

## **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 of December 31, 2020, 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. Moreover, 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 Business Overview**

##### **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 lives;
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 the 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 a 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 as follows:

### 1.1.1 Expressway Business

The Company and one of its subsidiaries, namely, Northern Bangkok Expressway Company Limited ("NECL"), have obtained concessions from the Expressway Authority of Thailand ("EXAT") for construction and operation of a total of three expressways, namely:

#### 1) The Si Rat Expressway (Sectors AB, C, and D)

The Si Rat Expressway (Second Stage Expressway) is the first large-scale construction project in Thailand on the basis of public private partnership. 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. In this regard, the title to various permanent constructions pertaining to or use of the Si Rat Expressway shall be vested in EXAT. The Company has the right to receive toll revenues as specified in the Agreement, with the Second Stage Expressway Agreement (Amendment) being signed on February 20, 2020 for an extension of the concession period until October 31, 2035.

The Si Rat Expressway is comprised of three Sectors, covering a total distance of 38.5 kilometers, as follows:

- Sector AB (starts from Ratchadapisek Road southward to Payathai Interchange eastward to Rama 9 Road and from Phayathai Interchange heading southward to Bangkhlo Interchange;
- Sector C (starts from Ratchadapisek Road northward up to Chaeng Watthana Road); and
- Sector D (starts from Rama 9 Road eastward to end at Srinakharindra Road).

#### 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 is implemented on a BTO basis. The route starts from the Outer Ring Road (Kanjapisek 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), running down to at-grade level around Kamphaeng Phet 2 Road, and connecting northward heading to Chaeng Watthana, covering a total distance of 16.7 kilometers. The concession period is 30 years and ends on December 14, 2042.

#### 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 is implemented on a BTO basis, with its Amendment being signed on February 20, 2020 for an extension of the concession period until October 31, 2035. The Udon Ratthaya Expressway is comprised of 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 northward heading to Bang Pa-in around Kanjanapisek Road (Western Outer Ring Road), covering a total distance of 32 kilometers.

### 1.1.2 Rail Business

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

- 1) The M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line), by investment on a PPP Net Cost basis, whereby MRTA invests in all civil works and the Company shall supply, install the M&E Equipment, and provide the operation and maintenance services. The Company is entitled to farebox revenue and undertaking activities and commercial development, including advertising, leasing space and telecommunications services in the metro stations and in the trains of the MRT Blue Line. The MRT Blue Line Project is comprised of the following:

- Hua Lamphong - Bang Sue Section, 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;
- Hua Lamphong - Bang Khae Section, which is the underground and elevated route, covering a total distance of 16 kilometers, with 11 stations; and Bang Sue - Tha Phra Section, which is the entire elevated route, covering a total distance of 12 kilometers, with 9 stations, divided into 3 phases during the installation of the M&E Equipment for service opening, namely, Phase 1: Bang Sue Station - Tao Poon Station, opened for service on August 11, 2017; Phase 2: Hua Lamphong Station - Lak Song Station, opened for service on September 29, 2019; and Phase 3: Tao Poon Station - Tha Phra Station, opened for service on March 30, 2020, for the concession period of 30 years from the date of service opening of the entire route.

The M.R.T. Chaloen Ratchamongkhon Line Project (MRT Blue Line) has connected to the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line) at Tao Poon Station.

- 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 farebox 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 (MRT Purple Line) is an elevated metro project, for a distance of 23 kilometers, with 16 stations and a connection to the M.R.T. Chaloen Ratchamongkhon Line Project (MRT Blue Line) at Tao Poon Station, whereby the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line), 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 have 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 the installation of the 3G signal distribution system, etc.

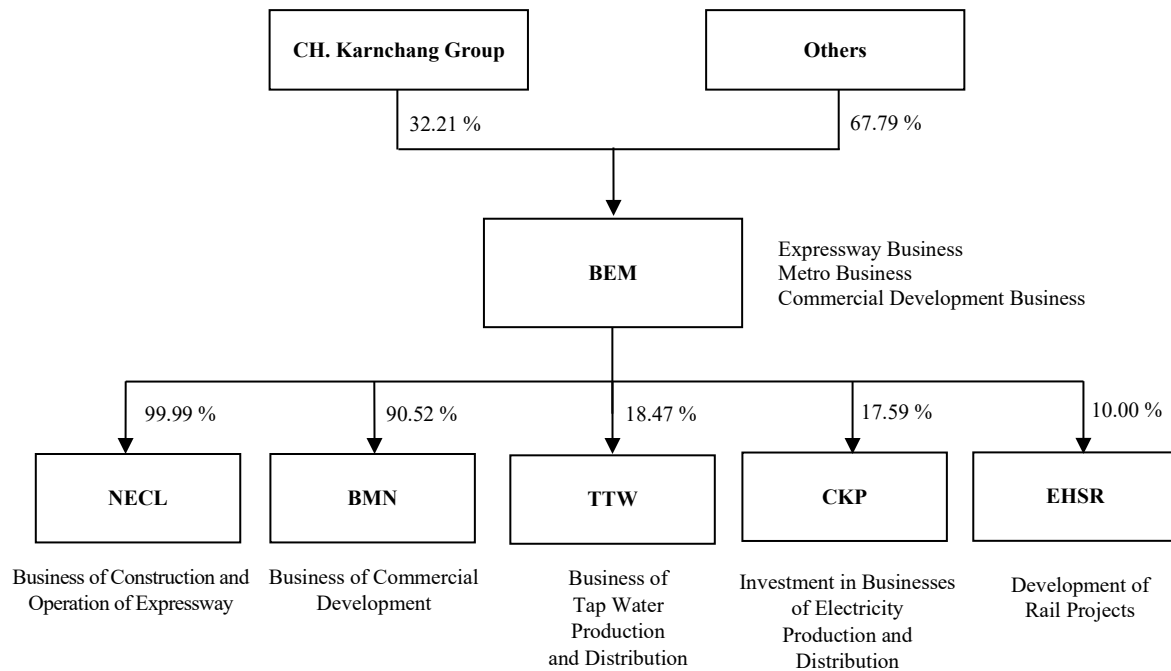
## 1.2 Significant Changes and Developments of the Company in 2020

February 15, 2020	The Company extended the period of time for the public’s free travel during the trial run of the MRT Blue Line Extension, Tao Poon - Tha Phra Section (Bang Pho Station - Charan 13 Station) from 10:00 hrs. - 16:00 hrs. to 06:00 hrs. - 24:00 hrs.
February 20, 2020	The Company/the subsidiary and EXAT signed the Second Stage Expressway Agreement (Amendment) and the Bang Pa-in - Pak Kret Expressway Agreement (Amendment) for settlement of the disputes and extension of the respective concession periods until October 31, 2035.

March 10, 2020	As a result of the situation of the pandemic of Coronavirus Disease 2019 (COVID-19) in Thailand, the Company has heightened the anti-pandemic measures and has placed the emphasis firmly on keeping clean inside of the MRT stations, trains, and the MRT system until present in order to prevent the spread of such disease until the situation of the pandemic would have been ameliorated.
March 30, 2020	The Company opened the full service of the MRT Blue Line Extension Project (Hua Lamphong - Bang Khae Section and Bang Sue - Tha Phra Section) and charged fares. The project's connected alignment features a Circle Line covering the central area of Bangkok, including a connection of travelling between Bangkok and Thonburi sides and the rolling stocks have been adding to the service from 19 to 54, as well as providing connections to other lines, namely, the MRT Green Line, the MRT Purple Line, the MRT Orange Line, the MRT Red Line, and the Airport Rail Link, thereby making the people's journeys more convenient and rapid.
May 28, 2020	TRIS Rating Co., Ltd. affirmed the Company's credit rating at "A", with a "Negative" outlook.
June 10, 2020	The Company issued and offered for sale debentures No. 1/2020, with a 4-12-year maturity, in the total amount of Baht 3,000 Million, at the fixed interest rates ranging from 2.88 percent to 3.78 percent per annum, for the existing debt repayment of the Company.
July 1, 2020	The Company has provided a discount on toll fees at "At Narong 1 Toll Plaza", from the Chalong Rat Expressway access to the First Stage Expressway to Bang Na, at the rate of Baht 25 per trip for all types of vehicles for one year, effective from July 1, 2020 to June 30, 2021.
July 2, 2020	The Company maintained the fares for the MRT "Blue Line" at the same rates, namely, starting from Baht 16 up to Baht 42, until December 31, 2020, despite the revision of the fares scheduled for July 2, 2020 in accordance with the MRT Blue Line Concession Agreement.
September 1, 2020	The U-turn bridge on the road along the railway around the intersection of Ratchaphruek Road was opened for service, in which the Company invested for design and construction on the area licensed by the State Railway of Thailand to facilitate the general public and users of the Si Rat - Outer Ring Road Expressway.
September 21, 2020	The Company was awarded a White Factory Project certificate by the Department of Labor Protection and Welfare in Nonthaburi Province, for the reason that the Company attached importance to drug problems in the business premises to be free from drugs of all types.
November 14, 2020	His Majesty King Maha Vajiralongkorn Phra Vajiraklaochaoyuhua and Her Majesty Queen Suthida Bajrasudhabimalalakshana graciously presided over the official opening ceremony of the M.R.T. Chaloem Ratchamongkhon Line Extension Project (MRT Blue Line) at the MRT Sanam Chai Station.
November 27, 2020	The Company was awarded Thailand's Top Corporate Brand 2020 as one of the organizations realized the significance of development of its corporate brand to ensure greater strength for the country's social and economic sustainability, with the highest brand value in the transportation and logistics sector in 2020, by the Faculty of Commerce and Accountancy Chulalongkorn University.
November 27, 2020	The Company opened the Underground Museum or so-called Site Museum, the first new-model museum in the public space inside the electric train station of Thailand, i.e., which was located inside the MRT Sanam Chai station, and served a point of exhibitions and displays of objects which were found during the construction of the MRT station.

### 1.3 Shareholding Structure of Company Group

➤ **Chart of Shareholding Structure and the Company's Shareholding Percentage as of December 31, 2020**



**Remark** : CH. Karnchang Group comprises

- 1) CH. Karnchang Public Company Limited; and
- 2) CH. Karnchang-Tokyu Construction Company Limited.

➤ **Investment in Subsidiaries and Other Companies**

The Company has a policy on investment in infrastructure businesses or supporting businesses conducive to the Company's operations and creating opportunities and long-term yields for the Company, as well as providing the sources of investment for future projects. The Company's investment as of December 31, 2020 was as follows:

**1) Names of Companies invested in 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 (NECL)	Construction and operation of the Udon Rattaya Expressway	6,000	5,250	99.99%	2,604
Bangkok Metro Networks Limited (BMN)	Operation of the commercial development business	254	254	90.52%	507
<b>Other Companies</b>					
CK Power Public Company Limited (CKP)	Investment by holding shares in other companies (Holding Company) operating business of electricity production and distribution	9,240	8,129	17.59%	3,340
TTW Public Company Limited (TTW)	Tap water production and distribution	3,990	3,990	18.47%	4,061
Eastern High-Speed Rail Linking Three Airports Company Limited (EHSR)	Development of rail projects	4,000	4,000	10.00%	400

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

### Expressway Business

- **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 of December 31, 2020, the Company’s shareholding was 99.99 percent of its registered capital. NECL entered into the Bang Pa-in - Pak Kret Expressway Agreement with EXAT for construction and operation of the Udon Rattaya Expressway, with its alignment running northbound continuing from the Si Rat Expressway around Chaeng Watthana Road and passing Bang Phun, Chiang Rak and ending at Bang Pa-in around Kanjanapisek Road (Western Outer Ring Road). Subsequently on February 20, 2020, NECL and EXAT signed the Bang Pa-in - Pak Kret Expressway Agreement (Amendment) under which the concession period was extended until October 31, 2035.

### Commercial Development Business

- **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 of December 31, 2020, the Company’s shareholding in BMN was 90.52 percent of its registered capital.

The Company currently engages BMN to serve as its sole management representative for commercial development in the MRT Blue Line Project as operated by the Company and also entitles BMN to be its management representative for commercial development, namely, 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 8,129,382,729 ordinary shares, at the par value of Baht 1 per share, with the paid-up capital of Baht 8,129,382,729. As of December 31, 2020, the Company’s shareholding was 17.59 percent of its paid-up 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 Bangkhenchai 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 of December 31, 2020, the Company’s shareholding was 18.47 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 approximately 25 percent of its registered capital.

### 3. Eastern High-Speed Rail Linking Three Airports Company Limited (“EHSR”)

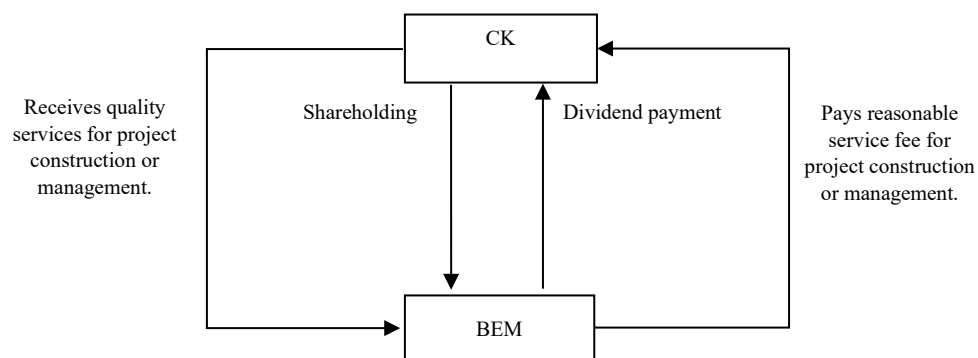
EHSR is a company established by CPH Group, with its registered capital of Baht 4,000 Million, divided into 40 million ordinary shares, at the par value of Baht 100 per share. As of December 31, 2020, the Company’s shareholding was 10 percent of its registered capital. EHSR carries out development of rail projects, design and construction works, civil work, in association with other projects, supply of the M&E Systems and rolling stocks, including provision of train operation and maintenance services, and development of areas supporting the rail services of the project for a period of 50 years (with the construction period of 5 years and operation period of 45 years).

## 1.4 Relationship with Business Alliance of Major Shareholder

The Company’s major shareholder was CH. Karnchang Public Company Limited (“CK”), as of December 31, 2020, whereby CK was holding 4,787,121,829 shares in the Company, representing 31.32 percent of the Company’s paid-up capital. From the past until the present, the Company has engaged CK to conduct construction and operation of various projects, as CK is a large construction company in Thailand, which has potential, knowledge, and expertise, and is thoroughly familiar with the civil infrastructure of the expressway and metro projects, including M&E Equipment. In addition, CK is experienced in the contractual operations on a Lump Sum Turnkey basis, and can deliver quality works on schedules, and is also the Company’s strategic investment partner. As a result, CK has taken on responsibility for and commitment to great success in the projects.

Therefore, in the future, it is possible that the Company will further engage CK to conduct project construction or management. However, in execution of transactions with CK, which is considered a person which may have a conflict of interest with the Company, the Company will have complied 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 (Sectors AB, C and D), the Si Rat - Outer Ring Road Expressway and the Udon Raththaya Expressway; 2) concessionaires for operation of the M.R.T. Chaloom Ratchamongkhon Line Project (MRT Blue Line) and the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line). 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)

Total Revenue Structure	Operated by	Shareholding Percentage of the Company	Consolidated Financial Information					
			For Year Ended December 31, 2020		For Year Ended December 31, 2019		For Year Ended December 31, 2018	
			Million Baht	%	Million Baht	%	Million Baht	%
<b>Revenue from expressway business</b>			<b>8,145</b>	<b>56.9 %</b>	<b>10,302</b>	<b>60.6 %</b>	<b>10,174</b>	<b>61.3 %</b>
Toll revenue	Company		6,942	48.5 %	8,852	52.1 %	8,718	52.5 %
Toll revenue	Subsidiary	99.99	1,203	8.4 %	1,450	8.5 %	1,456	8.8 %
<b>Revenue from rail business</b>			<b>4,520</b>	<b>31.5 %</b>	<b>5,022</b>	<b>29.5 %</b>	<b>4,736</b>	<b>28.6 %</b>
Farebox revenue and metro operation service charges	Company		4,520	31.5 %	5,022	29.5 %	4,736	28.6 %
<b>Revenue from commercial development business</b>			<b>825</b>	<b>5.8 %</b>	<b>783</b>	<b>4.6 %</b>	<b>705</b>	<b>4.2 %</b>
Commercial development revenue	Company		724	5.1 %	720	4.2 %	240	1.4 %
Commercial development revenue	Subsidiary	90.52	101	0.7 %	63	0.4 %	465	2.8 %
<b>Gains on sale of investments<sup>(1)</sup></b>			<b>4</b>	<b>0.0 %</b>	<b>181</b>	<b>1.1 %</b>	<b>499</b>	<b>3.0 %</b>
<b>Other income<sup>(2)</sup></b>			<b>829</b>	<b>5.8 %</b>	<b>707</b>	<b>4.2 %</b>	<b>477</b>	<b>2.9 %</b>
<b>Total revenues<sup>(3)</sup></b>			<b>14,323</b>	<b>100 %</b>	<b>16,995</b>	<b>100 %</b>	<b>16,591</b>	<b>100 %</b>

**Remarks :** (1) Gains on sale of investments are gains on sales of other current investments, and only in 2019 and 2018, gains on sale of investments in CKP, XPCL, and TTW are included.

