

# **Task Force on Kai Tak Harbourfront Development**

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For discussion  
on 12 Mar 2012

TFKT/04/2012

## **Connecting Kowloon East – Environmentally Friendly Linkage System**

### **PURPOSE**

This paper aims to inform Members of the findings of the feasibility study (the Study) on an environmentally friendly linkage system (EFLS) to enhance connectivity of Kowloon East and seek Members' views on the EFLS proposal as well as the way forward for the EFLS.

### **BACKGROUND**

2. In his 2011-12 Policy Address, the Chief Executive announced that we will adopt a visionary, coordinated and integrated approach to expedite the transformation of Kowloon East, comprising the Kai Tak Development (KTD), Kwun Tong and Kowloon Bay, into an attractive, alternative central business district (CBD) to support Hong Kong's economic development and sustain Hong Kong's position as a global financial centre.

3. To facilitate the transformation of the former industrial areas into another key CBD of Hong Kong, it is important that the infrastructural works and facilities should be well-designed and related well to the broad development strategies of enhancing connectivity, also to brand the place with quality urban design and promoting diversity for Kowloon East CBD. We will consider enhancing inter- and intra-district connectivity through the provision of an EFLS linking KTD, Kwun Tong and Kowloon Bay with the existing Mass Transit Railway (MTR) Kwun Tong Line and the future Shatin-to-Central Link (SCL). The provision of EFLS could on the other hand create a unique landmark in Hong Kong with high tourism appeal.

4. In December 2009, the Civil Engineering and Development Department commissioned the Study to investigate feasible EFLS

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network alignments based on assessments on engineering feasibility, traffic impact, land requirement, environmental impacts, operation viability, financial performance and economic return. The Study has also taken into account the important role to be played by the EFLS in “Energizing Kowloon East” and come up with an EFLS proposal to effectively cope with the aforesaid development strategies for Kowloon East CBD. The Study findings are outlined in the ensuing paragraphs.

## THE EFLS PROPOSAL

### *Alignment*

5. The Study suggests adopting elevated monorail as the EFLS and proposes a 9-kilometre 12-station line linking the MTR Kowloon Bay Station, through Wang Kwong Road to the KTD Station Square, where it can interchange with the Kai Tak Station of the future SCL. Then, the EFLS will run all the way through the former runway before crossing the Kwun Tong Typhoon Shelter (KTTS) at the tip of the runway via the Kwun Tong Transportation Link (KTTL) and end at the MTR Kwun Tong Station (See the proposed alignment plan at **Annex A**).

6. The proposed alignment serves all major developments in KTD including the Tourism Node, Runway Precinct, Metro Park, Multi-purpose Stadium Complex, developments at North Apron and hospitals at South Apron. It also runs through the two Action Areas, i.e. the Hoi Bun Road Redevelopment in Kowloon Bay (Action Area 1) and Kwun Tong Ferry Pier Waterfront Redevelopment in Kwun Tong (Action Area 2), which are proposed under the Government’s new strategy “Energizing Kowloon East”. Besides, the alignment along the KTTL would provide a more direct linkage between KTD and Kwun Tong, generating synergy on the developments in these two districts.

7. The EFLS can be connected to the MTR Kwun Tong Station either via Hoi Yuen Road or King Yip Street. Though the routing along Hoi Yuen Road can provide a more direct linkage with the MTR Kwun Tong Station, it will result in closure of one traffic lane to accommodate the EFLS. The routing along King Yip Street has less traffic impact, but

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its connection with the MTR Kwun Tong Station will be less direct.

8. The considerations for provision of a station are largely hinged on the site topography and the forecast passenger demand thereat. A simple EFLS alignment proposed by the Study offers a favourable condition for using monorail, which is aesthetically more appealing and has slimmer viaducts/supporting structures. In addition, the monorail system, being a unique landmark in Hong Kong, will enhance tourism appeal.

