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Kuala Lumpur

The historic development of urban rail in Kuala Lumpur has been very fragmented, with the system being created, and expanded, through different ownership, construction, mode and operational styles. It was not until 2004, when Rapid KL took operational control of the LRT lines, that some semblance of integration became evident. In 2007 the Monorail was also brought under this brand and since then there has been an attempt to better assimilate urban rail provision in the capital area. Initially, this had mixed success but, more recently, there has been a strengthening of ambition and resources to make this work – and this has largely been successful. This trend, together with recent expansions of rail provision, means that metropolitan KL now has a significant rail ‘footprint’ with 10 lines and several different modes throughout the Federal District and surrounding parts of Selangor. Whilst Rapid KL services (MRT/LRT/Monorail) are undoubtedly the backbone of rail provision, this is supported by KTM suburban rail services and a private airport line to PutraJaya and KLIA.

Rapid KL Services

The first modern rail provision in KL was the **Ampang/Sri Petaling Line** (37km to Sri-Petaling and 8.1km branch to Ampang from Chan Sow Lin). It runs on standard-gauge track with third-rail power supply from the Sentul area in the north on an elevated structure along the Gombak River and through the original city centre. This part of the route is the most characterful and the rail elevation is a great way to see the city and its, somewhat, indiscriminate development. The central section includes interchange with the Monorail at Titiwangsa and Hang Tuah, with the Kelana Jaya Line at Jamek Mosque, and via a long barrier free corridor at Plaza Rakyat to the MRT (Merdeka Station). Here the line returns to grade on its way to Chan Sow Lin - a two island platform/three line station. Only the northern island is used (the Ampang line splits 100m further east) and services dovetail well for transfer between Sri Petaling and Ampang (and v.v.). The shared line between Sentul and Chan Sow Lin offers 5min headways with each branch being served by alternate trains (10min headway). East of Chan Sow Lin, the Ampang line heads north through densely populated areas to the busy terminus of Ampang with its substantial station, sheds and bustling community. The line to Sri Petaling makes use of a flying junction to turn southward, running parallel to the KLIA and KTM lines for a while around Bandar Tasik Selatan (barriered interchange) before becoming continually elevated to the original terminus at Sri Petaling and then west to Putra Heights. This new part of the line is much smarter than the original sections, its stations being large, modern and stylish with good signage and information - all very different from the basic and somewhat shabby stations to the north and centre (no RTI/platform screens on original sections).

The original Adtranz stock has been fully retired and all services are now operated by CSR 6-car sets. This stock massively increases capacity and brings a real boost to the appeal of the lines which are Light Metro rather than LRT as it is branded. The stock is smart, with electronic strip maps, and LCD screens showing dynamic location information. Despite all of this shiny newness though, services still run quite slowly and it does seem to take an age to get to Putra Heights. Once there, however, this large, smart station amply illustrates how far Rapid KL has moved forward in creating a modern integrated urban rail system. Interchange stations in the city centre suffer from the legacy of separate ownership and transfer involves long walkways and stairs to completely different buildings, whilst Putra Heights offers modern, well signed and effortless interchange. The station consists of one central island platform and two exterior side platforms. The southern platforms (1/2) are used for the Sri Petaling Line and the northern platforms (3/4) for the automated Kelana Jaya Line. This allows cross-platform interchange for all passengers.

The **Kelana Jaya Line** (46.4km) uses a mix of the original 2 and 4-car Bombardier Innovia 200 series trains and new 4-car 300 series trains. The original 200 stock is now looking quite worn, but the 300 trains are smart with electronic strip map and an altogether brighter, less confined feel. The line runs on standard gauge elevated tracks with third-rail power supply and, being fully automated, offers useful headways (6/7mins) and some great, unrestricted views from the front of the train. The newer 17.4km southern section runs from Putra Heights north to the original terminus at Kelana Jaya. This new section has

distinctive stations with 'wing-shaped' roofs and island platforms. At USJ7 the line offers simple barrier free transfer to the Rapid KL Sunway BRT (see below). There is also some interesting infrastructure at Subang Jaya, where there is simple but barriered interchange with the KTM line to/from Port Klang and the new Line 10 (see below). Around Ara Damansara/Lembah Subang there are ramps to the large stabling facilities and very impressive infrastructure.

Once the line reaches the original southern terminus at Kelana Jaya there is a distinct change in the service with very high passenger numbers, more basic chunky stations (mix of side/island platforms) and a more dense urban environment. This part of the line toward KL Sentral and beyond offers some great views of the cityscape as the line travels over crowded roads and meanders between buildings. KL Sentral is the largest rail hub in South East Asia providing transfer to other public transport provision and it is very busy with a large entrance floor and various access points to the elevated KJ Line, the underground KTM and KLIA lines and (via a shopping centre) to the Rapid KL Monorail. There is also signage to the Muzium Negara MRT station, although, as with the Monorail, this involves leaving the system and re-joining via circuitous passageways with several level changes. Onward to Pasar Seni, there are wonderful views of the city, the KTM lines and the ornate KL station (KTM) where a new elevated walkway provides direct access from Pasar Seni. Pasar Seni also offers barrier-free transfer to the MRT via several escalators.