(2) Other income comprises interest income, dividend income, and gain on fair value adjustment of current investments.

(3) Exclusive of gains on reclassification of investments in TTW and CKP in 2019 and 2018, respectively.

### 2.1 Nature of Business Operations of the Company

The Company is committed to becoming a leading, fully-integrated transportation service provider, which builds up convenient, rapid, reliable and safe journeys for a better living. The Company's businesses are composed of the expressway and metro system services, including commercial development business directly related to the main businesses. The Company's overall businesses are divided into three main sectors, as follows:

#### 2.1.1 Expressway Business

##### 1) Nature of Services

The Company and one of its subsidiaries, i.e., Northern Bangkok Expressway Company Limited ("NECL"), have been granted concessions for construction and operation of a total of three expressways, namely, the Si Rat Expressway (Sectors AB, C and D), the Si Rat - Outer Ring Road Expressway, and the Udon Raththaya Expressway, as per the following details:



## 1) The Si Rat Expressway (Sectors AB, C and D)

The Si Rat Expressway (Second Stage Expressway) is under the Second Stage Expressway Agreement (Amendment) with the Expressway Authority of Thailand (“EXAT”), with the expiration of the concession period on October 31, 2035, while the Si Rat Expressway (Sector D) may extended for another 11 years and six months from the expiration date of the existing Agreement, namely, April 22, 2027.

The Si Rat Expressway is the first large-scale construction project in Thailand on the basis of public private partnership. 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. In this regard, the title to various permanent constructions pertaining to or use of the Si Rat Expressway shall be vested in EXAT. The Si Rat Expressway is comprised of three Sectors, covering a total distance of 38.5 kilometers, namely:

- Sector AB (from Ratchadapisek Road southward to Payathai Interchange eastward to Rama 9 Road and from Phayathai Interchange heading southward to Bangkhlo Interchange;
- Sector C (from Ratchadapisek Road northward up to Chaeng Watthana Road); and
- Sector D (from Rama 9 Road eastward to end at Srinakharindra Road).

As for tolls, EXAT has authorized the Company to collect tolls for the Si Rat Expressway, with the Company having the right to receive toll revenue sharing of the Chalem Mahanakorn Expressway and the Si Rat Expressway (Sector AB) and receive all toll revenues of the Si Rat Expressway (Sectors C and D). The revenue sharing between the Company and EXAT shall be specified in the Agreement, i.e., the Company and EXAT shall receive the revenue sharing from the Chalem Mahanakorn Expressway and the Si Rat Expressway (Sector AB) at 40 percent and 60 percent, respectively, and meanwhile, all toll revenues of the Si Rat Expressway (Sectors C and D) shall belong to the Company.

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

The Si Rat-Outer Ring Road Expressway is under the Concession Agreement for Investment, Design, Construction, Operation, Service, and Maintenance of the Si Rat-Outer Ring Road Expressway Project, with EXAT, with its concession period ending on December 14, 2042.

The Company has the duties to carry out design and construction, supply and installation of various relevant 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). The project is an elevated six-traffic lane expressway, for a distance of 16.7 kilometers, with 9 toll plazas. The project’s route starts from the Outer Ring Road (Kanjapisek 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 to the north of the Mo Chit 2 Bus Terminal, and running down to at-grade level around Kamphaeng Phet 2 Road. Moreover, the Company opened the connection of the Si Rat - Outer Ring Road Expressway with the northern part of the Si Rat Expressway (heading to Chaeng Watthana) for service on September 30, 2018, in order to ensure the greater convenience in travelling to Chaeng Watthana and continuing along the Udon Rattaya Expressway. In this regard, the Company is responsible for investment and all operating expenses, as well as sharing returns with or providing benefits to EXAT as specified in the Agreement.

In management of this project, the Company is responsible for collecting 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.

### 3) The Udon Rattaya Expressway

The Udon Rattaya Expressway (Bang Pa-in - Pak Kret Expressway) is operated by NECL under the Bang Pa-in - Pak Kret Expressway Agreement (Amendment) with EXAT, with its concession period ending on October 31, 2035, whereby such Agreement may be extended for another 10 years and 11 months from the expiration date of the existing Agreement, namely, September 27, 2026.

The Udon Rattaya Expressway 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 Rattaya Expressway, whereby the title to various permanent constructions pertaining to or use of the expressway shall be vested in EXAT, and EXAT is responsible for collecting and delivering all tolls to NECL as specified in the Agreement. The Udon Rattaya Expressway comprises 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 of the expressway. EXAT is responsible for collecting and delivering all tolls to NECL. All toll revenues in respect of the Udon Rattaya Expressway shall belong to NECL.

### 2) The details of the expressway linking networks are as follows:

Expressway Systems	Length (km.)	Constructed and Operated by
1. Chalerm 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 (Sector AB) (Prachachuen - Phayathai - Bangkhlo - Asoke) 2.2 Suburban Network (Sector C) (Prachachuen - Chaeng Watthana) 2.3 Suburban Network (Sector D) (Rama - Srinagarindra)	38.5	Company
3. Udon Rattaya Expressway (Bang Pa-in - Pak Kret)	32.0	NECL
4. Si Rat - Outer Ring Road Expressway	16.7	Company
5. Uttaraphimuk Elevated Way (Don Muang Tollway)	28.0	Don Muang Tollway Public Company Limited
6. Chalong Rat Expressway including its Extension (Ramindra - At Narong and Ramindra - Outer Ring Road)	32.9	EXAT
7. Burapha Withi Expressway (Bang Na - Chonburi)	55.0	EXAT
8. Kanjanapisek Expressway (Bang Pli - Suksawad) and Highway No. 37 (Suksawad - Bang Khun Thien Section) including a connecting road to Bhumibol Bridge 1 and Bhumibol Bridge 2	37.8	EXAT
<b>Total Length</b>	<b>268.0</b>	

### 3) Toll Revenue Sharing

The Company and EXAT have received the toll revenue sharing in respect of the urban expressways (the Chalerm Mahanakorn Expressway and the Si Rat Expressway (Sector AB)) at 40 percent and 60 percent, respectively.

While the Company has received all toll revenues for the suburban expressways (the Si Rat Expressway (Sectors C and D), the Si Rat - Outer Ring Road Expressway, and the Udon Ratthaya Expressway), in accordance with the terms of the respective Agreements.

Expressway	Length (km.)	Revenue	Revenue Sharing Company : EXAT
<b>Chalerm Mahanakorn Expressway</b>			
Din Daeng - Port	8.9	Company and EXAT	40 : 60
Bang Na - Port	7.9		
Port - Dao Khanong	10.3		
<b>Si Rat Expressway</b>			
Sector AB:			
(Rama 9 - Ratchadapisek)	21.8	Company and EXAT	40 : 60
(Phayathai - Bangkhlo)			
Sector C: (Ratchadapisek - Chaeng Watthana)	8.0	Company	100 : 0
Sector D: (Rama 9 - Srinagarindra)	8.7	Company	100 : 0
<b>Si Rat - Outer Ring Road Expressway</b>	16.7	Company	100 : 0
<b>Udon Ratthaya Expressway</b>			
Chaeng Watthana - Chiang Rak	22.0	NECL	100 : 0
Chiang Rak - Bang Sai	10.0		

### 4) 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)	25 <sup>(1)</sup>	50 <sup>(1)</sup>	85 <sup>(1)</sup>
<b>Si Rat Expressway (Sector AB) (Second Stage Expressway)</b>	50	75	110
Except:			
Prachachuen Toll Plaza (inbound)	60 <sup>(2)</sup>	90 <sup>(2)</sup>	140 <sup>(2)</sup>
Prachachuen Toll Plaza (outbound)	10 <sup>(2)</sup>	15 <sup>(2)</sup>	30 <sup>(2)</sup>
<b>Si Rat Expressway (Sector C) (Second Stage Expressway)</b>	15	20	35
Prachachuen 1 Toll Plaza (from Prachachuen Road)	15	20	35
Prachachuen 2 Toll Plaza (to Prachachuen Road)			
Ngam Wong Wan 1 Toll Plaza (outbound)			
Ngam Wong Wan 2 Toll Plaza (inbound)			
<b>Si Rat Expressway (Sector D)</b>	25	55	75
<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 <sup>(3)</sup>	90 <sup>(3)</sup>	140 <sup>(3)</sup>
Bang Pa-in Toll Plaza	55	120	180

**Remarks:** <sup>(1)</sup> These rates are after deduction of Baht 25 discount for all types of vehicles (from July 1, 2020 to June 30, 2021).

- (2) In case of the motorists' service use of the Second Stage Expressway continuing from Sector AB to Sector C at Prachachuen Toll Plaza (outbound) or from Sector C to Sector AB at Prachachuen Toll Plaza (inbound), the tolls of the Second Stage Expressway for all types of vehicles will be at a discount of Baht 5 throughout the contract period.
- (3) These rates are after deduction of Baht 10 discount for all types of vehicles.

#### Revisions to Toll Rates under the Agreements

- The Chalerm Mahanakorn Expressway and the Si Rat Expressway are subject to a revision to their respective toll rates every 10 years, with their next revision taking place on September 1, 2028;
- The Si Rat - Outer Ring Road Expressway is subject to a revision to its toll rates every 5 years from the date of service operation of the project 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 in the Agreement, with the first revision taking place on December 15, 2021; and
- The Udon Ratthaya Expressway is subject to a revision to its toll rates on the 1<sup>st</sup> day of November every 10 years, with the next revision taking place on November 1, 2028.

#### 5) Marketing and Competition of Expressway Business

##### • Customer Characteristics and Target Customers of Expressway Business

Target customers of the expressway users refer to those motorists who desire a convenient and rapid transportation or who desire to shorten the travelling distance to their destinations as well as to avoid the traffic congestion along the congested 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 2020, accounted for 98.21 percent, 1.49 percent, and 0.30 percent, respectively. The traffic volume from January 1 to December 31, 2020, using the expressways can be described by areas as follows:

Expressway System	Average Traffic Volume (trips/day)	%
1. Chalerm Mahanakorn Expressway (First Stage Expressway) (Bang Na - Din Daeng - Dao Khanong)	318,697	30.35
2. Si Rat Expressway (Second Stage Expressway)	266,545	25.39
▪ Sector AB (Prachachuen - Phayathai - Bangkhlo - Asoke)		
▪ Sector C (Prachachuen - Chaeng Watthana)	165,163	15.73
▪ Sector D (Asoke - Srinagarindra)	161,668	15.40
3. Udon Ratthaya Expressway (Bang Pa-in - Pak Kret)	78,956	7.52
4. Si Rat - Outer Ring Road Expressway	58,898	5.61
Total Average Traffic Volume	1,049,927	100.00

Given the fact that the expressway service is considered a form of provision of public utilities service to motorists who desire a convenient, rapid and safe travelling, which are regarded as target customers of the expressway systems, the group of consumers are then broad depending on their destinations, residences, and workplaces. Therefore, the revenues of the expressway systems will not depend on any particular group of customers.

## 6) Marketing Policy and Strategies of Expressway Business

### • Marketing Strategies of Expressway Business

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 Chalerms 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 Chalerms 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.

The Si Rat - Outer Ring Road Expressway, a route connecting between the Bangkok-Thonburi sides, has its route crossing the Chao Phraya River at the Rama VII Bridge, continuing along in parallel to the Southern railway via the districts of Bang Phlat, Bang Bamru, Taling Chan, passing Ratchaphruek Road, and ending at the Outer Ring Road (the West), thereby enabling motorists to conveniently and rapidly commute from and to Bangkok-Thonburi sides. On the inbound side, there is a connection point from the Boromarajonani overpass in Taling Chan area to the Si Rat - Outer Ring Road Expressway, at Km.5 + 200, and a connection point with the Si Rat Expressway in Mo Chit area, Chatuchak, turning right southward to Phaya Thai - Silom and turning left to the northern part of the Si Rat Expressway, to ensure the greater convenience in the motorists' travelling to Ratchadaphisek, Prachachuen, Chaeng Watthana, and Bang Pa-in, by using the Udon Ratthaya Expressway.

The marketing disadvantage is the physical limitation which prevents the release of traffic around the expressway exits during the peak hours, 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- 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 the price factor.

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

#### ○ Service and Product Strategies of Expressway Business

- 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- and off-ramps of the expressways serves as another measure to facilitate the travelling and to continually maintain the quality of the expressways in terms of engineering safety to meet international standards.
- The traffic volume statistics have been continuously monitored 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 travelling 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 communication channels on traffic information via Smart Traffic and Variable Message Signs (VMS) are added to keep motorists informed of the traffic conditions on expressways, as well as suggesting routes on expressways for more convenience and rapidity.
- The expressway guide signs on at-grade main roads and alleys in Bangkok and its vicinity have been continuously improved so as to facilitate motorists' travelling to destinations and boost their confidence to access and use the expressways. To this effect, the emphasis is given to provision of information relating to landmarks adjacent to the on- and off-ramps of the expressways via the websites, various public relations media, including social media to ensure greater convenience and rapidity in travelling of customers, as the expressway users.
- The public relations activities about the Si Rat - Outer Ring Road Expressway are undertaken at the places located along the Si Rat - Outer Ring Road Expressways and Chaeng Watthana in order to guide the expressway users on how to use the routes, and to accept needs and suggestions directly from the expressway users. Moreover, the Company has given directions to restaurants and tourist attractions via the Facebook fan page: Club Chim Tiew, with a great number of followers.
- Satisfaction surveys on toll collection services of the Si Rat-Outer Ring Road Expressway are conducted, with the result staying at the "Very Good" level.
- More Easy Pass lanes were added in response to the increased traffic volume in the Easy Pass lanes and after EXAT's policy on cancellation of the Easy Pass card deposit, the use of Easy Pass service then increased, thereby necessitating 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 4 Toll Plaza, Prachachuen Toll Plazas (inbound) and (outbound), were relocated to the farthest right lane for motorists to have more efficient and rapid access to the Easy Pass lanes.
- Easy Pass guide signs were improved for expressway motorists' convenient and rapid passage 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.
- The project to optimize efficiency of Easy Pass lanes was set up through the Company's installation of the second antennas at Easy Pass lanes to suit the convenience of the Easy Pass users in case the barrier at the toll gate is not opened despite the fact that the reserved money in the account is adequate for passing through, in which case, the system will then have the barrier gate opened without waiting staff to open it, making it possible to facilitate motorists' faster passage, save time waiting in a queue and mitigate traffic congestion in front of the toll plazas while minimizing air pollution.
- The project to top up reserve via Easy Pass account with credit card, debit card and Thai QR Payment was set up by the Company in collaboration with EXAT, and Krung Thai Bank to develop the top-up service, at the customer service center, the Si Rat Expressway Control Center Building, to accommodate top ups via credit, debit cards or Thailand QR Payment.
- The project to reduce the minimum top-up of Easy Pass account from Baht 500 to Baht 300 to promote the use of the Easy Pass was carried out by the Company in association with EXAT from June 16, 2020.
- The project for toll payment via EMV (Europay Master Visa) card at the toll lanes was set up by the Company in association with EXAT, and Krung Thai Bank, to develop the toll payment system with



contactless-enabled credit or debit cards under the EMV standard for the motorists' convenience, with its trial service starting on the Si Rat - Outer Ring Road Expressway from June 2020 and its official service opening in the Si Rat - Outer Ring Road Expressway and the Udon Raththaya Expressway on January 26, 2021; and it was expected to open for service for the Si Rat Expressway by April 2021.

○ **Price Strategies of Expressway Business**

- Toll rates, including the calculation for revisions of the toll rates, are agreed upon and specified in the Agreements ahead of time. It is mutually agreed that the rates are considered reasonable and based on the feasibility study for the investment of each project. Under the Second Stage Expressway Agreement (Amendment), and the Bang Pa-in - Pak Kret Agreement (Amendment), toll rates shall be revised every 10 years at the rates as specified in the respective 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 a 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 Raththaya Expressway, which the Company, together with EXAT, continued to provide the discount.

○ **Distribution and Distribution Channel Strategies of Expressway Business**

▪ **Payment of Tolls**

The service users can pay tolls in three ways: by cash, pay through the Automatic Toll Collection System (Easy Pass) or pay by EMV card (starting by 2021).

- Users of the Chalerm Mahanakorn Expressway and the Si Rat Expressway may choose to use the expressway services from various on- 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 of the Udon Raththaya 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 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.

▪ **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 the peak hours, as well as accommodating the increasing traffic volume in the future. Currently, there are Easy Pass users representing approximately 46.10 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 09.00 - 17.00 hrs., and at Prachachuen Toll Plaza (outbound) on business days from 07.30 - 22.00 hrs., on holidays from 09.00-22.00 hrs. Moreover, the Company, in collaboration with EXAT and the Department of Highways, carried out 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 Motorways (Motorways) of the Department of Highways.

