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本局檔號 Our Ref.: THB(T)CR 34/1/4661/00

來函檔號 Your Ref.:

(English translation  
of the letter issued on 11 December 2015 (PWSC51/15-16(01)))

11 December 2015

Legislative Council Secretariat  
Legislative Council Complex  
1 Legislative Council Road  
Central, Hong Kong  
(Attn.: Ms Sharon Chung)

**By Email and Fax**  
(Email: chung@legco.gov.hk)  
(Fax No.: 2978 7569)

Dear Ms Chung,

**Public Works Subcommittee under  
the Finance Committee of the Legislative Council  
Meeting on 9 December 2015  
845TH - Hong Kong-Zhuhai-Macao Bridge  
Hong Kong Boundary Crossing Facilities -  
Reclamation and Superstructures**

**Supplementary Information**

At the meeting of the Public Works Subcommittee (PWSC) under the Finance Committee of the Legislative Council (LegCo) held on 9 December 2015, some members requested the Government to provide supplementary information about the captioned project. Our reply is as follows.

**Latest Situation of Award of Contracts and Works Progress of the Contracts**

2. Among the ten major works contracts under the Hong Kong Boundary

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Crossing Facilities (HKBCF) project, eight of them have commenced and the remaining two will be awarded shortly. Details of these contracts, the latest works progress and the original and latest anticipated completion dates are at **Annex A**. The respective estimated contract prices in 2011 and the latest estimates are at **Annex B**.

### **Original Planned Expenditure and the Latest Estimated Cash Flow**

3. In the papers submitted to the LegCo PWSC by the Government, costs are usually presented in constant prices and money-of-the-day (MOD) prices. Generally speaking, the project cost for a public works project comprises “Base Estimate”, “Project Contingency” and “Provision for Price Adjustment”. “Base Estimate” is the estimated basic cost of a project which includes construction cost, design and management fees of consultants as well as site supervision cost of resident site staff. On top of the “Base Estimate”, we also allow in the project cost a provision for “Project Contingency” to cater for additional costs caused by unforeseen circumstances, e.g. unexpected ground conditions, higher-than-expected tender prices, possible claims during construction of the works, etc. Both “Base Estimate” and “Project Contingency” are calculated in constant prices. The constant prices in the discussion papers on the HKBCF project is based on the September 2011 prices. Moreover, to cater for the changes in the costs of labour and materials during the contract period, we also allow in the project cost a “Provision for Price Adjustment”. We adopt price adjustment factors derived from the Government’s latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the relevant contract periods to convert the cost estimates of capital works projects from constant prices into money-of-the-day (MOD) prices. The difference between the MOD prices and the constant prices will be the provision for price adjustment to be included in the project cost estimate.

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4. Enclosure 4 of discussion paper no. PWSC(2015-16)14 shows the original estimated cash flow and provision for price adjustment in 2011 as well as the latest cash flow and provision for price adjustment calculated based on the latest project estimates and price adjustment factors. The updated version of the Enclosure is at **Annex C**. For easy reference, the updated parts are shaded in grey.

5. Besides that, Enclosure 5 of discussion paper no. PWSC(2015-16)14 shows the difference between the latest project estimates and the original estimates in 2011. The whole HKBCF project comprises different types of works. Items (a) to (u) in Enclosure 5 of the discussion paper show the estimates for construction cost, consultancy fees, resident site staff cost and contingencies of the various works. The estimates are calculated in September 2011 prices. Item (v) is the provision for price adjustment. In view of the above update, the contingencies as shown in item (u) in Enclosure 5 of the

discussion paper will be reduced from \$1,584.4 million to the latest \$1,394.3 million (in September 2011 prices) (equivalent to \$2,182.0 million in MOD prices); and the provision for price adjustment in item (v) in Enclosure 5 of the discussion paper will be increased from \$8,351.4 million to \$8,541.5 million. The amounts for the other items remain unchanged. Please refer to **Annex D** for the relevant changes in Enclosure 5 (as shaded in grey).

### **Construction Difficulties and Challenges**

6. Various difficulties and challenges have been encountered during the construction of the HKBCF, including the unstable supply of materials, shortage of labour, restriction in airport height, constraints in environmental protection requirement and the slower-than-expected consolidation performance of the reclamation works, thus causing delay. The current difficulties and challenges are set out at **Annex E**. The Highways Department briefed the media on the relevant difficulties and challenges at the press conference on 27 November 2015.

