

【Thailand】

State of Urban Railway Extension Development in Bangkok

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In recent years, Bangkok, Thailand, has experienced rapid progress in urban railway development, with new lines opening and existing lines extending almost annually. This report presents an update on three major ongoing projects within the Bangkok metropolitan area: the branch extension of the Pink Line, the construction of the new Orange Line, and the southern extension of the Purple Line.

Figure 1 illustrates the general geographical relationship of the three railway lines within the Bangkok metropolitan area. The Pink Line connects the suburban areas to the north of Bangkok, running in an east-west direction. The Orange Line extends from the central city towards the eastern suburbs, while the Purple Line connects Nonthaburi Province to the north-west of Bangkok, passing through the city center,

continuing through the southern suburbs, and extending toward Samut Prakan Province to the south.

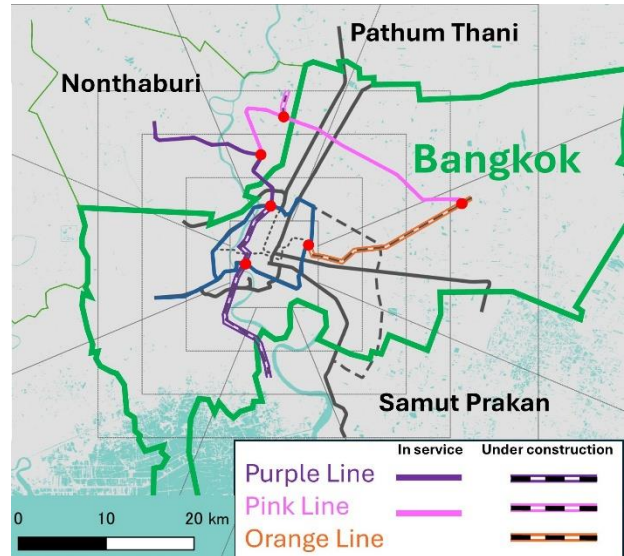
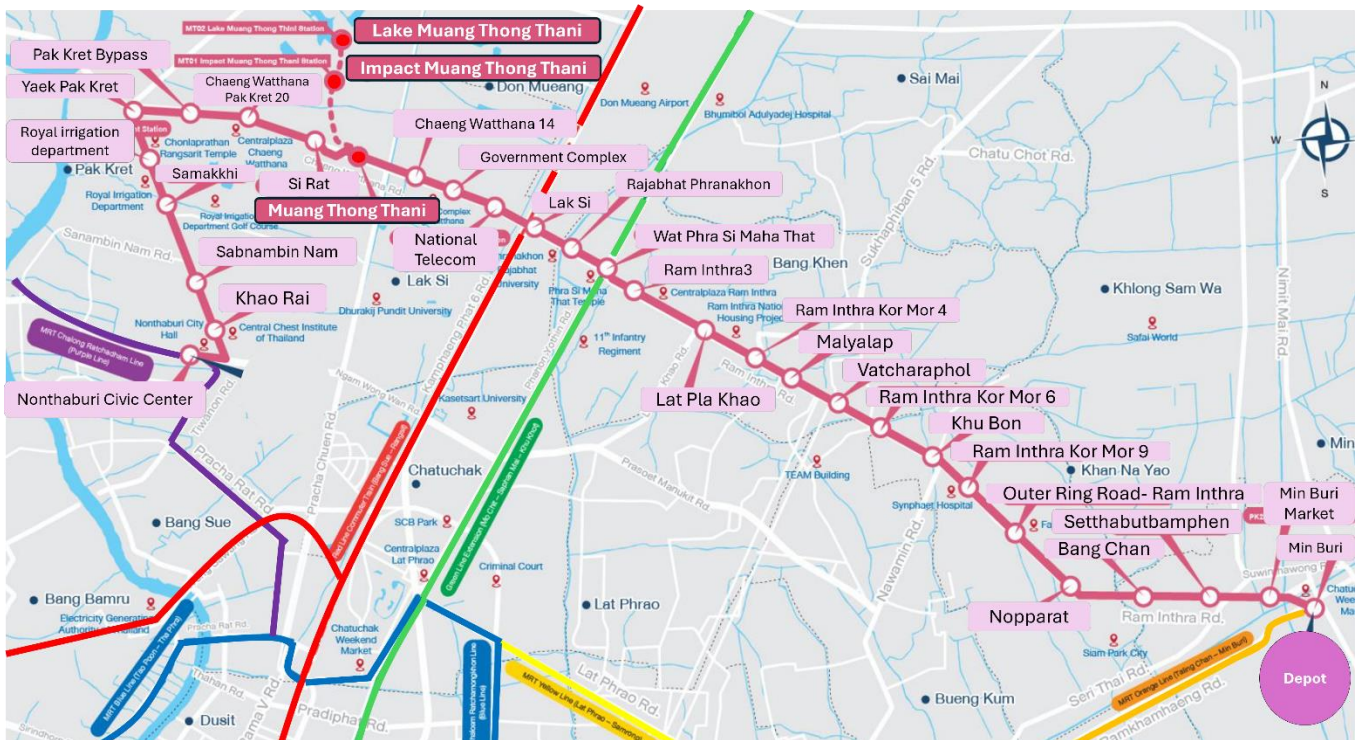


