

# Urban Rail in Jakarta and Jabodetabek

(with thanks to Fagra Hanif for supporting information)

## Context

Jakarta and the strategic metropolitan area known as **Jabodetabek** (Jakarta and the neighbouring municipalities of **Bogor**, **Depok**, **Tangerang** and **Bekasi**) has a population of 28mil (10mil Jakarta proper). This region has urban rail heritage, with the original suburban rail infrastructure dating from the early 20th century, during the Dutch colonial period (BOS -Batavia Ooster Spoorweg). Following independence, other priorities meant that funding for the network was constrained and this fact, combined with rapid urbanisation, growing prosperity and growth in car ownership, diminished the use and value of urban rail provision whilst also bringing congestion to the 'over-capacity' road network. In the late 1970s, the problems caused by underinvestment in the network became evident and since then, a combination of policy changes and increased resources have brought upgrading to the existing suburban network (double tracking, electrification, new rolling stock etc.), some false starts (monorail), and, more latterly, construction of modern 'metro-type' lines. With expansion and modernisation there has been much improvement to the urban rail setting in Jakarta and this city/region now has a comprehensive and interesting multi-modal rail footprint with further expansion in construction.

## Full Metro: Jakarta MRT

The first full metro in Indonesia, **Jakarta MRT**, opened in late March 2019. The **line** runs from Lebak Bulus (shedding facilities) through the southern suburbs on viaduct to the Blok M shopping area before heading underground after ASEAN and proceeding below Jalan Surdirman and the main commercial area to the busiest station Dukuh Atas (transfer to KRL, Airport Line, TransJakarta BRT and the future LRT). From here, it moves to the northern terminus of Bundaran HI where there is direct underground access to the TransJakarta BRT platform. The line is 14.6km (revenue) with 5.3km underground. It has 13 stations (6 underground) and a journey time of 29mins. Services operate from 0530-2200 at 10min base headways, although 5min headways are being trialled.

The underground **stations** have attractive street entrances (no totem) and along the route there has been beautification of the surrounds with greenery, new street paving, and smart new bus stops and seating areas to enhance integration. The mezzanines have wayfinding signage with smart font and station information boards including vicinity maps and line schematic (see below). Tickets are purchased from the ticket office although most passengers use contactless pre-paid e-money cards, valid on all forms of transport (to note that a transport only pre-paid contactless cards are being developed). Fares are distance based and start at IRP3000 (€0.19), increasing by IRP1000 for every station (max. IRP14000) (€0.88). This is quite expensive when compared to the flat fare of IRP3500 for TransJakarta buses (€0.22). Tickets are tapped on the barriers at entry and exit, but there is currently a delay in the card registering its validity with the software in the ticket gates and there is a

time lag of approx. 3secs between tapping and gates opening. At busy periods, this causes quite a tailback at the gates.

The stations are clean and have pale cream tiling and good luminosity, making the mezzanine very bright. Escalators/stairs lead to the island platforms that have full screens, topped by a dark blue panel on which the thin red strip map is exhibited. Platforms also have RTI showing next train arrival, different floor tile patterns and platform information boards. Again, these show a strip map in vertical form with red on dark blue, colours that make the line maps quite difficult to read. There is also a schematic route map showing the different zones of Jakarta (centred on Kota) and so the Metro line is placed in the bottom left hand corner. Whilst this is geographically accurate, it is not pleasing on the eye.

In general, the underground stations are similar and there is little in terms of distinctive design, although the stations are dominated by advertising on pillars and screens that brings colour to the surroundings. The elevated stations continue this bright but unsophisticated theme. These stations are large with impressive canopies over the side platforms which have half screens, information boards and RTI, whilst the mezzanine below is spacious and shiny. Blok M is probably the pick of the elevated stations as it has two island platforms with the exterior lines used for normal operations and the central single line utilised for the occasional terminating/northbound train.

The Nippon Sharyo **stock** operates in six car sets and uses overhead supply, running on 1067 gauge. The trains have heavy manual doors separating each carriage and currently do not offer women only sections, although this is to be implemented during peak periods. The exterior is metallic and blue with a black frontage, although several of the rakes have advertising skins. The interior is spacious, with good width and height and light blue lateral seating. There is no line map on the trains but there is a dynamic LCD information board above the doors. This carries a strip of the next three stations. It is unnecessarily small and I am not sure why, with a dynamic information option, they would offer such limited information on such a small scale. There are also audio announcements in Bahasa and English. Train interiors continue the 'heavy' advertising approach as seen in stations. There is no hard copy information and, in several ways, information provision and brand has not been particularly well executed with the schematic/line maps/wayfinding having flaws. But in a way, this speaks to Indonesian culture which stresses the importance of 'asking' rather than relying on information.

