洪水橋新發展區與鄰近地區環保運輸服務可行性研究 第一階段研究結果及建議

目的

本文件旨在就「洪水橋新發展區與鄰近地區環保運輸服務可行性研究」的第一階段研究結果及建議,徵詢委員的意見。

背景

- 2. 洪水橋新發展區將成為香港的新一代新市鎮,並與現時的天水圍、 元朗和屯門新市鎮及已規劃的元朗南發展形成本港西部的大型新市鎮發 展羣。基於其在新界西北的策略性位置,洪水橋新發展區可望成為新界 西北的「區域經濟及文娛樞紐」,提供大量多元的經濟活動以促進區域 的經濟發展。
- 3. 提供高效和便捷的環保運輸服務是促進蓬勃的地區經濟及推動洪水 橋新發展區的關鍵要素,以實現這遠大願景。環保運輸服務將為區內提 供快速運輸服務,以便往返洪水橋新發展區內不同地區,亦將會為洪水 橋新發展區與元朗南發展提供跨區運輸服務。
- 4. 《洪水橋及厦村分區計劃大綱圖》中預留了一條集環保運輸服務、 行人道及單車徑於一體的環保運輸走廊。環保運輸走廊將為區內提供快 速及環保的運輸服務,以連接新發展區內的住宅區、就業中心、主要社 區設施及鐵路站。元朗南發展亦已預留環保運輸服務走廊,以改善與洪 水橋新發展區和現有西鐵天水圍站的運輸效率及連接性。

第一階段研究結果

5. 可行性研究為洪水橋新發展區構思一套規劃周全的環保運輸服務網絡,以及探討連接至元朗南發展的可行性。我們已完成第一階段可行性研究的工作。我們在第一階段研究,根據載客容量、效率和技術可行性這三個基本準則,評估了七種環保公共運輸模式(即吊車、延伸現有輕鐵、單軌鐵路、個人快速運輸系統、自動捷運系統、環保巴士系統及現

代化電車)。當中,自動捷運系統、環保巴士系統及現代化電車均可滿 足該三個基本評估準則的要求。我們就初步預計行車時間、車站可達性 、視覺影響、路線靈活性及初步預算建造成本,對該三種被選出的模式 進行了比較。

可能的天水圍北延線方案

6. 為方便天水圍北的居民前往洪水橋新發展區的各就業區、社區、消閒和零售設施,以及接駁至西鐵站,我們將探討伸延環保運輸服務至天水圍北的可行性。

未來路向

7. 我們將綜合第一階段公眾諮詢收到的意見,建議適合洪水橋新發展 區與鄰近地區的環保公共運輸模式,並進行評估,以定出建議的環保運 輸服務方案,我們亦會研究是否需要就營運環保運輸服務進行相關立法 工作。我們計劃於完成第二階段研究後,就結果及建議開展第二階段公 眾諮詢。

8. 我們希望徵詢委員就第一階段研究結果及建議的意見。

附件 附件一 第一階段公眾諮詢摘要

土木工程拓展署 2019年9月



共水橋新發展區<mark>與鄰近地區環保運輸服務可行性研</mark>タ

Feasibility Study on Environmentally Friendly Transport Services in Hung Shui Kiu New Development Area and Adjacent Areas









Stage 1 Public Consultation Digest

你的意見非常重要!

Your Views are Important!

我們已完成第一階段可行性研究的工作,並已選出了幾種較適合作為洪水橋新發展區與鄰近地區環保運輸服務的環保公共運輸模式。

你對這些選出的環保公共運輸模式有什麼意見?

歡迎你於2019年11月30日或之前[,]就第一階段研究結果及建議表達意見[,]以便我們能夠開展下一階段的研究工作。

The first stage of the Feasibility Study has been completed. Suitable green public transport modes as Environmentally Friendly Transport Services (EFTS) for Hung Shui Kiu (HSK) New Development Area (NDA) and adjacent areas are shortlisted.