Figure1: Locations of the three railway lines within the Bangkok Metropolitan Area



Figures 2: Pink Line Route Map: Two stations in white text at the top are newly constructed, based on the route map from the development project website<sup>1)</sup>, which has been processed by AIRO

## 1. Extension of Pink Line Branch

The Pink Line is the newest monorail system in Bangkok, having been in operation for approximately one year since its commencement in January 2024. The line spans approximately 35 kilometers with 30 stations, connecting the Nonthaburi Civic Center station in Nonthaburi Province's Mueang Nonthaburi District, located to the northwest of Bangkok, to the suburban area of Min Buri District in the eastern part of the city. It travels through the northern suburbs of Bangkok.

Currently, extension work is underway on a section of the Pink Line, located in the north-west part of the route. This extension spans approximately 2.6 kilometers with two stations, branching north from the Muang Thong Thani station in Pak Kret District to the Lake Muang Thong Thani station.

This extension is expected to serve as a transportation link to the large-scale event facility known locally as the "Impact Arena," which hosts exhibitions, concerts, and other events.

At the branching station, Muang Thong Thani, a single track for the branch line has already been established on the northern side of the main line's island platform, as shown in Picture 1. Trains on the branch line will depart from Muang Thong Thani station, operating for about 300 meters on a single track before diverging and continuing on a double-track route.



Picture 1 : Muang Thong Thani branching station  
(Picturegraphed from the south-east)

According to a report from February 2025<sup>2)</sup>, as of the end of January 2025, the construction progress rate was 85.9%. Test operations, which will be open to the public free of charge, are scheduled to begin in late June 2025, prior to the official opening, which is expected to take place in July 2025. When visiting the site in December 2024, the civil works for the elevated stations in the extension section were nearly complete. Track work between stations was approximately 80% finished, and various equipment-related works were also progressing. The entire extension section is elevated, and as shown in Picture 2, the elevated sections of the existing roads are in close proximity along nearly the entire route, with construction being carried out under strict spatial constraints



Picture 2: The Impact Muang Thong Thani intermediate station (Pictured in the background)

When observing around the site, in the areas surrounding two planned stations, there were still few pedestrians, which may have contributed to some safety concerns. In certain locations, pedestrian pathways were closed off, leaving no accessible sections, and in other cases, there were no crosswalks. For example, when attempting to use a pedestrian overpass, the stairs led to a pathway where the floor panels were not installed, making it impassable (this occurred because the construction zone and the public area were not clearly separated, and one inadvertently entered a construction zone of the pedestrian bridge). These situations highlighted the need for heightened awareness and measures to ensure safety

Regarding the Pink Line, during the test operation period before the official opening (which was open to the public free of charge in December 2023), an incident occurred in which the power supply rail, installed along the side of the track for the monorail, detached from the track and fell to the ground over a distance of more than 4 kilometers during the night. This caused damage to vehicles and power lines below the track, as seen in Picture 1, where the rail on the side of the track is visible. Additionally, in July 2024, an incident occurred in which a door of a train in operation between stations suddenly opened (fortunately, no one fell from the elevated section). These incidents highlight ongoing safety challenges during both construction and operations.

