

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

845TH – Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures

Members are invited to recommend to Finance Committee the upgrading of **845TH** to Category A at an estimated cost of \$30,433.9 million in money-of-the-day prices for the construction of the Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities.

PROBLEM

We need to construct the Hong Kong Boundary Crossing Facilities (HKBCF) to complement the Hong Kong–Zhuhai–Macao Bridge (HZMB) project.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade **845TH** to Category A at an estimated cost of \$30,433.9 million in money-of-the-day (MOD) prices for the construction of the HZMB HKBCF.

/ **PROJECT**

PROJECT SCOPE AND NATURE

3. The HZMB is a cross-boundary cross-sea road infrastructure project providing direct land transport connection between the two shores of the Pearl River Delta (PRD), linking Hong Kong in the east to Macao and Zhuhai in the west. A brief background of the project, is set out in Enclosure 1. Structurally, the HZMB comprises two parts: (i) the HZMB Main Bridge; and (ii) the respective link roads and boundary crossing facilities of the three places.

4. **845TH** (the Project) involves the construction of the HKBCF, the scope of which comprises the following –

- (a) reclamation to provide land for the development of the HKBCF;
- (b) construction of cargo clearance facilities including processing kiosks and examination facilities for goods vehicles, cargo examination platforms, etc.;
- (c) construction of passenger clearance facilities including processing kiosks and examination facilities for private cars and coaches, passenger clearance building, etc.;
- (d) provision of accommodation for and facilities of Government departments providing services in connection with the HKBCF;
- (e) provision of transport and miscellaneous facilities inside the HKBCF including public transport interchange, transport drop-off and pick-up areas, vehicle holding areas, car parks, passenger queuing areas, road networks, footbridges, fencing, sewage and drainage systems, water supply system, utilities, electronic system, and traffic control, surveillance and information system, etc.;
- (f) provision of road access for connection of the HKBCF to the HZMB Hong Kong Link Road (HKLR), the Tuen Mun-Chek Lap Kok Link (TM-CLKL) and the Hong Kong International Airport (HKIA);
- (g) reprovisioning of affected airport facilities; and
- (h) provision of ancillary commercial areas, electrical and mechanical (E&M) works, other civil engineering works, landscape and amenity works, etc.

/ The

The proposed location plan, layout plans, cross-sectional plans and artist's impression of the HKBCF are at Enclosures 2 to 8.

5. Tender assessment for the main reclamation contract of the HKBCF has been completed. Subject to the funding approval by the Finance Committee (FC), we will award the contract as soon as possible so that the construction works can start in end 2011. We plan to complete the HKBCF in tandem with other HZMB projects to dovetail with the commissioning of the HZMB by end 2016.

JUSTIFICATIONS

Strategic Importance of HZMB

6. The HZMB is strategically important. It will facilitate the further economic development of Hong Kong, Macao and Western PRD. The construction of the HZMB will significantly reduce transportation costs and time for travellers and goods on roads¹, but the benefits go far beyond this. With the connection by the HZMB, the Western PRD will fall within a reachable three-hour commuting radius of Hong Kong. This would enhance the attractiveness of the Western PRD to external investment, which is conducive to the upgrading of its industry structure. Hong Kong will benefit from this new economic hinterland; the vast human and land resources in Western PRD will provide ample opportunities for Hong Kong businesses to expand their operation in the Mainland. The commissioning of the HZMB will also benefit various sectors in Hong Kong, such as tourism, finance and commerce. In particular, it will enhance Hong Kong's position as a trade and logistics hub as goods from the Western PRD and Western Guangdong, Guangxi, etc., can better make use of the airport and container ports in Hong Kong. Overall speaking, the HZMB will accelerate the economic integration of the PRD and its neighbouring provinces and enhance its competitiveness vis-à-vis countries of the Association of Southeast Asian Nations and other economic zones such as the Yangtze Delta region. Hong Kong will stand to gain in this process.

/ Need

¹ The HZMB will result in a significant reduction in relevant travelling time between Hong Kong and the Western PRD. For instance, as illustrated by the table below, the travelling time between Zhuhai on the one hand, and the Kwai Chung Container Port and the Hong Kong International Airport on the other, will be reduced by more than 60% and 80% respectively.

Origin – Destination	Current Distance and Travelling Time	Distance and Travelling time with HZMB	Reduction in Distance and Travelling Time
Zhuhai – Kwai Chung Container Port	about 200 kilometres about 3.5 hours	about 65 kilometres about 75 minutes	more than 60%
Zhuhai – Hong Kong International Airport	over 200 kilometres about 4 hours	about 40 kilometres about 45 minutes	more than 80%

Need for Construction of HKBCF

7. The HZMB Main Bridge will require construction of the HKBCF and HKLR. Together with the TM-CLKL and Tuen Mun Western Bypass, the HZMB project will enable the formation of an important road network linking up Hong Kong, Zhuhai, Macao and Shenzhen, thereby further enhancing the transportation and aviation hub status of Hong Kong. With its proximity to the HKIA, the HKBCF will also serve as an important multi-modal transportation hub.

8. At the meeting of the HZMB Task Force² on 7 January 2007, it was agreed that the three governments should set up their own boundary crossing facilities within their respective territories. On this basis, the Highways Department (HyD) commissioned a site selection study in May 2007 which finally recommended the location of the HKBCF to be reclaimed at the waters off the north-east of the Airport Island. In July 2008, HyD commenced the investigation and preliminary design study. We explained to the Public Works Subcommittee (PWSC) on 6 May 2009 the advantages of the preferred site (refer to details in PWSC Paper No. PWSC(2009-10)18).