### **The Absolutely Essential Facilities Required for Commissioning**

7. The HKBCF has to be equipped with the following absolutely essential facilities before it can be commissioned:

- (a) Main roads connecting the Passenger Clearance Building (PCB) and Vehicle Clearance Plazas (VCP) at the HKBCF with the Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR) and the local road network;
- (b) Passenger clearance facilities at the HKBCF including some processing kiosks and examination facilities for private cars and coaches, the PCB, etc.; cargo clearance facilities including some processing kiosks and examination facilities for goods vehicles, cargo examination platforms, etc.; and main roads and transport facilities of the HKBCF including public transport interchanges, drop-off and pick-up areas, etc.; and
- (c) Installation of the relevant equipment for the clearance facilities and completion of testing and commissioning for the systems.

8. As the contingencies reserved for the HKBCF project have already been used to pay for the price differences for awarding certain contracts with higher-than-expected returned tender prices, only an extremely small amount of contingencies is left. Such amount will not be sufficient to implement additional measures to catch up with the progress if any additional construction difficulties would occur in the future, nor to carry out necessary variations during construction to cater for actual site conditions to ensure the timely completion of the absolutely essential facilities for the commissioning of HKBCF in order to dovetail with the commissioning of HZMB. Therefore,

we need the approval for the increase in approved project estimate (APE) to top up the required contingencies; otherwise, we will be at high risk of not completing the absolutely essential facilities as scheduled. The estimate for this part is about \$2,180.0 million (in MOD prices).

### **Impact on the HKBCF Project if the increase in APE is not approved**

9. If we fail to obtain approval for the increase in APE in the near future, we would have to excise some facilities which are not absolutely essential for commissioning from some on-going and soon-to-be awarded works contracts. However, excising these facilities will affect the effective clearance operation and the maintenance and management of the HKBCF, causing inconvenience to the public. The excision will fall due starting from December 2015. Details are at **Annex F**. The total estimated cost of facilities which might possibly be excised is about \$1,340 million (in MOD prices). Re-tendering for construction of these facilities will involve additional tendering work and waste money. As the construction of these facilities will have to be carried out after the commissioning of the HKBCF, it will cause negative impact on HKBCF's operation and increase the construction difficulties, thereby leading to increase in construction cost. Therefore, excising these facilities from the existing contracts and re-tendering them will very likely increase the overall construction cost and such increase has not been included in this application for increase in APE. Preliminary estimate reveals that if these facilities to be excised are to be re-tendered for construction, the cost will increase by about \$600 million. Moreover, we will have to obtain the approval for the increase in APE before we can commence the re-tendering. The completion dates of these excised facilities will, therefore, be delayed from end 2017 or early 2018 as originally scheduled to one to two years after the approval of increase in APE.

10. If the increase in APE is not approved, we will not have sufficient funding for the second phase of works at the HKBCF. When we foresaw the risk of exceeding the APE in 2014, we decided to defer construction works of some of the boundary crossing facilities that are not required at the initial stage of commissioning to the second phase after the commissioning of the HKBCF. The aim is to mitigate the pressure of the already very tight programme of the HKBCF and reserve funding to construct the necessary boundary crossing facilities. The cost for the second phase of works is approximately 5% of the overall project cost. In other words, the first phase of works will cover HKBCF clearance facilities and road connections that are necessary at the early stage of commissioning of the HKBCF, including the PCB, cargo clearance facilities, public transport interchanges, main roads and transport facilities for the HKBCF, etc. The second phase of works will cover facilities that will enhance the HKBCF operation and cater for the additional clearance needs, including additional vehicle clearance kiosks at the VCP, additional drop-off and pick-up areas at the public transport interchanges, etc. Moreover, the

second phase of works also includes some roads and bridges on the airport island to cater for future growth of traffic demand. As the alignment of these roads and bridges may be affected by the Three-Runway System project of the Hong Kong International Airport, the construction of these roads and bridges can only commence after coordination. The total estimate for the second phase of the works, which is anticipated to commence after commissioning, is approximately \$1,940 million (in MOD prices).

Yours sincerely,

(Jessica LEE)  
for Secretary for Transport and Housing

C.C.

