Legislative Council

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Panel on Transport

Subcommittee on Matters Relating to Railways Meeting on 10 April 2018

Updated background brief on Light Rail service

Purpose

This paper provides background information on Light Rail service. It also summarizes the major views and concerns expressed by Members during previous discussions on this subject.

Background

Light Rail is a local transportation network which started operation in 1988 to meet the transport needs of the residents in the Northwest New Territories. In 1993, the Light Rail network was extended to Tin Shui Wai. Some Light Rail routes were reorganized in 2003 and 2004 to strengthen the service in Tin Shui Wai. Following the opening of the Tin Sui Wan extension in 2003, the system now covers 68 stops across 36.15 kilometres of track. In addition, the MTR Corporation Limited ("MTRCL") provides feeder bus services to and from many MTR stations in the New Territories. According to the Administration², the average daily patronage was about 490 000 in 2016. According to the on-site observation by MTRCL in 2016, the loading of 12 Light Rail routes ranged from 69% to 96%, with an average of around 80%³.

Source: MTRCL website: http://www.mtr.com.hk/en/customer/services/lt_bus_index.html LC Paper No. CB(4)500/16-17(09)

As there may be a number of routes passing through a single Light Rail stop, the MTRCL cannot ascertain which routes the passengers take after they purchase tickets or pay by Octopus. Therefore, the MTRCL is unable to assess the loading of individual Light Rail routes by making reference to the entry/exit records of passengers. The approach of on-site observation has been adopted by the MTRCL in assessing the loading of Light Rail. MTRCL staff observe and assess the vacant space of LRV compartments at platforms during the busiest hour during morning peak hours. Data obtained within the hour will be consolidated for assessing the loading of individual Light Rail routes.

Enhancing carrying capacity of Light Rail

3. According to the information provided by MTRCL in April 2016, the design capacity of a Light Rail Vehicle ("LRV") is around 240 persons. In practice the maximum number of passengers that are carried by a single-set LRV, as observed during peak hours, is about 200. The MTRCL has undertaken a number of measures to increase the carrying capacity of Light Rail service in view of the increase in patronage. The measures include increasing the frequency of service, improving the layout and design of LRV compartment, strengthening platform management, introducing short-haul special service and increasing the number of coupled-set LRVs⁴.

Additional LRVs and deployment of coupled-set LRVs

- 4. According to the Administration, deploying additional LRVs, either single-set or coupled-set, can increase the carrying capacity of the Light Rail. A coupled-set LRV can attain higher efficiency and achieve better on-time performance when compared with two single-set LRVs. On the other hand, single-set LRVs can be deployed with greater flexibility.
- 5. The MTRCL has formulated the deployment arrangements for LRVs having carefully considered the patronage of the various Light Rail routes, the travelling pattern of passengers, the busy sections of individual routes and the purposes of deploying single-set and coupled-set LRVs as mentioned above. When considering the deployment of coupled-set LRVs, the MTRCL also has to avoid additional LRVs from obstructing one another by considering a number of factors, including the utilization rates at junctions of the shared road section, the technical constraints of coupled-set LRVs and the overlapping of some sections of some routes.
- 6. Among the 12 Light Rail routes, the ordinary services of some of the routes are wholly operated by either single-set or coupled set LRVs; whereas some are operated by a mix of single-set and coupled set LRVs. In 2016, the number of coupled-set LRVs in service during morning peak hours accounts for around 36% of the total number of LRVs, representing an increase by 9% if compared with the situation in 2009. Details of the deployment of LRVs, with the loading of individual routes at the busiest section, are set out in **Appendix I.** As observed by the MTRCL, the above deployment arrangements during the peak hours can, to a large extent, cater for the passenger demand and the road traffic.

Measures under the Public Transport Strategy Study

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⁴ LC Paper No. CB(4)500/16-17(09)

- 7. Since end-2014, the Administration commenced the Public Transport Strategy Study ("PTSS"), to examine the roles and positioning of public transport services other than heavy rail. With regard to the long-term development of Light Rail, the Administration had conducted a systematic review in collaboration with the MTRCL.
- 8. On 16 June 2017, the Administration reported to the Panel on Transport ("the Panel") the outcome and recommended measures of the PTSS. According to the paper provided by the Administration to the Panel in June 2017⁵, the Light Rail is the railed-based and at-grade transport mode in Tuen Mun and Yuen Long (including Tin Shui Wai), as well as a feeder to the West This role, positioning and function of the Light Rail would be maintained and enhanced. The Administration and MTRCL concluded from the study a number of measures to enhance the carrying capacity of the Light Rail, with a view to meeting the transport demand of Northwest New Territories. On 22 January 2018, the Administration further reported to the Panel on the implementation progress of the measures recommended under PTSS and canvassed views of the members and the public on this subject. A summary of the implementation status of the measures for enhancing Light Rail service is at Appendix II.

