

Legislative Council Panel on Development

**108CD – West Kowloon drainage improvement
– Lai Chi Kok Transfer Scheme**

PURPOSE

This paper briefs Members on the Administration's proposal to part upgrade project **108CD** entitled "West Kowloon drainage improvement - Lai Chi Kok Transfer Scheme", to Category A at an estimated cost of about \$1,418 million in money-of-the-day (MOD) prices for the implementation of a drainage tunnel project in West Kowloon.

PROJECT SCOPE AND NATURE

2. The scope of the part of **108CD** which we propose to upgrade to Category A comprises construction of -

- (a) a drainage tunnel of about 3.7 kilometers (km) in length and 4.9 metres (m) in diameter, from Chak On Estate to Victoria Harbour near Stonecutters Island;
- (b) 6 intakes and about 120 m long connection adits;
- (c) a stilling basin and an outfall structure;
- (d) slope stabilization works; and
- (e) provision of ancillary works.

We plan to commence construction in early 2008 for completion in early 2012. A layout plan showing the location of the proposed works is at **Enclosure 1**.

JUSTIFICATION

3. Most of the existing drainage systems in the developed districts of Sham Shui Po, Cheung Sha Wan and Lai Chi Kok were built more than 40 years ago. Owing to rapid developments and changes in land use over the years, some natural ground and slopes have been paved over and become impermeable. Rainwater can no longer dissipate naturally through ground infiltration as in the past in such areas. This has led to significant increase in surface runoff. During heavy rainstorms, large quantity of surface runoff coming from the hinterland and the overflow from Kowloon group of reservoirs¹ would flow into the urban areas downstream within a short period of time and overload the existing drainage systems. As a result, flooding often occurs during heavy rainstorms resulting in traffic disruption, property damages and safety risk to public.

4. To alleviate the problem, we have formulated the Lai Chi Kok Transfer Scheme (LCKTS) that forms an integral part of the overall flood control strategy for West Kowloon. The proposed drainage tunnel, namely the Lai Chi Kok Transfer Tunnel (LCKTT), of the LCKTS will intercept surface runoff from the West Kowloon hinterland and the potential overflow from the Kowloon group of reservoirs at the upstream for discharge directly to Victoria Harbour near Stonecutters Island. By diverting the upland flow to the proposed drainage tunnel, the extent of drainage upgrading works required in the congested lower catchment urban areas will be significantly reduced. Upon completion of the Scheme, the standard of flood protection in Sham Shui Po, Cheung Sha Wan and Lai Chi Kok will be improved generally to withstand rainstorms with return period² of one in 50 years.

FINANCIAL IMPLICATIONS

5. We estimate that the costs of the proposed works to be \$1,418 million in MOD prices, made up as follows -

¹ The Kowloon group of reservoirs comprises Kowloon Reservoir, Shek Lei Pui Reservoir, Kowloon Reception Reservoir and Kowloon Byewash Reservoir.

² "Return period" means the average number of years during which a certain severity of flooding will occur once, statistically. A longer return period means a rarer chance of occurrence of a more severe flooding.

(\$ million)

(a) Construction works	1,187	
(b) Consultants' fees for contract administration and site supervision	114	
(c) Environmental mitigation measures	14	
(d) Contingencies	103	
Total :	<u>1,418</u>	(in MOD prices)

6. Design-and-build contract will be adopted for the LCKTT with a view to achieving a cost-effective design by utilising contractors' specialist knowledge in tunneling. By allowing part of the detailed design and construction to be carried out in parallel, the project programme could also be shortened. The contract will provide for price adjustments because the contract period will exceed 21 months.

PUBLIC CONSULTATION

7. We consulted the Sham Shui Po District Council (SSP DC) on 12 May 2005 and on 5 June 2007. The SSP DC welcomed the proposed drainage tunnel and supported the implementation of the project. In response to SSP DC's concern on the greening, safety and hygienic aspects of the original open-channel design at the stilling basin, we also attended SSP DC Environment and Food Committee meeting on 5 July 2007 in which members supported the revised decking and landscaping design.

8. We gazetted the proposed works under the Foreshore and Sea-bed (Reclamations) Ordinance on 9 June 2006 and received no objection. The works were authorized by the Chief Executive on 6 September 2006.

9. We briefed the Legislative Council Panel on Planning, Lands and Works at its meetings on 5 March 2001 and 4 January 2002 on the proposed drainage tunnel. We also circulated information papers to the Panel on 27 April 2004 and 13 July 2005 updating Members on the progress of the scheme.

ENVIRONMENTAL IMPLICATIONS

10. The LCKTT is not a designated project under the Environmental Impact Assessment (EIA) Ordinance. We completed an Environmental Review Study in September 2005. The study concluded that with the implementation of the recommended mitigation measures, the proposed works would not give rise to any long term adverse environmental impact and all construction impacts can be mitigated.