The line then journeys underground for 4.3 km (5 underground stations) serving the newer commercial areas of the northern city centre. These stations have large entrance porticos but the ticket halls are down at heel and quite small as are the short island platforms (full platform screens). KLCC (Petronas Towers) and Masjid Jamek are the busiest of the underground stations and can get quite crowded. The line north of Ampang Park is again elevated as it heads to the northern suburbs. On the return journey south, the views of the city centre with its skyscrapers is impressive (especially from Damai station).

The 8.6km **KL Monorail** is showing its age. Originally operated as an isolated line, its absorption into the Rapid KL family has brought with it some physical integration (long transfer time/walk/stairs etc) although there remains an issue with joint ticketing (see below). The line starts at KL Sentral in Brickfields (8min walk through a shopping centre to the main KL sentral station-barriered) and meanders its way through the eastern central area and Bukit Bintang at 7/8min base headways. The straddle beam system uses shabby Malaysian built 2 or 4-car SCOMI Sutra stock which gets quite busy at times, especially at the Ampang Line transfer stations of Hang Tuah and Titiwangsa. The 11 stations are all similar in style and are pretty squalid affairs, with escalators/stairs from the street to a mezzanine ticket hall before an additional climb to the half screen platforms (no RTI). Travelling through the central areas above main thoroughfares offers good views, but the journey is crammed, jerky and there is lots of dwell time at stations.

Since late 2016, KL can rightly claim to be a fully-fledged Metro City. The **MRT** runs for 50.9km from Sungai Buloh to Kajang with a journey time of 1h24 and both termini enable transfer the KTM commuter rail services. This is a fully automated line and services run at 7min base headways, using 4 car Siemens stock which has dynamic electronic strip maps offering a range of information at various stages of the journey between stations, and carriages also have the full KVIRN schematic (this is the only line to have the system map on trains). The plastic bucket seating is in different shades of blue and the glass panels at the sides of doors has a pleasant design. These features give the interior a bright and pleasant feel, and the ride is very smooth. The exterior of the train is white with thin ribbon- stripes at the bottom.

The elevated sections of the line show the differences in population density along the route. The northern sections undulate and meander around dense areas and have large sections of noise reduction barriers. The stations are large structures with flat roof and large walkways from the roadside. Most of the stations have side platforms with platform gates. The line runs on high viaducts and is quite slow on this section (35kph). The central underground section (9.5km) houses 7 stations, with island platforms, although 2 stations have stacked platforms (Bukit Bintang/Tun Razak). The train runs very slowly through the tunnels which are brightly illuminated. At street level there are new angular entrance porticos with small totem. Muzium Negara has an interesting elongated entrance in front of the Museum and offers interchange to KL Sentral but this requires passengers to leave the system and re-enter at KL Sentral via a long multi-level passage. At

Pasar Seni (KJ) and Maluri (Ampang) there is barrier free transfer – this comes in the form of long enclosed walkways which are very bright and stylish. Pasar Seni is a deep station and has long escalators from platform to surface and then a double escalator climb to the KJ line platforms, with an impressive exterior glass frontage to the station. At both these stations, there is a noticeable difference in style between MRT and other provision. After Maluri, the elevated line is fast (up to 90kph) and these stations are of the same design. Again island platforms are a rarity, but all have smart station signage and wayfinding on broad vertical struts which rest above the platform areas, and ticket halls are large and airy. Whilst less dense than the western section of the line, this part of KL is being rapidly developed with many large housing and commercial centres being built, all with walkways to stations.

Although the MRT doesn't appear to offer any bold or unique design features that are found in other parts of East Asia, the line (like the recent SP/KJ extensions) highlights how far rail transport has come in KL. Stations are a great improvement on the older provision in the city and slowly but surely the whole system is being retro-integrated, even with KTM services (see below). In general, Rapid KL is a good system and has significantly improved in recent years. The growth of the brand has been a welcome trend and the coverage of the city is now pretty impressive. Services run at useful headway on all modes from 0600-2330. Navigation aids have improved - there is plentiful signage and lines and stations are identified by initials and station number (as in Singapore/Bangkok). Schematic maps are noticeable at entrances and platforms and there are customer service centres at each station with some stocking schematic maps in hard copy (a recent improvement). There is a semblance of style uniformity across stations and stock – the Rapid KL brand is prominent - and integration (both physically and functionally) works – albeit clumsy in places – despite a legacy of fragmented provision.