9. With funding approval for **839TH** – HZMB HKBCF – detailed design and site investigation by Legislative Council (LegCo) in May 2009, we commenced the site investigation and detailed design of the HKBCF reclamation at the selected location in July and September 2009 respectively. Both studies have been completed. We also commenced the detailed design of the superstructures and infrastructures in December 2010.

/ **Reclamation**

² The Task Force was formed by the National Development and Reform Commission (NDRC) in 2007 to implement the project. The Task Force was led by the NDRC, with representatives from the Ministry of Transport, the Hong Kong and Macao Affairs Office of the State Council, and the governments of HKSAR, Guangdong and Macao Special Administrative Region as members. We reported to LegCo Panel on Transport in March 2010 regarding the management framework after works commencement of HZMB Main Bridge. (Refer to details in Legislative Council Paper No. CB(1)1354/09-10(01).)

Reclamation Works

10. We have minimized as far as possible the reclamation area of the HKBCF out of environmental and financial considerations. The artificial island of about 150 hectares (ha) (including about 130 ha of reclamation for the HKBCF and about 20 ha of reclamation for the TM-CLKL southern landfall³) would provide land mainly for accommodating clearance and transport facilities for the HZMB. The HKBCF reclamation and TM-CLKL southern landfall reclamation will be taken forward at the same location under the same works contract, so as to save a length of approximately 1.8 kilometres (km) of permanent seawall⁴. The ground investigation works for the HKBCF artificial island reclamation were carried out from 2009 to 2010.

11. With a view to minimizing any impact to the environment, the HyD together with its consultants have developed a non-dredge reclamation method, which will be the first of its kind in Hong Kong in respect of reclamation. Non-dredge reclamation method will be used for both the seawall and main reclamation (illustrated in Enclosure 9). Under this method, there is no need to dredge the soft marine mud in the seabed before backfilling. Instead, a series of interlocked large diameter steel cells (to be backfilled with inert construction and demolition material) will be sunk, penetrate through the marine mud and rest on the underlying firmer alluvium to form the perimeter seawall; while the commonly used band drains and preloading method without dredging⁵ will be used for the main reclamation.

12. The new non-dredge reclamation method can almost completely avoid the dredging and disposal of marine mud as well as significantly reduce the amount of backfilling material required (compared to the dredge reclamation method, the non-dredge reclamation method can reduce the amount of marine mud to be dredged by about 97% and backfilling material required by about one half). As a result, the amount of released suspended particles at sea during reclamation can be reduced by about 70%, and the construction marine traffic during the construction by about one half. Therefore, it is more environmentally friendly and meets the principle of sustainable development. The above construction method will increase the cost of reclaiming for the entire artificial island of about 150 ha by about \$670 million (in MOD prices). Subject to the funding approval by the FC, the reclamation works for the HKBCF will commence its construction first in end 2011, so as to provide land by phases for the construction of superstructures and infrastructures of the HKBCF for the commissioning of HZMB in end 2016.

/ **Superstructures**

³ The cost of reclamation for the TM-CLKL Southern Landfall is funded under **825TH** – TM-CLKL and Tuen Mun Western Bypass. Please see PWSC (2011-12)32 submitted concurrently.

⁴ Reclamation is needed for each of these two projects to provide land for the development of the HKBCF superstructures and infrastructures and the Southern Landfall of the TM-CLKL sub-sea tunnel. Reclamation in the same location for these two projects can reduce the total length of the seawalls.

⁵ The commonly used reclamation method is to install the band drains into the soft mud and then place the surcharge on the reclaimed land to accelerate its consolidation and settlement.

Superstructures and Infrastructures of HKBCF

13. The consultants are carrying out the design of the HKBCF master layout and general building plans, and firming up the user specifications and requirements with user departments. A list of the main buildings and accommodation to be provided in the HKBCF is attached at Enclosure 10, and the master layout plan and floor plans, cross-sections and artist impression of the Passenger Clearance Building (PCB) are shown in Enclosures 3 to 7 respectively.

14. Among the buildings, the PCB, will be the most iconic building. While complying with the airport height restriction (approximate heights between 25 mPD and 50 mPD) and avoiding mega-sized buildings to minimize the visual impact, high ceiling roof will be supported by long span structures to free up the space from columns in the halls as far as possible. Controlled natural sunlight will fill the departure hall through skylights and then filter into the arrival hall, thus minimizing the need for artificial lighting. Other energy efficient and environmentally friendly designs (details set out in paragraphs 44 to 47 below) will also be adopted to construct the HKBCF in an environmentally friendly manner. The PCB will provide convenient facilities, including convenient and efficient arrival and departure halls at its ground floor and first floor respectively, to be patronised by all HZMB passengers. Drop off lay-bys will be provided in front of the PCB entrances, and passengers can walk to the clearance halls after getting off the vehicle and after completing the clearance process, continue their journey all at same level until pick up. Majority of the drop-off and pick-up activities will be conducted under characteristic canopies; passengers are thus sheltered from adverse weather. Also, commercial or retail facilities of an appropriate scale will be provided at the PCB to serve and meet passengers' need.