## 2. Construction of the Orange Line (Eastern Section)

The Orange Line is a line included in the Bangkok Metropolitan Area Railway Development Plan, which was formulated in February 2010. It connects Taling Chan Station, located in the western suburban area of Bangkok's Taling Chan District, to Yeak Rom Klao Station in the eastern suburban area of Min Buri District, passing through the city center and crossing the Chao Phraya River. This line, which is often referred to as Bangkok's "East-West Line," spans over 35 kilometers. It uses a 1,435mm track gauge and operates with a heavy rail-system powered by a 750V DC third rail.

The Orange Line project has been divided into two sections at Thailand Cultural Centre Station, located on the boundary between Din Daeng and Huai Khwang Districts, where it intersects with the MRT Blue Line. Construction of the eastern section is currently advancing ahead of the western section. As of November 2024, preliminary works such as the relocation of utilities and the implementation of traffic lane restrictions have commenced in the

western section, with full-scale construction yet to begin. Accordingly, this paper focuses primarily on the progress of the eastern section.

The eastern section extends from Thailand Cultural Centre Station, which serves as part of the central city's orbital network via the Blue Line, to Yeak Rom Klao Station located in the eastern suburban area of Bangkok's Min Buri District. This section spans 22 kilometers and includes 17 stations—10 underground stations in the urban area and 7 elevated stations in the suburban area. It also connects with two suburban orbital monorail lines, the Yellow Line and the Pink Line, both of which commenced operations between 2023 and 2024, thereby enhancing overall network convenience.

In the eastern section, construction work has been largely completed, and trial operations have already commenced. As of a site visit conducted in December 2024, partial ancillary works were still underway at some elevated stations, including the development of exterior structures, pedestrian decks, and station plazas.

According to the Orange Line project's official website<sup>3)</sup>, which provides updates on the construction progress, the project reports a 100% completion rate. Although a newspaper article published in July 2024 indicated a scheduled opening in 2028, as of March 2025, no official opening date has been announced.

The depot for the Orange Line is located approximately one kilometer east of Thailand Cultural Centre Station, adjacent to the existing Blue Line depot. This area was formerly associated with the State Railway of Thailand (SRT). Even today, a road that gently curves northward branches off from the land once used by SRT’s conventional railway lines and the Airport Rail Link (ARL), which extend westward from Suvarnabhumi Airport toward the city center.

From Thailand Cultural Centre Station, the constructed route initially proceeds southeast, passing through MRTA Station located near the depot and Wat Phra Ram Kao Station (both situated in Huai Khwang District), which is also in close proximity to the Bangkok Japanese School.

Upon reaching Ramkhamhaeng Road, a major arterial road extending eastward from the city center, the route shifts northeast and continues along this corridor toward Min Buri, where the eastern terminus is located.

At Yeak Lam Sali Station (Bangkapi District), the Orange Line connects with the Yellow Line monorail, which commenced operations in fiscal year 2022. To facilitate the movement of passengers transferring between the underground Orange Line and the elevated Yellow Line, a large transfer facility accommodating long escalators and other infrastructure has been constructed. Additionally, a new bus terminal has been developed at ground level along the transfer route, and it has already been placed into service ahead of the station’s full opening.