9. The forecast daily patronage in 2031 is about 0.2 million.

## *Kwun Tong Transportation Link (KTTL)*

10. The KTTL is an integral part of the EFLS. To achieve a more direct connection between Kai Tak and Kwun Tong, the KTTL, which will accommodate an EFLS cum pedestrian (and possibly cycle track), is recommended. As this bridge link will span across the entrance to the KTTS with a suggested vertical clearance of 21 metres (m) above the sea level, it will impose a height restriction on vessels using the KTTS, in particular, high-mast dumb steel lighters will not be able to enter the KTTS. According to the Marine Department's record, about 100 high-mast dumb steel lighters would usually take refuge in the KTTS during the passage of typhoons. Given the KTTS has comparative large shelter area and is located closely to the core port operation area, it is frequently used by the working vessels (including dumb steel lighters, river-trade vessels and etc.) operating in Hong Kong. Any proposed restriction, which will prohibit some types of these vessels from using the KTTS, will have impact on the port operation as well as the cargo operation industry. To avoid causing adverse impact on the port operation and to safeguard the vessels' safety during inclement weather, we need to discuss with the affected industry to further explore effective, safe and feasible alternative measures which can properly address the impacts to the users of the KTTS.

11. If the existing use of the KTTS by any types of vessels is to be maintained, the KTTL has to be elevated to provide a vertical clearance of

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about 40-50m with a long swirl approach ramp, which will encroach upon the Action Area 2, thus depriving its redevelopment opportunity. Such bridge link will become a mammoth structure which is visually intrusive. The sharp turning radius of the approach ramp will also impose technical constraint on the operation of the EFLS. Apart from the above, the extremely windy environment at height will render the bridge not suitable for pedestrians and cyclists.

## *Financial & Economic Returns*

12. The EFLS proposal will incur substantial cost and the financial and economic returns are not satisfactory if it is treated as a transport infrastructure. The capital cost is broadly estimated to be \$12 billion (in 2010 prices). The anticipated revenue is unable to meet its capital cost as well as operating and maintenance expenses. We have broadly estimated that if both the capital cost and subsequent assets replacement expenses<sup>1</sup> are to be borne by the Government with public consensus, the annual revenue could barely cover the running cost of the EFLS. Based on the quantifiable economic benefits, the economic internal rate of return (EIRR<sup>2</sup>) of the EFLS proposal is estimated to be around +1%, which is lower than that of a typical transport infrastructure project, usually with a return of +4% or more.

## *Non-quantifiable Economic Benefits*

13. Apart from being an environmentally friendly transport infrastructure, the EFLS plays a very different and important role in the development of Kowloon East CBD. The Study reveals that the EFLS will not only provide a good intra-district connection among Kwun Tong, Kowloon Bay and Kai Tak, through direct and convenient interchange connections with the nearby MTR Kowloon Bay Station and Kwun Tong Stations as well as the Kai Tak Station of the future SCL, the EFLS will facilitate inter-districts travelling by linking the Kowloon East CBD with

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<sup>1</sup> Assets replacement expenses include both electrical and mechanical and rolling stock replacement costs, which will be incurred every 15-20 years.

<sup>2</sup> EIRR – the net rate of return of the project calculated by subtracting the construction and operation costs during construction and the subsequent 50 years of operation from the economic benefits.

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other business districts in Hong Kong in an effective manner. The EFLS will also generate synergy for adjacent developments and have catalytic effect on the successful transformation of Kowloon East into another attractive CBD.

14. Taking the form of a monorail system, the EFLS will create a unique landmark in Hong Kong with high tourism appeal. It will facelift the image of Kowloon East CBD and enhance the appeal of KTD to tourists and local visitors. At an elevated level, passengers could enjoy the panoramic views of Victoria Harbour, the beautiful landscape and those iconic developments in KTD. In other words, it provides tourists/visitors with a great experience of travelling and sightseeing.

## *Implementation Programme*

15. The implementation of the EFLS is largely hinged on the development pace of some major infrastructure/developments in the KTD area, for example, the SCL and the landscape deck along the former runway. We anticipate that the tentative commissioning date of the EFLS would be around 2023. Should public consensus on the EFLS be established, we will make every endeavor to implement the project as soon as possible.

## **ROAD-BASED GREEN PUBLIC TRANSPORT**

16. Given that the population intake and transport demand in the KTD will start from 2013 upon completion of Cruise Terminal Phase I and public housing development at North Apron, some road-based green public transport services have to be provided. Such services could then be rationalized upon the commissioning of the EFLS to provide reasonable alternatives to the travelers.