15. The vehicle kiosks, goods and vehicle examination buildings and facilities are carefully arranged to allow efficient clearance process for cross boundary vehicles including goods vehicles, private cars and coaches. The vehicle kiosks will be at the middle of the artificial island. A sustainable and modular design has been adopted for the surrounding cargo and vehicle examination buildings and facilities. With regard to the local public transport services and other vehicles, we will provide adequate flexibility for the provision of their drop-off, pick-up and waiting areas so as to adjust to match with the actual demand of different transport services upon commissioning of the HZMB.

16. Infrastructure works on the HKBCF mainly comprise at-grade road works, flyovers, underpasses, sewage and utilities works, etc. which will commence by phases immediately following the completion of the reclamation of the respective land. Part of the infrastructure works on the Airport Island that adjoins the HZMB HKLR will be carried out together with the HKLR works. All superstructure and infrastructure works will need to commence construction by phases as soon as possible for commissioning by end 2016.

FINANCIAL IMPLICATIONS

17. We estimate the capital cost of the Project to be \$30,433.9 million in MOD prices (please see paragraph 26 below), broken down as follows –

		\$ million
(a) Reclamation ⁶		5,950.1
(i) Construction of about 4.1 km of seawall for the HKBCF island	2,395.3	
(ii) Reclamation of about 130 ha for the HKBCF island	3,419.5	
(iii) Reclamation of about 6 ha at the east coast of the Airport Island for roads connecting to the Airport	135.3	
(b) At-grade roads of about 613 000 square metres (m ²)		1,126.0
(c) Viaducts and vehicles underpasses		2,766.2
(i) Viaducts and elevated roads of about 113 000 m ²	2,056.6	
(ii) Vehicles underpasses of about 9 000 m ² ⁷	466.8	
		/\$ million.....

⁶ The reclamation of the HKBCF artificial island will adopt the non-dredge reclamation method (i.e. adopting the interlocked large diameter steel cells for the seawall. Please refer to paragraphs 11 and 12 for details). The reclamation works mainly cover construction of about 4.1 km of seawall and formation of about 136 ha of land involving about 70 000 tonnes of steel and 44 million tonnes of filling material.

⁷ This mainly covers the underpasses for internal circulation within the HKBCF and connection to the HKIA.

		\$ million
(iii) Miscellaneous structures / retaining structures for roads and abutments	242.8	
(d) Footbridges and subways totalling about 7 000 m ²		153.6
(e) Drainage works, sewerage works, waterworks and common utilities enclosures ⁸		1,043.7
(i) Drainage works (including box culverts, pipe works and pump sumps)	542.4	
(ii) Sewerage works	59.1	
(iii) Waterworks	123.9	
(iv) Diversion of waterworks, sewerage works and drainage works on Airport Island	91.3	
(v) Common utilities enclosures	227.0	
(f) Pedestrian area and other external works		546.2
(i) Pedestrian area (including installation of covers and lighting)	340.0	
(ii) Travellers in bus area / public transport interchange (PTI)	68.3	
(iii) Car parks	56.5	
(iv) Fencing	81.4	
(g) E&M works for roads, viaducts, underpasses, common utility enclosures, footbridges and subways		429.2

/\$ million.....

⁸ The common utilities enclosure will accommodate utilities underground to avoid road digging for maintenance in future.

		\$ million
(h) Building piling		817.8
(i) Buildings ⁹		3,687.4
(i) Passenger Clearance Building	2,552.6	
(ii) Other buildings	1,134.8	
(j) Building services		1,458.2
(i) Passenger Clearance Building	1,049.7	
(ii) Other Buildings	408.5	
(k) Kiosks for vehicle clearance		348.2
(l) Furniture and equipment ¹⁰		1,216.3
(m) Additional energy conservation measures		125.0
(n) Traffic control and surveillance system (TCSS)		194.8
(o) Landscape works ¹¹		431.5
(p) Environmental mitigation measures including environmental monitoring and auditing		120.7
(q) Consultants' fees		253.0
(i) Contract administration	140.3	
(ii) management of resident site staff (RSS)	105.9	

/ \$ million.....

⁹ The building cost mainly covers the superstructures and fitting-out works of the buildings. The main buildings and their construction floor areas are listed in Enclosure 10.

¹⁰ The estimated cost of furniture and equipment is based on an indicative list of furniture and equipment items required, including general office furniture and equipment items required, as well as specialized operation equipment (e.g. baggage X-ray scanners; narcotic and explosive detectors; infra-red thermometers; broadcasting and telecommunications systems; vehicle X-ray scanning systems, fire engines; crowd control devices; etc). We plan to seek separate funding from the FC for installing computer systems to support the operations of the Immigration Department at the HZMB HKBCF under the Capital Works Reserve Fund **Head 710 – Computerisation** in due course.

¹¹ The landscaping works include the proposed landscaping area of about 50 ha, including gardens, roadside and footpath planting, soft landscape works for green roof at some of the ancillary buildings and indoor planting in the PCB, etc.

	\$ million	
(iii)Independent Environmental Project Office (ENPO) ¹² and independent environmental checker services	6.8	
(r) Remuneration of RSS	1,443.2	
(s) Electrical and Mechanical Services Trading Fund (EMSTF) charges ¹³	35.5	
(t) Duty visits outside Hong Kong ¹⁴	1.9	
(u) Contingencies	2,214.8	
	Sub-total	<u>24,363.3</u> (in September 2011 prices)
(v) Provision for price adjustment	<u>6,070.6</u>	
	Total	<u>30,433.9</u> (in MOD prices)

18. The HKBCF project involves construction of various infrastructures / roads and buildings, which includes mainly the construction of about 4.1 km of seawalls for the HKBCF island, reclamation of about 130 ha for the HKBCF island; (including the use of the non-dredge reclamation method and stone columns (to accelerate settlement)); and reclamation of about 6 ha at the east coast of the Airport Island for roads connecting to the Airport.