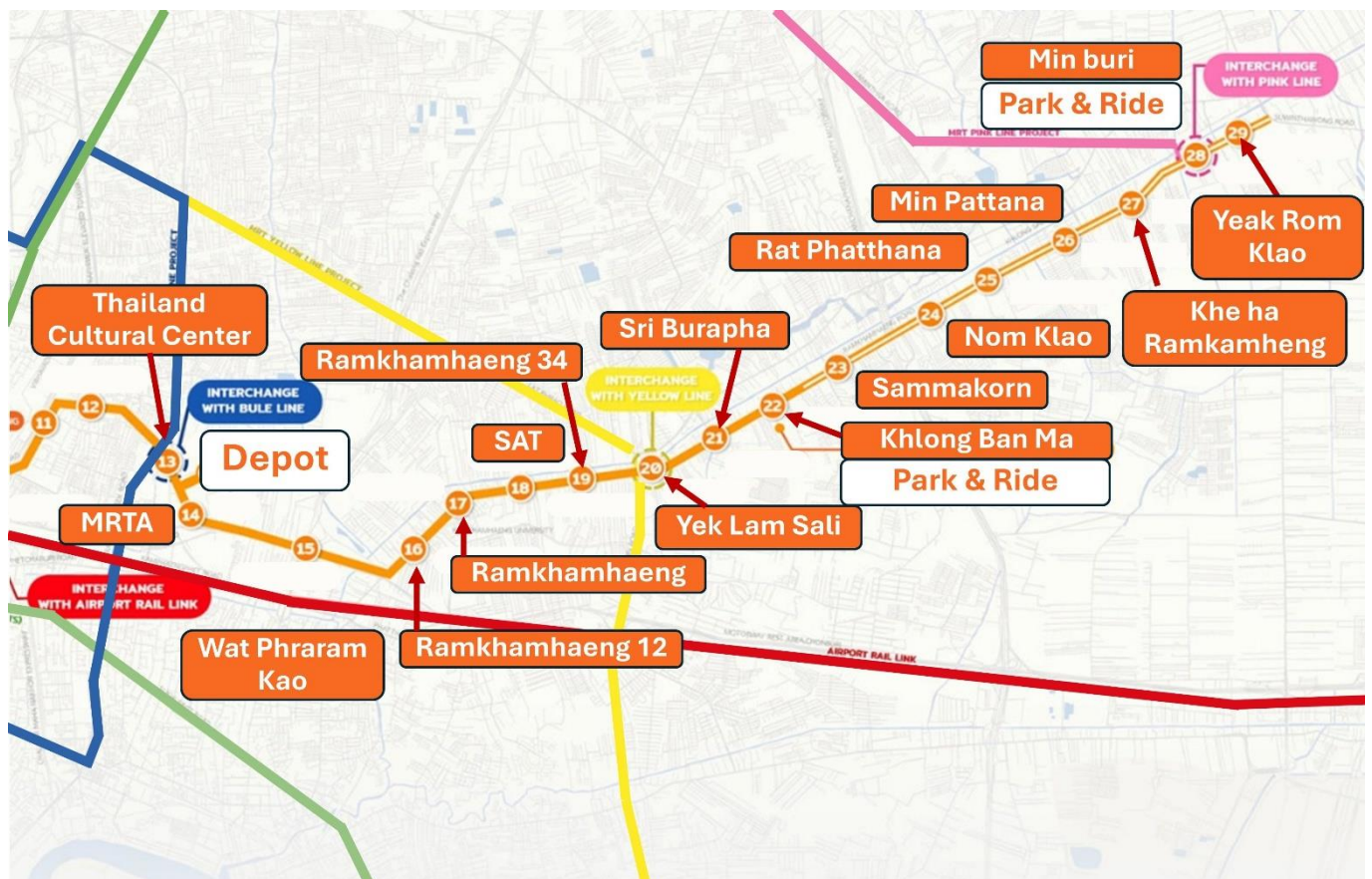


Figure 3: Orange Line Route Map: The intersection with the Blue Line is located at Thailand Cultural Centre Station (Route map adapted by AIRO from the project website<sup>4</sup>).



Picture 3 : Bus Terminal in Front of Yeak Lam Sali Station

From Khlong Ban Ma Station to Sammakorn Station (both located in Saphan Sung District), which is two stations east of the Yellow Line, the route transitions from an underground section to an elevated section. From this point onward, the line runs entirely on an elevated track until the terminus. Khlong Ban Ma Station, the easternmost point of the underground section, is also equipped with a parking garage for park-and-ride facilities.