What are your views on these shortlisted green public transport modes?

Please express your views on the findings and recommendations of the first stage study by 30 November 2019 for us to proceed with the next stage of the Study.

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Function of EFTS in HSK NDA and Adjacent Areas

3 環保公共運輸模式的評估
Evaluation of Green Public Transport Modes

一 研究背景及目標 _{環保運輸服務} Study Background and Objectives

洪水橋新發展區 -

新界西北的區域經濟及文娛樞紐
Hung Shui Kiu New Development Area –
Regional Economic and Civic Hub for the North West
New Territories

洪水橋新發展區將成為香港的新一代新市鎮,並與現時的天水圍、元朗和屯 門新市鎮及已規劃的元朗南發展形成本港西部的大型新市鎮發展羣。基於其在 新界西北的策略性位置,洪水橋新發展區可望成為新界西北的「區域經濟及文娛 樞紐」,提供大量多元的經濟活動以促進區域的經濟發展。

HSK NDA will be a next generation new town of Hong Kong and will form a major new town development cluster in the western part of the territory, together with the existing Tin Shui Wai, Yuen Long and Tuen Mun New Towns, and the planned Yuen Long South (YLS) Development. Given the strategic location of HSK NDA in the North West New Territories (NWNT), HSK NDA is envisioned to serve as a "Regional Economic and Civic Hub" for NWNT, accommodating many diverse economic activities creating impetus to the economic development of the region.

提供高效和便捷的環保運輸服務是促進蓬勃的地區經濟及推動洪水橋新發展區發展的關鍵要素,以實現這遠大願景。環保運輸服務將為區內提供快速運輸服務,以便往返洪水橋新發展區內不同地區,亦將會為洪水橋新發展區與元朗南發展之間提供跨區運輸服務。

A highly efficient and convenient EFTS is essential to promote a thriving local economy and foster the development of HSK NDA so as to turn this vision into reality. EFTS will provide rapid intra-district transport service in HSK NDA to support the internal movement between the development clusters. It will also provide inter-district transport service between HSK NDA and YLS Development.



研究背景及目標 Study Background and Objectives

研究的目標 **Objectives of the Study**

第一階段研究

為洪水橋新發展區構思一套規劃周全的環保運輸服務網路,

以及探討連接至元朗南發展的可能性

(已完成) Stage 1 Study

(Completed)

Formulate a well-planned EFTS Network in HSK NDA, and explore

possible connection to YLS Development

評估及選出較適合作為環保運輸服務的環保公共運輸模式

Evaluate and shortlist suitable green public transport modes to serve as EFTS

綜合第一階段公眾諮詢收到的意見,建議適合洪水橋新發展區與鄰近地區的

環保公共運輸模式

Recommend a suitable green public transport mode for HSK NDA and adjacent areas with consideration of comments received in Stage 1 Public Consultation

下一階段研究 **Next Stage** Study

進行評估,以定出建議的環保運輸服務方案,亦會研究是否需要就營運環保運輸服務 進行相關立法工作

Carry out assessment to determine the recommended EFTS scheme, and review whether relevant legislative work is required for the operation of EFTS

開展第二階段公眾諮詢

Conduct Stage 2 Public Consultation

研究流程 **Study Workflow** 第一階段研究(已完成) **Stage 1 Study (Completed)**

下一階段研究

Next Stage Study



第一階段公眾諮詢 Stage 1

Public Consultation



第二階段公眾諮詢 Stage 2 **Public Consultation**

環保運輸服務於洪水橋新發展區與鄰近地區的功能 Function of EFTS in HSK NDA and Adjacent Areas

洪水橋新發展區內的環保運輸走廊 **Green Transit Corridor in HSK NDA**

《洪水橋及厦村分區計劃大綱圖》中預留了一條集環保運輸服務、行人道及 單車徑於一體的環保運輸走廊。環保運輸走廊將為區內提供快速及環保的運 輸服務,以連接新發展區內的住宅區、就業中心、主要社區設施及鐵路站

A Green Transit Corridor (GTC), encompassing a highly efficient EFTS, pedestrian walkways and cycle tracks, has been reserved in the Hung Shui Kiu and Ha Tsuen Outline Zoning Plan to provide rapid transport service and green mobility, for connecting residential areas, employment nodes, key community facilities and railway stations.