Major concerns expressed by the Legislative Council Members

9. In the Fifth and Sixth Legislative Council, Members have expressed views and concerns on Light Rail service at the Panel on Transport meetings, Subcommittee on Matters Relating to Railways ("the Subcommittee") meetings, special Finance Committee meetings and Council meetings. Their major views and concerns are summarized in the ensuing paragraphs.

Crowdedness of Light Rail Vehicles

10. At the Subcommittee meeting on 19 April 2016, members passed a motion on loading of Light Rail. They expressed in the motion that LRVs were seriously overcrowded during morning peak hours and many residents in New Territories West had reflected that they had to wait for two to three LRVs before they could get on board when going to work or school in the morning. When the loading of Light Rail was calculated on the basis that each LRV could carry 200 passengers (equivalent to a passenger density of 6 to 7 ppsm), seven out of the 12 routes had a loading exceeding 80% during morning peak hours with four (505, 507, 614 and 615) among them standing at the level of 90% or

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⁵ LC Paper No. CB(4)1176/16-17(03)

above.

- 11. The Subcommittee thus urged the Administration in the motion to discuss with MTRCL the short-term measures to revise the present calculation basis of the loading of Light Rail from a carrying capacity of 200 passengers per LRV (equivalent to a passenger density of 6 to 7 ppsm) to the common standard adopted by other rails, which was based on a passenger density of 4 ppsm, so as to reflect the actual loading of LRVs. In addition, MTRCL should fully deploy, during the morning peak, coupled-set LRVs to serve routes with a loading (based on a passenger density of 4 ppsm) of 80% or above, so as to alleviate the problem of crowdedness during morning peak hours.
- MTRCL⁶ in May 2016 responded that the positioning of heavy rail and 12. Light Rail and journey distance travelled by their passengers were different, it was not appropriate to compare their passenger density directly. mainly provided cross-district transport services for commuters and the journey distance was around 10 kilometres. Light Rail provided feeder service for West Rail Line as well as served as an important public transport mode within the Northwest New Territories, and the journey distance was around two to three kilometres. According to MTRCL, when considering the deployment of coupled-set LRVs, it had to take full account of the actual conditions of individual routes, including patronage, travel patterns of passengers and traffic conditions, etc. with a view to driving resources to those routes or sections most Since March 2015, MTRCL had added 446 trips in total for Light Rail network per week, and deployed more coupled-set LRVs to serve nine Light Rail routes (including 507, 610, 614, 614P, 615, 615P, 705, 751 and 761P), so as to enhance carrying capacity.
- 13. At the Subcommittee meeting on 10 February 2017, a member expressed concern that the Light Rail service could not cope with the growing population and pressing transport needs in Tuen Mun and Yuen Long in the coming years. He urged MTRCL to deploy more coupled-set LRVs to increase the carrying capacity and relieve crowdedness during peak hours.
- 14. MTRCL explained that it had been the on-going efforts of MTRCL to enhance Light Rail service through various means, including implementing and enhancing measures for increasing the carrying capacity of the Light Rail system by appropriately deploying coupled-set LRVs to alleviate loading of certain busy sections. Nevertheless, having regard to the sharing of certain space of the roads with other road users, MTRCL should take into account the constraint imposed by the open design of Light Rail on the number of operating LRVs, alongside the patronage, when planning its LRV deployment.

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⁶ LC Paper No. CB(4)978/15-16(01)

