

KCR West Rail Phase I
Presentation to LegCo Transport Panel
Subcommittee on Matters Relating to the
Implementation of Railway Development Projects

This paper sets out the progress of KCR West Rail Phase I and highlights some areas of interest to Members.

West Rail Overview

2. West Rail Phase I is a 30.5-km domestic twin-track passenger railway linking Sham Shui Po in West Kowloon with Tuen Mun. It has nine stations and passes through five districts: Sham Shui Po, Kwai Tsing, Tsuen Wan, Yuen Long, and Tuen Mun. West Rail will interchange with the MTR system and KCRC's Light Rail, forming an integrated rail network.

3. West Rail will serve 340,000 passengers a day on system opening in December 2003. The patronage is forecast to grow to 500,000 a day by the year 2011.

4. The Key features of West Rail are as follows:

- Viaduct	13.4 km (44%)
- Bored tunnel	9.0 km (30%)
- Enclosed Structure at grade	3.2 km (10%)
- Cut-and-cover tunnel	2.5 km (8%)
- Open surface	2.4 km (8%)
- Number of Stations	9
- Size of Maintenance Centre	32.5 hectares
- Construction commencement date	Oct 1998
- Target opening date	Dec 2003

Progress of the Project

5. The project is making very good progress, with 80 % of the civil engineering work now complete and all major milestones achieved on time or ahead of schedule. We are confident that West Rail will be able to commence service to the public before the target opening date of December 2003.

6. As at July 2001, West Rail's tunnels are about 95 % complete, 75 % of the 13.4 km of viaduct deck has been erected, and the station structures are about 50 % complete. More than 14 km of track has been laid, out of a total of 88 km. The first 12-car train, manufactured under the West Rail rolling stock contract, is already undergoing test runs on our East Rail track.

7. Of the nine stations, the Kam Sheung Road Station structure was topped out in December 2000. Tin Shui Wai Station will be topped out in July 2001, and Meifoo Station will be topped out later this year. We have also topped out the West Rail Building, which will contain the operational control centre of West Rail. The remaining six stations will be topped out by the middle of next year.

8. Almost half of the West Rail alignment is inside tunnels. Tunnel excavation is well on schedule, with the 5.5-km Tai Lam Tunnel, which is the longest transportation tunnel in Hong Kong, broken through in early April 2001, and the 1.7-km Ha Kwai Chung Tunnel broken through in October 2000. The first of two tunnel boring machine (TBM) drives for the 1.8-km Tsing Tsuen Tunnel broke through in December

2000 and excavation of the second tunnel drive will be completed in early July this year.

9. West Rail's 13.4-km of continuous viaduct will be the longest bridge structure in Hong Kong. The first complete span of the twin span deck was erected in May 2000. At present, 75% of the 607 spans have been erected. The construction of viaduct is expected to be completed around the 3rd quarter of 2001.

10. For West Rail's railway operating systems, detailed design is progressing on programme. Prototype testing and equipment manufacture are now underway on many of the contracts. The first batch of eight new train cars, designed and manufactured under West Rail's train car contract, was delivered to Hong Kong in March 2001 while the second batch of four new train cars were delivered to Hong Kong in June 2001. They form a 12-car train and are now undergoing further tests required before being put into service for East Rail by the end of August 2001.

11. The new West Rail train contains many features that are new to Hong Kong, including colour LCD display for passenger information and real time news and financial information, CCTV monitoring system inside each train compartment for more effective management of incidents, platform to screen CCTV, train body side skirts to mitigate noise, and ergonomically designed train interior for passenger comfort.

12. West Rail has conducted questionnaire surveys during exhibitions of the mock-up of the new train car to collect public views on the train car design. Many of the suggestions collected from the public during the exhibition had been taken on board.

13. The first section of West Rail track work was laid in October 2000. As at the end of June 2001, 14 km out of a total of about 88 km of track has been laid.

14. As at June 2001, a total of 11,517 professionals and construction workers are working on the project, including KCRC's in-house staff as well as consultants' and contractors' staff. The project has thus contributed to the creation of jobs in Hong Kong.