Picture 4 : Route transition to ground section before Sammakorn Station

Further east, at Min Buri Station (Min Buri District), which is one station before the terminus, the Orange Line connects with the Pink Line. Although the two lines intersect at Min Buri Station, their respective station buildings are located several hundred meters apart. As a result, the station plazas at both stations are being developed with plans for future transportation connections, including bus and taxi services.



Picture 5: Pink line Min buri Station and Parking Garage building

Space has been allocated for use as a node. Similar to Khlong Ban Ma Station mentioned earlier, a parking garage for park-and-ride (P&R) purposes is also provided at this station.



Picture 6: Exterior construction at Min Buri Station on the Orange Line is Currently ongoing

The station to the east of Min Buri Station, the penultimate station, is Yeak Rom Klao Station, which serves as the terminus. Ramkhamhaeng Road, which has followed the alignment of the tracks up to this point, ends just beyond this station where it intersects with Suwinthawong Road

The development of the streets connecting the entrances and exits of each station is expected to be handled not by the railway operators but by entities such as the Bangkok Metropolitan Administration. However, at present, there appear to be no locations where the construction of new routes is being coordinated with surrounding developments, except at the stations that serve as key transfer points.

### 3. Southern extension of the Purple Line

The Purple Line, which commenced operations in August 2016, is a 23-kilometer, 16-station route connecting Khlong Bang Phai Station in Bang Bua Thong District, Nonthaburi Province, to Tao Poon Station in the Bang Sue District of Bangkok, located on the underground Blue Line. The line operates with a track gauge of 1435 mm and utilizes a third rail system for the supply of 750V DC, employing heavy rail technology. The trains used on the line are manufactured in Japan.

The current southern terminus Tao Poon Station is located one stop to the west on the Blue Line from Krung Thep Aphiwat Central Terminal (formerly Bang Sue Station), the central station of the State Railway of Thailand.

The current extension route runs 23 kilometers from Tao Poon Station further south, passing through central and suburban areas, to Khru Nai Station, which is located in Phra Pradaeng District, Samut Prakan Province, adjacent to the southern part of Bangkok. The extension includes 17 stations (10 underground stations in the northern section and 7) elevated stations in the southern section. Once this extension section—running roughly parallel to the Chao Phraya River from the city center toward the south—is completed, the Purple Line will become a route that can be referred to as Bangkok’s “North-South Line.”

In the extension section, the line will run north to south as an underground route through the interior of the loop-shaped Blue Line, crossing the Chao Phraya River to the south. At Wongwian Yai Station (in Thonburi District), it will connect with the BTS Silom Line and the State Railway of Thailand’s Mahachai Line, making it a highly convenient route.

Construction work on the southern extension section

began in March 2022. Currently, civil engineering work is underway, including shield tunneling and station structures for the 10 underground stations, as well as piers and girders for the 7 elevated stations. According to the Purple Line Project website<sup>5</sup>, which provides updates on the progress of the work, the planned opening is scheduled for 2027, and as of the end of February 2025, the construction progress rate stands at 51.6%.