## *Choices of Green Transport Vehicles*

17. Nowadays, there are various choices of green transport vehicles in the market worldwide. The latest green transport vehicles

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already in use in Hong Kong include ultra-low-sulphur diesel bus (Euro V Standard) and liquefied petroleum gas (LPG) mini-bus. Though the battery-electric bus, supercapacitor bus and hybrid bus are yet to be proven suitable for use in Hong Kong, the Government has planned to subsidize the franchised bus companies to purchase these types of buses for trial runs in order to ascertain their suitability for use in Hong Kong. The choice of an appropriate type of new green transport vehicle would much depend on the feasibility of the technology and the outcomes of the trial runs. A brief description of the aforesaid green transport vehicles is enclosed at **Annex B**.

## *Pros and Cons*

18. Road-based green transport vehicles will offer an advantage of lower capital cost and running cost and higher flexibility for route planning, but will occupy road space thus adding pressure to the already busy road network in the hinterland. Besides, the road-based green vehicles are inferior to the rail-based EFLS in terms of carrying capacity, tourism appeal, convenient, reliable and safe intra-district connectivity, synergy effects for developments and ability to enhance the visionary image of Kowloon East CBD. Having said that, we are open-minded to invite the public to deliberate their views on whether the road-based green transport modes should be adopted in place of EFLS in the long term.

## **PUBLIC CONSULTATION**

19. Given the vision for “Energizing Kowloon East” and KTD, the non-quantifiable economic benefits of EFLS and public aspiration, we plan to conduct a two-stage public consultation exercise to solicit public views on the implementation of EFLS as well as the use of road-based green transport vehicles. Stage 1 public consultation including consultations with relevant District Councils, and the Task Force on Kai Tak Harbourfront Development of the Harbourfront Commission, the Panel of Development of the Legislative Council, concern/focus groups and other stakeholders will take place between the first and third

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quarters of 2012. The planning and implementation of KTD have benefited from extensive and interactive public engagement, the EFLS consultation should be no exception. We plan to conduct public engagement workshops in mid 2012 to gauge more extensive public views. Besides, the KTD website and the newsletter "Kai Tak On the Move" will also be employed for community outreach to disseminate the study findings and the latest progress updates on EFLS and to collect comments from the public.

20. Views collected at the Stage 1 public consultation will be analyzed and further discussed at the Stage 2 public consultation, which will be conducted in end 2012, with a view to reaching consensus reflecting the majority of public views on the way forward for EFLS.

## **ADVICE SOUGHT**

21. Members are invited to comment on the above Study findings and the way forward for the EFLS proposal.

**Civil Engineering and Development Department  
March 2012**



環保連接系統的建議走線圖  
Proposed EFLS Alignment Plan



**BRIEF INFORMATION ON  
VARIOUS ROAD-BASED GREEN PUBLIC TRANSPORT OPTIONS**

***Euro V Standard Diesel Bus***

1. Euro V Standard diesel bus is the latest model in use in Hong Kong.



***Liquefied Petroleum Gas Mini-bus***

2. Liquefied petroleum Gas (LPG) is used as the vehicle fuel, producing significantly less particulates and carbon dioxide, but fuel consumption is higher than either petrol or diesel.



***Hybrid Bus***

3. Hybrid buses are powered from dual sources comprising a combination of battery-electric power and a conventional internal combustion engine usually diesel-powered. Such vehicles become favourable due to their lower exhaust emissions and better fuel economy.



***Battery-electric Bus***

4. Battery-electric buses are powered by internal battery which must be recharged for continuous movement. The development of lithium batteries in the last decade enables the battery electric vehicles to operate up to 300 km.



***Supercapacitor Bus***

5. A supercapacitor bus is an electric-charged vehicle, equipped with electrochemical capacitor to store the energy, which can be charged at depot or at bus-stops during boarding/alighting. Along the bus route, an overhead catenary system is provided at each of the bus-stops. The electricity receiver mounted on the bus top would be elevated to contact the catenary for a super-fast charging during boarding/alighting for about 30 seconds, which is adequate for travelling 1km.