Sustainable Development

15. West Rail embodies important initiatives to ensure sustainable development for Hong Kong.

16. As an electrified railway, West Rail will help reduce a significant amount of road traffic, thereby cutting back about 1,000 tonnes of pollutants a year which would otherwise be released into the atmosphere from vehicle exhaust emissions.

17. The elevated sections of the railway, which accounted for about 45% of the entire alignment, are supported by viaduct columns rather than on embankments. This avoids severing land and communities, and also avoids interfering with the natural drainage characteristics of the low-lying areas in the New Territories.

18. Using pre-cast segmental construction method, deck sections of the viaducts are built at a centralised work site and then transported to the locations where they are needed. The land required for the work is therefore minimal, and the impact to the community reduced.

19. The floating slab track on the viaducts, combined with noise absorption plenum and other noise abatement features on West Rail trains, will make West Rail one of the quietest railways in the world.

20. For the tunnel sections, too, sustainability features prominently in the design and construction. For the Kwai Tsing tunnel, a giant tunnel boring machine is being used to avoid the highly disruptive cut-and-cover tunnel works. This is the first time a TBM capable of tackling both soft ground and hard rock conditions is used in Hong Kong. Despite the gigantic size, the state-of-the-art TBM did not cause any noise or vibration nuisance to nearby residents.

21. For Tai Lam Tunnel, an extendable conveyer belt system is used to unload the blasted material from tunnel excavation to the stockpile outside the tunnel portal. The conveyer belt is extended in tandem with the progress of tunnelling work. This conveyer system

replaces the need for more than 200 loads of trucks for each tunnel blast, thus eliminating the environmental impacts caused by trucks. This is the first time such an environmentally friendly tunnelling method is used.

22. This is why West Rail's tunnelling work has resulted in virtually no complaints from nearby residents.

23. In addition, much of the spoil and rock produced from tunnelling has been used to form the embankments for the Pat Heung Maintenance Centre site. This is another example of optimising the use of scarce natural resources.

24. West Rail is also an energy efficient railway. Regenerative braking system will be used so that some of the energy used in braking will be fed back to the power supply system. This will save about 25% of traction power consumption. In addition, insulated roofs and the amount of glazed area will be optimised to reduce solar gain, and platform screen doors will be installed at all stations to reduce air-condition loss.

25. In view of the scarcity of Hong Kong's land resources, every effort has been made to minimise West Rail land-take. This is why only 18% of West Rail is built at grade. Also, by elevating Tuen Mun and Siu Hong Stations on bore pile foundations over Tuen Mun Nullah, West Rail utilises existing resources by "doubling up" on the use of existing drainage channel, thus further reducing land-take.

26. West Rail also exemplifies the concept of integrating transport development with land use. Eight out of the nine stations and the depot will have property development opportunities, with the potential of about 30,000 residential units being completed between the years 2006 and 2011.

27. With the exception of Mei Foo Station, which will be well served by an existing public transport interchange (PTI), the other eight West Rail stations will be linked to purpose-built PTIs to enable passengers to connect conveniently with various feeder services including buses, mini-buses, taxis, and bicycles. At Mei Foo, the station structure will blend in nicely with the Lai Chi Kok Park, with enhanced recreational facilities and landscaped areas.

28. In keeping with KCRC's 90 years of tradition of respect for the belief, values and culture of the New Territories communities, West Rail has taken great care to address community concerns in the alignment design, such as shifting the alignment where practicable to avoid impacting burial grounds and cultural heritage such as the Tsui Shing Pagoda in Tin Shui Wai.

Environmental Mitigation

29. West Rail is the largest construction project ever undertaken throughout the environmentally sensitive areas of Hong Kong. During

construction, KCRC has made every effort to ensure that environmental and construction impacts are kept to the absolute minimum.

30. All West Rail contractors are required to submit an Environmental Management Plan to the satisfaction of the Corporation before works can commence. The Plan sets out effective mitigation measures to ensure full compliance with relevant environmental requirements.