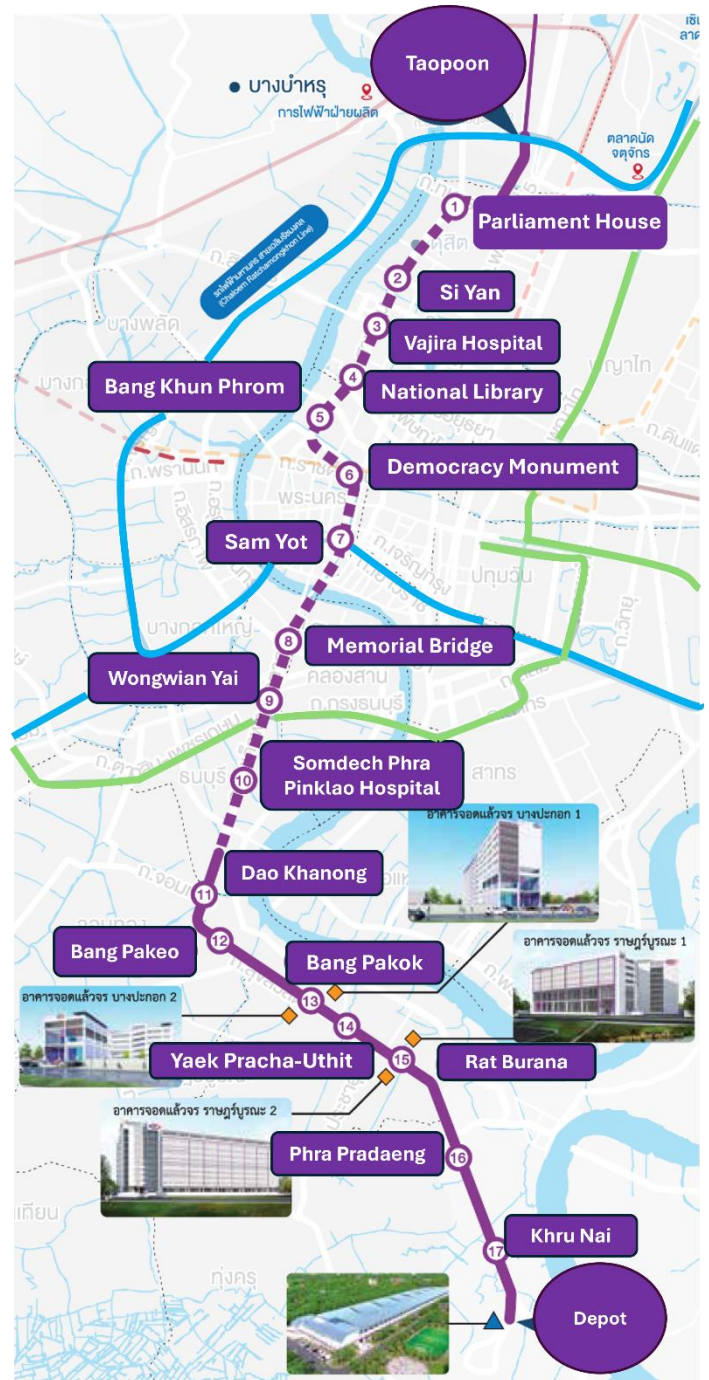
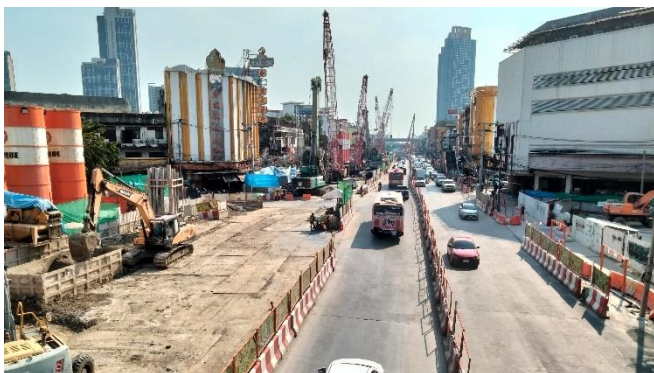


Figure 4: Purple Line Southern extension Route Map (Route map adapted by AIRO from the project website<sup>5</sup>).

Along the construction route, traffic lane restrictions are in place throughout the day, particularly around station areas, and traffic congestion has been observed at some of the planned station sites.

The extension section crosses over the Blue Line tracks on an elevated structure at Tao Poon Station, then immediately descends underground, running beneath Samsen Road along the eastern bank of the Chao Phraya River. It continues passes stations near major landmarks such as the Parliament House, the National Library, and the Democracy Monument. At Sam Yot Station (in Phra Nakhon District), it connects again with the Blue Line. After intersecting the Blue Line underground and heading further south, the route passes through an underground tunnel beneath the Chao Phraya River, which bends westward at that point. The line then continues southward beneath roads known as Prachatipok Road and King Taksin Road on the river’s western bank.