元朗南發展內的環保運輸服務預留土地 Land Reserved for EFTS in YLS Development

元朗南發展已預留環保運輸服務走廊,以改善與洪水橋新發展區和現有西鐵 天水圍站的運輸效率及連接性。

An EFTS corridor has been reserved in YLS Development to allow for enhancement of transport efficiency and connectivity with HSK NDA and West Rail Tin Shui Wai Station.

- 有關環保運輸服務在繁忙路口會盡量與行車道路分隔,以減少在交界路口出現衝突的情況。
- 2. 考慮洪水橋新發展區與鄰近地區的交通需要,環保運輸服務可能分階段落實

Remarks:

- 1. The proposed EFTS is designed to be separated from the vehicular road system at busy road junctions as far as possible to minimise junction conflicts.
- 2. EFTS may be implemented in phases to cope with the traffic demand of HSK NDA and its adjacent



Siu Hong Station





West Rail Tin Shui Wai Station Light Rail Nai Wai Stop

輕鐵泥圍站

環保運輸服務可將洪水橋新發展區及元朗南發展連接至 現有西鐵天水圍站、擬建洪水橋站及現有輕鐵站。

EFTS will link HSK NDA and YLS Development to the existing West Rail Tin Shui Wai Station, proposed HSK Station and existing Light Rail stops.

環保運輸服務的策略性效益 **Strategic Benefits of EFTS**



支持十地發展用涂 Support land use development Promote regional economic



促進地區經濟發展 development

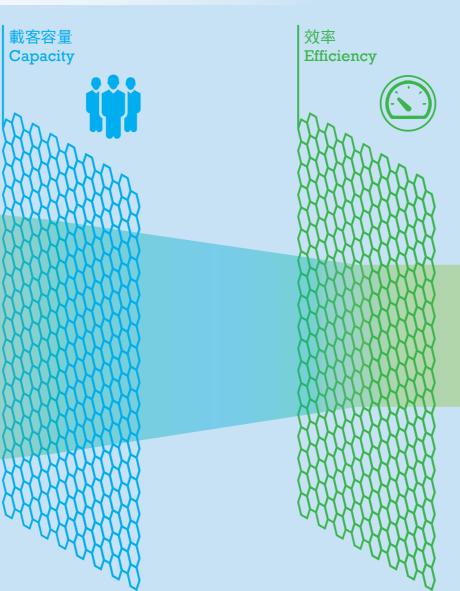


構建更綠色和怡人的環境 Cultivate a greener and more pleasant environment



促進就業 Induce employment







技術可行性

3 EFTS 環保運輸服務

環保公共運輸模式評估 Evaluation of Green Public Transport Modes

吊車

Cable Car

吊車以架空纜索垂吊於半空中,運行速度慢,載客容量低,一般用作旅遊設施,而 非日常公共運輸用途。

Cable Car is pulled by overhead cables, which operates at a slow speed and has low carrying capacity. It is usually used for tourism transportation instead of serving as a daily public transport system.



<mark>載客容量不足</mark> Insufficient Capacity



速度太慢 Speed Too Slow



延伸現有輕鐵

Extension of Existing Light Rail

現有輕鐵由人手操作,在專用與共用並存的走廊上運行。在部分交界路口,由於輕 鐵需與其他道路交通共用路面,服務水平亦因此受限。

The existing Light Rail is manually operated by a driver on sections of dedicated and shared corridors. Some of its sections share the road spaces with other road traffic at junctions and the service performance is therefore limited.