31. As a final precautionary measure, an Independent Environmental Checker oversees the whole environmental protection process including regular audits and reports that are sent to EPD. Throughout the construction stage the Corporation's own specialists Environmental Team and the Independent Environmental Checker closely monitor and audit contractors' performance to ensure that all environmental requirements are met. In the event any breaches are found, immediate rectification measures will be implemented.

32. Since construction works started in October 1998 up to May 2001, a total of 60 offences have been committed by West Rail's 19 main civil contractors. This represents an average of one offence per about six months by each 19 contractor. Of these 60 offences, 38 are offences under Air Pollution Control Ordinance, 11 under Water Pollution Control Ordinance, 10 under Noise Control Ordinance, and one under Waste Disposal Ordinance.

Wet season works arrangements

33. A major challenge of the West Rail project is to avoid blocking flood relief and drainage channels in flood-prone areas. Throughout the 2001 wet season, generally no construction works will be undertaken in any drainage systems. In the event some minor works have to be undertaken, prior approval from the Drainage Services Department would have to be obtained, and such works would be carried out only when the Hong Kong Observatory forecasts no rainfall during the period.

34. As two West Rail stations - Tuen Mun and Siu Hong - are being built directly above the Tuen Mun nullah, a number of mitigating measures have been completed to enhance the flow capacity of the nullah, including works to widen and deepen the nullah.

35. On top of this, comprehensive wet season contingency measures have been put in place. A direct link with Hong Kong Observatory has been established to gauge the 5-day weather forecast - the same information DSD obtains from Hong Kong Observatory. Close contact is maintained between DSD and the Corporation, and an Operation Procedure has been developed for the removal of construction plant from the nullah prior to the occurrence of any rainstorm / typhoon.

36. These measures have proved to be effective, as there were only a few flood-related complaints during the heavy rains in June this year. We have looked into these complaints and are satisfied that West Rail works have not exacerbated the flooding.

Community Partnership

37. Since the design stage of West Rail, KCRC has been proactively reaching out to inform and consult the community and to work closely with them in resolving their concerns arising from the construction and future operation of West Rail.

38. In addition to operating a 24-hour complaints and enquiry hotline and conducting regular site visits, briefing sessions and consultation sessions with residents, KCRC has set up community liaison offices at major construction sites to provide one-stop rapid response to complaints and enquiries. Relevant District Councils are briefed regularly on the progress of the project and on issues of local concern. Community liaison groups with residents representatives have been set up to maintain a close dialogue with residents.

Construction Safety

39. Overall safety performance remains very good with a cumulative accident frequency rate of 1.01 per 100,000 man-hours worked vs the ceiling of 1.6. The Cumulative Incidence Rate is 28 reportable accidents per 1000 workers, which compares favourably with the Hong Kong construction industry average of 155. (West Rail's low incidence rate has brought down the industry average.)

Handling of Third Party Claims

40. KCRC has taken out a comprehensive insurance policy for the West Rail project to ensure that third party liability is well covered.

41. At law the liability to pay for damage to third party property lies with the person/company who caused the damage. In the context of West Rail this will usually be the relevant contractor. The approach of the Corporation in dealing with third party claims, therefore, is to refer claims to the relevant contractor in the first instance. KCRC staff then monitor the progress of all claims, to ensure that they are handled expeditiously.

42. Legal aspects of handling third party claims aside, the Corporation does its best to ensure that its contractors and the insurers adopt a pragmatic approach towards third party claims. Wherever there has been doubt in a claim case, the benefit of the doubt has been given to

the claimants. This is why there are cases where ex-gratia payments have been made to claimants, even though on strict legal grounds it was thought that the liability of the contractor was doubtful. Through this pragmatic approach, many claims cases have been resolved. The Corporation will continue to seek to ensure that any third party claims are dealt with in a flexible and pragmatic manner.

Conclusion

43. With the support of the relevant Government Departments and the community at large, West Rail is making very good progress. We are now aiming at opening this world-class railway ahead of the original target date of December 2003.

July 2001