/19.

¹² 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 Main Bridge.

¹³ 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.

¹⁴ 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 such as building integrated photovoltaic panels, etc. The costs of air passage, subsistence allowances, etc. are subject to the relevant provisions in the Civil Services Regulations.

19. Regarding traffic facilities, paragraph 17 lists out the necessary works such as at-grade roads, viaducts and vehicular underpasses etc. Other than the road network required within the HKBCF, we will provide an organised road / viaduct network to connect the HKBCF with the HKLR, TM-CLKL and the Airport, so as to facilitate drivers to access the HKBCF. Relevant works include foundations and E&M works, provision of basic facilities such as signs and road lighting etc.. These facilities will be mainly provided at the vehicle examination plaza, PTI and other locations. We will also build kiosks for vehicle clearance, which will be located at the vehicle examination plaza and the PTI, to provide clearance process for cross boundary vehicles (including goods vehicles, private cars and coaches). Moreover, we will also provide TCSS at the road network as well as landscape works etc.

20. In respect of pedestrian facilities, paragraph 17 lists out the necessary works, such as footbridges, subways and footpaths etc., in the HKBCF including the foundation and E&M works. Facilities include footbridges, subways, footpaths, footpaths covers and lighting, and travellators etc., located at the vehicle examination plaza and the PTI, so as to provide a well-planned pedestrian network to facilitate passengers.

21. In respect of the other infrastructures, we will implement drainage works, sewerage works, waterworks, including waterworks, sewerage works and drainage works systems (including box culverts, pipe works and pump sumps) in the HKBCF; diversion of waterworks, sewerage works and drainage works on the Airport Island; and common utilities enclosures located under vehicle examination plaza and roads of the HKBCF. Furthermore, we will introduce environmental friendly measures, such as adopting rainwater harvesting for irrigation etc.. In respect of construction of buildings, we will carry out the building piling works, building construction works, and building services works etc. for different buildings. We will also adopt various energy efficient features such as building energy management system, high efficiency motors, and water-cooled air conditioning system etc., so as to meet the principle of sustainable development and construct a more environmentally friendly HKBCF.

22. A detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at Enclosure 11. The construction floor area (CFA) of the buildings (excluding vehicle kiosks) under this project is about 157 000 m². The estimated construction unit cost of the buildings, represented by the building and building services costs, is about \$32,800 per m² of CFA in September 2011 prices. We have compared the project's building works with the other similar government projects. After taking into account HZMB's features and mode of construction, we consider the estimated cost reasonable.

/23.

23. For the HZMB-related local projects¹⁵, we originally scheduled to commence the construction before end 2010. The works commencement date for the HZMB-related local projects has been affected by the legal proceedings of a judicial review (JR) case, as a Tung Chung resident filed an application with the Court of First Instance (CFI) for leave for JR against the decisions of the Director of Environmental Protection (DEP) as regards the approval for the Environmental Impact Assessment (EIA) Reports and the granting of Environmental Permits (EPs) relating to the HKBCF and HKLR projects¹⁶. Therefore, we now plan to submit the funding application of the HZMB-related local projects to the FC in November 2011. Subject to funding approval, the construction of these projects will commence by end 2011. As there is now a difference of about one year compared to the original construction timetable, we estimate this has led to an overall cost increase of about \$6.5 billion in MOD prices for the HZMB-related local projects. Main reasons include: (i) adjustment in construction method to compress the construction timetable in order to ensure the timely commissioning of the HZMB in end 2016 (associated cost increase is about \$4.15 billion); and (ii) increase in construction price levels (associated cost increase is about \$2.35 billion). For the HKBCF project, out of the estimated cost of \$30,433.9 million in MOD prices, about \$6.3 billion in MOD prices arises from the additional cost due to the JR, which includes the additional costs for: (i) adjustment of construction method to accelerate construction of the HKBCF infrastructures, facilities and buildings etc., including using more sand as filling material for the reclamation works, and the use of additional manpower, equipment and facilities (associated cost increase is about \$4.05 billion) for accelerating the works progress; and (ii) increase in construction price levels (associated cost increase is about \$2.25 billion). The remaining \$0.2 billion of the aforesaid \$6.5 billion cost increase is caused by the advance works for the TM-CLKL (refer to details in PWSC Paper No. PWSC(2011-12)32). If the works are not implemented immediately, we anticipate that the cost will continue to rise significantly.

24. The HZMB project is a major cross-boundary transport infrastructure project that has been adequately discussed in the community and under planning for a long time. It has very important strategic value in terms of further enhancement of the economic development between Hong Kong, Mainland and Macao. In respect of the works programme of the Bridge itself, works of the Main Bridge within Mainland waters and the Zhuhai Macao Boundary Crossing Facilities are progressing well. As regards the bridge section of the Main Bridge, contracts for the detailed design of bridges were signed in March 2011 and works have been formally commenced. These works are anticipated to be completed in 2016.

/25.

¹⁵ Including the HKBCF, HKLR, and advance works for the TM-CLKL.

