

SPEECH BY MR PANG KIN KEONG, PERMANENT SECRETARY, MINISTRY OF TRANSPORT, AT THE THIRD JOINT FORUM ON INFRASTRUCTURE MAINTENANCE, ON 12 JANUARY 2017, AT WATERHUB

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Colleagues,

Introduction

1. A very good morning. I am happy to see our rail and water communities gathered once again to share ideas and views. I would like to thank PUB for hosting today's forum.

2. This is the third Joint Forum on Infrastructure Maintenance. We have made significant progress since the first two sessions. Several of the recommendations have already been implemented. For example, at the first forum, we had elaborated on the need to go beyond "*Maintenance as Usual*". SBST has since developed its asset management plans to systematically pinpoint and resolve possible faults. SMRT is increasing its maintenance workforce headcount by a quarter. In the second forum, we acknowledged the need to build up our maintenance engineering capabilities. LTA has since set up a new dedicated Rail Asset Operations and Maintenance Group.

3. I hope the programme today will similarly provide fresh insights, spark interesting conversations, produce more ideas, and result in concrete initiatives and actions to further improve rail reliability.

Reliability Performance

4. At the last forum in May 2016, the Minister for Transport challenged our rail operators to achieve a Mean Kilometre Between Failure (MKBF) of 400,000 train-KM

by 2018 for incidents resulting in service delays of more than 5 minutes, and 800,000 train-KM by 2020.

5. Last year, we achieved a 30% improvement in MKBF for our entire MRT network, from 133,000 train-KM in 2015, to 174,000 train-KM in 2016. The best performer, the Downtown Line, achieved 260,000 train-KM. The older Circle Line, although it experienced some significant signalling problems, also turned in a commendable performance of 228,000 train-KM.

6. I believe that this improvement is the result of sharply increased investments in the renewal and upgrading of operating assets, the sharply intensified maintenance regimes put in place by the operators, and the adoption of good ideas from the larger engineering fraternity in Singapore. I thank everyone for your efforts and contributions.

7. I am even more heartened when I look at the quarter by quarter performance of the individual MRT lines. Both the North-South and East-West Lines achieved more than 200,000 train-KM in 4Q2016. As for the North East Line, its performance rose consistently from 93,000 in 1Q2016, to 158,000 in 2Q, 321,000 in 3Q, and ended the year at 328,000 train-KM in 4Q2016. It might be instructive for SBST to share what they have done differently to achieve this.

8. I draw two other observations from the rail reliability figures. First, all the lines managed to surpass 200,000 train-KM in one or more quarters last year. We had set 200,000 train-KM as the interim target for 2016. Second, a few of the lines, in particular the NEL, have gone beyond 300,000 train-KM. It gives me a measure of confidence that if we are able to inject more consistency and sustainability into our efforts, the target of 400,000 train-KM by 2018 is within reach.

Way Ahead

9. So as we enter 2017, I would like to call upon the rail community to continue to work together as One Team, and re-double our efforts across the Design, Build, Operate and Maintain value chain. There are three areas where we can make further improvements.

10. First, with the Government taking over ownership of the operating assets under the New Rail Financing Framework, we will make even more significant investments in our rail systems. LTA will soon be calling a tender to replace the 66 trains in the first-generation fleet serving the North-South and East-West Lines. These are the oldest trains on our network, 29 years old, bought when Singapore's first MRT line opened in 1987. The Government will also be carrying out major replacement and enhancement works for the power supply system serving the North-South and East-West Lines. The power system has been in use also since 1987. Its upgrade should help to bring down the number of disruptions caused by power malfunction. We are also sourcing for new trains, power rail, signalling system and various other critical components to replace our first-generation assets in the Bukit Panjang LRT.

11. Overall, the Government expects to spend more than \$4 billion renewing, upgrading and expanding our existing rail assets in the next five years. This is on top of the \$20 billion that the Government will be spending on new rail lines in the same period.

12. Second, we can and should better harness technology to improve rail operation and maintenance. When we built our first MRT line in the 1980s, the predominant rail maintenance approach was "preventive maintenance", where maintenance is regularly performed to reduce the likelihood of failure.