○ **Marketing Promotion and Communication Strategies of Expressway Business**

The Company has provided a 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 2020, the Company continued to provide a discount on tolls for the service users of the Udon Rattaya Expressway, operated by the Company's subsidiary (NECL), at Muang Thong Thani Toll Plaza.

Furthermore, during the remarkable festivals, such as, New Year's days, the Company, in cooperation with EXAT, undertook activities to promote the use of the expressways for the motorists by distributing souvenirs as giveaways to motorists, as well as providing the service points for motorists in order to create a feeling of close bond with customers to ensure good relationship under the theme that we provide the best services to customers throughout the routes, on the occasion of the previous New Year's Eve celebrations.

The Company canceled the Easy Pass top-up service at the respective toll booths of the Chalerm Mahanakorn Expressway, the Si Rat Expressway, and the Chalong Rat Expressway, in a total of 149 Easy Pass lanes, from Tuesday, June 16, 2020 onwards, with EXAT reducing the Easy Pass application fee and minimum top up from Baht 500 to a minimum of Baht 300, in order to resolve traffic congestion in front of the expressway toll plazas. In this regard, Easy Pass card users still can fill in the reserved money at the toll plaza building (One Stop Service) and the Easy Pass Fast Service Center, as normal, and also can top up the reserved money for tolls through various channels, whether by online means, through a bank or at the counter service.

The Company, as a private company that provides the expressway services, implemented in response to the government policy by participating in the drive safety campaign known as "Driving Slowly, Daytime Headlight Switching on, Seat Belt Fastening", for the motorists' facility and safety during the New Year Festival, by setting up the expressway user screening points before accessing the service, with the Company's aim of being a part in preventing the spread of Coronavirus Disease 2019 ("COVID-19"). The Company also promoted the drive safety campaign via social media on the expressways and traffic radio station to the target customers to raise their awareness of safe journey, and to assure them of the quality service on the expressways and various service promotion activities of the Company.

Other than that, the Company also offered toll discounts; disseminated the expressway network maps, including connections of the expressways with various routes in order to facilitate the expressway users' travelling.

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 the Company's website: [www.bemplc.co.th](http://www.bemplc.co.th), as well as social media: the Company's Facebook ([www.facebook.com/bangkokexpresswayandmetro](https://www.facebook.com/bangkokexpresswayandmetro)) and the Facebook fan page: Club Chim Tiew ([www.facebook.com/clubchimtiew](https://www.facebook.com/clubchimtiew)); public relations for the use of the Si Rat - Outer Ring Road Expressway, including

the connection of the Si Rat Expressway heading to Chaeng Watthana, serving as a channel for publicizing information such as giving directions to restaurants and tourist attractions via the special routes; recommendations on how to use cars safely, how to maintain cars; direct acknowledgment of needs and suggestions from the expressway users, as well as undertaking activities to strengthen relationships with followers of the Company's fan page: Club Chim Tiew, including publication of the bimonthly BEM Magazine as a medium for sharing information and news between the Company and motorists, together with enhancement of knowledge, satisfaction and attraction of new customers to use the services more, as well as continuing the social contribution activities throughout the year to ensure the positive attitude of our services towards customers and society.

## 7) **Industrial Outlook and Competition of Expressway Business**

The country's economy in 2020 was another year of its low growth, mainly due to the COVID-19 epidemic, droughts, the US-China trade war, including the delayed budget act and exports which failed to achieve the set targets, let alone the growing household debt problem, in which the government implemented various assistance measures to stimulate the economy but in a short-term. Upon the expiration of the measures, expenditures fell into a state of slowdown; people put off their spending and chose to spend money on necessary items and save money. All of these factors had an impact on the manufacturing, distribution, export, tourism and automobile industries. (Sources: BOT MACAZINE January 2021, GSB Research Center February 2021)

The automotive industry in 2020 faced challenges from the COVID-19 epidemic when volume of vehicles produced in April seemed to be at the lowest level over the past 30 years, due to 1) production shutdowns, 2) economic contraction, and 3) lockdown, a measure to contain the spread of such virus. These factors resulted in a decrease in automobile production by 86.4 percent year-on-year, coupled with a contraction in demand for new cars both at home and abroad since the beginning of 2020, reflecting the slowdown in unnecessary spending, along with the announcement of postponement of the Motor Show from the original schedule in April, thereby fading the demand for cars in the first four months of the year out (source: GSB Research Center February 2021). Moreover, the purchasing power was weakened by the business closure, droughts which affected consumers, and besides, various financial institutions intensified their credit facilities extension, not to mention car manufacturers' postponement of their new car launches, as such, marketing opportunities to stimulate consumers were then lost. (Sources: Business/ Industry Outlook 2020 - 2022: Automobile Industry, Bank of Ayudhya Public Company Limited, January 2021)

However, in the third and fourth quarters of 2020, the COVID-19 outbreak had eased and the government sector unlocked various measures while issuing various measures to help stimulate the economy, particularly in the tourism sector, which was considerably shrunk, resulting from the absence of foreign tourists, therefore, measures to promote tourism in the country were formulated. Such measures were given the positive feedbacks in the third quarter of the year onwards, resulting in a rising travel which caused an increase in vehicle use, as such, traffic congestion started returning to normal. According to the report of the Bureau of Transport and Traffic Policy and Planning (OTP), the survey results of the average speed of personal cars on various main roads in Bangkok, exclusive of the Inner Ring Road (Ratchadaphisek), in 2020, were found that the average speed during the morning peak hours was at 17.6 km./hr., while the average speed during the evening peak hours was at 21.8 km./hr., compared with the same period in 2019, it was found that the average speed during the morning peak hours increased by 1.9 km./hr. or representing a percentage of 11.8 km./hr., while the average speed during the evening peak hours increased by 0.2 km./hr. or representing 0.8 percent. (Source: Daily News, February 2, 2021) Despite the fact that the auto sales had been improving due to the postponement of the Motor Show to July 2020 and the organization of the 2020 Auto Expo from late November to early December 2020, together with the launch of new car models at such event, the auto sales could not return to normal, in line with the report on red-label new car registration statistics nationwide in 2020 from the Department of Land Transport that it declined by 14 percent (totaling 2.64 million vehicles). (Source: Department of Land Transport, January 2021)

With the automobile industry in a shrinking phase as well as the problem of traffic congestion from the construction of various utilities, working from home, the number of foreign tourists who were unable to travel to visit Thailand, the overall growth of traffic volume on the expressways was affected. Nonetheless, if the spread of COVID-19 situation had been defused, the traffic volume and economic conditions would improve and return to normal.

## 8) **Procurement of Products and Services of Expressway Business**

### • **Nature of Procurement of Products of Expressway Business**

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 a feasibility study and submitted its proposals for investment in projects with appropriate returns and conditions.

The expressway projects under the Second Stage Expressway Agreement, the Bang Pa-in - Pak Kret Expressway Agreement, 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.

## 9) **Environmental Impact (Expressway Business)**

The Company and NECL have always operated the construction and expressway business with environmental responsibility, by adhering to the business guidelines which can be summarized as follows:

In the construction phase of the expressways, the Company and NECL 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 NECL 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 for applying for the Certificate of ISO 14001 Environmental Management System. The Company has its commitment to ensuring environmental management in line with the following guidelines:

- 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;
- To instill and encourage our staff with an awareness of efficient use of energy and natural resources;
- To comply with the environment-related laws and regulations;
- To review the purposes and goals for continued improvement of the environmental management system;
- To communicate our environmental policy to the public and all parties concerned.

Besides, the Company obtained certification from SGS (Thailand) Limited as follows:

- ISO 9001: 2015 Quality Management System; and
- ISO 14001: 2015 Environmental Management System.

In 2020, the Company continued to maintain the ISO 14001 Environmental Management System, by monitoring important environmental concerns, as well as optimizing the use of natural resources through its continued energy management measures, for example, change of the air conditioning systems of the Si Rat Expressway Control Center Building, on the 1<sup>st</sup> and 2<sup>nd</sup> Floors, from AHU (Air Handling Unit) and Split Type air conditioning systems to VRV (Variable Refrigerant Volume) type air conditioning system, thereby reducing the consumption of electricity from the Metropolitan Electricity Authority by approximately 15 percent from the existing air conditioning systems.

With respect to 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 then put such study results into practices, by means of improving the safety on expressways, 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.

The Company continued to provide training for staff and executives on know-how and techniques for environmental management in accordance with the ISO 14001 Environmental Management System, as well as undertaking various activities to raise an enterprise-wide awareness, and environmental conservation activities in association with the communities nearby.

## 2.1.2 Rail Business

### 1) Nature of Services

The Company has been granted concessions for two mass rapid transit rail system projects by the Mass Rapid Transit Authority of Thailand (“MRTA”), as per the following details:

- (1) **The M.R.T. Chaloen Ratchamongkhon Line Project** (“MRT Blue Line Project”): the Company executed the Concession Agreement with MRTA on March 31, 2017, for a concession period of 33 years from MRTA’s Notice to Proceed (NTP), under which the Company shall be responsible for supply, installation, testing and commissioning of M&E Equipment, provision of services to ensure a continuous operation as a single network (Through Operation), and the Company is entitled to farebox revenue as well as undertaking activities and commercial development, including advertising, leasing space and telecommunications services in the metro stations and trains throughout the concession period of 30 years from the date of the service opening of the entire route. In this regard, the M.R.T. Chaloen Ratchamongkhon Line Project is consisted of Hua Lamphong-Bang Sue Section (the existing MRT Blue Line), and Hua Lamphong-Bang Khae Section, Bang Sue-Tha Phra Section (the MRT Blue Line Extension), per the details below:



- **Hua Lamphong - Bang Sue Section (the existing MRT Blue Line)**, the first underground metro system of Thailand, covering the distance of 20 kilometers, with 18 stations, which was opened for service on July 3, 2004. The Company is entitled to farebox revenue as well as undertaking activities and commercial development, including advertising, leasing space and telecommunications services in the metro stations and trains.
- **Hua Lamphong - Bang Khae Section and Bang Sue - Tha Phra Section (the MRT Blue Line Extension)**, the underground and elevated route, with a total of 20 stations, divided into 4 underground stations and 16 elevated stations, having a connection with the M.R.T. Chaloem Ratchamongkhon Line Project (the existing MRT Blue Line) at Hua Lamphong Station and Bang Sue Station, as well as connecting with the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line) at Tao Poon Station. The Company is responsible for investment, supply, installation, testing and commissioning of the M&E Equipment, and trial running, including the O&M Services by ensuring the continuous train operation (Through Operation). The supply and installation of the M&E Equipment for opening for service are divided into three sections, namely:
  - Section 1: Bang Sue Station - Tao Poon Station, opened for service on August 11, 2017;
  - Section 2: Hua Lamphong Station - Lak Song Station, opened for service on September 29, 2019;
  - Section 3: Tao Poon Station - Tha Phra Station, opened for service on March 30, 2020 thereby ensuring the train operation in the MRT Blue Line Project as a single network (Through Operation), by having Tha Phra Station as the main common and interchange station, which would enable the passengers to change their destinations from Tha Phra Station to travel to the suburban area westward via Bang Phai Station to Lak Song Station or travel to the urban area via Itsaraphap Station to Hua Lamphong Station, as well as travelling to Tao Poon Station connecting with the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line).

In this regard, the M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line) was opened for full service, covering the total distance of 48 kilometers, with 38 stations and a total of 54 trains available for service every day from 06.00 - 24.00 hours.

- (2) **The M.R.T. Chalong Ratchadham Line Project** (“MRT Purple Line Project”), Bang Yai - Bang Sue Section (Khlom Bang Phai Station - Tao Poon Station), covering a distance of 23 kilometers, with a total of 16 elevated stations, where Tao Poon Station is located as an interchange station with Bang Sue Station of the M.R.T. Chaloem Ratchamongkhon Line (MRT Blue Line), which would make it possible for passengers’ interchange from the MRT Purple Line to the MRT Blue Line at Tao Poon Station, which in the future, would be connected with the MRT Purple Line (Tao Poon - Rat Burana Section).

The Company has been granted the concession for investment, the supply of M&E Systems and O&M Services, on a PPP Gross Cost basis. That is, MRTA invests in all civil works and the Company invests in the M&E Systems and the rolling stocks, including provision of the O&M Services in accordance with the service standards defined in the conditions of the Agreement. MRTA is entitled to all farebox revenue and commercial development revenue from the utilization of the civil infrastructure and the railway systems and MRTA shall make gradual repayment for the M&E Systems to the Company on a monthly basis for a period of 10 years, and engage the Company to conduct the operation and maintenance throughout the concession period of 30 years from September 4, 2013.



There is 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	Chaloem Ratchamongkhon Line (MRT Blue Line)		Chalong Ratchadham Line (MRT Purple Line)
	(Hua Lamphong Station - Bang Sue Station)	(Hua Lamphong Station - Lak Song Station and Bang Sue Station - Tha Phra Station)	(Khlong Bang Phai Station - Tao Poon Station)
Concession Type	PPP Net Cost	PPP Net Cost	PPP Gross Cost
Concession Period	33 years (2017-2050)		30 years (2013-2043)
Number of Stations	18 stations	20 stations	16 stations
Distance	20 kilometers	28 kilometers	23 kilometers

## 2) Revenue

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

- **Farebox 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 farebox 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.

- **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.

## 3) Marketing and Competition of Rail Business

- **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 for tourism/ leisure;
4. Commute for special activities, e.g., seminars or conferences; and
5. Commute for other purposes, e.g., business dealings.

#### 4) **Marketing Policy and Strategies of Rail Business**

##### • **Service and Product Strategies of Rail Business**

- Creativity and Development of Convenient Services for MRT Passengers

The M.R.T. Chaloom Ratchamongkhon Line (MRT Blue Line) has the service route passing through central business districts (CBD), residential areas, and connecting with other significant mass rapid transit systems which would result in an increase in the number of passengers, for example:

- A connecting point for the M.R.T. Chalong Ratchadham Line (MRT Purple Line) at Tao Poon Station;
- A connecting point for the BTS Skytrain (Green Line) at Chatuchak Park Station, Phahon Yothin Station, Sukhumvit Station, Silom Station, and Bang Wa Station;
- A connecting point for ARL (Airport Rail Link) (Red Line) at Phetchaburi Station, as a connection with Suvarnabhumi Airport;
- A connecting point with Thai Railway Station at Hua Lamphong Station, Phetchaburi Station, Bang Sue Station, and Bang Khun Non Station;
- A connecting point with the Port at Bang Pho Station, Phetchaburi Station, Bang Wa Station, and Sanam Chai Station.

As for transit connections between the metro stations and buildings, there are currently seven points, namely:

- Sam Yan Station connected to Chamchuri Square and Samyan Mitrtown (residential buildings, office buildings, and entertainment and education centers);
- Phahon Yothin Station connected to Union Mall Shopping Center;
- Sukhumvit Station connected to Terminal 21 Tower (shopping center, hotel, office building, and residential building) and Interchange 21 Tower (office building);
- Phra Rama 9 Station connected to Central Plaza Grand Rama 9 and G Tower (office building);
- Phasi Charoen Station connected to Seacon Bangkae Department Store;
- Lak Song Station connected to The Mall Bangkhae Shopping Center;
- Phetchaburi Station connected to Singha Complex.

Most of the travel behaviors of the service users were for work purpose, followed by for education purpose, while in respect of travel for tourism purpose, the rising number of service users could still be accommodated. The Company thus strategically established a travel promotion strategy for tourism, by signing a cooperation agreement with the Tourism Authority of Thailand (TAT) together with the Mass Rapid Transit Authority of Thailand (MRTA) in the project “Happy Journey with MRT” to promote and support extensive travel by the MRT.

And due to the ongoing COVID-19 situation, the Company added a strategy to build confidence among passengers in the use of the MRT services under the “Healthy Journey with BEM” project, such as, tightening up measures for cleanliness, spraying disinfectants, campaign for wearing cloth face masks, ensuring social distancing, providing disaster relief assistance to those who were affected by such situation, both the entrepreneur sector and the people sector, by providing for cloth mask sale areas without charges, together with hiring of part-time staff and giving away one million cloth face masks to passengers.

In addition, the Company strategically increased the number of the service users travelling with metro cards to ensure the convenience of their travelling, save time the service users take within the stations, and to increase revenues for the Company, by way of provision of additional privileges in the metro cards, making cooperation with business alliances to give a discount on fees for a metro card issuance or top up, or provision of special benefits for the metro cardholders.

### ○ 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 the 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 stops time at every station punctual with the least possible deviations.