¹⁶ On 22 January 2010, a Tung Chung resident filed an application with the CFI for leave for JR against the decisions of the DEP as regards the approval for the EIA Reports and the granting of EPs relating to the HKBCF and HKLR projects. The CFI handed down its judgement on 18 April 2011 quashing the EPs and therefore their construction could not commence. DEP appealed against the court's judgment. The Court of Appeal handed down its judgment on 27 September 2011, unanimously allowing DEP's appeal and therefore the EIA reports and EPs of HKBCF and HKLR projects are maintained valid.

25. The HZMB connects Hong Kong, Zhuhai and Macao. The HZMB Hong Kong local projects would connect the HZMB Main Bridge located in Mainland waters at the HKSAR boundary. The road leading to the eastern artificial island in the Mainland waters has to connect the HKLR in Hong Kong waters in order to complete the entire traffic network. Therefore, apart from the HZMB Main Bridge, the associated Hong Kong projects need to be completed in tandem for connection to enable the commissioning of the HZMB. If the local projects cannot be completed on time making it not possible for HZMB to be commissioned by end 2016, there would be direct financial loss and indirect economic loss not only to Hong Kong, but also to the Mainland and Macao. Therefore, we hope that funding approval can be obtained from LegCo as soon as possible so that construction can commence early. We will also endeavour to adopt different methods to compress the construction period so that the HZMB Hong Kong projects can be completed in tandem for the commissioning of the HZMB by end 2016.

26. Subject to approval, we will phase the expenditure as follows –

Year	\$ million (September 2011 prices)	Price Adjustment Factor	\$ million (MOD)
2011 – 2012	63.9	1.00000	63.9
2012 – 2013	1,737.3	1.05375	1,830.7
2013 – 2014	2,210.1	1.11171	2,457.0
2014 – 2015	4,311.6	1.17285	5,056.9
2015 – 2016	5,387.2	1.23736	6,665.9
2016 – 2017	5,168.4	1.30541	6,746.9
2017 – 2018	4,707.0	1.37721	6,482.5
2018 – 2019	777.8	1.45296	1,130.1
	<u>24,363.3</u>		<u>30,433.9</u>

27. We have derived the MOD estimate on the basis of the Government's latest assumptions on the trend rate of change in the prices of public sector building and construction output for the period 2011 to 2019. Subject to funding approval, we will deliver the project through the following types of contract –

- (a) the reclamation works for the HKBCF artificial island under standard re-measurement contract because the quantities of reclamation works involved will vary depending on actual subsea conditions;
- (b) some infrastructure works at the Airport adjoining the HKLR under a combined design-and-build contract for these infrastructure works and the HKLR design and construction works on a lump sum basis because we can clearly define the scope of works in advance;
- (c) the remaining superstructure and infrastructure works of the HKBCF project under standard re-measurement contracts because the quantities of piling and other foundation works involved will vary depending on actual ground conditions; and
- (d) the TCSS works under lump sum contracts because we can clearly define the TCSS scope of works in advance.

The above contracts will provide for price adjustments. We will also engage the consultants for providing the independent ENPO and independent environmental checker services on a lump sum basis, and with provision for price adjustments in the consultancy agreement.

28. We estimate the annual recurrent expenditure arising from the Project to be \$1,352.2 million.

PUBLIC CONSULTATION

29. We have commenced our public consultation and engagement activities on the HZMB HKBCF and HKLR projects since 2003. In gist, we have consulted the LegCo, the Advisory Council on the Environment (ACE), and engaged with various professional institutions, the relevant District Councils and Rural Committees, public transport trades, trade associations, fishermen groups, marine industry, green groups and local communities through meetings and public workshops. The details of these consultation and engagement activities are set out in Enclosure 12.

/ Latest

Latest Consultation in respect of Environmental Impact Assessment Reports

30. We exhibited for public inspection the Environmental Impact Assessment (EIA) reports for the HKBCF, HKLR and TM-CLKL between 14 August and 12 September 2009. On 8 September 2009, we briefed the Islands District Council (IDC) on the EIA findings. On 21 September 2009, we consulted the EIA Subcommittee of the ACE. On 12 October 2009, the ACE endorsed the EIA reports with conditions. The DEP approved the EIA reports with conditions on 23 October 2009 and issued the EPs on 4 November 2009. After the legal procedures of the JR and appeal, the Court of Appeal confirmed the validity of the EPs. Refer to footnote 16 for details.

31. According to the conditions of the EP, we shall submit the findings of the preliminary study on the Marine Park at Brothers Islands¹⁷ to the ACE in December 2011. If the study's preliminary proposal of the marine park at Brother Island is agreeable to the ACE, the Administration will carry out further study on the details of designation and consult stakeholders for the proposed marine park closer to the time of the completion of the HKBCF project.

Objection-handling process in respect of reclamation works, amendment to the Chek Lap Kok Outline Zoning Plan, road works and sewerage works

32. We gazetted on 12 and 19 June 2009 the proposed reclamation works under the Foreshore and Sea-bed (Reclamations) Ordinance (Cap. 127), and the draft Chek Lap Kok Outline Zoning Plan (OZP) No. S/I-CLK/11¹⁸ under the Town Planning Ordinance (Cap. 131). We also gazetted the HKBCF road scheme and plans on 7 and 14 August 2009 under the Roads (Works, Use and Compensation) Ordinance (Cap. 370). During the statutory objection period, 789 objections to the proposed reclamation works, 789 representations on the draft Chek Lap Kok OZP and 611 objections to the road scheme were received. Most of the objections and representations are in the form of standard emails / letters / forms and concerns on the proposed works for their perceived negative impacts to Tung Chung residents, environment and ecology, and requesting alternative solutions. More detailed descriptions of the objections / representations are in Enclosure 13. Despite our effort in resolving the objections, 720 objections to the proposed reclamation works / and

17 The EP for the HZMB HKBCF project requires the project proponent to advance the preparation works for the designation of the marine park, including a study on the details of the designation and consultation with stakeholders, on the understanding that designation of the marine park would immediately follow the completion of the project. The project proponent shall deposit the proposal, including the proposed size and management plan, of the proposed marine park in consultation with the Agriculture, Fisheries and Conservation Department before the commencement of construction of the Project.

