The capital of Jilin Province was founded only 200 years ago, and is famed for its automobile industry and rolling stock production (CNR/CRRC Changchun). The city was also the first in China to operate a LRT line and now offers the full gamut of urban rail provision - full metro, light rail and tram. Metro and Light Rail provision is jointly operated by Changchun Rail Transit Corporation with 5 lines and 96.3km of revenue service. 40.6km is underground, the remainder being elevated or at grade.

Full Metro: Line 1/Line 2 (36.5km-fully underground)

Although Changchun has been an 'urban rail' city since 2002, it was not until 2017 that full metro services began. **Line 1** is 16.4km line (15 stations) running north-south from North Ring Road (for barrier free connection to Line 8- see below), via the main railway station to Hongzuizi in the south. The line has 2 stations within the main railway station area - the quaintly named 'Northern stop of Changchun Station' (Changchunzhanbei) is accessed via a huge, drab and confusing plaza in front of the Railway station, the confusion caused by scale and insufficient directional signage. This station is also served by LRT Line 4 but both facilities are currently unconnected and transfer requires new tickets and a lengthy walk. 700m south is the newly opened 'Changchun Station' where there is a nearby connection to LRT Line 3 station of the same name. As with Line 4 transfer, passengers have to exit the metro system to access the exterior LRT. Further south, the line passes Nanhu Lake and Weixing Square which will eventually provide barrier-free integration with LRT Line 3. South from here, the line runs below a busy thoroughfare and entrance porticos are located at main junctions. These are substantial structures and quite unique in style with swirling support pillars and basic totems. All stations have a similar layout with a rectangular ticket hall housing security screening, customer office, ticket machines, customer office and smart barriers. Many stations also have large art works along the side walls. There is a pale colour scheme, station distinction coming from differing ceiling designs. The pale theme is continued at platform level. These are standard island platforms with full screens, line strip map, RTI screens (now operational but poor-small type showing next three services in a vertical line), and bold calligraphic station names, the red trim being the only colour element. The 6 car CRRC stock is locally built (overhead supply), with interiors predominantly white, except for the pungent red seating. The carriages house the new schematic system map including all lines, and there is electronic and audio information in Mandarin and English. The line takes 30mins to travel and services operate from 0600-2130, running at 8min base headways.

In Summer 18, the 20.1km **Line 2** opened (18 stations). The line runs east-west between the current western terminus of Shuangfeng and Dongfang Square, through densely populated districts such as Chaoyang and Erdao. It is a very busy line, enabling transfer to Line 1 (see below), LRT Line 3 (Jiefangqiao) and 4 (Jilindalu), and the two tram lines in the west where there is also transfer to the busy West Railway Station. Services run at 8min base headways from 0600-2130, with the journey taking 34mins. As with Line 1, the stations, whilst functional and clean, do not have particularly striking design elements and little of the flair now associated with newer lines in China. They have the same mezzanine and platform structure as is standard in China, with some interesting wall art at platform level and blue trim on pillars. Platform station names are located on posters on each pillar. As with Line 1, transfer to the LRT lines involve leaving the system, heading outside and entering the respective light rail stations. Transfer is signed at both stations but this is far from seamless interchange (see below). The highlight of the line, and indeed the whole system, are the Jifeng Avenue Line 2 platforms. This line runs above and perpendicular to Line 1 and involves transfer via a decorated 'loop' walkway to the bright and interesting side platforms. These have a high roof and above the platform screens there is a full panel on which back lit window shapes are located, providing an impression of a bright exterior environment (see photo). The 6 car stock is also locally produced with a white exterior and blue band below the windows. The interior is white with coloured and basic dot progression strip map. Full system schematics are also located in each carriage. As with Line 1, this line is also heavy with gaudy advertising both on trains and on platforms.