Secretary for Financial Services and the Treasury  
(Attn: Miss Karen SHING)

(Fax: 2147 5240)

Director of Highways (Attn: Mr Albert LEE)

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**Progress and Anticipated Completion Dates of the Ten Major Works Contracts of the HKBCF Project (Up to November 2015)**

Contract	Contract Title and No.	Scope of Main Works	Contract Award Date	Works Progress	Actual Completion <sup>Note 1</sup>	Original Planned Completion <sup>Note 2</sup>	Original Contract Completion Date	Anticipated Completion Date
1	HZMB HKBCF - Reclamation Works (HY/2010/02)	Reclamation to provide land for the development of the HKBCF and the Tuen Mun-Chek Lap Kok Link (TM-CLKL) southern landfall	November 2011	Sand filling has been substantially completed. Certain parts of the land have been handed over to the contractors of the superstructure works (e.g. passenger clearance building, cargo clearance facilities, etc.) <sup>Note 3</sup> . The remaining surcharging and construction of seawall are in progress.	84.5%	92.5%	February 2016	End 2016
2	HZMB HKLR - Section between Scenic Hill and HKBCF (HY/2011/03)	Construction of vehicular bridges, at-grade roads and underpasses at the airport island entrusted to the HKLR project	May 2012	Excavation works for the mining section of the tunnel between the HKBCF and the Hong Kong International Airport are in progress.	55%	56%	Works absolutely essential for commissioning to be completed by end 2016, remaining works to be completed by January 2017 or earlier.	End 2017
3	HZMB HKBCF and HKLR, and TM-CLKL Southern Connection - Traffic Control and Surveillance System (HY/2013/05)	Construction of traffic control and surveillance system for the HKBCF, HKLR and TM-CLKL Southern Connection	January 2014	System design is in progress.	19%	20%	Works absolutely essential for commissioning to be completed by end 2016, remaining works to be completed by December 2017 or earlier.	Works absolutely essential for commissioning to be completed by end 2017, remaining works to be completed by mid 2018 or earlier.
4	HZMB HKBCF - Passenger Clearance Building (HY/2013/01)	Construction of passenger clearance building and associated infrastructure works for the HKBCF	April 2014	Most piles have been completed. Construction of pile caps and basement is in progress. The Contractor has planned to catch up with the progress by pre-fabricating and pre-assembling the huge roof modules of passenger clearance building to reduce the time of on-site works.	25%	40%	November 2016	End 2017
5	HZMB HKBCF - Infrastructure Works Stage I (Western Portion) (HY/2013/02)	Construction of infrastructure works including vehicular bridges and at-grade roads at the western portion of the HKBCF	July 2014	Most pre-drilling works of piles have been completed. Construction of piles and decks of bridges is in progress. The Contractor has planned to catch up with the progress by pre-fabricating some of the bridges to reduce the time of on-site works.	10%	36%	December 2016	End 2017
As indicated by the Secretary for Transport and Housing at the LegCo Panel on Transport meeting on 16 January 2015, it would be very difficult for the HZMB project to be completed at the same time by end 2016 as scheduled.								
6	HZMB HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities (HY/2013/03)	Construction of vehicle clearance plazas, public transport interchanges, ancillary buildings and facilities and associated infrastructure works for the HKBCF	March 2015	About 70% of pre-drilling works of piles has been completed. Construction of bored piles of box culverts, and foundation works and external structural works of some ancillary buildings are in progress.	4%	12%	Works absolutely essential for commissioning to be completed by mid 2017, remaining works to be completed by October 2017 or earlier.	Works absolutely essential for commissioning to be completed by end 2017, remaining works to be completed by early 2018 or earlier.
7	HZMB HKBCF - Infrastructure Works Stage II (Southern Portion) (HY/2013/04)	Construction of infrastructure works including vehicular bridges and at-grade roads at the southern portion of the HKBCF	February 2015	Pre-drilling of piles and piling of some bridges are in progress.	5%	12%	Works absolutely essential for commissioning to be completed by mid 2017, remaining works to be completed by May 2018 or earlier.	Works absolutely essential for commissioning to be completed by end 2017, remaining works to be completed by mid 2018 or earlier.
8	HZMB HKBCF - Automatic Vehicle Clearance Support System (HY/2013/06)	Construction of Automatic Vehicle Clearance Support System for the HKBCF	July 2015	System design is in progress.	1%	1%	Works absolutely essential for commissioning to be completed by mid 2017, remaining works to be completed by January 2018 or earlier.	Works absolutely essential for commissioning to be completed by end 2017, remaining works to be completed by early 2018 or earlier.
9	HZMB HKBCF - Gantry Type X-ray Vehicle Inspection System (HY/2014/04)	Construction of gantry type X-ray vehicle inspection system for the HKBCF	Not yet awarded	To be awarded shortly	-	-	-	End 2017
10	HZMB HKBCF - Remaining Ancillary Buildings and Facilities (HY/2014/05)	Construction of remaining ancillary buildings and facilities at the HKBCF	Not yet awarded	To be awarded shortly	-	-	-	Works absolutely essential for commissioning to be completed by end 2017, remaining works to be completed by early 2018 or earlier.