Future development of Light Rail

- 15. Noting that the Administration would carry out an in-depth review on the long-term development of Light Rail under PTSS at the Panel meeting on 25 November 2014, some members urged the Administration to consider transforming the current Light Rail system to become an elevated automated people mover system to release road space and reduce traffic accidents. They also asked the Administration to consider scraping Light Rail service and replacing it with underground railway services.
- 16. The Administration explained that Light Rail provided feeder service for West Rail Line and served as an important public transport mode within the Northwest New Territories ("NWNT"). As such, the Administration would not prematurely give up Light Rail.
- 17. At the Subcommittee meeting on 10 February 2017, a member suggested constructing a medium-capacity railway with small stations accommodating three-car or four-car trains to operate in parallel with the major Light Rail corridors to cater for the growing population in NWNT. The alignment of the railway system should cover several main roads, including Yuen Long Main Road and the major road network serving Tin Shui Wai. Having regard to the constraint imposed by the open design of the Light Rail system, the member also suggested constructing tunnels at 11 junctions with busier traffic along the existing Light Rail routes. Hence, Light Rail and other road users would not have to compete for road space at the 11 junctions.
- 18. The Administration advised that for the long-term railway development, the Administration would take forward the Strategic Studies on Railways and Major Roads beyond 2030. The Strategy Studies would explore the transport infrastructure required for the developments in Lantau, NTNW and New Territories North. Also, when considering the development of Hung Shui Kiu New Development Area and the Yuen Long South development, the Administration had reserved land for developing Environmentally Friendly Transport Services ("EFTS"). Whether and how best the existing Light Rail system and EFTS in the new development areas could be connected and integrated would be further studied.

Rationalization of Light Rail routes

19. When discussing the outcome and recommended measures of PTSS at the Panel meeting held on 16 June 2017, some members expressed concern over the impact of the plan to rationalize some Light Rail routes, in particular whether the overcrowding problem at Siu Hong Station would become worse. In view that rationalization of some routes such as route nos. 610, 614 and 615

might possibly meet with local objections, the member considered that the Administration should present more supporting figures to justify the rationalization proposals when conducting local consultations. Members noted that the Administration had recognized the need for enhancing the carrying capacity and operational efficiency of Light Rail. Moreover, the Administration would take heed of the views of relevant District Councils on the short, medium and long-term measures to enhance the Light Rail service.

Service disruption on Light Rail

20. Some Members were worried that the ageing of Light Rail system had caused frequent incidents in recent years. They therefore expressed concern about the numbers of service disruptions of Light Rail and traffic accidents involving Light Rail as well as the resultant casualties. In response, the Administration⁷ advised that in 2012, 2013 and 2014, with LRV trips totalling more than 1 million per year, there were 29, 27 and 33 service disruptions of eight minutes or above respectively occurred in Light Rail network. Amongst them, there were two, one and three service disruptions of 31 minutes or above respectively. In 2012, 2013 and 2014, the number of traffic accidents involving Light Rail was 20, 27 and 29 respectively. Among them, 12, 21 and 16 cases involved casualties of 73, 105 and 46 respectively. There were two deaths in two accidents which occurred in 2013.

Latest development

21. The Administration plans to brief members on the enhancement of Light Rail service at its meeting to be held on 10 April 2018.

Relevant Papers

22. A list of relevant papers is in **Appendix III.**

Council Business Division 4
<u>Legislative Council Secretariat</u>
4 April 2018

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⁷ http://www.info.gov.hk/gia/general/201501/28/P201501280459.htm

 $\underline{\textbf{Appendix I}}$ Deployment of LRVs in December 2009 and December 2016

	Number of LRVs deployed			Number of LRVs deployed				
	(December 2009)			(December 2016)				
Route	Single -set	Coupled- set	Hourly carrying capacity during peak hours *	at the busiest section	Single -set	Coupled -set	Hourly carrying capacity during peak hours *	Loading at the busiest section
505	8	0	1 885	99%	6	2	2 356	74%
507	8	0	1 885	101%	10	1	2 430	83%
610	12	1	1 885	85%	11	2	2 019	85%
614	7	0	980	89%	7	0	980	69%
614P	4	0	980	(average loading of 614 and 614P)	5	0	1225	(average loading of 614 and 614P)
615	7	0	942	70%	7	0	942	80%
615P	4	0	980	(average loading of 615 and 615P)	5	0	1 225	(average loading of 615 and 615P)
705	2	3	3 921	95%	0	5	4 900	87%
706	1	4	4 411	82%	0	5	4 900	91%
751	6	6	2 625	93%	6	6	2 625	96%
751P	4	0	1 532	78%	4	0	1 532	78%
761P	2	11	5 026	100%	0	13	5 444	81%
Special service	3	0			2	1		
Takal	68	25			63	35		
Total		118			1	133		

^{*}About 200 persons per LRV

Source: Annex 2 of LC Paper No. CB(4)500/16-17(09)

Summary of implementation status of the measures for enhancement of Light Rail service under Public Transport Strategy Study