### ○ 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 cards in travelling. These arrangements comprise keeping styles of metro cards modern to ensure conformity with technology and increase in efficiency of metro cards to ensure that metro cards can be commonly used with the MRT Blue Line and the MRT Purple Line; cooperation with financial institutions in issuing co-branded cards for financial transactions and travelling on the MRT system, namely, in alliance with KASIKORNBANK Public Company Limited to make cards for Chulalongkorn University and Chulalongkorn Hospital; to make co-branded cards with other institutions or agencies. Moreover, there was the launch of a product in a form of top up voucher for interested organizations, for instance, Ananda Development Public Company Limited to distribute as welfare for its staff to top up their metro cards.

### • **Price Strategy of Rail Business**

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.

### • **Marketing Promotion Strategies of Rail Business**

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 organize sales promotion programs in association with leading companies and banks to create value added to the MRT services and offer privileges to metro card holders, with the underlying aim of encouraging passengers to change their behavior from using tokens to using more metro cards, by which customers would receive more convenient and rapid services with various privileges as follows:
  - Offering top-up discounts on the metro cards in association with Advanced Wireless Network Public Company Limited, Muang Thai Life Assurance Public Company Limited, FWD Life Insurance Public Company Limited, Ocean Life Insurance Public Company Limited, and Boon Rawd Trading Co., Ltd.;
  - Offering cash back, including redemption of credit card points in association with Krungthai Card Public Company Limited, Citibank, UOB Bank Public Company Limited, and Krungsriayudhya Card Company Limited;
  - Offering privileges in the form of offering discounts at shops, restaurants, theaters or events around the MRT routes.
- 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 and manage customer relationships (Customer Relation Management), as a building of good relationships and constant interactions with customers, to customers' satisfaction and to ensure brand loyalty, as well as to maintain the existing customer base, such as, managing the passenger information system in the form of the MRT Club membership system, creating a good network and relationship with general service users through social medial channels and public relations within the stations, including booth activities, both inside and outside the MRT routes.
- To develop the electronic payment system for online top-up via mobile phones with TrueMoney Wallet Application and Krungthai Bank Application, with a plan to develop the electronic payment system for retail shops within Metro Mall to make it more convenient and rapid for the MRT passengers.
- To encourage people to use government welfare smart cards in travelling with the MRT system, by improving the automatic fare collection systems (AFC) of the M.R.T. Chaloe M Ratchamongkhon Line Project (MRT Blue Line) and the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line) to accommodate usage of their government welfare smart cards.
- **Marketing Communication Strategies of Rail Business**
  - 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, visual display within the stations and trains, online social network media, including external public relations media from business alliances to provide the MRT service users with journey information. The Company also has emphasized development of the Mobile Application system titled Bangkok MRT Application to accommodate travelling plans of the passengers.
  - To focus on publicizing news and information to current service users, including new customers, via booths presenting the use of the service, both inside and outside the routes, with provision of useful advice and information, such as, information on privileges of the metro cards, application for the MRT club system membership, follow-up channels via social media and Bangkok MRT Application, with the aim of stimulating provision of information on services and

privileges to the service users, by emphasizing the punctuality, convenience, rapidity in journeys with the MRT system, making it possible to spend more time with families from using the services and to set a definite travelling timetable.

- To create destinations via regular communication, public relations and journey information along the MRT routes via preparation of event calendar, route maps with attractive destinations, e.g., office buildings, schools, hotels, shopping centers, tourist attractions and other landmarks, information relating to convenient and rapid links to other mass rapid transit systems, which can be searched via the website, Bangkok MRT Application and BEM Magazine.
- To assure the passengers and people of the safety in travelling and service provision through public relations via television, radio and other media, and organize activities for public relations of service provision and safety-related activities at various venues, e.g., educational institutions, office buildings, to present the safety of the MRT system to the passengers and people for their understanding and confidence in the services.

- **Development Strategy of Rail Business**

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 service users of the MRT system. At present, the Company collaborates with financial institutions to make it possible to hold a single co-branded card for entering into multi-transactions.

- **Distribution Strategies and Channels of Rail Business**

The Company provides more sales outlets in addition to the ticket vending machines and ticket offices in the stations, for example, by presenting to various agencies such as organizations, banks, educational institutions, hotels, private companies, special metro card pages so that they would be used by such organizations on various occasions, for instance, as gifts for staff to build their morale, for customers to express the Company's appreciation of their support, or even for brand promotion, and as public relations materials, thereby making the MRT cards more precious than being used as a travelling ticket.

## 5) **Industrial Outlook and Competition of Rail Business**

### **Mass Rapid Transit Systems in Bangkok and its Vicinity**

Bangkok is a large capital city with a dense population, and is the economic center, giving rise to a rate of rapid growth and expansion. As a result, Bangkok today has been extremely facing traffic problems, which have accumulated over many years, along with an ongoing increase in population, number of cars, motorcycles and other vehicles in Bangkok every year, without any declining tendency, not to mention the demand for travel of the people which was rising, while the traffic areas and public transport systems could not adequately accommodate such rising demand, which was considered the main problem occurring in other densely populated capital cities worldwide. From such problems, the government has therefore implemented a policy to emphasize the development of various public transport networks to resolve the traffic problems in order to accommodate an increase in the population, including the economic growth of the country.

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

- **Personal Transport System**

As a result of the people's residences in Bangkok and its vicinity which are spread all over, travelling, including the growing number of highly-paid population, coupled with the inadequacy of the existing mass transit systems, travelling by personal cars then remains popular, if comparing the expenses spent on travelling with personal cars, together with service quality and safety, as a result, the use of a personal car is still necessary and comfortable to travel. On the contrary, the expansion of traffic areas in Bangkok still remains limited and inadequate to accommodate the increasing number of vehicles.

- **Public Transport System**

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

- **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, even if there was currently a total of 18,914 buses in service, let alone more than 2,836 passenger vans which became enormously popular among the people because of provision of its convenient and rapid service in travelling. Furthermore, the Bangkok Mass Transit Authority (BMTA) has also applied technologies, i.e., E-Ticket system or payment via QR-Code Mobile Banking, to improve its service quality to ensure conformity to the current situations affected by the outbreak of COVID-19, in which people have to use the bus service in new normal, therefore, adjusted the operating guidelines under the concept of "New BMTA New Normal" which passengers have to always wear medical face masks while on board, clean their hands with gel hand sanitizers, ensure a social distancing, and scan QR Code via Thai Chana Application, for the greater safety in the services. But due to the continuing traffic congestion problems on roads as whole, especially during the morning peak hours from 6.30-8.30 hrs. and the evening peaks hours from 16.30-18.30 hrs. and during the rainy season, travelling is then time-consuming. (Source: Bangkok Mass Transit Authority, information as at November 2020)

- **Trains**

Over the past years, the government sector has implemented a policy to provide relief assistance to the low-income earners to enable them to spend through the government welfare smart cards, whereby the cardholders can use the service for both public service buses (bus), passenger vehicles served by The Transport Co., Ltd., trains and electric trains, free of charge in the amount not exceeding Baht 500 baht per system per month. However, the train system service still lacks the facilities and the safety for the service users, due to the fact that the conditions of the trains in use are currently not comfortable, not to the service users' satisfaction, and it takes quite a long time to travel, let alone the limited routes not covering the entire city. As a result, the State Railway of Thailand (SRT) expedited additional dual track rail system construction projects on many routes, together with the new depot construction project, in order to enhance the capacity and accommodate the maintenance of the rising number of trains and to develop 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 owing to different service routes, namely, the SRT mainly aims to provide the service to suburban areas.

- **BTS**

BTS Skytrain is Thailand's first mass rapid transit rail system on the elevated dual tracks in separate directions, with its first service opening on December 5, 1999 on 2 lines, namely, Sukhumvit Line and Silom Line; and in 2020, the line extension project of Mo Chit - Saphan Mai - Khu Khot Section was gradually opened for the people's trial, covering a total service distance of 68 km., with 59 stations. As such, travelling by BTS Skytrain is another option which facilitates commuters' travelling, and with the BTS Skytrain's route running to the heart of the city, it then becomes massively popular among people, and it also contributes to a factor in continuously increasing the service users.



## ○ ARL

The Suvarnabhumi Airport Rail Link or Airport Rail Link is a special mass rapid transit rail system project, as part of the projects for construction of suburban rail system, carried out and operated by the State Railway of Thailand (SRT). The Suvarnabhumi Airport Rail Link is the electric train system which has both underground and elevated structures, with the alignment running to accommodate 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 the service, and enhance the service capacity of a total of 9 Airport Rail Link trains to ensure the service stability, thereby satisfying the growing needs of the passengers.

As a result of an ongoing increase in a number of the public transport system service users, it reflected 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, rapid and shortened journeys of service users, and result in a positive effect on the economy and environment. Therefore, the mass rapid transit system becomes an important variable of a travelling mode which helps improve the quality of travelling life of urban people and minimize the usage of fuels and national resources.

## 6) **Industrial Outlook and Government Policy of Rail Business**

Thailand's overall economic outlook in 2020 declined by 6.1 percent as compared to that during the same period in the previous year, mainly due to the situation of the outbreak of the COVID-19 which had occurred since the end of 2019 and in the second quarter of 2020, it was then severely affected by the stringent measures to contain the spread of the COVID-19, both at home and abroad, including an occurrence of a new wave of the spread of COVID-19 in late 2020, which was a factor in putting pressure on and affecting all sectors. But when compared with the third quarter of 2020, Thailand's overall economy had improved, mainly resulting from the relaxation of lockdown measures and various remedial measures of the government sector which helped stimulate the economy from the situation which began to ease and be able to cope with the first wave of the outbreak of the disease, before its new wave has occurred all over the country in late 2020 until present, thereby possibly causing a slowdown in the economy once again. *(Source: Office of the National Economic and Social Development Board: The Bank of Thailand)*

**In terms of transportation system development**, the Ministry of Transport has strived to develop the transportation systems of Thailand to serve as a mechanism to drive the country's economy to achieve balanced and stable growth. The infrastructure development for transportation would cover areas across the country, accommodate constant transportation and travelling which are connected together in a variety of modes, whether it be primary, secondary, and sub-tours, within the area, especially the mass transit system by electric train, one of the strategic plans for transportation development and as another important instrumental in driving the economy and reviving the country. In this regard, the M.R.T. Chaloem Ratchamongkhon Line (MRT Blue Line Extension), Hua Lamphong - Bang Khae Section (Lak Song Station), and Bang Sue - Tha Phra Section, one of the projects to which the government had given priority in the implementation of each project, could be opened for service within the respective specified timeframes, namely, the M.R.T. Chaloem Ratchamongkhon Line (MRT Blue Line Extension), Hua Lamphong - Bang Khae Section (Lak Song Station), and the M.R.T. Chaloem Ratchamongkhon Line, Bang Sue - Tha Phra Section, were officially opened for service on September 29, 2019 and on March 30, 2020, respectively, as a result, the entire route of the MRT Blue Line Project was opened for full service as a single network (Through Operation), thereby alleviating traffic problems in Bangkok from where is the center of all activities to the center of transport and travelling network. Moreover, the BTS Gold Line Project, Phase 1, was opened for the people's trial on December 16, 2020, as well as the MRT Green Line Extension Project, Mo Chit - Saphan Mai - Khu Khot Section, which was gradually opened for the people's trial in 2020. In addition,

the government sector has expedited the construction of a variety of metro projects, including the MRT Orange Line, Thailand Cultural Centre - Min Buri Section (Suwinthawong), which was planned to open for service in 2024; and the Bang Khun Non - Thailand Cultural Centre to open for service in 2026; the MRT Yellow Line, Lat Phrao - Samrong to open for service in 2022; MRT Pink Line, Khae Rai - Min Buri to open for service in 2022. Moreover, many other major metro projects are pushed forward, namely, the MRT Purple Line (South), Tao Poon - Rat Burana (Kanchanaphisek Outer Ring Road); the MRT Yellow Line Extension, Yaek Ratchada - Lat Phrao - Yaek Ratchayothin; the MRT Pink Line Extension, Si Rat - Mueang Thong Thani; and the MRT Brown Line, Khae Rai - Lam Sali (Bueng Kum); the MRT Grey Line, Section 1: Watcharaphon - Thong Lor; the MRT Grey Line, Section 2: Phra Ram 3 - Tha Phra; and the Bangna-Suvarnabhumi Line Project. Currently, they are in the process of proposing a budget for study and review of project details, including investment format, all the projects have been accelerated by the government sector to ensure compliance with the strategic plans for infrastructure development for transportation of the country, in order to build a metro network which covers more areas, and to be another option for travelling which can schedule easily, rapidly and safely, as well as to help diminish environmental problems, improve the quality of life of the people in the pursuit of the country's continual development and sustainability.

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

The economic recession which had continued from the beginning of 2020 due to the outbreak of the COVID-19 made the real estate market during the first half of the year undesirable to investors, thereby directly affecting Thai people's purchasing power in that their purchasing power was weakened and they chose to spend less, therefore, it might not be the right time to purchase residences. However, in the second half of 2020, the real estate development had continued but at a lower rate than the previous year. After the country began to loosen the lockdown measures from the situation of the first wave of the COVID-19 epidemic which had been defused, entrepreneurs adjusted themselves by implementing the marketing strategies to stimulate purchasing power of consumers and investors, offering the goods price reduction to meet the purchasing power available in the market, affecting the decisions of consumers and investors with the purchasing power to start spending continuously, together with the demand for real estate, in particular the real estate market surrounding the metro routes which still remained in great demand from consumers and investors, and it was one of the main factors in selection of residences, including the full service opening of the MRT Blue Line Project (M.R.T. Chaloem Ratchamongkhon Line); the service opening of the MRT Green Line Extension Project; and the plan for the service opening of other metro projects.

Moreover, a real estate development new trend, the "Mixed Use Projects", under which the real estate developer has the concept in urban development in another format, focuses on mixed use of real estate of different types for the maximum benefits. This was due to the restrictions on land use in Bangkok which allowed for real estate development for a single use or project development only for residential or commercial purpose may no longer ensure the optimum use of land. For that reason, the mixed use projects started to play a role and become enormously popular among the big real estate entrepreneurs and are also spread along the route alignment of the MRT Blue Line (M.R.T. Chaloem Ratchamongkhon Line), for example, Singha Complex, the Luxury Mixed Use Complex, on Asoke-Phetchaburi Road, connecting to MRT Phetchaburi Station, regarded as the potential landmark and major business center, launched on December 13, 2018; Samyan Mitrtown, the mixed use project launched on September 20, 2019 connecting to the BTS Sam Yan Station; and The PARK Life Project, a new retail lifestyle of urban people, located in the intersection area of Rama IV and Ratchadaphisek Road, adjacent to the Queen Sirikit National Convention Centre Station, which was launched on August 28, 2020. These mixed use projects become the destinations in demand among entrepreneurs, investors, tourists, and residents. Therefore, the development of the rail system provides the network which covers the wide-areas of Bangkok and its vicinity and becomes a key factor in real estate development in various forms, such as, condominiums, office buildings, shopping centers, flea markets, famous tourist attractions, hotels, apartments, restaurants and supermarkets, to ensure that they are rapidly growing together.