Note 1: In general, actual completion of public works contracts of the Government is the percentage of accumulative expenditure for works up to the respective month against the contract sum.

Note 2: Original planned completion is the percentage of cash flow derived from the works programme submitted by the contractor at the commencement of works against the contract sum.

Note 3: The superstructure works, in general, refer to the infrastructures and facilities within the approved project scope of the Project except for the reclamation works. They mainly include the passenger clearance building, cargo clearance facilities, passenger clearance facilities, accommodation for and facilities of government departments, transport facilities and road network, and other associated infrastructures and facilities, etc.

**Contract Prices of Estimate in 2011 and the Latest Estimate**

<b>A. Awarded Contracts</b>				
<b>Contract</b>	<b>Contract Title and Contract No.</b>	<b>Contract Award Date</b>	<b>Estimate in 2011</b>	<b>Returned Tender Price</b>
			<b>(in MOD price) (\$ million)</b>	
1	HZMB HKBCF - Reclamation Works (HY/2010/02)	November 2011	7,027.1*	5,765.9*
2	HZMB HKLR - Section between Scenic Hill and HKBCF (HY/2011/03)	May 2012	1,105.6*	1,489.6*
3	HZMB HKBCF and HKLR, and TM-CLKL Southern Connection - Traffic Control and Surveillance System (HY/2013/05)	January 2014	244.0*	116.3*
4	HZMB HKBCF - Passenger Clearance Building (HY/2013/01)	April 2014	6,390.3	8,399.9
5	HZMB HKBCF - Infrastructure Works Stage I (Western Portion) (HY/2013/02)	July 2014	1,485.2	2,371.9
6#	HZMB HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities (HY/2013/03)	March 2015	5,216.7	7,657.2
7#	HZMB HKBCF - Infrastructure Works Stage II (Southern Portion) (HY/2013/04)	February 2015	1,349.5	2,259.6
8#	HZMB HKBCF - Automatic Vehicle Clearance Support System (HY/2013/06)	July 2015	269.3	153.9
	Sub-total (1) to (8)=		<u>23,087.7</u>	<u>28,214.3</u>

<b>B. Latest Estimate of Contracts to be Awarded, Remaining Works and Other Fees</b>			
	<b>Contract Title and Contract No. of Contracts to be Awarded, Remaining Works and Other Fees</b>	<b>Estimate in 2011</b>	<b>Latest Estimate</b>
		<b>(in MOD Prices) (\$ million)</b>	
9	HZMB HKBCF - Gantry Type X-ray Vehicle Inspection System (HY/2014/04)^	2,414.0* (sum of item 9 and 10 is approximately \$1.2 billion)	3,181.6* (sum of item 9 and 10 is approximately \$1.2 billion. Contract price of individual contract cannot be provided as these two contracts have not been awarded.)
10#	HZMB HKBCF - Remaining Ancillary Buildings and Facilities (HY/2014/05)		
11	Furniture and equipment to be procured by departments (absolutely essential for commissioning)		
12	Phase 2 works to commence at a later stage (including enhanced facilities in HKBCF, remaining at-grade roads and viaducts in the Airport Island, etc. @)		
13	Consultancy fees, remuneration of resident site staff and other fees associated with the works contracts	2,165.5	2,317.1
14	Contingencies	2,766.7	2,182.0
	Sub-total (9) to (14)	<u>7,346.2</u>	<u>7,680.7</u>
	<b>Grand Total (1) to (14)</b>	<b><u>30,433.9</u></b>	<b><u>35,895.0</u></b>

**Notes:**

\*: Contracts are funded by more than one works project and the amount shown in the table is the part to be funded by **845TH**.

#: Contracts include works which may need to be excised.

^: Contract No. HY/2014/04 includes 9-year maintenance services of the gantry type X-ray vehicle inspection systems, but the recurrent cost for the maintenance services was not included in **845TH**.

@: Please refer to paragraph 10 of the letter.