11. For short-term impacts during construction, we will control noise, dust and site run-off within standards and guidelines through implementation of mitigation measures, such as the use of temporary noise barriers and silenced construction plants to reduce noise generation, water-spraying to reduce emission of fugitive dust, and strict control on diversion of stream flows in the works contracts. We will implement Environmental Monitoring and Auditing programme to ensure a satisfactory environmental performance of the construction and operation of the proposed works.

12. We have considered ways in the planning and design stages to reduce the generation of construction waste where possible. We have considered optimising the tunnel diameter, tunnel alignment, the number and locations of intakes, as well as maximising the use of construction waste by reusing the excavated soil material for landscaping and the excavated rock for architectural finishes in the planning and design stages to reduce the generation of construction waste. In addition, we will require the contractor to reuse inert construction waste including excavated soil for backfilling on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities³. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further

³ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

minimise the generation of construction waste.

13. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

14. We estimate that the project will generate in total about 338,000 tonnes of construction waste. Of these, we will reuse about 162,000 tonnes (48%) of inert construction waste on site and deliver about 155,500 tonnes (46%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 20,500 tonnes (6%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$6.8 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁴ at landfills).

LAND ACQUISITION

15. The alignment of the proposed drainage tunnel has been carefully designed to minimize encroachment upon private land as far as possible. The tunnel will mainly run along public road and government land. The LCKTT will cross the existing railway lines of West Rail, MTR Tsuen Wan Line and MTR Airport Railway at a level below them. The railway authorities have expressed no objection to the proposed LCKTT alignment. Due to site constraint, a section of the tunnel will encroach onto an underground stratum of land within a private lot adjacent to Ching Cheung Road. The owner has agreed in principle to grant an easement to the Government at a nominal cost for the construction and maintenance of the proposed drainage tunnel within the private lot subject to agreement of terms and conditions which are being

⁴ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills, (which is likely to be more expensive) when the existing ones are filled.

finalized. The grant of an easement by the lot owner would obviate the need for acquiring the land by resumption.

TRAFFIC IMPACTS

16. We have carried out traffic impact assessment (TIA) for the proposed works. The TIA indicated that the construction and operation of the proposed LCKTT would not cause any significant traffic impact to the surrounding road network. We have drawn up preliminary temporary traffic management schemes for the proposed works and consulted the relevant authorities including Transport Department (TD) and Hong Kong Police Force (HKPF) who considered the preliminary traffic schemes acceptable.

17. We will establish a Traffic Management Liaison Group (TMLG) under the works contracts to discuss, scrutinise and agree on the proposed temporary traffic arrangements. We will invite representatives from TD, HKPF, Highways Department, District Offices, various public transport operators and utility undertakings to attend the TMLG meetings, and every temporary traffic arrangement has to be agreed by the TMLG before implementation. The TMLG will also take into account all relevant factors such as site restrictions, existing and future traffic conditions, pedestrian safety, access to building/shop fronts and provision of emergency vehicular access in considering the temporary traffic arrangements.

BACKGROUND

18. In September 2000, we included **108CD** “West Kowloon drainage improvement – Lai Chi Kok Transfer Scheme” in Category B for alleviating the flooding problem in the West Kowloon area.

19. In March 2002, we upgraded part of **108CD** to Category A as **123CD** “Lai Chi Kok Transfer Scheme – preliminary design and investigations” at an estimated cost of \$33.3 million in MOD prices for engaging consultants to carry out the preliminary design and investigations for the project.

20. In December 2005, we engaged consultants to carry out reference design, prepare contract documentation and assist in the tendering process

under the design-and-build procurement approach for the LCKTT under **108CD**, at an estimated cost of \$12.4 million (in MOD prices). We have charged the amount to block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”. The consultancy commenced in March 2006 for completion in March 2008.

21. In April 2007, we upgraded part of **108CD** to Category A as **150CD** “Inter-Reservoirs Transfer Scheme - environmental impact assessment, investigation and design” at an estimated cost of \$26.0 million in MOD prices for engaging consultants to carry out the environmental impact assessment study, investigation and detailed design for the Inter-Reservoirs Transfer Scheme.

22. Of the 276 trees within the project boundary, our latest estimate is that 173 trees will be preserved. The proposed works will involve the removal of 103 common trees including 99 trees to be felled and 4 trees to be replanted within the project site. All trees to be removed are not important trees⁵. We will incorporate planting proposal as part of the project, including the planting of about 327 trees and 52,000 shrubs.

23. We estimate that the proposed works will create about 170 jobs (125 for laborers and another 45 for professional/technical staff) providing a total employment of 7,150 man-months.