7) **Progress of Development of the Mass Rapid Transit Systems under the Government Policy**

Project	Current Status of Project
<b>SRT Red Line</b> , suburban railway system: <ul style="list-style-type: none"> <li>- North: Bang Sue-Rangsit</li> <li>- South: Bang Sue-Hua Lamphong-Mahachai</li> <li>- East: Bang Sue-Makkasan-Chachoengsao</li> <li>- West: Bang Sue-Taling Chan-Salaya,</li> </ul> All of the routes start at the Bang Sue Grand Station.	<p><b>Bang Sue-Rang Sit, with a distance of 26.30 km.</b></p> <p><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 &amp; Construction Public Company Limited and Unique Engineering and Construction Public Company Limited) on January 18, 2013.</p> <p><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.</p> <p><u>Contract 3:</u> M&amp;E System, including the supply of carriages, SRT executed the agreement for engagement of MHSC Joint Venture (MITSUBISHI Heavy Industrial Ltd., Hitachi and Sumitomo Corporation) on March 29, 2016.</p> <ul style="list-style-type: none"> <li>- It was expected to open for service in and around 2023.</li> </ul> <p><b>Taling Chan-Salaya, with a distance of 14.8 km.</b></p> <ul style="list-style-type: none"> <li>- The project was already approved on February 26, 2019.</li> </ul> <p>Currently, it is in the process of bid preparation.</p> <p><b>Taling Chan-Siriraj, with a distance of 5.7 km.</b></p> <ul style="list-style-type: none"> <li>- The project was already approved by the Council of Ministers on March 5, 2019.</li> <li>- Currently, it is under construction, which was expected to be completed in 2022.</li> </ul> <p><b>Hua Lamphong-Mahachai, with a distance of 37 km.</b></p> <ul style="list-style-type: none"> <li>- SRT reviewed the detailed design.</li> </ul> <p><b>Rangsit-Thammasat University (Rangsit Campus), with a distance of 8.84 km.</b></p> <ul style="list-style-type: none"> <li>- The project was already approved on February 26, 2019.</li> <li>- Currently, it is in the process of preparing a Royal Decree on Land Expropriation.</li> </ul> <p><b>Bang Sue-Taling Chan, with a distance of 15 km.</b></p> <ul style="list-style-type: none"> <li>- SRT engaged Unique - Chun Wo Joint Venture to carry out the construction. The construction was 100% completed.</li> </ul> <p>It is in the process of trial run and it was expected to open for service in late 2021.</p>
<b>MRT Blue Line</b>	<p><b>Bang Sue-Tha Phra and Hua Lamphong-Bang Khae, with a distance of 27 km.</b></p> <ul style="list-style-type: none"> <li>- Section 1: Bang Sue-Tha Phra was officially opened for service on August 11, 2017.</li> <li>- Section 2: Hua Lamphong-Bang Khae (Lak Song Station): <ul style="list-style-type: none"> <li>• Opened for the people's trials from Hua Lamphong Station - Tha Phra Station on July 29, 2019.</li> <li>• Opened for the people's trials from Hua Lamphong Station - Bang Wa Station on August 24, 2019.</li> <li>• Opened for the people's trials from Hua Lamphong - Bang Wa Station, without any interchange at Hua Lamphong Station on September 7, 2019.</li> </ul> </li> </ul>

Project	Current Status of Project
	<ul style="list-style-type: none"> <li>Opened for the people's trials from Hua Lamphong Station - Lak Song Station on September 21, 2019.</li> <li>Officially opened for service on September 29, 2019.</li> </ul> <p>- Section 3: Bang Sue-Tha Phra, with its official service and entire network opening on March 30, 2020.</p> <p><b>Bang Khae - Phutthamonthon Sai 4 (with a distance of 8 km.)</b></p> <p>It is in the process of consideration and review of passenger volume and justification of the project by the Ministry of Transport.</p>
<p><b>MRT Green Line</b></p> <p>Mo Chit-Saphan Mai-Khu Kot and Bearing- Samut Prakan, with a total distance of approximately 25 km.</p>	<p><b>Mo Chit-Saphan Mai-Khu Kot, with a distance of 19 km.</b></p> <p>- MRTA executed the civil work contracts, Contracts 1-4, on April 3, 2015, as follows:</p> <p><u>Contract 1:</u> (Civil Works), Mo Chit - Saphan Mai, with a distance of 12 kilometers, operated by Italian-Thai Development Public Company Limited;</p> <p><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, Sinohydro Corporation Limited, and China Harbour Engineering Company Limited);</p> <p><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.);</p> <p><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.).</p> <p>- On August 9, 2019, one station, namely, Ha Yaek Lat Phrao Station, was opened for service.</p> <p>- On December 4, 2019, another four stations were opened for service, namely, Phahonyothin 24 Station, Ratchayothin Station, Sena Nikhom Station, and Kasetsart University Station.</p> <p>- On June 5, 2020, another four stations were opened for the people's trials, namely, Royal Forest Department Station, Bang Bua Station, 11<sup>th</sup> Infantry Regiment Station, and Wat Phra Si Mahathat Station.</p> <p>- On December 16, 2020, another seven stations were opened for service, namely, Wat Phra Si Mahathat Station, Phahonyothin 59 Station, Sai Yud Station, Saphan Mai Station, Bhumibol Adulyadej Hospital Station, Royal Thai Air Force Museum Station, Yaek Kor Por Aor Station, and Khu Khot Station.</p> <p><b>Bearing-Samut Prakan, with a distance of 13 km.</b></p> <p>- On April 3, 2017, one station, namely, Samrong Station, was opened for service.</p> <p>- On December 6, 2018, another nine stations were opened for the people's trials from Samrong Station to Kheha Samut Prakan Station.</p>

Project	Current Status of Project
<b>MRT Orange Line</b> Bang Khun Non-Min Buri (Suwinthawong), with the total distance of 35.9 km.	<p><b>The West Section: Taling Chan-Thailand Cultural Centre, with a distance of 27 km., and the East Section: Thailand Cultural Centre-Min Buri (Suwinthawong), with a distance of 22.57 km.</b></p> <ul style="list-style-type: none"> <li>- On December 9, 2016, MRTA received an approval by the Council of Ministers' resolution to carry out the construction of the MRT Orange Line Project, Thailand Cultural Centre-Min Buri (Suwinthawong).</li> <li>- On February 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 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> <li>- On January 28, 2020, the Council Ministers passed a resolution approving the MRT Orange Line Project, Bang Khun Non-Min Buri (Suwinthawong) on a PPP Net Cost basis, for a period of 30 years from the commencement of service for the MRT Orange Line Project.</li> <li>- On July 10-24, 2020, MRTA issued an announcement inviting interested private entities to purchase a request for proposal for investment in the MRT Orange Line Project, Bang Khun Non-Min Buri (Suwinthawong).</li> <li>- On November 9, 2020, MRTA opened for the private entities to submit their requests for quotation for the MRT Orange Line Project, Bang Khun Non-Min Buri (Suwinthawong).</li> </ul>

Project	Current Status of Project
<b>MRT Yellow Line</b>	<p><b>Lat Phrao-Samrong, with a distance of 30.4 km.</b></p> <ul style="list-style-type: none"> <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 Eastern Bangkok Monorail Company Limited (EBM).</li> <li>- On August 27, 2018, the construction of the project officially commenced, which would take a period of 39 months (3 years and 3 months). It was expected to be completed and ready for service in 2022.</li> </ul> <p><b>MRT Yellow Line Extension: Ratchada-Lat Phrao Intersection to Ratchayothin Intersection, with a distance of 2.6 km., with 2 stations:</b></p> <ul style="list-style-type: none"> <li>- On October 17, 2018, the Commission for the Management of Land Traffic System Management Committee (CMLT) resolved to approve that the project be incorporated in the Mass Rapid Transit Master Plan in Bangkok Metropolitan and its vicinity. Currently, MRTA is in the process of complying with procedures and laws in relation to amendment of the Joint Venture Agreement.</li> </ul>
<b>MRT Pink Line</b>	<p><b>Khae Rai-Min Buri, with a distance of 34.5 km.</b></p> <ul style="list-style-type: none"> <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 Northern Bangkok Monorail Company Limited (NBM).</li> <li>- On August 27, 2018, the construction of the project official commenced, which would take a period of 39 months (3 years and 3 months). But there was a problem lying in moving the station in the front area of Nonthaburi Government Center and Nopparat Station, with the environmental impact analysis report (EIA) requiring to be revised, as such, the service opening was then postponed from the original target to occur at the end of 2021 for another one year, i.e., in and around 2022.</li> </ul> <p><b>MRT Pink Line Extension, Si Rat Station-Mueang Thong Thani:</b></p> <ul style="list-style-type: none"> <li>- On October 17, 2018, the Commission for the Management of Land Traffic System Management Committee (CMLT) resolved to approve that the project be incorporated in the Mass Rapid Transit Master Plan in Bangkok Metropolitan and its vicinity. Currently, MRTA is in the process of complying with procedures and laws in relation to amendment of the Joint Venture Agreement.</li> </ul>



Project	Current Status of Project
MRT Brown Line	<p><b>Khae Rai - Lam Sali (Bueng Kum), with a distance of 22.1 km.</b></p> <ul style="list-style-type: none"> <li>- January 3, 2019, the Commission for the Management of Land Traffic System Management Committee (CMLT) resolved to assign the OTP to incorporate the development plan for the MRT Brown Line Project, Khae Rai-Lam Sali (Bueng Kum) into the Mass Rapid Transit Master Plan in Bangkok Metropolitan and its vicinity, Phase 1.</li> <li>- Currently, MRTA is in the process of designing a foundation for the project located on Prasert Manukit Road overlapping the Third Stage Expressway, Northern Section (N2), before delivery of the same to ETA for a simultaneous use in bidding and construction.</li> </ul>
MRT Purple Line	<p><b>Tao Poon-Rat Burana (Kanchanaphisek Outer Ring Road), with a distance of 23.6 km.</b></p> <ul style="list-style-type: none"> <li>- On July 25, 2017, the Council of Ministers passed a resolution granting approval for MRTA to carry out the construction of civil works for the MRT Purple Line Project, Tao Poon-Rat Burana Section (Kanchanaphisek Outer Ring Road).</li> <li>- Currently, the project is in the process of preparing for land expropriation survey and assessing remuneration for land expropriation, which would be carried out by MRTA simultaneously with the process of price estimation to make a bid preparation for seeking a private partnership.</li> </ul>

Sources: [www.railway.co.th](http://www.railway.co.th), [www.mrta.co.th](http://www.mrta.co.th), [www.otp.go.th](http://www.otp.go.th), [www.bts.co.th](http://www.bts.co.th), [www.bkkmrt.com](http://www.bkkmrt.com), [www.mrta-orangelineeast.com](http://www.mrta-orangelineeast.com), [www.mrta-yellowline.com](http://www.mrta-yellowline.com), and information collected by the Company.

## 8) Procurement of Products or Services of Rail Business

### • Nature of Procurement of Products

The mass rapid transit system projects were awarded to the Company by the 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 the 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. Chaloe M Ratchamongkhon Line Project (MRT Blue Line)

The Company engaged Joint Venture CKET as the MRT project manager (Project Manager) for the MRT Blue Line, Bang Sue - Hua Lamphong Section (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 a contractor for maintaining the M&E Equipment. In respect of the MRT Blue Line Extension Project, Hua Lamphong - Bang Khae Section and Bang Sue - Tha Phra Section, the Company engaged CH. Karnchang Public Company Limited as Project Manager, with Siemens having the duty to supply rolling stocks, power supply equipment, signaling system, control, and communications system. Moreover, the Company engaged Siemens as a contractor for maintaining the M&E Equipment of the MRT Blue Line Project for the whole route.

**The M.R.T. Chalong Ratchadham Line Project (MRT Purple Line), Bang Yai - Rat Burana, Bang Yai - Bang Sue Section, (Khlom 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, (Khlom 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, including the O&M Services in accordance with the service standards as defined in the conditions of the Agreement. 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 O&M Services in accordance with the service standards as defined in the Agreement. In addition, the government sector is entitled to all farebox 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; and Phase 2: O&M Services. The Company engaged

CH. Karnchang Public Company Limited as Project Manager 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 the supply of rolling stocks, power supply equipment, signaling system, control, and communications systems, as well as maintenance service.

**9) Environmental Impact of Rail Business**

According to the Company's energy conservation policy, the Company will regularly devise new guidelines for improving, changing and implementing energy-saving projects every year to ensure the efficient use of energy while minimizing environmental pollutions, as well as reducing the electricity cost for the Company. The electricity consumption of the business in management of the mass rapid transit system projects constitutes the majority of costs of the Company; therefore, the Company formulated measures for energy saving management in 2020 to reduce energy consumption and to conserve the environment by reducing Carbon dioxide (CO<sub>2</sub>) emissions.

The Company attaches importance to reduction of energy consumption for the purpose of environmental conservation because the environment is everything around us, comprising water, air, sunlight, including assorted resources, e.g., forests, soils and minerals, etc., all of which have an influence on human life. The Company then realizes the significance of and the engagement with nature conservation to ensure the availability of the country's nature. To that end, the sustainable and continuous guidelines have been implemented by the Company, as follows:

- Reasonably reaping the benefits from the nature, such as, planting trees around buildings to reduce the heat temperature of natural light shining off buildings, thereby functioning the air conditioners in a more economical way;
- Sparingly using energy generated from natural resources, such as, helping save electricity by turning it on when it is needed only and focusing on use of natural daylight, saving oil fuel, using tap water wisely by watering the plants with the used water, and campaigning for turning faucets off when not in use, etc.

- Helping preserve the air environment by reducing air pollution, such as, not burning garbage or not taking any other action causing air pollution, and inspecting the engine condition of the Company's vehicles to make sure they are in a normal condition so as not to release toxic fumes into the air, etc.
- Helping conserve natural resources because natural resources are all beneficial to human beings in terms of consumption and utilization, therefore, helping conserve our nature by using other materials in place of using natural resources, such as, reducing the use of foam as much as possible, the use of cloth bags instead of plastic bags and not littering and not discharging wastewater into natural canals, etc.

The Company also prioritizes and has implemented various measures on the organization, for example, promotion and public relations measures, control measure, and technical change measures, etc. In addition, the Company has continuously studied and developed for the purpose of efficient energy use. Over the past years, the Company had replaced the existing light bulbs with efficient light bulbs inside the MRT train stations and the Phra Ram 9 Depot, thereby having a profound effect on the Company and reducing Carbon dioxide (CO<sub>2</sub>) emissions. In 2020, the Company organized the energy saving projects relating to the use of more efficient light bulbs, including expansion of the scope of operations in the parts of the stations and Kanlapaphruek Depot, the MRT Blue Line Extension, to cover all areas of the Company.

#### **Here are the activities and measures implemented in 2020:**

- Measure for replacing the existing light bulbs with efficient light bulbs (LED bulbs) in the Phra Ram 9 Depot, the M.R.T. Chaloeam Ratchamongkhon Line Project (the original MRT Blue Line);
- Measure for controlling turning on and off the lighting system, the seasonal air conditioning system so that the use of electric power is according to the actual use and the seasons, to ensure the efficient energy use on the parts of the M.R.T. Chaloeam Ratchamongkhon Line Project (the original MRT Blue Line and the MRT Blue Line Extension) and the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line) and to facilitate the services to the rising number of passengers.
- Study on solar power generation project in the areas of the M.R.T. Chaloeam Ratchamongkhon Line Project (the original MRT Blue Line), one of the projects on that the Company has conducted a study for a while, not to mention the fact that the global trend has been toward the greater utilization of renewable energy because the production of electricity from natural resources will have no impact on the environment, reducing both Carbon dioxide (CO<sub>2</sub>) emissions and global warming. According to the NOVA's information, the rail service providers in other countries have started switching to solar power.
- Study on application of highly efficient technologies in the systems including the guidelines for properly improving and changing the working processes of the systems, to control the functions of equipment, so that the study results will be used for reference in operations in the next year for the purpose of energy saving on the parts of the M.R.T. Chaloeam Ratchamongkhon Line Project (MRT Blue Line Extension) and the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line).

#### **Here are the ongoing activities:**

- Continual review of the work process in terms of policies, goals, operational plans and internal and external audits, to achieve efficiency in the work process.
- Improvement of the train service timetables to make them commensurate with the increasing number of passengers during the period of public relations in order to encourage everyone to save energy in the pursuit of sustainable development.
- Water is one of the resources which the Company greatly values and appreciates; the Company has then chosen to install the electric train cleaning systems which are capable of recycling used water, that is, such systems can recycle used water by up to 3 cubic meters, and the Company has also applied the aforesaid cleaning systems from the commencement of the metro service until now.
- One of the Company's strengths lies in selection of eco-friendly technologies which still remains unchanged, for example, repair and maintenance service vehicles used within the Depot areas have engines which meet the EURO IV standards, the exhaust emission standards for vehicles, which can rest assured that the use of the repair and maintenance service vehicles will in no way give rise to toxic pollution, etc.

With regard to the Company's work operations in the field of energy and environmental conservation, the Company has strictly complied with relevant government laws, e.g., laws governing energy conservation and environment, and has also adopted the (ISO 50001) Energy Management System standard, including the (ISO 14001) International Environmental Management System standard, from the opening of the MRT service, while simultaneously undertaking activities to control and improve, remedy risks or things which may threaten the safety through risk assessment, engagement and listening to opinions of all related parties, in order to create correct knowledge and understanding, as well as to alleviate traffic problems, help conserve environment and improve the quality of life of the people. To that end, the Company has further improved its operations in respect of management to strive for the sustainable development, and has been therefore provided standard certifications as follows:

- ISO 9001:2015 Quality Management System;
- ISO 14001:2015 Environmental Management System;
- ISO 45001:2018, OHSAS 18001:2007 and TIS 18001:2001 Occupational Health and Safety Management Systems;
- Safety Management System from Ricardo Rail Limited.

In 2020, the Company carried out the continuous and systematic energy management to achieve efficiency in the metro system through energy management suitable for the business and to ensure the environmental conservation in a concrete way in the pursuit of sustainable development under the energy conservation policy which must be pursued by everyone in the same direction, with the commitment to responsibility for energy conservation; therefore, developed the energy management system to ensure the optimum use of energy based on the following guidelines:

- Control of energy consumption in activities including purchasing of products and services of the Company to meet the energy conservation goals and plans to ensure the optimum use of energy in compliance with laws;
- Assuring that such energy control measures are continuously implemented and reviewed, including update and improvement; and
- Educating and raising awareness of staff and contractors, including related parties, as to their own roles, duties and responsibilities regarding impacts of energy use.

These policies are an integral part of the Company's business operations and it is the responsibility of all staff and contractors to put them into practice earnestly and regularly to ensure that the energy conservation has been conducted continuously and sustainably.