**Hong Kong-Zhuhai-Macao Bridge**  
**Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures**

**Table 1 – Cash flow and provision for price adjustment in PWSC(2011-12)30**

Year	Original project estimate (in September 2011 prices) (\$ million) <b>X</b>	Original price adjustment factors (October 2011)#  <b>Y</b>	Approved project estimate (in MOD prices) (\$ million) <b>Z</b>	Provision for price adjustment (\$ million)  <b>A = Z - X</b>
2011 - 2012	63.9	1.00000	63.9	0.0
2012 - 2013	1,737.3	1.05375	1,830.7	93.4
2013 - 2014	2,210.1	1.11171	2,457.0	246.9
2014 - 2015	4,311.6	1.17285	5,056.9	745.3
2015 - 2016	5,387.2	1.23736	6,665.9	1,278.7
2016 - 2017	5,168.4	1.30541	6,746.9	1,578.5
2017 - 2018	4,707.0	1.37721	6,482.5	1,775.5
2018 - 2019	777.8	1.45296	1,130.1	352.3
<b>Total</b>	<b>24,363.3</b>		<b>30,433.9</b>	<b>6,070.6</b>

**Table 2 – Latest cash flow and provision for price adjustment due to latest project estimate (PE) and latest price adjustment factors**

Year	Latest PE (in September 2011 prices) (\$ million) <b>a</b>	Latest PE (in September 2015 prices) (\$ million) <b>b</b> ^^	Latest price adjustment factors (October 2015) ##  <b>c</b>	Latest PE (in MOD prices) (\$ million) <b>d</b>	Latest provision for price adjustment (\$ million) <b>e</b>	Net increase in provision for price adjustment (\$ million) <b>f</b>
Up to March 2015	5,830.0^	6,620.5^	1.00000	6,620.5^	<b>e = d - a</b>	<b>f = e - A</b>
2015 - 2016	4,306.6	5,344.8	1.00000	5,344.8		
2016 - 2017	7,467.3	9,267.5	1.05875	9,812.0		
2017 - 2018	5,371.1	6,666.0	1.12228	7,481.1		
2018 - 2019	2,436.1	3,023.4	1.18961	3,596.7		
2019 - 2020	1,942.4	2,410.7	1.26099	3,039.9		
<b>Total</b>	<b>27,353.5</b>	<b>33,332.9</b>		<b>35,895.0</b>	<b>8,541.5</b>	<b>2,470.9</b>

Notes:

- # Price adjustment factors adopted in October 2011 were based on the projected movement of prices for public sector building and construction output at that time, which were assumed to increase by 5.5% per annum from 2012 onwards.
- ## Price adjustment factors adopted in October 2015 were based on the latest movement of prices for public sector building and construction output, which are assumed to increase by 5.5% in 2015, 6.0% per annum over the period from 2016 to 2019 and by 5.0% in 2020.
- ^ \$5,830.0 million was the actual expenditure (excluding price adjustment) up to March 2015; whereas \$6,620.5 million was the actual expenditure (including price adjustment).
- ^^ The September 2015 prices is converted by multiplying the latest project estimate (in September 2011 prices) by 1.24108. The figure of 1.24108 represents the changes in price movement for public sector building and construction output between September 2011 and September 2015.

Note: Information updated after April 2015 is shaded in grey.

	(A) Approved Project Estimate (\$ million)	(B) Latest Project Estimate (\$ million)	(B) – (A) Difference (\$ million)
(iii) Independent Environmental Project Office (ENPO) <sup>4</sup> and independent environmental checker services	6.8	6.8	0.0
(r) Remuneration of RSS	1,443.2	1,443.2	0.0
(s) Electrical and Mechanical Services Trading Fund (EMSTF) charges <sup>5</sup>	35.5	35.5	0.0
(t) Duty visits outside Hong Kong <sup>6</sup>	1.9	1.9	0.0
(u) Contingencies	2,214.8	1,584.4 1,394.3	(630.4) (820.5)
Sub-total	24,363.3	27,543.6 27,353.5	3,180.3 2,990.2
	(in September 2011 prices)	(in September 2011 prices)	
(v) Provision for price adjustment	6,070.6	8,351.4 8,541.5	2,280.8 2,470.9
Total	30,433.9 (in MOD prices)	35,895.0 (in MOD prices)	5,461.1

Note: Information updated after April 2015 is shaded in grey.

<sup>4</sup> The Environmental Permit for the HKBCF project requires the setting up of an independent ENPO before the commencement of the HKBCF construction to oversee the cumulative environmental impacts arising from the HKBCF project and other concurrent projects in the adjoining area and to liaise closely with the Mainland project teams for the HZMB.

