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SPEECH BY MR KHAW BOON WAN, COORDINATING MINISTER FOR INFRASTRUCTURE AND MINISTER FOR TRANSPORT, 13 NOVEMBER 2017, 9.45AM, AT TUAS WEST MRT DEPOT

"A Tale of Two Lines"

Good morning ladies and gentlemen,

At age 30, the North-South Line is our oldest MRT line, while the Downtown Line is our newest.

2. I asked the Land Transport Authority (LTA) to compare both lines and highlight the differences. Thirty years separate these two lines and some of the differences are stark.

3. First, the first phase of the North-South Line, cost us around $2.74 billion to build, or $4.41 billion in today's dollars. The Downtown Line cost us close to $21 billion. The cost per kilometre has gone up from $160 million to $490 million.

4. Second, the North-South Line is about 40 per cent underground while the Downtown Line is completely underground.

5. Third, the North-South Line has 26 stations, of which 8, or 30 per cent are interchange stations. The Downtown Line has 34 stations, of which 11, or 32 per cent are interchange stations. More interchange stations means a higher level of network resilience.

6. Fourth, the North-South Line has an average of two entrances/exits per station. Likewise for the Downtown Line. For the new Thomson-East Coast Line that is under construction, we will be providing for an average of close to four entrances/exits per station. More entrances/exits mean greater convenience for commuters.

7. Fifth, the North-South Line, which has seen some extensions since its early days, has a total fleet of 70 six-car trains for its current length of 45km. In contrast, the Downtown Line has a total fleet of 88 three-car trains to serve the rail length of 42km. This difference reflects the different catchment populations along the route.

8. Sixth, the North-South Line operated, until recently, on a Fixed Block Communication System which is largely analogue. The Downtown Line operates on a Communications-Based Train Control system which, as a digital system allows remote control of most train functions, making the Downtown Line a more reliable line. That is why we are changing the signalling system of the North-South Line to a communications-based system too.

9. Seventh, the North-South Line shares one major maintenance facility at Bishan Depot with the East-West Line, whereas the Downtown Line has its own facility at Gali Batu. This is a critical difference which I will elaborate later.

10. Technology advancement partly explains the differences. But there is a major factor underpinning the stark differences. Thirty years ago, Singapore's per capita GDP was $16,398, last year in 2016, it has grown more than four times to $73,167. It was a very different era. Finance was tight, it still is, so we really had to scrutinise every dollar of spending, especially big ticket items like an MRT line.

11. Since we are at an MRT depot, let me use our expenditure on depots as an illustration. For 30 years, we have only the Bishan Depot to support two major MRT lines, for all their major maintenance overhaul activities. This is a severe handicap for our engineering and maintenance crew.

12. That is why it is such a relief when this Tuas Depot was completed recently. It is now possible for the North-South Line and the East-West Line to each have its own dedicated major maintenance facility. In a way, Tuas Depot is 30 years' late, but better late than never!

13. There is another reason why the completion of the Tuas Depot has allowed us to sleep a little bit better. It comes with a new Tuas power substation. Until now, the North-South and East-West Lines were drawing power from four 66kV substations, at Buona Vista, Bishan, Stamford and Yasin. Peak hour power load was about 80 per cent of the network capacity and was anticipated to increase by a further 25 per cent with the opening of the Tuas West Extension and completion of re-signalling works, thus requiring us to tap into the backup reserves. We were cutting it real close. And the need to reduce crowdedness in trains forced us to add new trains, further pushing the limits on our power capacity.

14. The fifth substation at Tuas has increased the network power capacity by 50 per cent and is therefore greatly welcomed. But we cannot yet heave a sigh of relief, because the existing equipment in the power substations has aged significantly and is due for a renewal. That is why we need to quickly replace and upgrade them. Power supply is one of the six key ageing assets of the North-South and East-West Lines which we need to renew. We have only done two (sleepers, third rail), four more to go (signalling, power supply, trains, track circuits). That is why we need more engineering hours. This can only come if we reduce train operating hours. It is a zero-sum game.

15. Besides quantity, I have also urged LTA to push for a qualitative upgrade for our depots. Technology has moved ahead. Maintenance approach has moved from preventive to predictive. We need to invest in technology to exploit predictive maintenance, and to build up capabilities to do so.

16. This morning, we will see a sample of some of these predictive maintenance technologies, including an Automatic Vehicle Inspection (AVI) System. We will progressively install them in existing depots, as soon as we can.

17. Meanwhile, we are building the new Mandai Depot for the Thomson-East Coast Line. Carrying my mantra over from MOH to MOT, I urge LTA to adopt the strategy that "every new depot must be better than the existing depots", in terms of technology adoption. This way, we up the game, up the productivity of our staff, and up the level of train reliability.

18. I look forward to the tour.

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