載客容量不足以滿足延伸至新發展區 Insufficient Capacity to Extend to the NDA



根據載客容量、效率和技術可行性的基本準則,吊車、 延伸現有輕鐵、單軌鐵路和個人快速運輸系統都並非作 為洪水橋新發展區及元朗南發展環保運輸服務的合適選 擇。 Based on the basic criteria, including capacity, efficiency and technically feasibility: Cable Car, Extension of Existing Light Rail, Monorail and PRT are considered not suitable modes as EFTS for HSK NDA and YLS Development.

單軌鐵路 Monorail

單軌鐵路透過全自動操作,於高架專屬軌道上運行,不受行人和道路交通影響。雖然單軌鐵路可以提供足夠的載客容量和高效的服務,但單軌系統的轉彎半徑較大, 未能符合洪水橋新發展區及元朗南發展內已規劃的環保運輸服務走線的要求。

Monorail is a fully automated system and operates on dedicated elevated rail-track without being affected by pedestrian and road traffic. While monorail can provide sufficient capacity and efficient service, the monorail system requires a relatively large turning radius which does not fit in the planned alignment of EFTS in HSK NDA and YLS Development.



〇〇〇〇 不符合技術要求

Not Meeting Technical Requirement



個人快速運輸系統

Personal Rapid Transit (PRT)

個人快速運輸系統利用全自動操作的小型車廂,為個人或小羣體提供點對點的專線 出行服務。因此,個人快速運輸系統僅能滿足較低的交通需求。

PRT is a system of small automated electric vehicles offering on demand travel from point to point for individuals and small groups, which can only meet relatively low transportation demand.



取各谷重个足 Insufficient Capacity



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自動捷運系統

Automated People Mover (APM)

自動捷運系統採用全自動操作,於高架專屬軌道上運行,與行人及其他車輛完全分隔,不受道路交通的影響。

APM is a fully automated system and operates on fully dedicated elevated rail-track which is fully segregated from pedestrian and other vehicles without being affected by road traffic.



選出作進一步比較 Shortlisted for Further Comparison



環保巴士系統

Green Bus System (GBS)

環保巴士系統在專屬巴士線上運行。為提升上落客效率, 車站可配備有收費閘機和閘門。在洪水橋新發展區及元朗南發展, 環保巴士系統將採用環保能源巴士(如電動巴士) 提供服務。有需要時, 環保巴士系統亦可在一般公共道路上運行以擴闊服務範圍。

GBS operates along a dedicated bus lane. To enhance the boarding and alighting efficiency, station can be provided with ticket gates and screen doors. The GBS in HSK NDA and YLS Development would be served by green energy bus (e.g. electric bus). When necessary, GBS can also operate on general public roads to serve a wider area.



選出作進一步比較 Shortlisted for Further Comparison



現代化電車

Modern Tram

現代化電車由人手操作,可在專屬軌道上行駛。行人可於地面過路處橫過專屬軌道。現代化電車採用低地台車廂及車站設計,方便乘客上落。

Modern Tram is manually operated by a driver and can run on dedicated rail-track. It generally allows pedestrians to cross the dedicated rail-track at at-grade crossing. Its low-floor tram car and station design offer convenient boarding and alighting.



選出作進一步比較 Shortlisted for Further Comparison



自動捷運系統、環保巴士系統和現代化電車在載客容量、效率及技術可行性方面可基本滿足洪水橋新發展區及元朗南發展環保運輸服務的要求。這些模式已被選出,作進一步比較。

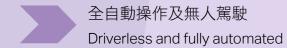
The performance of APM, GBS and Modern Tram in terms of capacity, efficiency and technical feasibility in general could meet the requirements of EFTS for HSK NDA and YLS Development. These modes are therefore shortlisted for further comparison.

