Legislative Council Panel on Development

PWP Item No. 765CL –

Development of Anderson Road Quarry Site -
Road Improvement and Infrastructure Works

Supplementary Information

Purpose

At the Legislative Council (LegCo) Panel on Development meeting on 25 April 2017, Members requested the Government to provide supplementary information on the following issues relating to the road improvement and infrastructure works of the Anderson Road Quarry (ARQ) site –

(a) *detailed breakdown of the costs of the proposed road construction works ($955.3 million) and construction of the proposed vehicular flyover ($106.1 million);*

(b) *the role of and the work done by the Project Cost Management Office in the Administration's preparation of the cost estimates of the proposed works in (a);*

(c) *the findings of the traffic impact assessment report for the proposed development at the ARQ site relating to the impact of additional traffic flows on local major roads and junctions arising from the proposed development of the ARQ site; and*

(d) *how the proposed road improvement works could effectively address the aggregate impact of the proposed development at the ARQ site and the public rental housing development at Anderson Road on the traffic in Kowloon East before the completion of Route 6, which comprised the Tseung Kwan O — Lam Tin Tunnel, Trunk Road T2 and Central Kowloon Route.*

This note provides the information requested by the LegCo Panel on Development.

(i) Costs of Road Improvement Works

2. The cost breakdown of the proposed road improvement works for the ARQ site development is at **Table 1**. The three proposed road improvement works are to be carried out at Clear Water Bay Road, New Clear Water Bay Road, Sau Mau Ping Road and Lin Tak Road, which are at uphill area and close to steep slopes. Hence, slope cutting and retaining wall construction are required along the roads for widening and the associated improvement works. The cost breakdown has included estimates for these slope-related works.

(ii) Cost Control

3. As with the established practice, we have followed, in collaboration with the Project Cost Management Office (PCMO), the cost management initiatives of the Government for implementing the project. Without compromising the functionality, quality and safety of the works, we have implemented various cost reduction measures with the adoption of the design principles of "fitness for purpose" and "no frills". For instance, under the guiding principle of "design for buildability" for reducing costs and safeguarding site safety, we have assessed the road alignment, structural design, construction method, minimisation of earthworks, simplified landscaping design, construction materials, etc. One of the examples is that we have explored options of the structural design and bridge erection method for the flyover construction over the busy Tseung Kwan O (TKO) Road. Different schemes (e.g. cast in-situ or precast schemes) taking account of factors such as construction cost, impact to daily traffic, site safety and road user safety have been duly compared for achieving a balanced scheme. Moreover, we have optimised the design of greening works on the proposed footbridges and flyover in order to reduce the width of the bridge deck and also the size of the associated foundation while the greening works are optimally maintained.

4. Furthermore, procurement and tendering of projects will be refined with the aim of lowering the risk premium included in the tender price and thus reducing the overall project cost. We will adopt the target cost contract under New Engineering Contract form. We will also reduce the non-essential contract and design requirements in order to reduce construction costs and enhance the cost-effectiveness of the project as far as practicable.

(iii) Traffic Impact Assessment

5. According to the findings of the Traffic Impact Assessment (TIA) report, the ARQ site development will generate about 840 passenger car units/hour of

traffic flow during the morning peak hours. As the proposed residential areas will be mainly located in the southeast of the ARQ site, it is anticipated that about 70% of the traffic will use the eastern access road connecting Po Lam Road, Sau Mau Ping Road and TKO Road. The remaining 30% will use the access road to On Sau Road connecting Clear Water Bay Road and New Clear Water Bay Road. The potential impact of additional traffic flows to the local major roads and junctions arising from the proposed ARQ site development is set out at **Table 2**.

6. As mentioned in the supplementary note issued to the LegCo Panel on Development in April 2017 (see LegCo Paper No CB(1)847/16-17(01)), the TIA findings also indicated that the east-west traffic condition of Kowloon urban area will be effectively improved upon completion of Route 6, which comprises the Tseung Kwan O – Lam Tin Tunnel (TKO-LTT), Trunk Road T2 and Central Kowloon Route (CKR). TKO-LTT will be an alternative route of the existing TKO Tunnel and will divert its traffic. It is anticipated that the traffic using TKO Tunnel to Kowloon will be significantly reduced, and the capacity of TKO Road could be spared for accommodating the traffic demand arising from the ARQ site development, with the planned population intake starting from 2023/24. Coupled with the aforementioned road improvement works, it is envisaged that, including the traffic generated by ARQ site development, the volume/capacity (V/C) ratio of TKO Road in the morning peak hours in 2026 will be 0.98, which is acceptable and lower than the current V/C ratio of 1.13.