In 2021, the ongoing action plans for energy saving projects for the sustainable development of the energy management system are as follows:

- Appropriate electric energy use control in the areas of the M.R.T. Chaloe Ratchamongkhon Line Project (MRT Blue Line Extension) and the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line);
- Implementation of the solar power projects in the area of the M.R.T. Chaloe Ratchamongkhon Line Project (the original MRT Blue Line);
- Implementation of the projects for replacement of fluorescent bulbs with LED bulbs in the areas of the M.R.T. Chaloe Ratchamongkhon Line Project (the original MRT Blue Line and the MRT Blue Line Extension);
- Implementation of the projects for improvement of main equipment efficiency of the systems of the M.R.T. Chaloe Ratchamongkhon Line Project (the original MRT Blue Line and the MRT Blue Line Extension);
- Implementation of the projects for installation of LED bulbs in place of fluorescent bulbs of the areas of the M.R.T. Chalong Ratchadham Line Project (MRT Purple Line);
- Implementation of the projects for energy conservation activities for all employees or staff.

In addition, the Company has paid attention to the potential environmental impact from the MRT services so as not to be harmful to the environment, quality of life, and livelihood of the people and communities nearby, by strictly monitoring, preventing and mitigating the environmental impacts in accordance with the Environmental Impact Mitigation Measures and Monitoring Program (EMP), during the implementation of the MRT projects in service, namely, the M.R.T. Chaloe Ratchamongkhon Line Project and the M.R.T. Chalong Ratchadham Line Project, for report to the Office of Natural Resources and Environmental Policy and Planning (ONEP) to inspect and monitor the environmental qualities in key environmental issues as follows:

(1) Air Quality

The results of air quality measurement in the 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 dB(A), with the maximum level not exceeding 115 dB(A), 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.

(6) Waste Management

The results of waste management were found that segregation, collection and transport of waste for disposal were made efficiently in accordance with the management plan and applicable laws.

### 2.1.3 Commercial Development Business

The Company has carried out commercial development in relation to the expressway system by allowing the private entities and individuals to use the space for commercial operations in the vicinity of the expressway system for installing Intelligent Traffic Signs and advertising boards in various forms and for installing shops in the areas of toll plazas and engaging in other business, such as, use of the areas in the expressway system for installing 3G signal distribution devices, etc. In respect of commercial development of the M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line), the Company also has operated and appointed its subsidiary, namely, Bangkok Metro Networks Limited ("BMN"), as the management representative in the commercial development of such MRT project, per the following details:

1) **Nature of Services**

• **Commercial Development Relating to Expressway System**

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 the lease of spaces for commercial operation, as follows:

○ 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.

○ Retail Areas around Toll Plazas

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

○ Other Business Operations

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



- **Commercial Development Relating to Metro System**

The Company has appointed its subsidiary, namely, BMN, as the sole management representative in the commercial development of the M.R.T. Chaloom Ratchamongkhon Line Project (MRT Blue Line), per the following details:

- **Procurement and/or Production of Advertising Boards**

BMN, as the Company's representative, will conduct studies and analyses on the areas in the MRT stations in order to set up and develop advertising media which suit the passengers' behavior in use of the services to maximize the effectiveness of communication. To that effect, BMN will work in association with agencies or brand owners, to launch innovations in use of technologies for replacing static media with dynamic media, developing more creativity to create image, awareness, as well as strengthening the engagement between consumers and goods and services.

With the nature of the areas within the MRT stations which are composed of undergrounded structures covering the large areas in a closed environment, with a timing of Captive Environment Capture Attention of the advertising media before downing to the platform levels, including the media integration in the areas nearby, such nature of this type is then conducive to the creation of advertising media with the storytelling trends of the brand owners which will help encourage and improve engagement, as well as helping consumers recognize those products and services, which are the prime goals or measurement of the effectiveness of the budget spending for advertisement and public relations among the customer groups. Other than the integration of advertising media inside the MRT stations, BMN has adopted the concepts of the integration, creativity, storytelling trend, to the areas on the MRT stations through areas of ventilation chimneys, roof structures of the train stations, passenger elevators, thereby resulting in a perfect advertising and promotion.

However, the Company has been facing challenges, technological changes, perception of information, together with behavior, lifestyle of consumers which are rapidly evolving, as a result, the development of advertising media in the MRT trains will be constantly conducted to ensure that it has fulfilled the needs of customers, to their satisfaction, and to assure customers that the advertising media in the MRT trains has proved valuable and brought the maximum benefits for them.

- **Lease of Retail Areas in MRT Stations**

The retail space in the MRT stations is arranged for the service provisions both inside and outside the areas of Metro Mall. Currently, the rental and service areas in the Metro Mall which are in service, including, Kamphaeng Phet Station, Chatuchak Park Station, Phahon Yothin Station, Lat Phrao Station, Thailand Cultural Centre, Phra Ram 9 Station, Phetchaburi Station, Sukhumvit Station, and Khlong Toei Station. The Company continues to supply products and services which are in demand and suitable for the MRT passengers' styles of the use of services. Each area will be zoned appropriately, and in the meanwhile, the Company has come up with an idea to develop the Metro Mall area as a stopover or meeting point for service users, therefore, the common area has been improved to be larger in order to accommodate the needs of the service users, thereby making the services in the MRT trains a part of their livelihoods in the new normal.

In addition to the spaces for lease and services inside the Metro Mall, the Company has also provided the spaces for lease and services outside the Metro Mall in order to satisfy the small-sized enterprises' needs for their space or to serve as an area to increase sales channels of the space tenants and the services in the Metro Mall area, as another option. The services will be provided in a short-term event area designated by the Company in compliance with regulations on safety in metro stations, covering a total of 38 elevated and underground stations. This year, the enterprises took an interest in the use of the services of the MRT Blue Line Extension, such as, Tao Poon Station, Wat Mangkon Station, Itsaraphap Station, Tha Phra Station, Bang Wa Station, Phasi Charoen Station, Bang Khae Station, and Lak Song Station, etc.



○ **Provision of Service and Maintenance of Telecommunications System Equipment**

Nowadays, the M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line) has a total of 22 underground stations, divided into Bang Sue - Hua Lamphong Section, with 18 underground stations, and Hua Lamphong - Lak Song Section, with another four underground stations, namely, Wat Mangkon Station, Sam Yot Station, Sanam Chai Station, and Itsaraphap Station, where telecommunications equipment has been installed by the Company to receive and transmit mobile phone signals, which is in consistency with the government sector's issuance of the licenses to the private entities at present, and to reflect the technological changes and fulfill the service users' desire for optimum efficiency, the Company is in the process of enhancing efficiency in equipment receiving and transmitting signals in Bang Sue - Hua Lamphong Section to provide the efficient services to the people whenever they use the MRT services.

**2) Marketing and Competition of Commercial Development Business**

• **Customer Characteristics and Target Customers**

The main commercial development business in the MRT system consists of the installation of advertising media, lease of spaces and services, and service and maintenance of telecommunications equipment, as a result, the customer characteristics and target groups vary according to service types. Therefore, the Company has classified its customer characteristics and target groups under service types as follows.

○ **Advertising and Public Relations Media**

Most of the advertising media customers include the Company's customer groups, comprising advertising agencies which represent the brand owners to serve as planning operators, purchase advertising media in accordance with objectives of the brand owners; and another group of customers is brand owners who have a desire to directly purchase advertising media with the Company. The main proportion of the Company's customers is relative to advertising media purchase from the agency customer group. This year, the Company's customer proportion of agencies to brand owners increased from the previous year to 80:20, due to the economic slowdown and the impact of the COVID-19 epidemic; ongoing intensely-prone competition in the industry; industrial structure and changing consumer behavior; small to large brand owners' reduction of their budgets to purchase advertising media. On the other hand, the Company worked more with agencies during the 3<sup>rd</sup>-4<sup>th</sup> quarters of the year to create campaigns for the goods and services which still need the budgets for purchase of advertising media in order to boost sales in the last quarter of the year. The top five product and service groups which use advertising media in the MRT system are comprised of communication equipment group (mobile phones), followed by beverage, consumable goods, insurance, and website groups.

○ **Lease of Retail Areas in MRT Stations**

In 2020, lease of spaces and services of the retail shops in the MRT stations were affected by the COVID-19 epidemic situation, with the government announcing the closure of certain types of retail shop services from the beginning of 2020, including a request for cooperation from the private sector to allow employees to work from home, resulting in a dramatic decline in the number of the MRT users which had an impact on the sales of the space tenants and services in the MRT stations. Nonetheless, the Company implemented relief measures in aid of the customer groups, including an exemption of rental and service fees during the service shutdown or a 50-percent discount on rental fees in case of stores which remained open for service, or extension of rental-service fee payment period, as a result, they are still the Company's business alliances which have continued business and taking a lease on retail spaces in the MRT stations. Most of the customer groups for space rental and services have continued their business with the Company, for instance, customer groups in categories of food and beverage, convenience stores, supermarkets, bakery shops, foreign currency exchange shops, phone accessories stores, beauty and salon shops, eyeglass shops, etc.

○ Provision of Service and Maintenance of Telecommunications System Equipment

The Company's customer groups are those who have obtained licenses to operate the telecommunications business from the Office of the National Broadcasting and Telecommunications Commission (the Office of the NBTC) to provide mobile phone services, both public and private sectors, comprising AIS, DTAC, TRUE MOVE, TOT, and CAT, each of which would hold the license to provide the service under the frequency category. The frequency services provided in the M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line) include 850, 900, 1800, 2100, 2300 and 2600 MHz.

3) **Marketing Policy and Strategies of Commercial Development Business**

• **Service and Product Strategies of Commercial Development Business**

**Commercial Development Relating to Expressway System**

- 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.
- Shops and public restrooms are provided to expressway users in 4 toll plazas of the Si Rat Expressway and the Udon Rathaya 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 technological changes, digital disruption, including the situation of the COVID-19 epidemic have an impact on the advertising media industry structure in a manner that the media mix modeling, together with the ways the agencies work, planning and decision to spend budgets for advertising and public relations of the advertisers have resulted in a change in the business plans and new strategies have been established during the foregoing crisis, as such, the advertisers have been affected, both directly and indirectly, and then reduced their advertising budgets, by changing from a long-term plan to a short-term plan, exploring creative ideas to create motivation or engagement with consumers, making a declining use of offline media and switching to online media in order to rapidly reach consumers. These changes have forced the agencies and the Company, as the advertising media owner in the MRT system, not only to adjust oneself but the respective service plans in order to meet the needs of the agencies or advertisers.

BMN has worked with the advertisers (brand owners) and agencies in exploring creative ideas which suit the advertisers' products with the compelling storytelling through the advertising media in the MRT trains to ensure that the MRT users perceive and engage with the products and services. Other than that, BMN is also looking for business alliances to offer a variety of the use of the advertising media in the MRT trains, for example, the production of content for advertisement through the PIDS, the marketing activities inside the MRT stations in collaboration with the brand owners, the transition of advertising media platform from static media to dynamic media at the prominent points inside the MRT stations. Apart from the development of advertising media inside the MRT stations, BMN has also carried out development of advertising media for the areas above the MRT stations, for instance, ventilation chimneys or ventilation buildings, roof areas of the MRT stations, passenger elevators or free space on the MRT stations; the integration of such areas, creativity of advertising media which is capable of catching the public's eyes on the roads outside to become a Landmark Media which can efficiently send persuasive communications out to people on the areas out of the MRT stations.

- The technological changes and the COVID-19 epidemic have not only affected the advertising media business, but also the space rental and service business, that is, the available retail space is beginning to take fewer leaseholders because their switching to online sales is increasing. By this reason, the retail shops in the future may only be a place for product showcase and may be needed in a smaller size. In addition, the situation of the COVID-19 epidemic has substantially changed consumers' spending habits in a manner that they have switched to doing online shopping and using delivery services more, thereby resulting in a decrease in the number of shop-goers at shopping centers, as compared with the previous years. Nevertheless, the retail space inside the MRT stations will be the areas where meet

the needs of entrepreneurs and consumers because people's switching to mass rapid transit services is nowadays rising, therefore, the available retail space in the MRT stations will provide greater convenience in people's spending, thereby saving time in travelling to large shopping centers. Other than the availability of the retail space, the Company has also provided common areas as a meeting point or stopover to facilitate the MRT service users, which has a positive effect on the entrepreneurs in the rental space as it will increase the number of passengers accessing to the services and that for a longer period of time, thereby causing a rise in sales of the retail shops.

- This year, 5G is considered the catalyst for momentous technological change in Thailand, the awakenings of 5G are increasing hastily because it is not only a mobile network, but it will also be used more widely, especially in communications. 5G networks have been developed to transmit multiple streaming data simultaneously with greater efficiency, stabilization, and rapidity. As a consequence of such transformation, the Company has improved and developed its devices to accommodate all frequency bands, including the 2600 MHz for 5G, together with the improvement of the efficiency of antenna transceivers from SISO to MIMO, which was already completed at the stations of the MRT Blue Line Extension, comprising, Wat Mangkon Station, Sam Yot Station, Sanam Chai Station and Itsaraphap Station. Currently, it is in the process of boosting the efficiency of devices in the phase of Bang Sue - Hua Lamphong Section in order to provide the MRT service users with the efficient services.

In addition to the primary commercial services as mentioned above, the Company has also provided service areas for selling products and services or organizing various marketing activities outside the area of the Metro Mall inside the MRT stations, covering a total of 38 MRT stations of the MRT Blue Line Project, with the varied sizes of the areas depending on each station structure.

- **Corporate Image Promotion Strategies**

- Giving back to the society, support of the government policies are regarded as an important mission which has been realized and prioritized by the Company through, such as, organizing activities to broaden knowledge of the youths, activities for reading promotion, provision of support to the government sector in public relations about its services, etc.

- **Distribution Strategies and Channels of Commercial Development Business**

- The commercial services in the M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line) have varied according to the service types, distribution channels are then differentiated by the service types.
  - Public relations media have sale channels via business alliances as agencies together with direct presentation to the brand owners.
  - Spaces for lease and service and telecommunications service are presentation of the spaces direct to the brand owners or the service providers.

#### 4) **Industrial Outlook and Competition of Business Development Business**

- **Advertising Media**

The digital disruption, the economic slowdowns both at home and abroad, the ongoing situation of the COVID-19 epidemic at the beginning of the year until now, including the domestic political situation are factors behind the tremendous impact on the advertising media industry in Thailand.

As for the advertising media outlook from January to October 2020, its growth rate dropped by 15 percent, despite a sign of recovery in the advertising media industry in the end of the third quarter until the beginning of the fourth quarter of 2020, with all advertising media types being affected by such aforementioned situations. The top five most affected media include media in theaters, stores/outlets, newspapers, magazines and cable television media, with the growth rate declining by more than 30 percent compared to the previous year, which the growth rate of cinema media declined by more than 50 percent. Furthermore, the advertising media relative to the MRT advertising media, which is mobile media, has been affected significantly, with its contraction accounting for 25 percent compared to the same period of the previous year. Upon the analysis on the contracted media types, it would be found that such contraction has correlated with the situations which gave rise to the slowdown, particularly due to the COVID-19 epidemic, in which the government has taken various measures to contain the spread of

the virus, for instance, the closures of retail shops in shopping centers, the closures of crowded places such as movie theaters, entertainment spots; and the social distancing measures to allow employees to work from home.

In the third and fourth quarters before a new wave of the COVID-19 at the end of 2020, irrespective of signs of improvement that the brand owners started returning to use budgets for advertising in order to boost their sales in the last quarter of the year, during such length of time, the advertising industry had remained affected by the political demonstrations within the country. Such foregoing factors, let alone domestic and international economic conditions where their recovery capacity is still at low level, the ongoing COVID-19 epidemic, including the existing situations of the domestic political demonstrations and a new wave of the disease in late 2020, will still have the impacts until 2021 in which the brand owners continue postponing to spend the advertising budgets to see if there will be any changes in such situations or have revised their strategies to short-term instead of long-term budgeting.

- **Spaces for Lease and Service**

During the first and second quarters of the year, the situation of the first wave of the COVID-19 epidemic had a direct impact on the space rental and service business, as a result of the government measures to reduce the spread of the COVID-19, thereby making it impossible to open the business for service. Yet, the retail space resumed in service in mid-May but it was an opening for services subject to the limitations, which were obstacles in the business operations. This included a change in consumers' spending behaviors in a manner of avoiding entering crowded areas, protecting themselves from the virus infection, switching to online shopping and delivery services in place of going out to do shopping at shopping centers. Thus, the retail space service business is still waiting for the economic recovery after the emergence of the current COVID-19 crisis. Moreover, the space tenants remain affected by a decline in sales of goods and services owing to a decrease in purchasing power of consumers; they have therefore sustained losses and are unable to expand their business as planned. Likewise, the spaces for lease and services in the MRT stations are also affected by such situation in spite of the fact that during the third and fourth quarters before the new wave of the disease outbreak, the number of MRT service users has started to gradually return to normal. However, the decrease in the purchasing power of consumers, their lifestyle modifications to spending more time at home, refraining from going outside as much as possible, and the new wave of the disease outbreak, have started to result in a slowdown or decline in the sales and number of tenants of the MRT spaces.