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自動捷運系統 Automated People Mover (APM)

設計考慮 Design Considerations



在高架專屬軌道上行駛,與行人及車輛完全分隔,可減少行車時間 Operating on dedicated elevated rail-track with full segregation from pedestrians and vehicles, with reduced journey time

建造成本較高 Higher capital cost

較多高架橋及車站造成較大視覺影響

Higher visual impact due to more elevated viaducts and station structures

較多高架車站,乘客上落較為不便 More elevated stations, less convenient for accessing

須設信號、機電及供電系統的大型機房
Requiring large plant rooms for signalling, mechanical and power supply systems





現有的自動捷運系統 Existing APM



全自動操作及無人駕駛 Driverless and Fully Automated



與行人及車輛完全分隔的高架路軌 Elevated Rail-track with Full Segregation from Pedestrians and Vehicles



設有大堂及月台的高架車站 Elevated Station with Concourse and Platform



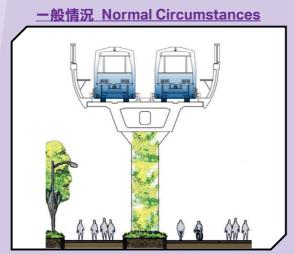
信號、機電及供電系統 Signalling, Mechanical and Power Supply Systems

3 星星

環保公共運輸模式評估 Evaluation of Green Public Transport Modes

自動捷運系統概念走線 APM Conceptual Alignment





高架段 Elevated Section



洪水橋新發展區區域廣場處的車站 Station at Regional Plaza in HSK NDA



洪水橋新發展區河畔長廊處的車站 Station at Riverside Promenade in HSK NDA



元朗南發展內的車站 Station in YLS Development



環保巴士系統 Green Bus System (GBS)

設計考慮 Design Considerations

由環保能源巴士 (如電動巴士) 提供服務 Served by green energy bus (e.g. electric bus)

可行駛於專屬道路或一般公共道路,行車時間會因為需要在一般道路 與其他車輛共用路面而增加

Can run on dedicated roads or general public roads. Journey time will be increased due to shared use of road space with other vehicles.

上落車時間較長

Longer time for boarding and alighting

車站可設閘門和收費閘機,以縮短上落車時間

Can provide screen doors and ticket gates at station, allowing shorter boarding and alighting time

可提供靈活的巴士路線服務

May provide flexible bus route services

允許行人於地面過路處橫過專屬道路。於巴士班次頻密的路段,行人 或需使用行人天橋橫過馬路

Allowing pedestrians to cross the dedicated road at at-grade crossings. At section of high bus frequency, pedestrians may need to cross the road by using footbridge





現有的電動巴士 Existing electric bus



環保巴士系統專屬道路
GBS Dedicated Road
車站設巴士停車處及於巴士班次頻
密的車站設行人天橋
Station with Bus Bays and
Footbridges at Station with High
Bus Frequency



電動巴士及充電設施 Electric Buses with Charging Facilities



車站可設有閘門 Can have Sc<u>reen Doors at Station</u>



車站可設有收費閘機 Can have Ticket Gates at Station



環保巴士系統概念走線 **GBS Conceptual Alignment**



一般情況 Normal Circumstances

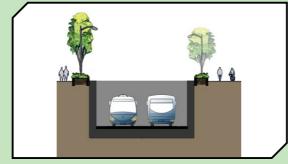


地面段 At-grade Section

其他情況 Other Circumstances



高架段 Elevated Section



低於地面段 Depressed Section



洪水橋新發展區區域廣場處的車站 **Station at Regional Plaza in HSK NDA**



洪水橋新發展區河畔長廊處的車站 Station at Riverside Promenade in **HSK NDA**



元朗南發展內的車站 **Station in YLS Development**



設計考慮 Design Considerations

現代化電車設計
Modernised tram design

可採用無架空電纜設計及在專屬軌道進行綠化

Can be catenary free and have greening on the dedicated rail-track

低地台設計,方便乘客上落

Convenient for boarding and alighting with low-floor station

車站可設閘門和收費閘機,以縮短上落車時間

Can provide screen doors and ticket gates at stations, allowing shorter boarding and alighting time