7. The TKO-LTT is expected for completion in mid-2021 the earliest, which could match with the population intake of the ARQ site development. The TKO-LTT consists of a branch tunnel and sliproads connecting the toll plaza of Eastern Harbour Crossing (EHC). The traffic from TKO to Hong Kong Island via EHC could then opt to not using TKO Road and Lei Yue Mun Road. Hence, it can spare the road capacity of TKO Road for local traffic. The Government will also take forward the construction of CKR, and the Highways Department is striving to commence the construction works in the latter half of 2017 for completion in 2025. Moreover, the detailed design of Trunk Road T2 is in progress, and the Civil Engineering and Development Department is reviewing its implementation programme so as to match with the commissioning of CKR. The local traffic will then be further improved upon completion of the CKR and Trunk Road T2.

Development Bureau
Civil Engineering and Development Department
21 June 2017

Table 1

Breakdown of Construction Cost of the Proposed Road Improvement Works for the Development of Anderson Road Quarry Site

		$ million	
Road Works			
(i)	Earthworks	134.9	
(ii)	At-grade roads, waterworks and drainage works	102.1	
(iii)	Construction of retaining walls	380.2	
(iv)	Slope works	338.1	
	Sub-total	955.3	
Construction of Vehicular Flyover			
(i)	Foundation and pile caps	25.7	
(ii)	Abutments and piers	37.7	
(iii)	Bridge deck structures	42.7	
	Sub-total	106.1	
	Total	**1,061.4**	(in September 2016 prices)

Table 2

Potential Impact of Additional Traffic Flows to the Local Major Roads and Junctions arising from the Proposed Development of Anderson Road Quarry Site

Location	Assuming Route 6 in place while this Project NOT in place in 2026 V/C[1] or RC[2]	Assuming Route 6 and this project (including all the associated road improvement works) in place in 2026 VC or RC
Junction of Lin Tak Road/Sau Mau Ping Road	RC = -9%	Changed to grade separated free-flow junction
Junction of On Sau Road/Clear Water Bay Road	RC = 1%	RC = 15%
New Clear Water Bay Road (near Shun Lee Tsuen Road)	V/C = 1.08 1,950 pcu/hr[3]	V/C = 0.61 2,180 pcu/hr
Tseung Kwan O Road	V/C = 0.88 4,210 pcu/hr	V/C = 0.98 4,710 pcu/hr
Clear Water Bay Road near Ping Shek Estate	V/C = 0.93 5,020 pcu/hr	V/C = 0.99 5,340 pcu/hr
Branch tunnel of Tseung Kwan O – Lam Tin Tunnel[4] to Eastern Harbour Crossing	Not Applicable	V/C = 0.34 610 pch/hr

[1] V/C (volume/capacity) ratio is an indicator which reflects the road capacity to cope with vehicular traffic flows. A V/C ratio not greater than 1.0 means that the road has sufficient capacity to cope with the volume of vehicular traffic under consideration. A V/C ratio above 1.0 indicates the onset of mild congestion and a ratio above 1.2 indicates more serious congestion with traffic speeds progressively deteriorating with further increase in traffic.

[2] The traffic condition of a signal-controlled junction is indicated by its reserve capacity (RC). A positive RC figure indicates that the junction is operating with spare capacity. A negative RC figure indicates that junction is overloaded, hence resulting in traffic queues and longer travel time.

[3] Passenger car unit/hour (pcu/hr) is a unit for measuring traffic flow in equivalent number of private cars as design basis. For example, a pcu value of 1.0 is assigned to private cars and taxis. Heavy vehicles such as goods vehicles or buses which usually travel at a lower speed are assigned higher pcu values.

[4] The Tseung Kwan O – Lam Tin Tunnel comprises the construction of a dual two-lane highway, which is approximately 3.8 kilometres (km) long (of which about 2.2 km is in the form of a tunnel) connecting Po Shun Road of Tseung Kwan O, Eastern Harbour Crossing and Cha Kwo Ling Road of Kwun Tong.