13. Today, as sensors and diagnostic equipment become more widely available and cheaper, we are able to use a fusion of sensor data and smart analytics to continuously monitor the condition of the assets, proactively predict faults that are likely to happen, and fix them before they happen. This "predictive maintenance" approach also reduces maintenance costs, effort and downtime. This is because tasks are performed just-in-time, when warranted.

14. So in the next few years, LTA will work with the operators to expand our current suite of condition monitoring tools. These include new generation Automatic Track Inspection systems to monitor track conditions, starting with Downtown Line 3, which will be put into operation later this year. Instrumentation will also be done on the new

power supply system and new train fleet for the North-South and East West Lines that I just spoke about.

15. Another area where we will better harness technology is smart asset maintenance and management. Minister Khaw shared at the last forum that LTA is working with vendors to develop an Enterprise Asset Management System. I am told that LTA is close to finalising the tender preparation and will be launching in 2018, a prototype for the Downtown Line with focus on the rolling stock and signalling system. The prototype will then undergo iterative improvements, and expand to include the remaining DTL systems and the rest of our rail lines.

16. The third area of priority for our rail reliability efforts should be to strengthen our local engineering and maintenance core. Our rail network would have doubled in size by 2030, in the short space of 15 years. Apart from Shanghai, we are perhaps the only city that is growing at this pace. We should see this as an opportunity. For example, more good engineering jobs would be created. We foresee the sector to grow in employment from the 8,500 jobs today to 14,500 jobs by 2030, an increase of around 70%.

17. Furthermore, with more new rail lines coming on-stream, we have an opportunity to implement more recent and more cutting-edge technologies. In this regard, I challenge our rail community to push yourselves to become the vanguard and at the forefront of the industry globally, to lead the change when it comes to railway maintenance. There is no reason why we cannot aspire to this in the field of predictive maintenance.

18. The recent set-up of the Singapore Rail Academy and the SMRT-University of Birmingham Postgraduate Programme in Urban Railway Engineering (Singapore) are good steps in this direction. To spur the development of innovative ideas, the Ministry and LTA have also set aside grants to support promising research proposals by academics, industry and private companies on predictive maintenance, automating inspection and maintenance, as well as system design and upgrade. LTA will be issuing calls for proposals later in the year. I hope to see exciting proposals that can

take us to the rail reliability targets which Minister Khaw had proposed, and even surpass them.

19. For me, the recent Circle Line signalling incident was a clear example of the need to develop much deeper local knowledge and expertise in rail technology, within LTA and the operators, and also within the industry. You will remember that the Circle Line experienced intermittent loss of signalling communications in August/September, and again in November. We brought in the signalling system manufacturer, but for a long while, were unable to identify the cause of the problem. It was only through subsequent collective efforts by LTA, SMRT, DSTA, DSO, IMDA, GovTech, ALSTOM and Rhode & Schwarz, that we finally solved the mystery. It may seem logical that as a buyer, we would depend on the supplier or manufacturer of a component or system to resolve problems, but this will not be enough if we aspire to achieve world-leading standards. We need to complement the support provided by the system manufacturers, with our own technical expertise, and the knowledge we bring of the local operating conditions. I therefore very much like the approach I have seen in recent times, where LTA is not content with just having a technical problem resolved by the system manufacturer, or simply replacing the faulty component, but insists on getting a deep understanding of the root of the problem.

Conclusion

20. Let me conclude. 2017 will be an important year for the rail industry. The Tuas West Extension will open this year. Downtown Line Stage 3 will also open, and with it, we will celebrate the completion of the full Downtown Line. The re-signalling project for the North-South Line will be completed, allowing us to run more trains during peak hours. The operator licence of the Thomson-East Coast Line will be put out for tender. I hope that working as One Team, 2017 will also be a landmark year for rail reliability, and bring us closer to our MKBF targets, and also reduce the number of major disruptions to less than a handful annually.

21. Last but not least, I wish all of you and your families a happy and healthy year ahead. Thank you.