### **Light Metro: Jakarta LRT/Jabodetabek LRT**

Two light metros are being constructed within the region although both are branded as 'LRT'. The systems are separately owned (Jakarta Municipal Government and National Government respectively) and it remains unclear as to how these systems might physically integrate.

The **Jakarta LRT** is smaller and opened in June 2019, almost one year after its planned opening for the 2018 Asian Games, its delay causing much persiflage in media and political

circles. This line is located in the east of the city around Kelapa Gading and is an elevated 5.8km line using standard gauge and third rail power. The route runs on viaduct from a large shopping complex above Raya Boulevard/Jl Putih Raya to the Velodrome complex used for the Asian Games. There are connections with TransJakarta services at Pulomas (short walk along the street) and Velodrome (access via skybridge). The line operates from 0530-2230 with 10min base headways and, although services are currently free, a flat fare of IRP5000 is likely. Stations are quite tasteful, with prominent street entrances leading to the ticket/platform level. This has a ticket office, ticket machine, and barriers leading directly to the platforms. Walls have different coloured designs, but the overall scheme is of a pale grey (there are no information boards/maps) and there are glass panels separating paid and non-paid areas. Wayfinding is stylish but limited. The side platforms are long – built for 6-car sets – and have platform screens and RTI, together with the multiple support struts to support the roof. These are not open areas but can be narrow and appear quite cluttered with lifts, panels, offices and stairs. The platform ends have angled stairs/escalators to the cross platform bridge which affords nice views of the line, although you do have to double-back on yourself to get to exit/platform position, often through narrow passageways. The roof designs are nice and are different at each station but maintain the pale grey theme.

The Rotem stock is in 2-car form and stops at the forward end of the platform in each direction. It has a white, red and brown exterior and the interior has side seating, a dynamic RTI screen and a cleaning crew. There is audio information in Bahasa and English. The current service appears to be used by curious Jakartans, and is very busy. Although only short, and not connected to other rail provision, it has some nice views and serves a new area of the city.

The **Jabodetabek LRT** is a larger project and is, in part, a reincarnation of the failed Jakarta Monorail project whose initial construction (2004-2008) and subsequent relaunch (2014-16) was plagued by a lack of political and financial commitment. The original support pillars can still be seen on the main avenues of Jakarta and are now used as improvised advertising billboards. Some of these may be used for stabling on the new line in the north of the city. The new system will consist of three lines spanning the Jabodetabek region and will be operated by PT KAI. The initial 43km section (2021/22) will run from Jakarta to Bekasi.

### **Suburban Rail: KRL Commuter Line**

The KRL Commuter network has six **lines** with 183.3km of revenue track hosting 79 stations across Greater Jakarta. Excluding Japan, this is the largest and most intensive suburban rail network in East Asia with a daily ridership of over 1mil. A combination of Japanese aid (in the form of old JR/Tokyo Metro/TOEI/Tokyu stock) and the purchase of second hand Tokyo/Yokohama trains, together with station modernisation and a rebranding of the network, has created an interesting and comprehensive suburban rail system. The core route (Red/Blue Lines) travels from the beautiful 1920s style terminus station at Jakarta Kota in the centre of the old town and travels south for 11km along a raised track bed/viaduct to reach the busy interchange station of Manggarai (see below) where the eastern Bekasi branch (Blue Line) and the west bound loop (Yellow Line) merge - the main service continues south

to Depok and Bogor. The yellow Line is an important and well used service, heading west from Manggarai and then north along the canals. This is a busy section as the line calls at Sudirman and Karet (new CBD and transfer to Airport Line) and provides transfer at Tanah Abang (Green Line to Maja), and Duri (Brown Line to Tangerang). The Loop then heads east around the port area (bypassing Kota), and then runs south some 2km to the east of the core Red/Blue lines through Rajawali (Pink Line to Tanjung Priok), Pasar Senen (stops northbound only), and to the terminus at Jatinegara. There are level crossings across the system and many of the routes are shared with freight and inter-city trains.

The network uses 1067 gauge and operates from 0400-2330 at 10/15min headways, with higher frequencies on duplicated services toward Bogor. The current network has been consolidated from almost 40 'point to point' routes and so several services short stop to provide higher frequencies on the main central corridors. Most services are electrified, although some DMU operations still run on peripheral lines. The **stock** is a mix of 8, 10 and 12 car stock (women only carriages at each end) with shorter rakes on the lesser lines. The ex-Japanese stock is complimented by some Indonesian INKA/Bombardier trains. The stock has side cushioned seating (very low seats) and strip maps above the doors. There are audio announcements in Bahasa and English and some of the more modern stock is air-conditioned. Although quite worn, given its age and usage levels, the stock well maintained and clean and this is in part due to the 'in journey cleaning crew' who roam the carriages mopping the floors and cleaning the panels.