Me	asures	Implementation status (as at January 2018)				
Sho	ort-term measures					
(a)	To expand the fleet and increase the carrying capacity by purchasing 10 additional Light Rail vehicles.	MTRCL has purchased 10 additional Light Rail vehicles to expand the fleet. They will be providing services by batches between 2019 and 2023.				
(b)	To rationalize some Light Rail routes to enhance the deployment of Light Rail vehicles, operational efficiency and the capability of increasing the number of Light Rail vehicles.	The Administration and MTRCL attended the Traffic and Transport Committee meetings under the Yuen Long and Tuen Mun District Councils in July 2017 to canvass views from members on the Light Rail rationalization proposals. Having regard to the views received, the proposals are being prepared and the District Councils will be consulted again after the review.				
(c)	To adjust traffic lights at busy junctions to better align with the time of Light Rail vehicles passing the junctions, reduce the waiting time at junctions, and enhance operational efficiency and passenger's convenience	The Administration has completed the adjustment work for one of the road junctions to maximize the priority enjoyed by Light Rail to pass through the road junction. The adjustment work for the other two junctions will be completed between the first and second quarter of 2018.				
Me	Medium-term measures					
(d)	To undertake a study on design improvements for busy junctions to alleviate the need for Light Rail to share road with other road users, as well as enhance operational efficiency and passenger's convenience.	To endeavour to seek resources to commence the feasibility study of some busy junctions in 2018.				

Measures	Implementation status (as at January 2018)		
Long-term measures			
(e) To improve the mode of operation of Light Rail along Yuen Long Main Road in the long-run.	To proceed after the completion of the feasibility study on design improvement for busy junctions.		
(f) To undertake a study of the feasibility of constructing a new heavy rail to connect to the urban areas, in parallel with West Rail Line and Light Rail.	Preliminary work is being prepared.		
Environmentally friendly transport sys Development Area and Yuen Long South F	G		
(g) The Transport and Housing Bureau and the Transport Department ("TD") in collaboration with the Development Bureau and Civil Engineering and Development Department ("CEDD") which are responsible for the two new development areas, will conduct an indepth study on the transport mode to be adopted for the environmentally friendly transport system.	TD and CEDD have established a steering group to oversee the consultancy study. Public engagement is expected to commence in the second quarter		

Source:

LC Paper Nos. CB(4)1176/16-17(03) and CB(4)490/17-18(01). Details of the measures can be found in Chapter 5 of Study Report of the PTSS issued in June 2017 (http://www.td.gov.hk/filemanager/en/publication/ptss_final_report_eng.pdf)

Panel on Transport Subcommittee on Matters Relating to Railways

List of relevant papers on Light Rail service

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
17.7.2013	Council meeting	Hon LEUNG Che-cheung raised a question on train services of MTR West Rail Line and Light Rail	http://www.info.gov.hk/ gia/general/201307/17/ P201307170208.htm
23.10.2013	Council meeting	Hon Alice MAK Mei-kuen raised a question on Light Rail fare system	http://www.info.gov.hk/ gia/general/201310/23/ P201310220554.htm
11.12.2013	Council meeting	Motion on "Enhancing the railway service in the Northwest New Territories" moved by Hon LEUNG Checheung	http://www.legco.gov.h k/yr13- 14/english/counmtg/mo tion/cm1211-m2- wordings-e.pdf
		Progress Report on motion on "Enhancing the railway service in the Northwest New Territories"	http://www.legco.gov.h k/yr13- 14/english/counmtg/mo tion/cm1211-m2-prpt- e.pdf
28.2.2014	Subcommittee on Matters Relating to Railways	Administration's paper on capacity and loading of MTR trains	CB(1)980/13-14(03) http://www.legco.gov.hk/yr 13- 14/english/panels/tp/tp_rdp/ papers/tp_rdp0228cb1-980- 3-e.pdf
		Minutes	CB(1)1928/13-14 http://www.legco.gov.hk/yr 13- 14/english/panels/tp/tp_rdp/ minutes/rdp20140228.pdf