Located at the point where the two road names change is Wongwian Yai Station. Here, the plan is to connect the ground-level station—which serves as the city-side terminus of the State Railway’s Mahachai Line (currently not connected to other lines)—with the elevated BTS Silom Line station, situated about 500 meters to the south, via an internal passageway. This is expected to significantly improve transfer convenience between the lines.



Picture 7: Planned Side Area around Wong Wian Yai Station

The extension route passes beneath the BTS Silom Line just south of Wongwian Yai Station, continuing underground along King Taksin Road heading further south. About 2 kilometers down, just before Dao Khanong Station (in Thonburi District), the line emerges above ground and transitions into an elevated section. After crossing the Dao Khanong Canal, the road changes name to Suksawat Road, and both the extension route and the flow of the Chao Phraya River shift toward the southeast. From this point onward, the area takes on a stronger character of old-town neighborhoods, with residential zones and traditional shopping streets becoming more prominent.

Bang Pakok Station, located in a commercial district with large markets and supermarkets, and Rat Burana Station near the Industrial Ring Road that crosses the Chao Phraya River (both in Rat Burana District)—are planned to have parking structures for park-and-ride use.



Picture 8: Planned Side Area around Bang Pakok Station

Field observations reveal that in many areas of Bangkok, bus route services are limited primarily to major arterial roads. Consequently, in the vicinity of commercial facilities and high-traffic bus stops, it is common to find informal minibus services operating. These typically consist of light trucks or small pickup vehicles that have been retrofitted with passenger seating in the cargo area, as exemplified by the vehicle visible on the right side of Picture 8. These minibuses function as a form of last-mile connectivity, providing access between transit nodes and residential neighborhoods located along narrow

side streets not served by regular bus routes. It is anticipated that such services will continue to play an important role in local transportation networks even after the commencement of operations on the Purple Line extension, serving as complementary feeder systems to the newly established rail infrastructure.

The Purple Line traverses Rama II Road an expansive arterial thoroughfare with a cross-section of seven lanes in each direction—by means of an elevated structure. It subsequently intersects with the Chaloem Maha Nakhon Expressway, an urban expressway that similarly extends southward from central Bangkok and crosses the Chao Phraya River (as depicted in Picture 9). Notably, expansion work is currently being undertaken on the expressway, resulting in the concurrent implementation of two major infrastructure projects rail and highway at this juncture. This overlapping construction activity highlights the complexity of coordinating large-scale urban transportation developments within densely built environments.



Picture 9: The intersection with the Chaloem Maha Nakhon Expressway (expand in horizontal)

The extension line continues southward along Suksawat Road, passing through Bangkok's southern district of Rat Burana. Upon exiting the Bangkok Metropolitan Area, the line enters Samut Prakan Province, where it proceeds approximately 3.5 kilometers farther to its terminus at Khru Nai Station. The operations and maintenance depot is planned to be

located further south of this terminus station, serving as the logistical and administrative hub for the extended segment of the line.

## Conclusion

This report has provided an overview of the current status of the three mentioned railway lines. In December 2024, the Thai government approved a cabinet resolution to implement an integrated fare system across all metropolitan rail lines, with a policy initiative to cap fares at 20 baht (approximately 90 yen) by September 2025. Coupled with the ongoing expansion of the network through new line development, this initiative is expected to contribute to an increase in the rail system's modal share. However, given that certain sections in the city center already experience severe congestion during peak hours—including entry restrictions at some station gates, the need for capacity enhancement, as well as the identification of appropriate funding sources, is likely to become a central topic of future transportation policy discussions.

In addition, regarding railway safety an issue also noted in the section on the Pink Line the first Japan-Thailand Railway Workshop was jointly held in January 2025 by JTTRI-AIRO and Thailand's Department of Rail Transport. This event provided a platform for discussions between Japanese and Thai railway stakeholders. A summary of the workshop proceedings is available on the respective official websites<sup>6)7)</sup>

## References

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