Trains run quite slowly and the track is bumpy in places, but journeys offer great views of the sprawling modern city and the shanties that bound the lines. The **stations** are basic, with entrances hosting ticket offices and machines, schematic wall maps and turnstile barriers. Tickets come in the form of an RFID electric card (IRP10000 deposit) and fares are distance based (IRP3000-13000). Most stations are basic, side platform affairs with corrugated shelters and uneven platform surfaces that are at a lower level than train doors and there is quite a step up to enter/exit. At some stations, the gap is addressed by the use of metal steps at the platform edge. The larger interchange stations are multi-platform facilities and here upgrading and new constructions bring a more modern feel – Manggarai, in particular, will be multi-level (largest station in Indonesia) and, as well as becoming the terminus for most intercity trains (currently Gambir) it will act as the transfer hub for commuter and airport line services. At modernised stations, wayfinding is fine but in general across the system signage can be a little inadequate and there are few station announcements – but it is simply a case of asking – Indonesians are accommodating, helpful and incredibly charming. At larger stations, the system also has an efficient platform transfer system whereby the platform is split in two, with a central section having steps down to rail level and here is located a broad track crossing. Passengers stream across, overlooked by the security teams. Unsurprisingly there is no RTI or hard copy information, but the schematic is widely present on the system and is simple to follow. This is definitely a rail system in a developing country – cleansed modernity is at a premium, but it is comprehensive, charismatic and hugely enjoyable.

### **Airport Railway: Railink**

Opened in 2017, the Railink service between Soekarno-Hatta International Airport (SHIA) and Stasiun BNI (four services each way also run to Bekasi) is 54.3km (SHIA to Bekasi) with six stations. All but 12km of the line (a new alignment between Batu Ceper and SHIA) operates on existing KRL infrastructure and so there are some conflicts with the intensive KRL services, although the doubling of tracks east of BNI will help to reduce this. Two new stations have been built BNI/SHIA with the remainder being modernised sections of existing KRL stations. Tickets are purchased at machines (credit/debit card only) and gates open a short period before the train is due to arrive. The journey is quite fast (46mins BNI-SHIA) but expensive at IRP70000 BNI-SHIA/IRP100000 Bekasi-SHIA and services now run at 30min headways through the day. At Duri there is a long dwell time as the train reverses direction, but around the airport area there are some great views of the terminals and apron lined with aircraft. The line uses INKA-Bombardier six-car trains with overhead power supply. These are lovely trains and have paired seating and space for luggage. The trains are also quiet as the service is not particularly well patronised. Upon arrival at SHIA, the Airlink station is connected to the **APM Skytrain** which shuttles between the three terminals (2.9km) and the Railink station at approx. 20min intervals, although there are higher gaps during some parts of the day. The entire journey takes 18mins.

In addition to the mixed urban rail provision, mention can also be made of the **TransJakarta BRT**, which, at over 250km, is the longest in the world. The system offers a network of 13 corridors and 241 halts, spread across the city and connecting to several KRL Commuter and Jakarta MRT stations. Buses, in the main, run in dedicated lanes, often in the centre of main arteries and Line 13 has a significant elevated section, offering great views across southern Jakarta. Halts are accessed by long ramps from the sides of roads and are substantial structures with ticket office, ticket gates, information boards and elevated platforms with half screens. Doors are located high on the side buses so passengers can only board from designated TJ halts. Services operate from 0500-2200 and are frequent, although subject to congestion and bunching (especially at Harmoni), and when mixed with general traffic there can be delays. The system uses a flat fare structure (3500IRP) although a prepaid card is required (IRB20000 non-refundable deposit). An inexpensive and interesting system; and a great way to experience Jakarta.

In **summary**, this mega city is slowly developing a comprehensive and integrated (to a degree) urban rail/BRT system. Whilst there are some flaws in the 'soft' offer and transfer, the MRT is a stimulus and great addition to this; the TransJakarta BRT is a wonderful experience and the highlight is the fantastic KRL system. All forms of transport are bereft of hard copy information but this is addressed by a voluntary body, *Transport for Jakarta*, which produces impressive maps and helpful signage. Overall, there is a lovely atmosphere across all the network - passengers interact with each other and it is dowsed in that wonderful Indonesian charm - An interesting urban rail environment in a fantastic city.