Light Rail: Line 3/Line 4/Line 8 (59.8km-4.1 underground)

The full metro lines are complimented by the three light rail lines which are fully part Changchun Rail Transit system yet are branded 'Changchun Light Rail Transit'. Lines 3 and 4 were the original urban rail services in Changchun (standard gauge/overhead power supply) and have a separate feel to the metro, although the new Line 8 is better integrated into the system. **Line 3** (31.1km/1.0km underground) is the busiest line on the system and opened in 2002 as the first LRT type system in China. It runs from an interesting and busy station at the south of Changchun Railway station. The station here has separate entrance and exit buildings and platforms, punctured by a single rail line (a

second line/third platform is used at peak times and for stabling). The trams stop at the very front of the station, the first carriage inaccessible due to the station entrance buildings. There are no automated ticket machines and the ticket office here is located in a separate building 15m from the station entrance, with a taxi rank and street hawkers in between. The line travels south west at grade, running parallel to the heavy rail lines. This section has good speeds and the stations are well spaced and busy. Stations have side platforms and are quite basic but feature a lovely geographic route map (this map only shows line 3 and no connection to other provision). Station entrances are square glass structures with maroon roofing. There is no totem, little directional signage and the buildings are quite unkempt and continually cramped with passengers. These station entrances are located above the platforms and so stairs and bridges have also to be negotiated. At Jeifangqiao there is a 50m walk to the Line 2 station, and at Kuanpingqiao, the station lies below and perpendicular to the tram lines (see below) with the station exit 30m to the north of the tram stop of the same name. After 8.4km the line turns east and becomes elevated at Nanhudalu. This is the most substantial station on the original part of the line and is attached to a large office building.

Returning to grade, there is a short underground section at Guigudajie and a stretch of line that includes level crossings. The infrastructure and stations remain quite basic on this stretch and the level crossings are not barriered but have traffic lights, with priority given to car/pedestrian traffic, and so the LRT service has to dutifully wait its turn to proceed. Beyond Weiguangjie lies the newer part of the system opened in 2006. Weixingguangchang (Weixing Square) is housed in a 0.9km tunnel and the station is dim, dank and grubby with stairs to a basic irregularly shaped ticket hall. The entrance porticos here are oval shaped glass structures with stairs down to the entrance hall. There is no totem and no sign to say that it is the entrance to the LRT. This is made more confusing by the costermongers' stalls spilling down the stairs from the local market. The juxtaposition between this entrance and that of the new Metro Line 1 across the road are startling. In time there will be full physical integration to Metro Line 1 here and building work of the connecting passenger tunnels is apace but for the moment there is no direct transfer. Beyond Weixingguangchang (15.2km) the line becomes elevated and line speeds are reduced. Here, stations are more substantial, with large ground level ticket hall, bulky roof structures, side platforms (with a semblance of a functioning RTI system) and information boards. At Linhejie there is transfer to the Line 4 station (Weixinglu Station) via stairs and walkway. This is a very busy station and offers some great views of both lines and the rail traffic. South east from here the line remains busy to Shijiguangchang (Shiji Square) where 1 in 3 services terminate. This in the Nanguan area of the city and the line (with some grade running) passes recently developed areas with large sports and convention complexes and local tourist spots. Services operate from 0600-2100 with 8min base headways, and the interesting journey takes 1h05.

Line 4 is a 15.5km (3.1km underground) fully segregated line that has a Light Metro feel, although like Line 3, this has low level platforms. The line opened in 2011 with the northernmost section from 'Northern stop of Changchun station' to Dongdaqiao the last to be competed (2012). This section consists of a 3.1km/3 station underground run. As mentioned above, the station at Changchunzhanbei is separate from the Line 1 station of the same name and although there is evidence of the construction of passenger tunnels for barrier-free interchange, current transfer requires passengers to leave the system and undertake a quite lengthy and labourious transfer. This and the two other underground stations are dimly lit, cold, gloomy damp places and considering their young age they are disappointing and have aged prematurely. They have island platforms and information board (no RTI) including a pathetic schematic of the 2-line LRT system (this map is presented at all Line 4 stations but not at Line 3 stations). Beyond Weihuanggong the line becomes elevated and travels above the very busy Linhejie thoroughfare. The elevated section has noise reduction panels along the route but the stations are brighter, indeed this section houses the nicest stations on the system (e.g. Shironglu). These stations have low level island platforms (no screens) and are substantial structures with ticket barriers located in the middle of the platform on the side exit portal before passengers travel down to the ground level exits (stairs located at the end of the platform allow for direction change). At Jilindalu there is transfer to Line 2 (exit of system required) and at Weixinglu (11.3km) the elevated structure rises significantly as the line travels above Line 3. The station here provides free transfer to Line 3 (Linhejie) via an elevated walkway. Beyond here the line becomes less busy although the views of the urban area to Chechang are impressive. Operating times and frequencies are identical to Line 3 and the full journey takes 31mins.