## 5) **Procurement of Products and Services of Business Development Business**

- **Nature of Procurement of Products**

The Company has obtained the concession from the Mass Rapid Transit Authority of Thailand (MRTA) for operation and commercial development in the M.R.T. Chaloem Ratchamongkhon Line Project (MRT Blue Line), with the Company conducting commercial development in respect of 1) procurement and/or production of advertising media of various forms; 2) lease of retail areas in the MRT stations; 3) provision of service and maintenance of telecommunications system equipment; and 4) other commercial activities, by authorizing Bangkok Metro Networks Limited as the Company's representative to conduct the commercial development.

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

## 6) **Environmental Impact of Commercial Development Business**

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 (details shown in Item 9: Environmental Impact of Rail Business).

**2.2 Work Pending Delivery - None -**

### 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 sufficiency 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, a risk management handbook as guidelines in the operations, and regularly monitors, evaluates, reviews risks every quarter 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 plan to achieve the specified objectives, goals, missions and vision of the Company.
3. To carry out proactive risk management to manage risks which may result in the Company's loss of interests and opportunities.
4. To delegate risk management as the staff's responsibility at all levels and manage risks within their work units and the organization to contain risks at sufficiency 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 in 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 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

The Company has operated its businesses under the relevant Concession Agreements subject to the supervision of the government sector, difference in the contractual parties' understanding of compliance with the terms and conditions of the respective Concession Agreements may then arise in various aspects, such as, revisions of expressway toll or MRT fare rates, responsibility for costs under the respective Agreements, and etc., about which the Company may require a certain period of time to conduct negotiations for corresponding understanding in order to avoid any impacts on the Company's business operations.

Moreover, there may be policy changes in the government administration by the political party in charge, which such changes possibly affect the existing practical guidelines or terms specified in the relevant Agreements, or may require the Company to proceed beyond those specified in the relevant Agreements or undertakings.



As a result of negotiations for resolution of the disputes of the Second Stage Expressway Project (the Si Rat Expressway, including Sector D) and the Bang Pa-in - Pak Kret Expressway Project (the Udon Raththaya Expressway) until the settlement could be reached, the Council Ministers' Meeting on February 18, 2020 passed a resolution approving the amendments of the relevant Agreements to settle the disputes of the Second Stage Expressway Project (the Si Rat Expressway, including Sector D) and the Bang Pa-in - Pak Kret Expressway Project. In this regard, the Company and NECL signed the Second Stage Expressway Project (Amendment) and the Bang Pa-in - Pak Kret Expressway Project (Amendment) with EXAT on February 20, 2020.

Given the fact that the Company and NECL have been granted to extend the respective expiration periods of the existing Agreements, including the Second Stage Expressway Agreement (Sectors A, B and C), the Agreement for Extension of the Second Stage Expressway Project (Sector D), and the Bang Pa-in - Pak Kret Expressway Project Agreement, until October 31, 2035, there is no more risk of uncertainty in considering the renewal of the relevant Agreements with government agencies, but risks from the business operations pursuant to the relevant Agreements with government agencies and government policies in accordance with the Concession Agreements with EXAT and MRTA still remain. In this regard, the Company has established a joint operating system with the government sector, both at the administrative and operating levels, by sharing sufficient information with each other to ensure good understanding towards each other, as well as regularly and closely monitoring the political situations and policy changes, and reasonably reviewing the strategies and operational plans to suit the situations and ensure the mutual interest in the long run.

### 3.1.2 Risk Relating to Revenues less than Projections

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, expansions of electric train networks, other feeder system modes with greater convenience, alternative fare rates of other transit systems available for route users, road traffic congestion, oil prices, and urban growth, and businesses surrounding the expressway or metro routes which would change the people's destinations, etc., all of which will affect the volume of the Company's service users. Moreover, the Company generates commercial development revenue, which may vary depending on 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 obligations owed to the lending financial institutions or creditors according to the mutually agreed schedule, such as, interest expenses, scheduled repayment of loans, operating expenses under the Agreements, as well as remuneration payable to MRTA, etc.

To minimize such risk, the Company has established a unit to closely monitor any impact which may affect various factors and formulated appropriate strategies. In addition, the Company can limit potential impacts from risk factors, such as oil prices, road traffic congestions, and alternative fare rates of other transit systems available for passengers, 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 has developed new advertisement media to increase its commercial development revenue, such as advertisement media management via the Passenger Information Display System (PIDs), platform billboard, and digital media, including further development of retail space.

In 2020, the Company had been affected by the situation of the outbreak of COVID-19 from late February and continued to July 2020, the government and private agencies had allowed their own personnel and staff to work from home wherever possible to reduce the risk of an infection with COVID-19, not to mention the fact that the government imposed various measures, for example, risky locations must remain closed, activities in crowded places are prohibited, including the imposition of a curfew under which no persons throughout the Kingdom were allowed to depart from their dwelling places during 22.00 - 04.00 hrs. from April 3, 2020, with the approved curfew relaxation in the second phase to start from 23.00 - 04.00 hrs. from May 17, 2020, and in the third phase to start from 23.00 - 03.00 hrs. from June 1, 2020 onwards. These were aimed to impose restrictions on the people's relocation to prevent and contain the spread of COVID-19, resulting in a decrease in the travelling volume, by which the Company's core revenues were affected accordingly.



The travelling volume of both expressway and metro services which had declined from February 2020 caused a decrease in the Company's revenues in the first quarter of the year. Nevertheless, after the government's relaxation on enforcement of its measures enabling the people to do activities of their daily living more conveniently, for example, cautious opening of some shops, restaurants, beauty salons, department stores, and etc., were allowed, the travelling volume was then rising. That was, the number of expressway users returned by more than 80 percent for the metro service, due to the ongoing social distancing measures, under which, during the peak hours, only 20 percent of the number of passengers required to travel could be accommodated. In this regard, if after the situation would have been defused by which the government has unlocked all of its measures, it was expected that the travelling volume and revenues of the Company would return to normal.

Notwithstanding, the Company remains cash and bank deposits and has the undrawn credit facilities extended by many financial institutions, no liquidity problem has confronted the Company.

### 3.1.3 Risk from Interest Rate and Foreign Exchange Rate Fluctuations

Given that the Company remains obliged to service interest-bearing liabilities to lenders, and the Company plans for future investment in many 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 floating interest cost in respect of the certain credit facility, thereby putting the Company at risk by bearing an increase in expenses from interest rate fluctuation or increase in the money market. However, the Company has managed 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 entered into a conversion contract for partial floating interest rates to fixed interest rates during the period which the interest rates in market had gradually declined, in order to reduce the potential risk from interest rate fluctuation in the future. However, the Company still maintained a partial loan bearing the floating interest rate to ensure consistency with the presently economic condition which has not yet given a signal of an increase in interest rate, thereby resulting in a decrease in financial cost. In this regard, the floating interest rate would be converted into fixed interest rate to minimize the risk in the future in due course.

In addition, the Company incurred expenses in foreign currencies, for example, the 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 its expenses in foreign currencies is low. The Company will still consider reducing risk from the exchange rate, such as negotiations for reduction of foreign currency expenses and buying forward, etc.

As a consequence of the outbreak of COVID-19 which has had a negative impact on financial markets in that investors therefore have faced some uncertainty as to their holding of financial instruments, as such, investments in newly-issued debt instruments were reduced in order to maintain liquidity, thereby causing a slowdown in investment demand, along which the fact that TRIS Rating Co., Ltd. revised the Company's credit rating from A with a "Stable" outlook to A with a "Negative" outlook, which may affect the Company's plan to issue new debentures.

Nonetheless, in 2020, the Company issued its debentures in the amount of Baht 3,000 Million, with a 4-12 year maturity, at the rates of 2.88 - 3.78 percent per annum. In addition, the Company has its credit facilities extended by many banks available in case of the Company's inability to issue debentures, therefore, the Company's repayment of due debts is in no way affected.

### 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, for example, perils, serious accident, earthquake and such events which may be caused by terrorism, sabotage as bombing, riot, including gathering of insurgent groups, which may force the Company to suspend its services, thereby giving rise to loss of revenue, damaging assets, tarnishing image and destroying reliability of the Company. For this reason, the Company has set forth emergency plans in response to any such events which may suddenly occur, for example,

removing various significant and essential M&E equipment for management of the expressways for storage at the safe place, as well as arranging for staff training to ensure that the staff in charge will be able to take prompt actions to resolve such emergency, for instance, practicing emergency drills of all relevant units inside and outside the Company by the 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; installation of metal detectors, CCTVs, and provision of security staff in all areas.

The Company has taken out insurance against property all risks, business interruption, public liability, and terrorism in respect to 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 thus expedited the expansion of the metro network and the connecting system to other transportation systems. Therefore, it would be highly possible that there would be governmental organizations or private agencies operating the mass rapid transit system business which require additional personnel with knowledge, expertise, and skills in the technical field in the rail business. As a result, it would be likely that the Company's main personnel would be enticed away from the Company.

The risk from a shortage of competent personnel is considered as one of the Company's main risks, as they are a 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 the 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; organizing outing activities to encourage staff to love, unite, feel connected with the organization; review and revisions of the operation process and work system to ensure readiness at all times, as well as preparation of the 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 a 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.

### 3.1.6 Risk in respect of Information Technology Security

With the Company's commitment to providing the services of the expressway system and the mass rapid transit system with safety, convenience, rapidity, reliability, punctuality and efficiency, the Company then needs to employ the cutting-edge technology to support its operations, including the provision of the services with the highest efficiency in a constant manner, which there may be a risk from disruption of main work systems, such as the collection control system, traffic control system, electricity system, and equipment (electrical power system, signaling system, communications system, SCADA system, platform screen door system, automatic fare collection system, signage system) and the Company's internal computer system (Back Office). If there is an attempt to have unauthorized or unapproved access to the information technology system of the Company, from both internal and external persons, including computer virus attacks, there is a risk which the fare collection system may break down; the fare management system may be disrupted and out of service.

The Company sets up an emergency plan to deal with possible incidents which may have an impact on system equipment, comprising preventive and corrective plans for system equipment, on a regular basis, for prevention and arranging for staff in charge to ensure their access to tackling problems immediately in case of emergency in the work systems; there is a process of replaceable cards management in the case where the fare management system is not able to record entry-exit to and from the gates. The system is designed to enable all fare collection equipment to collect information in a stand-alone manner in the case where the server is not able to collect information on traveling of passengers. Manuals are prepared to specify procedures and methods for the safety of the information technology system. Furthermore, the Company formulates the policy to improve the toll collection system at

the control center level in accordance with the ISO/IEC 27001:2013 Information Security Management System standard in order to provide a higher degree of security to the information technology of the toll collection system at the control center level, and also defines a standard for critical information management to ensure the business continuity, enhancement of the trust in the organization on the global stage. The Company has obtained certification of the ISO/IEC 27001:2013 standard for development of the process and Information Security Management System (ISMS) in accordance with the ISO/IEC 27001:2013 international standard for the toll collection systems at the Si Rat Expressway Control Center (CCB 2) and the Si Rat - Outer Ring Road Expressway Control Center (CCB7), as well as developing personnel in the field of information technology security management to enable them to perform works under the work process / system so developed, including following up news on cyber threats for taking precautions and making preparedness to handle at all times.

### 3.1.7 Operational Risks from the COVID-19 Outbreak Situation

There was recently the emerging infectious disease known as COVID-19 which was caused by a newly discovered and unknown strain of the Coronavirus, and which had widely spread in Wuhan of China. Currently, the large outbreak of the COVID-19 infection has occurred worldwide.

As a result of the situation of the outbreak of the COVID-19, the Company has continued to monitor the situation and heighten the precautionary measures in both the MRT Blue Line and the MRT Purple Line, with such measures being taken to cover passengers, staff, contractors, and visitors. The Company has implemented the following:

- 1) Adopting the work rules and regulations regarding prevention and containment of dangerous communicable diseases and the business continuity management plan to cope with the situation of the outbreak of the COVID-19;
- 2) Imposing precautionary measures against the spread of COVID-19 in accordance with the government measures, namely:
  - Providing face masks for staff;
  - Avoiding crowded activities;
  - Splitting the work teams to reduce their risk of exposure to the disease transmission;
  - Requiring all staff, contractors and visitors entering the Company's areas to always wear face masks and frequently wash their hands in case of a conversation or close contact with other persons;
  - Avoiding traveling to any other provinces at risk of the ongoing outbreak;
  - Providing alcohol or gel hand sanitizers for staff and passengers;
  - Disinfecting inside the trains at the Depots every day before the train service, and spraying disinfectants inside the trains at the terminal stations during the rush hours;
  - Disinfecting inside the metro stations, the office buildings in the common areas, and the frequently touched points or devices every hour, the Company's common vehicles every trip, and shared office equipment;
  - Providing screening points for staff, contractors and passengers by measuring body temperature before entering the area;
  - Prioritizing the passengers' access to the services at each station's entrances-exits, shop floor, platform floor, and ensuring seat distancing on board in accordance with social distancing measures;
- 3) Adjusting the train service in accordance with the Emergency Decree on Public Administration in Emergency Situation B.E. 2548 (2005) (No. 3) prohibiting any person throughout the Kingdom from departing from his/her dwelling place between 23.00-04.00 hrs., and other government requirements;
  - Adjusting the service hours and making it known to the passengers for acknowledgement of the change of the last train timetables of the MRT Blue Line and the MRT Purple line to end at 22.30 hrs;
  - Increasing trains while increasing service frequencies during rush hours in the evening until the service closing of both the MRT Blue Line and the MRT Purple Line to ensure the passengers' convenience and relieved congestion;
  - Requiring the MRT service users to always wear medical face masks while using the services.

- 4) The Company ensures the implementation in the event that any staff is found infected with the disease in accordance with the work rules and regulations regarding prevention and containment of dangerous communicable diseases, and the business continuity management plan, as follows:
  - Notifying the Department of Disease Control and the regulatory body (MRTA) about the staff infected with the COVID-19;
  - Assessing a group of staff at risk of being further infected with the disease, and requiring the group of staff at risk to comply with the quarantine measures;
  - Assessing the areas where pathogen spread may occur; considering zoning the work areas for cleaning and spraying disinfectants;
  - Making passengers, mass media, and the public known about such implementation in order to build their confidence in the use of the services

In this regard, the Company has continued to strictly observe the precautionary measures against the spread of the COVID-19 throughout the years 2020 and 2021 in conformity with the government measures.

### 3.2 Corporate Specific Risk

#### 3.2.1 Risk from Legal Disputes

Pursuant to the existing Concession Agreements, the Company and NECL had a total of 19 disputes with EXAT on a 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.

On February 18, 2020, the Council of Ministers' Meeting resolved to approve the amendment of the Agreements to settle the disputes of the Second Stage Expressway Project (the Si Rat Expressway, including Sector D) and the Bang Pa-in - Pak Kret Expressway Project. The Company and EXAT signed the Second Stage Expressway Agreement (Amendment) while NECL and EXAT signed the Bang Pa-in - Pak Kret Expressway Agreement (Amendment) on February 20, 2020. In this regard, the Company, NECL and EXAT had already filed the withdrawals of their respective Plaints or execution of all the judgments, as a result, the Second Stage Expressway Agreement (Amendment) between the Company and EXAT, and the Bang Pa-in - Pak Kret Expressway Agreement (Amendment) between NECL and EXAT came into effect.

#### 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 in the event that the operational results of such companies whose shares were held by the Company do 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 whereby those investments can be converted into cash when there are appropriate business opportunities and occasions.

Since 2019, the Company has changed its policy on investment from investments in associates recognizing share of profit or loss according to the shareholding percentage to other long-term investments in available-for-sale securities, which a change in market capitalization would be recorded on the end date of the accounting period. The price difference is treated as unrealized gain or loss indicated in the shareholders' equity.

In this regard, the decrease in the shareholding percentage to be the investment in the available-for-sale securities shall be deemed to minimize a risk from return on investments in companies less than projections in the event that such company's operational results fail to meet the projections. However, the Company sent its representatives to be members of the board of directors of the companies invested by the Company to ensure the Company's participation in their management and acknowledge the operational results of the companies invested by the Company on a regular basis.

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

Costs of rail business comprise the cost of farebox and cost of train service, which are deemed the main expenditure of the Company's business operations, comprising repairs 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 the cost of farebox vary according to the aforesaid costs. However, in the past, the Company remained able to effectively control its cost of farebox. Besides, the cost of farebox 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 Concession Agreement for the MRT Purple Line Project, 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 the 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 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 the 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 and in the event that the trains cannot be opened for service, the Company's image may be affected.

In this regard, the Company has managed the risk by study information from the members of the international federations of public transport operators, e.g., UITP, APTA, NOVA Group of Metros, including the advice from Lloyd's Register Rail, the highly experienced consultant, it is then possible for the Company to select and procure other manufacturers' M&E Equipment which is compatible with its existing system. The Company also formulates the strategic plan in developing the quality of its personnel to ensure they have sufficient capabilities for working with local and overseas equipment manufacturers and contractors in the maintenance and repair of the M&E Equipment and the rail system to ensure efficiency without reliance on the sole existing manufacturer.

