 20, 2017
<b>Party</b>	CH. Karnchang Public Company Limited ("CH. Karnchang Plc.")
<b>Key Summary</b>	<p>CH. Karnchang Plc. has main duties under this Agreement as follows:</p> <ul style="list-style-type: none"> <li>• To design, supply, and install the M&amp;E Equipment for the MRT Blue Line Project, including but not limited to the rolling stock, signaling system, power supply system, SCADA, communication system, automatic fare collection system, platform screen doors, and depot workshop equipment, etc.;</li> <li>• To connect the M&amp;E Systems for the MRT Blue Line Extension Project with those for the M.R.T. Chaloem Ratchamongkhon Line Project and for the MRT Blue Line Project, Bang Sue Station - Tao Poon Station, including commissioning to ensure compliance with the provisions in the Concession Agreement for the MRT Blue Line Project;</li> <li>• To inspect, test run, and commissioning the M&amp;E Systems for the MRT Blue Line Extension Project in association with the Company.</li> </ul> <p>CH. Karnchang Plc. shall be the project manager, as well as supply and install the M&amp;E Equipment within a period of time as specified in the Concession Agreement for the MRT Blue Line Project, which the Company executed with the Mass Rapid Transit Authority of Thailand dated March 31, 2017, in the amount of Baht 19,643 Million.</p>

### 6.2.3 Commercial Development Business

#### 6.2.3.1 The Agreement for Granting of Right for Commercial Development to Bangkok Metro Networks Limited

<b>Execution Date</b>	March 11, 2005 (and amendments)
<b>Party</b>	Bangkok Metro Networks Limited (“BMN”)
<b>Key Summary</b>	<p>BMN has the right for commercial development in the M.R.T. Chaloem Ratchamongkhon Line Project, as follows:</p> <ul style="list-style-type: none"> <li>• Right for development of spaces in 11 metro stations and the basement level of Lat Phrao park and ride facility;</li> <li>• Right for commercial development for procurement and/or production of advertising media in various forms, such as stickers, light boxes of various sizes, platform billboards, in the metro stations and trains;</li> <li>• Right for provision of telecommunications service in the metro stations and trains, as well as IRDN (Integrated Radiating Distributed Network) service, to accommodate the communication service of all mobile phone systems, including other telecommunications service of all types in the future;</li> <li>• Right for management of the Passenger Information Display installed in the metro stations and trains.</li> </ul>