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
28.5.2014	Council meeting	Hon TAM Yiu-chung raised a question on service hours of Light Rail and MTR buses in New Territories West	http://www.info.gov.hk/ gia/general/201405/28/ P201405280428.htm
25.11.2014	Panel on Transport	Administration's paper on Public Transport Strategy Study — work plan	CB(1)238/14-15(06) http://www.legco.gov.h k/yr14- 15/english/panels/tp/pa pers/tp20141125cb1- 238-6-e.pdf
		Minutes	CB(4)437/14-15 http://www.legco.gov.h k/yr14- 15/english/panels/tp/mi nutes/tp20141125.pdf
28.1.2015	Council meeting	Hon LEUNG Che-cheung raised a question on Light Rail service	http://www.info.gov.hk/ gia/general/201501/28/ P201501280459.htm
17.7.2015	Panel on Transport	Administration's paper on planning of transport infrastructure in Northwest New Territories	CB(4)1306/14-15(04) http://www.legco.gov.h k/yr14- 15/english/panels/tp/pa pers/tp20150717cb4- 1306-4-e.pdf
		Minutes	CB(4)228/15-16 http://www.legco.gov.h k/yr14- 15/english/panels/tp/mi nutes/tp20150717.pdf
9.12.2015	Council meeting	Hon Michael TIEN Puk-sun raised a question on train services	http://www.info.gov.hk/ gia/general/201512/09/ P201512090545.htm

Date of	Meeting	Minutes/Paper	LC Paper No.
meeting		•	•
7.4.2016	Finance Committee (Special meeting)	Replies to initial written questions raised by Finance Committee members in examining the Estimates of Expenditure 2016-2017 (Session No.: 14) (Questions Serial Nos. 0215, 1356, 1623, 3593 and 4740)	k/yr15- 16/english/fc/fc/w_q/th
19.4.2016	Subcommittee on Matters Relating to Railways	MTR Corporation Limited's paper on capacity and loading of trains in the MTR network	CB(4)854/15-16(07) http://www.legco.gov.h k/yr15- 16/english/panels/tp/tp_ rdp/papers/tp_rdp20160 419cb4-854-7-e.pdf
		MTR Corporation Limited's response to the motion on "Loading of Light Rail" and the supplementary information requested by members at the meeting on 19 April 2016	http://www.legco.gov.h k/yr15- 16/chinese/panels/tp/tp
		Minutes	CB(4)1282/15-16 http://www.legco.gov.h k/yr15- 16/english/panels/tp/tp rdp/minutes/rdp201604 19.pdf
8.2.2017	Council Meeting	Hon LEUNG Che-cheung raised a question on traffic situation in Northwest New Territories	http://www.info.gov.hk/ gia/general/201702/08/ P2017020800489.htm? fontSize=1

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
10.2.2017	Subcommittee on Matters Relating to Railways	Administration and MTR Corporation Limited's paper on Deployment of Coupled- set Light Rail Vehicles	CB(4)500/16-17(09) http://www.legco.gov.h k/yr16- 17/english/panels/tp/tp rdp/papers/tp_rdp20170 210cb4-500-9-e.pdf
		Minutes	CB(4)1227/16-17 http://www.legco.gov.h k/yr16- 17/english/panels/tp/tp rdp/minutes/rdp201702 10.pdf
16.6.2017	Panel on Transport	Administration's paper on Public Transport Strategy Study	CB(4)1176/16-17(03) http://www.legco.gov.h k/yr16- 17/english/panels/tp/pa pers/tp20170616cb4- 1176-3-e.pdf
		Minutes	CB(4)177/17-18 http://www.legco.gov.h k/yr16- 17/english/panels/tp/mi nutes/tp20170616.pdf
		Administration's supplementary information on the Public Transport Strategy Study (follow-up paper)	CB(4)1381/16-17(01) http://www.legco.gov.h k/yr16- 17/english/panels/tp/pa pers/tp20170616cb4- 1381-1-e.pdf

Date of meeting	Meeting	Minutes/Paper	LC Paper No.
18.10.2017	Council meeting	Hon Kenneth LAU raised a question on traffic situation in Yuen Long	http://www.info.gov.hk/ gia/general/201710/18/ P2017101700772.htm? fontSize=1
22.1.2018	Panel on Transport	The Administration's paper on Public Transport Strategy Study - Implementation Progress of Measures	CB(4)490/17-18(01) http://www.legco.gov.h k/yr17- 18/english/panels/tp/pa pers/tp20180122cb4- 490-1-e.pdf
		Administration's response to the letter from Hon Frankie YICK Chi-ming to the Administration on the observations and opinions expressed by members and deputations/individuals on the Public Transport Strategy Study as set out in LC Paper No. CB(4)714/17-18(01)	CB(4)714/17-18(02) http://www.legco.gov.h k/yr17- 18/english/panels/tp/pa pers/tp20180122cb4- 714-2-e.pdf

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