18 The major amendments incorporated in the draft Chek Lap Kok OZP No. S/I-CLK/11 are mainly to incorporate the transport infrastructures and land use proposals on the proposed reclamation areas for the HKBCF, HKLR, the southern landfall of TM-CLKL.

and 567 objections to the road scheme still remain unresolved. In respect of the draft Chek Lap Kok OZP, after giving consideration to the valid representations under the Town Planning Ordinance on 13 November 2009, the Town Planning Board decided not to uphold the representations under the Ordinance.

33. We also gazetted the proposed sewerage works for the HKBCF on 7 and 14 August 2009 under the Roads (Works, Use and Compensation) Ordinance as applied by section 26 of the Water Pollution Control (Sewerage) Regulation (Cap. 358 AL). During the 60-day statutory period for objection, no objection to the proposed sewerage works for the HKBCF was received.

34. In respect of the unresolved objections as mentioned in paragraph 32 above, we submitted the project together with objections to the Chief Executive-in-Council (CE-in-C) for consideration. On 18 October 2011, after considering the unresolved objections and representations, the CE-in-C authorised the reclamation works and road schemes of the HKBCF project without modification under the Foreshore and Sea-bed (Reclamations) Ordinance and the Roads (Works, Use and Compensation) Ordinance respectively; and approved the amendment of the Chek Lap Kok OZP. Also, the DEP authorized the proposed sewerage works for the HKBCF. The notices of authorisation for the reclamation works, road schemes and sewerage works of the HKBCF project and the Chek Lap Kok OZP were gazetted on 21 October 2011.

35. We briefed the LegCo Panel on Transport on the latest progress of the HZMB and related local projects and consulted it on our plan to submit the funding applications for the projects (including the HKBCF) on 26 October 2011. The Panel supported the submission of funding applications to PWSC. We will separately write to the Transport Panel to provide supplementary information requested by the Members, and will copy the same to the PWSC Secretariat for onward submission to PWSC Members for reference.

ENVIRONMENTAL IMPLICATIONS

36. The reclamation works, dredging operation and road bridges under the Project are designated projects under Schedule 2 of the Environment Impact Assessment Ordinance (EIAO) (Cap. 499) and EPs are required for their construction and operation. An EIA was conducted for the HKBCF to evaluate possible environmental impacts of the project during both construction and operational phases, including potential impacts on air quality, noise, water quality, ecology such as Chinese White Dolphins, waste management, fisheries, landscape and visual etc., with mitigation measures recommended. The EIA report concluded that the environmental impacts arising from the proposed project would be acceptable with the implementation of the recommended mitigation project measures. Key
/findings

findings of the EIA study and some major mitigation measures recommended are listed at Enclosure 14. The DEP approved the EIA report under the EIAO with conditions on 23 October 2009 and issued the EP on 4 November 2009 for the HKBCF project.

37. During the detailed design of the reclamation works, HyD developed a non-dredge reclamation method which, when compared with the scheme proposed in the 2009 EIA report, can further reduce the volume of marine deposits to be disposed of by about 17 million cubic metres (m³); the requirement of backfilling material by about one half; the release of marine suspended solids by about 70%; and construction marine traffics by about one half. The DEP issued the Variation of EP on 24 June 2010 for the non-dredge reclamation method .

38. At the planning and design stages, we have considered measures to reduce the generation of construction waste where possible (e.g. using site hoardings and signboards so that they can be recycled or reused in other projects, and adopting repetitive / modular design to enable reuse of formwork). In addition, we will require the contractors to reuse inert construction waste (e.g. excavated materials) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities¹⁹. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

39. During construction, we will control noise, dust and site run-off nuisances to the levels within established standards and guidelines through the implementation of mitigation measures in the relevant contracts. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of site, and provision of wheel-washing facilities as well as other relevant measures recommended in the HKBCF EIA report. In particular, underwater percussive piling method will be forbidden to avoid disturbance to Chinese White Dolphins.

/40.

¹⁹ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

40. At the construction stage, we will require the contractors 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 contractors 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

41. With the adoption of new non-dredge reclamation method, no dumping of dredged marine mud at designated dumping ground is required. The minimal amount of dredged mud will be reused within site. We estimate that the project will consume in total about 18.64 million tonnes of inert construction waste (soft public fill) during the reclamation process. We estimate that the Project will also generate in total about 9.27 million tonnes of construction waste. Of these, we will reuse about 2.1 million tonnes (22.7%) of inert construction waste on site and 0.84 million tonnes (9%) of inert construction waste on other construction site(s), and deliver 6.32 million tonnes²⁰ (68.2%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 0.01 million tonnes (0.1%) 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 about \$172 million for this project (based on an unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne²¹ at landfills).

42. We will set up an independent ENPO before the commencement of construction of the project to oversee the cumulative environmental impacts arising from the project and other concurrent projects in the adjoining area and to liaise closely with the Mainland project teams for the HZMB Main Bridge.