Ticket machines are simple to follow and dispense small RFID tokens. Fares are distance based ranging from 2.30 to 6.10 and cover all three modes. If arriving from the airport there is also a KLIA Ekspres and Rapid KL 48-hour (2 calendar days) card for 115 Ringgit (including return KLIA fare). The use of Rapid KL rail services is valid on any 2 consecutive days within 1 month of purchase. This is only 15 Ringgit more than an airport return so is good value (if arriving late as many flights to KL do, then buy a single ticket from KL Sentral to your destination, otherwise you will waste one of the days). With this ticket it is important to keep receipts as the ticket doesn't work at all barriers and Rapid KL staff seem unaware of the offer-always use the 'special barrier' for disabled etc as the card beeps inactive on normal barriers).

This ticket is not valid on Rapid KL buses that operate across the city, but it does allow for use on the **BRT system** in the Sunway area because there is simple, barrier free transfer from the KJ line at USJ7. The elevated roadway is impressive with decent stations (7), escalators from the street, ticket barriers, customer offices and associated information. Services run every 5mins and this is a nice example of how physical and ticket integration has improved in KL.

Non-Rapid KL Services

Although an integral part of the Klang Valley Integrated Rail Network (KVIRN) and with physical interchange at 4 (soon 5-Ecocity) Rapid KL stations, the suburban rail network in Kuala Lumpur is not part of the Rapid KL brand/operation. Suburban rail provision is divided into three separate operations. Firstly, **KTM Kommuter**. This began in its current guise in 1995 and is a 2-line system that operates in an 'X' formation across the Greater KL area. Line 1 runs from Seremban/Tampin in the south-east to Batu Caves the north-east whilst Line 2 runs from the Klang area through Shah Alam to the centre and north to Rawang (and an onward shuttle to Tanjung Malin). The service has 152.9km of route (4.2km shared) and runs on 1000 gauge with overhead power supply. In addition to this, a new line has recently opened (May 18) to Subang Airport (the original International Airport for KL). Branded as Line 10, the line runs from KL Sentral to Terminal Skypark running non-stop on KTM rails between KL Sentral and Subang Jaya (Port Klang Line) from where it branches north on a new 9.2km alignment (grade and elevated) to the Subang airport area (the original international airport in KL). The service is operated by old Class 83 EMUs in 3 car sets with a grey livery and currently only 13 return journeys per day operate. These take 17mins from KL Sentral to Subang Jaya and an additional 12mins on the new branch (total 30mins). Currently services are free and interestingly, the System schematic map only shows the line as running from Subang Jaya to Terminal Skypark.

This is a system where theory and practice diverge. Theoretically, the system has all the hallmarks of a good suburban rail network. Physical integration with other rail services, embedded as part of the regional rail network, smart modern 6-car CSR stock with electronic information and side seating, high patronage levels, a bundled service though the central area on a 4.2km section (4 stations) from Putra to KL Sentral (including the historic, ornate, and tatty Kuala Lumpur Station), to provide a reasonable 20/25min headways, and there is even a 1km underground stretch including a 4-platform underground station at KL Sentral. In practice though, KTM Kommuter is best described as a 'lethargic' rail system that fails to perform as it should. Firstly the services run pretty slowly in the main KL area. Trains crawl along, are often waiting at signals and there are also some long dwell times at stations; secondly the trains on each route run only 45min headways and so outside of the bundled corridor services are not very frequent. Finally, services are often delayed and there is no dovetailing of schedules to ensure a well-spaced service in the central area. Without such timetable discipline the value of the bundled service is limited. Fares are distance based and tickets come in the form of a bright yellow token.

Finally, the rail operation to the main international airport (KLIA) is a private concern. **KLIA Transit** and **KLIA Ekspres** is operated by Express Rail Link (ERL), running services on the 57km line from KL Sentral to KLIA Terminal 1 and 2. The services use platforms at different sides of KL Sentral and at the airport the island platforms are bi-directional with each type of service using just one platform. The Express journey takes 28mins and is branded as the fastest train in South East Asia, whilst the Transit service is more suburban rail and has 3 intermediate modern stations (with transfer to the Sri Petaling Line/KTM at Bandar Tasik Selatan), taking 36mins to reach the airport. Ekspres trains run at 15/20min intervals from 0500-0000, whilst Transit services are every 30mins. The line uses standard gauge and runs parallel to the 1000 gauge KTM line from the city to Serdang, where the separate services diverge. The journey is smooth and fast and by far the best way to reach the city - sitting on the right going into the city you get great views of the skyline. Siemens Desiro 4-car stock has LCD displays, advertising and wifi. Seating is paired and there is much space given over to luggage racks. It is a very different system from the KTM lines and is arguably the best airport-city rail link in this part of the world, but at 55 ringgit one way, it doesn't have general fare integration with other parts of the system and is quite expensive. Having said that, the new return ticket and 2- day Rapid KL ticket is a good value purchase.

In summary, KL has come a long way in urban rail as the momentum for integration and expansion has gathered pace. Although the legacy of a fragmented system endures (this is not the 'smooth', user friendly system (physically or functionally) you find in other Asian cities), the different modes, coverage and policy direction make it interesting.