Opened in October 2018, **Line 8** (Beihu Line) is the latest addition to the urban rail system in Changchun. It is an elevated system (13.2km-12 stations) and links North Ring Road and Guangtong Road via the Northeast China

Development Area. The line is the most 'LRT like' of the three in Changchun and runs quite speedily, offering great views of the newer areas of the city. At North Ring Road there is barrier free transfer to the northern terminus of Line 1. This is well signed and involves corridors and stairs, taking 5mins to transfer. The stations on the line have a mix of side and island platforms (low floor platforms) and are pleasant structures with interesting ceiling designs, waiting areas, basic RTI, and smart information boards. At some stations ticket barriers located in the middle of the platform on the side exit portal. A strip map is located on a panel above the tracks and there are no platform edge barriers. The journey takes 27mins and services run at 8min base headways from 0600-2100. This line offers a modern take on the light rail and has a different atmosphere to the original LRT provision in the city, although currently, it is not a particularly well used line.

The light rail lines use locally produced Low Floor LRT trains in 4 car articulated sets painted in a range of bold colours. The interiors have a mix of side and paired seating and have many deep internal stairs from the entrance areas, which give a chaotic feel to the interiors. Lines 3 and 4 stock have a flattened 'X' strip map above the doors, whilst the newer Line 8 trains have a smart strip and a dynamic LCD screen located in the gap between vertical grab poles which is most impressive. Mandarin and English audio announcements are made and all signage is bi-lingual.

Using the system is quite easy, but it has some unnecessary complexities. Ticket machines are easy and dispense distance based (2-5 yuan) tickets in the form of smart RFID cards. Wayfinding is good on newer elements but there are some bad examples, especially on the older lines. This is made more difficult by station name changes which have taken place across the system at numerous places. In some cases there are separate directional signs which show old and new station names which may be confusing to the occasional user/visitor. CRTC also does not provide hard copy information.

With two distinct rail systems (Metro/LRT) this is a difficult network to **summarise**. The new metro lines are not particularly inspiring but do nudge a rather tired (but characterful) light rail system into a more modern setting. This modern feel is further progressed by the new Line 8 service. Service enhancements are occurring, such as improvements to RTI and wayfinding but these are far from the high standard set by many Chinese systems. Retrospective integration is slowly happening (e.g. Line 1/Line 8) but despite brazenly showing the transfer icon, most transfers involve barriers and exit from the system and a street walk. How interconnection progresses in the future we will see. There is a clear desire from CCRT to assimilate of two systems but this is currently very slow and on the older system, two other system maps and brands still exist, along with station design, signage, information and brand. And so, whilst we are witnessing the creation of a more unified, user friendly, comprehensive system, an overarching approach to brand and service quality continues to be absent – hopefully the new Line 8 and new map are just the first elements of a more unified, stylish and fresh urban rail system.

In addition, like Dalian, Changchun has a first generation **tram** system. The 2 line (12.6km) network is essentially a single line with a 5km branch, operating from 0600-1950 and, although the system is a far cry from the heyday of the 1950s when a 7 line/50km system operated across the city, the trams are well used and serve the western part of the city adequately. Halts are pretty basic and schedules don't seem to exist - there a big time gaps followed by a bunching of 2 or 3 trams. Modern stock is used in the main although occasional heritage trams can still to be seen (adorned with flowers). This is a nice little addition to Changchun's rail coverage. Finally, mention can also be made of the **rail line to/from the airport** (station name: LongJia). The station is accessible from the airport terminal via a long underground passage and is well signed. The normal ticket purchase/triple checking for Chinese national railways applies here so time is needed to purchase tickets and enter the station waiting area, especially at busy times. The station facilities are above ground but platforms are located in a 0.7km tunnel – and they are basic, austere and cold. Trains run 2 to 3 times per hour (not clockface) on their way to/from Jilin city and there are no stops between the airport and Changchun station. This stretch is on elevated structures for most of the 15min journey and is a much nicer and less expensive way (8.50 Yuan) to reach the city than the Airport Bus.