43. We have included the costs of implementing the environmental mitigation measures, including an environmental monitoring and audit programme (\$120.7 million), in the overall project estimate.

/ ENERGY.....

²⁰ These are mainly the surcharge material to be removed after the settlement of the reclamation site is completed.

²¹ 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 per m³), nor the cost to provide new landfills (which is likely to be more expensive), when the existing ones are filled.

ENERGY CONSERVATION MEASURES

44. This project will adopt various energy efficient features, including –
- (a) building energy management system;
 - (b) T5 energy efficient fluorescent tubes with electronic ballast and lighting control by occupancy sensors and daylight sensors;
 - (c) optimisation of power factor and supply voltage;
 - (d) high efficiency motors;
 - (e) automatic on-demand control of chilled water circulation system;
 - (f) automatic demand control of supply air;
 - (g) on-demand control of fresh air supply with carbon dioxide sensor;
 - (h) heat wheels for heat energy reclaim of exhaust air;
 - (i) light-emitting diode (LED) lighting and exit signs;
 - (j) on-demand control for passenger conveyors;
 - (k) automatic on / off switching of lighting and ventilation fans inside the lifts;
 - (l) heat pump units for hot water production and air conditioning;
 - (m) water-cooled air conditioning system; and
 - (n) automatic condenser tube cleaning equipment.
45. For renewable energy technologies, we will adopt photovoltaic system, solar hot water heating and solar powered landscape lighting.
46. For green features, there will be green roof on some of the ancillary buildings for environment and amenity benefits.

47. For recycled features, we will adopt rainwater harvesting for irrigation; provide space for separation, collection and storage of recyclable materials. We will also collect food waste for composting for horticultural treatments.

48. The total estimated additional cost for adoption of the above features is around \$125 million (including \$26 million for energy efficient features), which has been included in the cost estimate of the project. The energy efficient features will achieve 10.5% energy savings in the annual energy consumption with a payback period of about 6 years.

HERITAGE IMPLICATIONS

49. The Project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

50. We have reviewed the design of the Project to minimise the extent of land acquisition. We will resume about 30 604.4 m² of private land; and create easements and other permanent rights of about 13 689.9 m² and rights of temporary occupation of about 264 689.3 m² of private land. We will also clear about 22 665 m² of Government Land. No structure will be affected due to land resumption and clearance. Ex-gratia allowance, e.g. “Tun Fu” ceremonial fees, will also be paid where appropriate. Under the established policy, ex-gratia allowance will be offered to fishermen affected as a result of the loss of their habitual fishing ground caused by the project. We will charge the cost of land resumption and clearance estimated at \$83.22 million to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance costs is at Enclosure 15.

BACKGROUND INFORMATION

51. In May 2007, we engaged consultants to undertake the HZMB HKBCF Site Selection Study – Feasibility Study at an estimated cost of \$3.85 million under **Subhead 5101CX** “Civil engineering works, studies and investigations for items in Category D of the Public Works Programme”. The consultants completed the study in March 2008.

52. We included **834TH** in Category B in March 2008.

53. In June 2008, we upgraded part of **834TH** to Category A as **837TH** – Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities – investigation and preliminary design at an estimated cost of \$86.9 million in MOD prices. We engaged consultants in July 2008 to undertake the investigation and preliminary design for the project, which was substantially completed in 2010.

54. In May 2009, we upgraded part of **834TH** to Category A as **839TH** – Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities – detailed design and site investigation at an estimated cost of \$621.9 million in MOD prices.

55. We engaged consultants in July and September 2009 to undertake the ground investigation and detailed design for the reclamation works (including the reclamation works under the TM-CLKL advance works), which were completed. We invited tender for the reclamation works in February 2011 and the tender assessment has been completed. The detailed design, site investigation and contract procurement including preparation of tender documents and assistance in assessment of tenders for the above reclamation works are jointly funded under **839TH** and **Subhead 6100TX** “Highways works, studies and investigations for items in Category D of the Public Works Programme”.

56. We engaged consultants in September 2010 to prepare the tender for the design and build contracts of the HZMB HKLR, which also covered some works under the HKBCF project at the Airport Island that was entrusted to the HKLR project. The tendering for the works contract (including the aforementioned works under the HKBCF project) is in progress and the works will commence as soon as possible. The contract procurement including preparation of tender documents and assistance in assessment of tenders for the above works contract is jointly funded under **839TH** and **Subhead 6100TX** “Highways works, studies and investigations for items in Category D of the Public Works Programme”.

57. We engaged consultants in December 2010 to undertake the detailed design for the HKBCF superstructures and infrastructures. The detailed design of the HKBCF superstructures and infrastructure is ongoing.

58. We invited the tenders for procuring consultants for the independent ENPO and independent environmental checker services in September 2011.

59. We originally scheduled to commence the construction of the HZMB-related local projects before end 2010. We therefore set out their estimated costs in the Estimates for 2010-11 and 2011-12. Apart from considering the estimates prepared at that time, we have also considered in this funding application the cost increases due to the deferral in works commencement of about one year due to the JR proceedings, the adoption of the more environmentally friendly non-dredge reclamation method as well as the additional costs caused by factors such as design development, and anticipated increase in material and construction costs, etc..