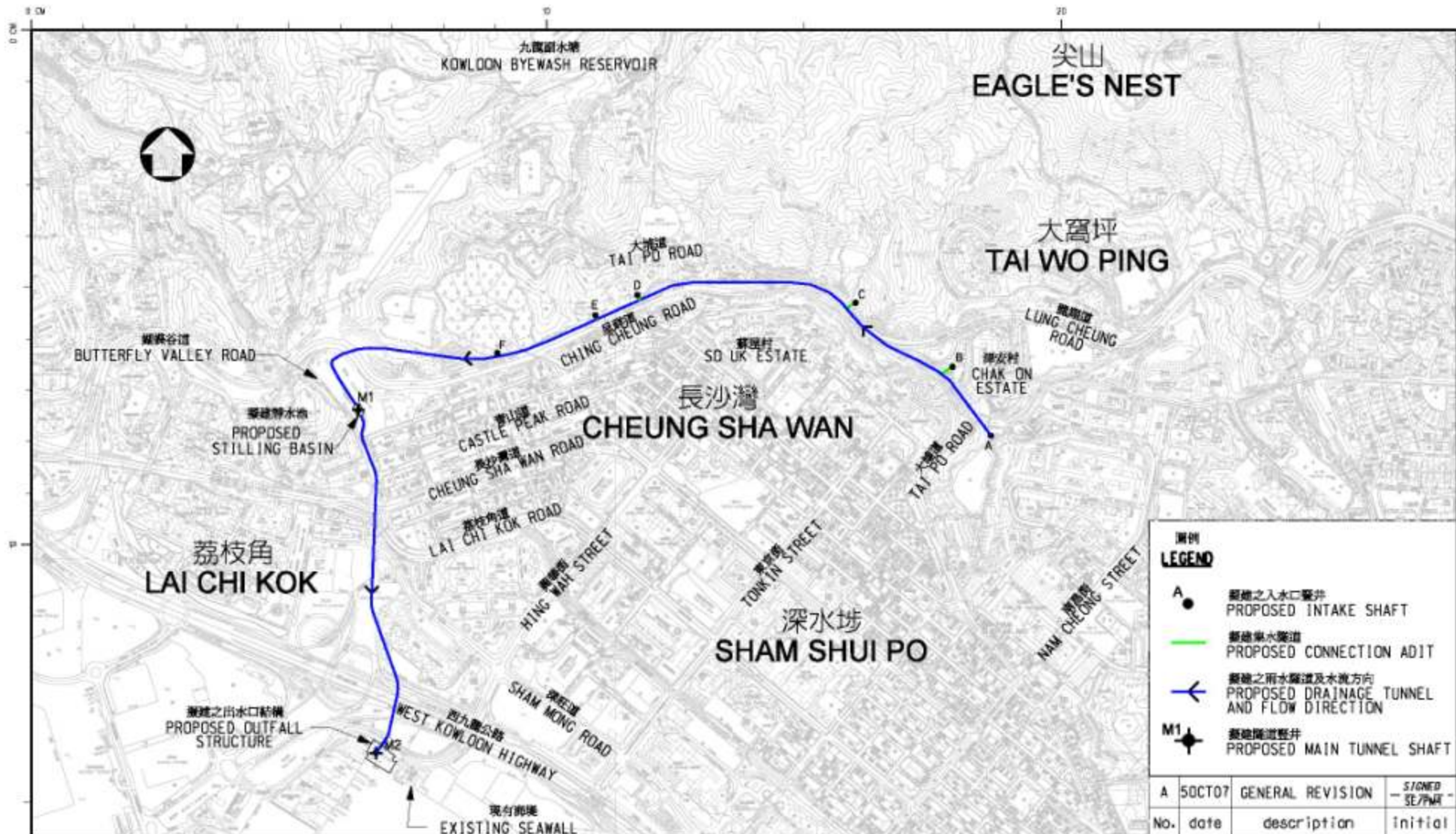
⁵ “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25m.

WAY FORWARD

24. Members are invited to support our proposal for part-upgrading of **108CD** for consideration by the Public Works Subcommittee in December 2007 and for funding approval by the Finance Committee in January 2008.

Development Bureau
October 2007



圖例
LEGEND

- A ● 擬建之入水口窰井
PROPOSED INTAKE SHAFT
- 擬建車水渠道
PROPOSED CONNECTION ADIT
- ← 擬建之雨水隧道及水流方向
PROPOSED DRAINAGE TUNNEL AND FLOW DIRECTION
- M1 ◆ 擬建隧道窰井
PROPOSED MAIN TUNNEL SHAFT

A	5OCT07	GENERAL REVISION	SIGNED SE/PWR
No.	date	description	initial

圖則名稱 drawing title
工務計劃項目第4108CD號
西九龍雨水改善工程 - 荔枝角雨水轉運計劃
PWP ITEM No. 4108CD
WEST KOWLOON DRAINAGE IMPROVEMENT
- LAI CHI KOK TRANSFER SCHEME

繪畫 drawn	SIGNED C.K.LAM	日期 date	28MAY07
核對 checked	SIGNED C.W.CHEUNG	日期 date	04JUN07
批核 approved	SIGNED W.C.LAM	日期 date	04JUN07
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION		

圖則編號 drawing no. 比例 scale
DPM/108CD0/0002A N.T.S.

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ENCLOSURE 1
附件一