### **3.2.5 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 staffs 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 the Si Rat Expressway, the Udon Raththaya 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. As for 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 power backup system and the management of purchase of spare materials.

Moreover, the Company may be exposed to the risk from non-functional toll collection equipment which may arise from various causes, such as, inoperative electrical system due to a power failure on the part of the Metropolitan Electricity Authority, error processing by the operating system, etc. In this regard, the Company gives high priority to such risk management by arranging for power backup system, a security system for prevention of access to significant work systems by any 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.

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

The Company executed the Concession Agreement for the MRT Blue Line Extension Project with the Mass Rapid Transit Authority of Thailand (MRTA) on March 31, 2017, 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. Chaloe Ratchamongkhon Line Project in order to provide the train operation service in phases as planned. The Company 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. Such implementation went according to plan, as follows:

- Phase 1: Bang Sue Station - Tao Poon Station, under the Agreement scheduled for service opening by August 15, 2017, was opened for service by the Company on August 11, 2017;
- Phase 2: Hua Lamphong Station - Lak Song Station, under the Agreement scheduled for service opening within 30 months, was opened for service by the Company on September 29, 2019; and
- Phase 3: Tao Poon Station - Tha Phra Station, with its service opening within 36 months (in March 2020), was opened for its commercial operation by the Company on March 30, 2020, thereby providing a single rail network (Through Operation) for the train operations of the MRT Blue Line and the MRT Blue Line Extension Projects, and such service generates income for the whole line as specified in the respective Concession Agreements.

The MRT Blue Line Extension Project had completed all of its 3 phases of service within the specified period of time under the Agreement; it was then deemed that there remained no risk from the delayed operation of the MRT Blue Line Project.



#### 4. Property Used in Business Operations

##### 4.1 Main Assets

As of December 31, 2020, the Company and its subsidiaries had main assets used in business operations, as follows:

(Unit: Million Baht)

Class of Assets	Net Book Value
1. Building and equipment	379
2. Rights to operate expressway sectors	31,702
3. Rights to use sites for expressway construction	-
4. Intangible assets under the Concession Agreement for the MRT Blue Line Project	44,684
<b>Total</b>	<b><u>76,765</u></b>

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

##### 4.1.1 Building and Equipment

As of December 31, 2020, the book value of the building and equipment as per the consolidated financial statements of the Company and its subsidiaries was as follows:

(Unit: Million Baht)

Company	Net Book Value	Ownership	Encumbrance
BEM	347	Owner *	None
NECL	14	Owner **	None
BMN	18	Owner	None
<b>Total</b>	<b>379</b>		

**Remarks:** \* This refers to the 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 the lease of a building space for use as its head office located at No. 587 Sutthisarn Road, Ratchadaphisek Subdistrict, Dindaeng District, Bangkok 10400, at the rental rate of Baht 10,000 per month.

\*\* NECL does not own any property, plant, and equipment but NECL takes on the lease of a building space for use as its head office located at No. 587 Sutthisarn Road, Ratchadaphisek Subdistrict, Dindaeng District, Bangkok 10400, 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 Expressway Sectors

As of December 31, 2020, the book value of the rights to operate expressway sectors as per the consolidated financial statements of the Company and its subsidiary was as follows:

(Unit: Million Baht)

Company	Net Book Value
BEM	26,965
NECL	4,737
<b>Total</b>	<b>31,702</b>

The rights to operate expressway sectors are considered the costs of construction of the Si Rat Expressway, the Si Rat - Outer Ring Road Expressway, and the Udon Ratthaya Expressway, with the details as of December 31, 2020, comprising:

(Unit: Million Baht)

Class of Assets	Net Book Value	Ownership	Encumbrance
Si Rat Expressway (Sectors AB, C and D)	2,856	EXAT	None
Si Rat - Outer Ring Road Expressway	23,418	EXAT	None
Udon Ratthaya Expressway	4,737	EXAT	None
Project costs during construction	691	EXAT	None
<b>Total Net Book Value</b>	<b>31,702</b>		

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.

On February 18, 2020, the Council of Ministers resolved to approve the amendment to the Agreements for settlement of all of the disputes between the Company/NECL and EXAT; and on February 20, 2020, the Company/NECL and EXAT signed the Second Stage Expressway Agreement (Amendment) and signed the Pa-in - Pak Kret Expressway Project Agreement (Amendment), for the respective specified concession periods of 15 years and eight months from February 20, 2020, which are entitled to be extended under the remaining entitlement in the existing Agreements. In this regard, the Company and NECL are required by these Agreements to be responsible for expenses relating to toll collection, traffic management and rescue operation on the expressways, including costs of maintenance of the expressways under the relevant Agreements throughout the term of the Agreements. As for the Si Rat - Outer Ring Road Expressway Agreement, it has the specified concession period of 30 years from December 15, 2012.

The essence of revenue sharing and renewal of the concession periods under the respective Agreements (Amendments) is as follows:

Expressway	Revenue Sharing The Company/the Subsidiary : EXAT	Extended Period	Remaining Extension Entitlement *
Si Rat (Sectors AB, C and D)	First Stage and Second Stage Sector AB 40 : 60 Sector C 100 : 0	15 years and 8 months to October 2035	4 years and 4 months
	Sector D 100 : 0	8 years and 6 months to October 2035	11 years and 6 months
Udon Ratthaya (Bang Pa-in - Pak Kret)	100 : 0	9 years and 1 month to October 2035	10 years and 11 months

\* The remaining period under entitlement to full extension of the respective Agreements as specified in the existing Agreements.

Toll rates have been revised to increase at a fixed rate every 10 years from September 1, 2018 for the Second Stage Expressway Agreement and every 10 years from November 1, 2018 for the Bang Pa-in - Pak Kret Expressway Project Agreement at the rates specified therein.

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

The rights to use sites for expressway construction are considered as a 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 rights to use sites for expressway construction were totally amortized in the first quarter of 2020.

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

As of December 31, 2020, 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
BEM	44,377
BMN	307
<b>Total</b>	<b>44,684</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 of December 31, 2020, comprising:

(Unit: Million Baht)

Company	Class of Assets	Net Book Value	Ownership	Encumbrance
BEM	M&E Equipment	41,741	Owner	None
BEM	M&E Equipment and leasehold improvements, telecommunications system equipment, and advertising system equipment in metro stations	1,125	Owner	None
BMN	M&E Equipment and leasehold improvements, telecommunications system equipment, and advertising system equipment in metro stations	306	Owner	None
BEM	Project costs during construction	1,511	Owner	None
BMN	Project costs during construction	1	Owner	None
	<b>Total Net Book Value</b>	<b>44,684</b>		

## 4.2 Investments in Other Companies

### 4.2.1 Summary of Investments as per the Financial Statements

As of December 31, 2020, the book value of investments in other companies as per the Company's separate financial statements was 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  Less: Provision for impairment of investments  Net investments	2,604  (2,450)  154	99.99	5,250	Subsidiary	- Construction and operation of the Bang Pa-in - Pak Kret Expressway Project
2. Bangkok Metro Networks Limited  Less: Provision for impairment of investments  Net investments	507  (16)  491	90.52	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	4,061	18.47	3,990	Other Company	- Production and distribution of tap water
4. CK Power Public Company Limited	3,340	17.59	8,129	Other Company	- Investment in other companies (Holding Company) operating the energy business
5. Eastern High-Speed Rail Linking Three Airports Company Limited	400	10.00	4,000	Other Company	- Development of electric railway projects

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

The Company has the 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 of December 31, 2020, the Company invested in the subsidiaries and other companies, as follows:

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

The Company established NECL in 1996, by holding 99.99 percent of its shares. The potential benefits to be derived by the Company would be in the form of dividend from the 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 a 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. NECL has started to generate profits since 2013 onwards. The Company has 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 of December 31, 2020, 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 in various forms inside the metro stations and inside the trains, lease of retail spaces in the M.R.T. Chaloom Ratchamongkhon Line Project (MRT Blue Line) stations and spaces in the basement level of the Lat Phrao park and ride facility. In addition, BMN also provides service and maintains telecommunications system equipment inside the metro stations. Subsequently, in October 2018, the Company, who shall be exclusively entitled to commercial development in the M.R.T. Chaloom Ratchamongkhon Line Project in accordance with the Concession Agreement for the MRT Blue Line Project dated March 31, 2017, entered into an agreement engaging BMN as a management representative for all commercial development in lieu of granting of the commercial development right.

As of December 31, 2020, BMN’s registered and paid-up capital was Baht 254 Million, whereby the Company held shares in BMN representing 90.52 percent of all BMN’s shares sold.

In this regard, the Company has a control policy or participates in setting out the significant policies on the business operations by assigning its five representatives to be members of BMN’s board of directors, from a total of seven directors of BMN.

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

The Company has invested in TTW which operates the business of production and distribution of tap water to the Provincial Waterworks Authority for further distribution to water users in the vicinity 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, on a Build-Own-Operate (BOO) basis, and TTW also acquired the rights to manage the tap water production and wastewater treatment systems in Bang Pa-In Industrial Estate from Bangpa-in Land Development Co., Ltd., for a period of 30 years from August 6, 2009.

TTW has invested in Pathum Thani Water Co., Ltd., representing 98 percent of its registered capital. Such company operates the business of production and distribution of tap water in the vicinity of Pathum Thani-Rangsit, Pathum Thani Province, under

the Water Production and Distribution License Agreement with the Provincial Waterworks Authority, for a period of 25 years from October 15, 1998. TTW has 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, in which TTW holds shares representing 68 percent of its registered capital. In addition, TTW has invested in the energy business through holding 24.98 percent of shares in CK Power Public Company Limited whose main business is holding company in other companies operating the business of production and distribution of electricity from various types of energy. The potential benefits to be derived by the Company would be in the form of dividend from the investment.

The Company, as a shareholder, assigned its representative to be a member of the board of directors of TTW. As of December 31, 2020, the Company held shares in TTW representing 18.47 percent of its registered capital.

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

The Company has invested in 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 of December 31, 2020, CKP invested by holding shares representing 61.33 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; 37.50 percent in Xayaburi Power Company Limited; and 42 percent in Luang Prabang Power Company Limited. The potential benefits to be derived by the Company would be in the form of dividend from the investment.

The Company, as a shareholder, assigned its representative to be a member of the board of directors of CKP. As of December 31, 2020, the Company held shares in CKP representing 17.59 percent of its registered capital.

#### **5) Eastern High-Speed Rail Linking Three Airports Company Limited (“EHSR”)**

The Company invested in EHSR, which was established by CPH Group to carry out development of electric railway projects, design and construction works, civil work, in association with other projects, supply of M&E Systems and rolling stocks, including provision of train operation and maintenance services, and development of areas for supporting the electric railway services of the project, for a period of 50 years (with the construction period of 5 years and the operation period of 45 years). The potential benefits to be derived by the Company would be in the form of dividend from the investment.

The Company, as a shareholder, assigned its representative to be a member of the board of directors of EHSR. As of December 31, 2020, the Company held shares in EHSR representing 10 percent of its registered capital.



## 5. Legal Disputes

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

The Company/the subsidiary and the EXAT had reached the mutual agreement for settlement of a total of 19 disputes of the Second Stage Expressway Project (the Si Rat Expressway, including Sector D) and the Bang Pa-in - Pak Kret Expressway Agreement (the Udon Rattaya Expressway), in the total amount of Baht 134,274.8 Million, which subsequently on February 18, 2020, the Council of Ministers had resolved to grant approval for the Company/the subsidiary and the EXAT to amend the relevant Agreements to settle the disputes; and on February 20, 2020, the Company/the subsidiary and the EXAT then signed the Second Stage Expressway Agreement (Amendment) and the Bang Pa-in - Pak Kret Expressway Agreement (Amendment).

Currently, the Company/the subsidiary and the EXAT have completely complied with the applicable laws for settlement of all of the disputes between each other.

## 6. General Information and Other Significant Information

### 6.1 General Information

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

<b>Company Issuing Securities</b>	<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 Sutthisarn Road, Ratchadaphisek Subdistrict, Dindaeng District, Bangkok 10400
Telephone	: 0 2641 4611 and 0 2354 2000
Fax	: 0 2641 4610 and 0 2354 2040
Website	: www.bemplc.co.th
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

<b>Company Issuing Securities</b>	<b>: Northern Bangkok Expressway Company Limited (“NECL”)</b>
Business Operation	: Construction and management of the Udon Ratthaya Expressway
Head Office	: 587 Sutthisarn Road, Ratchadaphisek 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	: Procurement and production of advertising media in various forms in the MRT stations and inside the MRT trains, lease of retail space in the MRT stations, the MRT Blue Line Project and the basement level of the Lat Phrao park and ride facility, including provision of service of telecommunications system in the MRT stations and inside the MRT trains.
Head Office	: 832 Sutthisarn Road, Ratchadaphisek Subdistrict, Dindaeng District, Bangkok 10400
Registered Capital	: Baht 254 Million, which is fully paid up.
Shareholding Percentage	: 90.52 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	: 18.47 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, Sutthisan Winitchai Road, Ratchadaphisek Subdistrict, Dindaeng District, Bangkok 10400
Registered Capital	: Baht 9,240 Million, Baht 8,129 Million of which is paid up.
Shareholding Percentage	: 17.59 percent
Telephone	: 0 2691 9720
Fax	: 0 2691 9723
Website	: www.ckpower.co.th

<b>Company Issuing Securities</b>	<b>: Eastern High-Speed Rail Linking Three Airports Company Limited (“EHSR”)</b>
<b>Business Operation</b>	<b>: Development of railway projects, performance of design and construction, civil works in association with other projects, supply of M&amp;E Systems and rolling stocks, including provision of train operation and maintenance services, and development of areas for supporting the rail services of the project.</b>
<b>Head Office</b>	<b>: 313 C.P. Tower, 14<sup>th</sup> Floor, Silom Road, Silom Subdistrict, Bangrak District, Bangkok 10500</b>
<b>Registered Capital</b>	<b>: Baht 4,000 Million, which is fully paid up.</b>
<b>Shareholding Percentage</b>	<b>: 10.00 percent</b>
<b>Telephone</b>	<b>: 0 2858 3149</b>

### (3) Reference

<b>Securities Registrar</b>	<b>: Thailand Securities Depository Company Limited</b> The Stock Exchange of Thailand 93 Rachadapisek Road, Dindaeng Subdistrict, Dindaeng District, Bangkok 10400 Telephone : 0 2009 9382 Fax : 0 2009 9476
<b>Auditor</b>	<b>: EY Office Limited</b> 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
<b>Legal Advisor</b>	<b>: The Legists Group</b> Abdulrahim Place, 9 <sup>th</sup> Floor No. 990 Rama IV Road, Silom Subdistrict Bangrak District, Bangkok 10500 Telephone : 0 2636 1111 Fax : 0 2636 0000
<b>Financial Advisor</b>	<b>: Advisory Plus Company Limited</b> 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

<b>Debenture Registrars</b>	<b>:</b>	<b>Siam Commercial Bank Public Company Limited</b>
		G Tower, Grand Rama 9, 15 <sup>th</sup> Floor, North Wing 9, Rama 9 Road, Huai Khwang Subdistrict, Huai Khwang District, Bangkok 10310
		Telephone : 0 2128 2326-9
		Fax : 0 2128 4625
	<b>:</b>	<b>Krung Thai Bank Public Company Limited</b>
		977/2 Phaholyothin Road, Samsen Nai Subdistrict Phayathai District, Bangkok 10400
		Telephone : 0 2298 0831
		Fax : 0 2298 0835
<b>Debenture Holders' Representative</b>	<b>:</b>	<b>Siam Commercial Bank Public Company Limited</b>
		G Tower, Grand Rama 9, 17 <sup>th</sup> Floor, North Wing 9, Rama 9 Road, Huai Khwang Subdistrict, Huai Khwang District, Bangkok 10310
		Telephone : 0 2128 2316-7
		Fax : 0 2128 4621
<b>Regularly Contacted Financial Institutions</b>	<b>:</b>	<b>Krung Thai Bank Public Company Limited</b>
		35 Sukhumvit Road, Khlong Toei Nuea Subdistrict Watthana District, Bangkok 10110
		Telephone : 0 2208 4631-9
		Fax : 0 2256 8619
	<b>:</b>	<b>Siam Commercial Bank Public Company Limited</b>
		9 Ratchadaphisek Road, Chatuchak Subdistrict Chatuchak District, Bangkok 10900
		Telephone : 0 2256 2323
	<b>:</b>	<b>TMB Bank Public Company Limited</b>
		3000 Phaholyothin Road, Chom Thong Subdistrict Chatuchak District, Bangkok 10900
		Telephone : 0 2299 2511-2
		Fax : 0 2299 2752
	<b>:</b>	<b>Bangkok Bank Public Company Limited</b>
		333 Silom Road, Silom Subdistrict Bang Rak District, Bangkok 10500
		Telephone : 0 2230 1036
		Fax : 0 2230 2722

## 6.2 Other Significant Information

- None -