<sup>5</sup> Since the establishment of the EMSTF on 1 August 1996 under the Trading Funds Ordinance (Cap. 430), the EMSTF charges government departments for design and technical consultancy services for E&M installations provided by Electrical and Mechanical Services Department. The services rendered for this project include checking consultants' submissions on all E&M installations and providing technical advice to the Government on all E&M works and their impacts on the Project.

<sup>6</sup> Duty visits outside Hong Kong in connection with the Project include quality control visits or acceptance tests of specialized operation equipment, curtain wall / cladding factories, material workshops, green features etc. The costs of air passage, subsistence allowances, etc, are subject to the relevant provisions in the Civil Services Regulations.

**Unexpected Difficulties and Challenges Encountered during the Construction of HKBCF**

Various difficulties and challenges have been encountered during the construction of the HKBCF, including the unstable supply of materials, shortage of labour, restriction in airport height, constraints in environmental protection requirement and the slower-than-expected settlement performance of the reclamation works, thus causing delay in the works. The current difficulties and challenges are detailed as follows:

**Unstable supply of materials**

The reclamation works for the HKBCF commenced in November 2011. The works require a substantial amount of backfilling materials and rockfill, including approximately 25 million m<sup>3</sup> of public fill and sand fill, and 3.5 million m<sup>3</sup> of rockfill. However, the unstable supply of sand fill and shortage of rockfill have caused impact on the reclamation progress.

In 2012, the contractor took more time than expected to arrange with the Mainland for the export of sand fill (i.e. importation of materials from Mainland by the contractor). In mid 2014, due to the change of export procedures for sand fill in the Mainland, the contractor was required to re-submit the application for export of sand and the progress was thus disrupted. In February 2015, the Mainland started banning the exploitation of sand in the vicinity of Nei Lingding Island at Pearl River Estuary. This affected the progress of the reclamation works.

Since late 2013, due to environmental protection, the Guangdong Provincial Government adjusted the exploitation amount of rock and imposed regulations on some Mainland rock quarries. This affected the supply of large rock armour (2 to 5 tons). According to the rock quarry investigation carried out by the consulting engineer and the contractor, a total of 270 000 tons of rock armour is required for the reclamation works, but the existing rock quarries capable for supplying the large rock armour can only provide approximately 2 400 tons per week. Such amount is not sufficient to meet the demand of the reclamation works. Therefore, the laying of the rock armours on the surface of the seawall at the north and northwest of the HKBCF reclamation works has been affected.

In view of the shortage of the large rock armour, the contractor and the consulting engineer have been looking for appropriate solutions. We are now actively considering the proposal and relevant technical information submitted by the reclamation contractor in 2015 regarding the laying of precast concrete units instead of some large rock armours on the seawall surface.

**Shortage of labour**

Due to the shortage of skilled labour in the construction industry, the contractors of the HKBCF have been encountering difficulties in recruiting suitable local workers. Therefore, the contractors are importing suitable workers under the Supplementary Labour Scheme to fulfill the demand of manpower for the construction works. However, skilled labours are still in shortage and this affects the progress of the HKBCF works to a certain extent.

Though the importation of labour helps mitigate the pressing need of labour resources for the works of the Hong Kong section, it takes time for processing the applications and there are genuine difficulties encountered in recruiting overseas workers. The problem of skilled labour shortage still exists in the works of the Hong Kong section. The contractors are implementing appropriate measures to press ahead fully with the construction works.

**Restriction in airport height**

Due to the height restriction of the Airport, the construction method and the machinery of the reclamation and superstructure works contracts have to be selected to fulfil the requirements and limitation on operation hours imposed by the Airport. For example, contractors of some of the construction works cannot use large equipment (e.g. large lifting appliances) until the closure of the south runway. Yet, the closure time of the south runway has been adjusted several times since the reclamation works commenced. For example, in October 2011 (i.e. before the commencement of works), the south runway of the Airport closed 4 nights per week (including 3 consecutive nights) and 7 hours each night. Later, in April 2012, it closed 2 nights per week (not consecutive) and 6.5 hours each night. Although the closure schedule was further revised to 3 nights per week and 6.5 hours each night in October 2013, the unstable construction schedule has caused adverse impact on the original

## **Annex E**

programme of works (such as installation of steel cells etc.) which have to be carried out during the closure of the south runway. This affected the reclamation works at the west and south of the HKBCF island. During the reclamation works at the west and south of the HKBCF island from 2011 to 2013, the closure timetable of the south runway of the Airport is shown as follows:

<b>Effective Date</b>	<b>Closure Days of the South Runway</b>	<b>Closure Hours of the South Runway</b>
31 October 2011	Every Monday, Wednesday, Thursday and Friday	Hong Kong Time 1:00 am to 7:59 am
31 December 2011	Every Monday, Wednesday, and Thursday	Hong Kong Time 1:30 am to 7:59 am
15 April 2012	Every Sunday and Wednesday	Hong Kong Time 1:30 am to 7:59 am
31 July 2012	Every Friday, Saturday and Sunday	Hong Kong Time 1:30 am to 7:59 am
31 March 2013	Every Monday and Friday	Hong Kong Time 1:30 am to 7:59 am
20 October 2013	Every Monday, Thursday and Sunday	Hong Kong Time 1:30 am to 7:59 am

To reduce the impact on the construction progress due to the change of closure timetable of the south runway, the contractor has replaced part of the non-dredged seawall with steel cells and rubble mound (which involved the use of larger machinery at the west and south of the HKBCF island) by the non-dredged rubble mound seawall. Furthermore, the contractor has mobilized shorter machinery for the installation of band drains and stone columns, etc. The lower efficiency of the shorter machinery than the larger sized machinery has affected the construction progress.

### **Constraints in environmental protection requirement**

Four of the major superstructure works contracts of the HKBCF, including the Passenger Clearance Building and the vehicle clearance facilities, and two contracts of roads and viaducts will reach their construction peak period in the coming 2 years. In order to catch up with the construction programme, many contractors proposed extending the construction hours. However, as the

HKBCF works site is close to the Tung Chung residential area, the contractors have to obtain the construction noise permit issued by the Environmental Protection Department (EPD) for carrying out construction works during 7:00 p.m. to 7:00 a.m. on the next day.

For example, to fulfill the requirement under the construction noise permit, the EPD limits the construction noise level to 43 dB during 11:00 p.m. to 7:00 a.m. on the next day. As regards the reclamation works of the HKBCF, only one-sixth of the machinery can be used at night for the construction activities such as installation of band drains and sand filling, etc. This has limited the ability of speeding up the work progress by using more labour, more machinery or more shifts, etc.

Despite the prior knowledge of the requirement under construction noise permit imposed by the EPD, we could not ensure completely the viability and the extent of the extended construction hours of the contracts before the works commencement. This is because, the EPD in practice takes into account the type, number, location and operation period, etc. of the mechanical equipment furnished by the contractors to determine whether construction noise permit could be issued.

#### The slower-than-expected settlement performance of reclamation works

To minimise the impact on marine environment of the reclamation works for the HKBCF, the more environmentally-friendly non-dredged seawall design was introduced. It is the first of its kind in Hong Kong and thus it takes time for consolidation of experience during construction. During construction, the distribution and the strength of the existing marine mud layer is more complicated than expected, leading to the slower settlement and consolidation progress. Therefore, the surcharge period has to be increased in order to meet the technical requirement for handover of site to the contractors of the superstructure contracts. We have reviewed the construction programme of the superstructure contracts in accordance with the settlement performance of reclamation works. We have also discussed the possible delay recovery measures in detail with the consulting engineers and the contractors to minimize the overall delay.

Given the abovementioned factors, the overall completion date of the HKBCF

reclamation works has been affected. Nevertheless, the reclaimed land sites have been handed over to the superstructure contractors in phases for commencement of works. Moreover, the construction sequence of the superstructure contracts has also been adjusted to tie in with the schedule of handing over of the reclaimed land sites, with a view to minimizing the impact on the construction programme.



**Impact on the HKBCF Project if approval for the increase in approved project estimate (APE) is not obtained**

If we cannot obtain approval for the increase in APE in the near future, we will have to excise some facilities from some of the on-going and soon-to-be awarded works contracts which are necessary but not absolutely essential for operation at the time of commissioning. Details are listed in the table below:

Item	Due Date	Contract No.	Facilities to be Excised	Anticipated Completion Date of Facilities	Impact on the Effective Clearance Operation, Maintenance and Management of HKBCF, and the Public
1	December 2015	HY/2013/04	Landscape works at the southern portion of the HKBCF	Early 2018	Landscape works in the southern portion of the HKBCF will be missing, thus affecting the overall appearance of the HKBCF.
2	January 2016	HY/2013/03	Public Carpark for domestic vehicles	End 2017	The public will not be able to drive directly to the HKBCF and switch to cross-boundary shuttle buses to Zhuhai or Macao. HKBCF will not be able to provide comprehensive transport facilities at the time of commissioning and cause inconvenience to the public. Those who live in remote areas, or need to drive to the HKBCF due to emergency circumstances will be most affected.
3			Taxi Queuing Area		At present, taxi queuing areas are available at the Hong Kong International Airport and other major boundary crossing facilities (e.g. Lo Ma Chau Spur Line Control Point, Shenzhen Bay Port, etc.) to facilitate the orderly taxi queuing and pick-up of Hong Kong residents and visitors), thereby shortening the waiting time of passengers.  If taxi queuing area is not available at the HKBCF, taxis will have to queue up at taxi stands to pick up passengers. As there is only limited space at the taxi stands, the taxi queue may occupy part of the carriageways leading to the taxi stands and cause congestions nearby, thereby affecting the traffic flow in the vicinity of the HKBCF.
4			Communication and security electronic systems, etc. of Outbound and Inbound Private Car Annexures		Same as item 7
5			Additional Private Car and Goods Vehicle Kiosks to cater for the increased traffic demand after commissioning		The HKBCF will not be able to cater for the anticipated traffic demand at the early stage of HKBCF commissioning. At peaks of passenger flow during public holidays or the annual peak season for freight, the missing of these kiosks may cause serious traffic congestion at the HKBCF.
6	February 2016	HY/2013/03	Communication and security electronic systems of E&M Maintenance Building and Highways Depot	Early 2018	Same as item 12
7	May 2016	HY/2014/05 (Not yet awarded)	Outbound and Inbound Private Car Annexures	Early 2018	There will be no separate clearance services for cross boundary passengers and drivers for private cars at the HKBCF. If any one of the parties has problems during clearance, e.g. Customs and Excise Department (C&ED) officers discover problematic items on the vehicles, all the passengers and drivers will have to be detained together for inquiry to clarify the ownership of the problematic items.
8			Detective Dog Base		We will have to make temporary arrangements for setting up a detective dog base as per the request from the C&ED.
9			Dangerous Goods Store		The C&ED has to deliver the detected dangerous goods to the dangerous goods store outside the HKBCF. This will affect the effectiveness of the normal clearance operation. In addition, increasing the number of deliveries of dangerous goods to the dangerous goods store outside the HKBCF will also pose higher risk to the public.
10	June 2016	HY/2013/03	Irrigation system for the Vehicle Clearance Plazas and Public Transport Interchanges	Early 2018	The implementation of landscape works will be affected if there is no irrigation system.
11	July 2016	HY/2014/05 (Not yet awarded)	4 Public Toilets in the Vehicle Clearance Plazas	End 2017	The drivers and passengers of goods vehicles and private cars will not be able to use the facilities during clearance and this will cause inconvenience.
12			E&M Maintenance Building and Highways Depot	Early 2018	This will affect the maintenance and management of the roads and facilities at the HKBCF and delay the required maintenance works, affecting the quality of the roads and facilities. In case of power failure, the maintenance party may not be able to respond rapidly as requested.
13			Landscape works of the Remaining Ancillary Buildings		Some of the landscape works at the HKBCF will be missing, thus affecting the overall appearance of the HKBCF.
14	August 2016	HY/2013/06	Automatic Vehicle Clearance Support System (AVCSS) of the additional kiosks and Outbound and Inbound Private Car Annexures	End 2017	Same as items 5 and 7
15	January 2017	HY/2013/03	Landscape works for the Vehicle Clearance Plazas and Public Transport Interchanges	Early 2018	Some of the landscape works at the HKBCF will be missing, thus affecting the overall appearance of the HKBCF.

The total estimated cost of facilities which might possibly be excised is about \$1,340 million. Re-tendering for construction of these facilities will involve additional tendering work and waste money. As the construction of these facilities will have to be carried out after the commissioning of the HKBCF, it will cause negative impact on HKBCF's operation and increase the construction difficulties, thereby leading to increase in construction cost. Therefore, excising these facilities from the existing contracts and re-tendering them will very likely increase the overall construction cost and such increase has not been included in this application for increase in APE. Preliminary estimate reveals that if these facilities to be excised are to be re-tendered for construction, the cost will increase by about \$600 million. Moreover, we will have to obtain the approval for the increase in APE before we can commence the re-tendering. The completion dates of these excised facilities will, therefore, be delayed from end 2017 or early 2018 as originally scheduled to one to two years after the approval of increase in APE.