允許行人於地面過路處橫過專屬軌道

Allowing pedestrians to cross the dedicated rail-track at at-grade crossings

若在路口與其他車輛共用路面,將增加行車時間

Shared use with other vehicles at junctions will increase journey time



現有的現代化電車 Existing Modern Tram



發展中的無軌電車 Trackless Tram under development



現代化電車設計 Modernised Tram Design



綠化路軌及無架空電纜 Green Rail-track and Catenary free



低地台車站及車廂設計 Low-floor Station and Tram Car Design



地面過路處 At-grade Crossing

3 日 環保運輸服務

環保公共運輸模式評估 Evaluation of Green Public Transport Modes

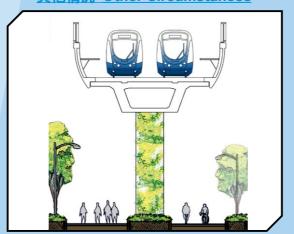
現代化電車概念走線 Modern Tram Conceptual Alignment



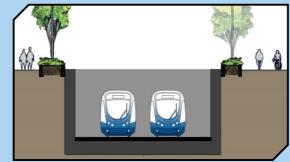
一般情況 Normal Circumstances



地面段 At-grade Section 其他情況 Other Circumstances



高架段 Elevated Section



低於地面段 Depressed Section



洪水橋新發展區區域廣場處的車站 Station at Regional Plaza in HSK NDA



洪水橋新發展區河畔長廊處的車站 Station at Riverside Promenade in HSK NDA



元朗南發展內的車站 Station in YLS Development

選出的環保公共運輸模式 Shortlisted Green Public Transport Modes		初步預計行車時間 (如從泥圍站至流浮山站) Preliminary Estimate of Journey Time (On-vehicle) (Such as from Nai Wai Station to Lau Fau Shan Station)	車站可達性 Station Accessibility	視覺影響 Visual Impact	路線靈活性 Routing Flexibility	初步預算建造成本 (2018年9月價格計算) Preliminary Capital Cost Estimate (Sep 2018 prices)
	自動捷運系統	13分鐘 <mark>(1)</mark>	較低	較高	較低	約400-450億元
	Automated People Mover (APM)	13 minutes	Lower	Higher	Lower	About \$40-45 billion
	環保巴士系統	20分鐘	中等 <mark>(3)</mark>	中等 (3)	較高	約200-250億元
	Green Bus System (GBS)	20 minutes	Moderate	Moderate	Higher	About \$20-25 billion
	現代化電車	17分鐘	較高	較低	較低	約250-300億元
	Modern Tram	17 minutes	Higher	Lower	Lower	About \$25-30 billion

- (1) 由地面行人道來回高架車站月台的初步預計步行時間約為3至4分鐘 The preliminary estimate of walking time to and fro at-grade walkway and platform of elevated station is about 3 to 4 minutes
- (2) 大部分為建造高架橋及高架車站成本 Mainly the cost of viaducts and elevated stations construction
- (3) 於巴士班次頻密的路段,行人或需使用行人天橋橫過馬路 At section of high bus frequency, pedestrians may need to cross the road by using footbridge

付註: 環保運輸服務的設計,包括上述初步預計行車時間及初步預算建造成本,將於下一階段研究再作檢討。

Remarks: The design of EFTS, including the above preliminary estimate of journey time and preliminary capital cost estimate, will be subject to review in next stage of the Study.

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可能的天水圍北延線方案 Possible Extension Option to Tin Shui Wai North

為方便天水圍北的居民前往洪水橋新發展區的各就業區、社區、消閒和零售設施,以及接駁至西鐵站,我們將探討伸延環保運輸服務至天水圍北的可行性。
In order to facilitate Tin Shui Wai North residents travelling to/from various employment zones, community, leisure and retail facilities in HSK NDA, as well as connection with West Rail stations, we will explore the feasibility of extending EFTS to Tin Shui Wai North.