60. Of the 752 trees within the project boundary (all located on the Airport Island), 405 trees will be preserved. The proposed construction works will involve the removal of 347 trees within the project site at the Airport Island, including 193 trees to be felled and 154 trees, including two important trees²², to be transplanted elsewhere. A summary of the important trees affected is at Enclosure 16. We will incorporate planting proposals as part of the project, including about 5 000 trees and 186 000 shrubs, as well as 93 000 m² of grassed area.

61. We estimate that the proposed works under **845TH** will create about 9 290 jobs (about 1 410 for professional / technical staff and 7 880 for workers) providing a total employment of about 291 020 man-months.

Transport and Housing Bureau
November 2011

²² “Important trees” refers 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 of 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 an important person 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 (m) (measured at 1.3 m above ground level), or with height / canopy spread of or exceeding 25 m.

Background of
Hong Kong-Zhuhai-Macao Bridge Project

Compared to the linkage with other parts of the Pearl River Delta (PRD), transport link between the Hong Kong Special Administrative Region (HKSAR) and the Western PRD has been weak, relying primarily on waterborne traffic. A study on “Transport Linkage between Hong Kong and Pearl River West”, jointly commissioned by the National Development and Reform Commission (NDRC) and the HKSAR Government in 2003, confirmed the urgent need for the construction of a land transport link connecting Hong Kong and Western PRD.

2. With the approval of the State Council to proceed with the preparatory work for the Hong Kong-Zhuhai-Macao Bridge (HZMB), the governments of Guangdong Province, the HKSAR and the Macao Special Administrative Region (the three governments) in 2003 established an HZMB Advance Work Coordination Group (AWCG) to commence the preparatory work for the HZMB. In 2004, the AWCG commissioned the China Highway Planning and Design Institute (HPDI) to conduct a feasibility study of the HZMB. The NDRC also formed an HZMB Task Force in 2007 to push forward the project. The Task Force was led by the NDRC, with representatives from the Ministry of Transport, the Hong Kong and Macao Affairs Office, and the three governments as members. At its meeting on 7 January 2007, the Task Force recommended that the three governments should set up boundary crossing facilities (BCF) within their respective territories.

3. The Central People’s Government approved the Feasibility Study Report of the project in October 2009. In respect of the works programme of the Bridge itself, works of the Main Bridge within Mainland waters and the Zhuhai Macao Boundary Crossing Facilities, commenced in end 2009 as scheduled and are expected to be completed by 2016 as planned.

4. To facilitate the works of the HZMB Main Bridge, the three governments jointly signed an Inter-governmental Agreement in late February 2010, which specifies the partnership arrangements between the three governments as well as their rights and responsibilities in respect of the construction, operation, maintenance and management of the HZMB Main Bridge. The three governments also established the Joint Works Committee of the Three Governments (the Committee) on 24 May 2010, comprised representatives of the three governments. The Committee plays a supervisory role over the implementation of the HZMB project, and is responsible for decision-making on major issues concerning the project. On the basis of the Articles of Association signed by the three governments, they also established the

managing body of the HZMB Main Bridge (the HZMB Authority)¹. The HZMB Authority is responsible for co-ordinating the construction, operation, maintenance and management of the HZMB Main Bridge, and implementing various policies of the Committee.

¹ The HZMB Authority is the project's legal person, which operates as a non-profit-making public institution legal person.

**845TH – Hong Kong–Zhuhai–Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures**

**List of Main Buildings and Accommodation on
Hong Kong Boundary Crossing Facilities (HKBCF)**

Main Buildings / Facilities		Approximate Construction Floor Area (CFA) (square meters)*	Major / Special Accommodation
1	Passenger Clearance Building	93 000	Departure / arrival halls, custom, immigration and quarantine (CIQ) and other offices, commercial or retail facilities, canteen for staff, joint command center, interview and search rooms, barracks, first aid room, VIP rooms, immigration examination counters and e-channels at each hall, Customs and Excise Department (C&ED) examination cubicles, health screening stations, police reporting centre, observation rooms, and monitoring / control centre, etc.
2	Clearance buildings / facilities for private cars, coaches and their drivers / passengers	17 500	Examination facilities and offices for C&ED, Immigration Department (ImmD) and Department of Health (DH) to process private cars, coaches, their drivers and private cars' passengers.
3	Clearance buildings / facilities for goods vehicles, their cargoes and drivers	22 000	Examination facilities and offices for C&ED, ImmD and DH to process goods vehicles, their cargoes and drivers.
4	Vehicle Processing Kiosks	4 500	Inbound and outbound vehicle processing kiosks for DH, ImmD and C&ED.
5	Fire Station cum Ambulance Depot	4 000	Offices, barrack, changing room, lecture room, recreation rooms, exercise room, laundry, canteen, drill tower, equipment stores, medical equipment stores, general stores, underground fuel tanks with fuel dispensers and 5-bay appliance room.

Main Buildings / Facilities		Approximate Construction Floor Area (CFA) (square meters)*	Major / Special Accommodation
6	Police Main Building and other buildings / facilities	2 500	Offices, resource center, armory, antenna tower, briefing room, interview room and changing rooms in Police Main Building, and other buildings / facilities including Police Weigh Station, Police Under Vehicle Surveillance System Monitor Room, Police Inspection Post and Police dangerous goods store.
7	Other accommodation for government departments	3 500	Other office accommodation and examination buildings / facilities for Agriculture, Fisheries and Conservation Department (AFCD) and DH, and C&ED Detector Dog Base and Dangerous Goods Store, etc.
8	Maintenance Depots	5 500	Offices, workshops, storage of spare parts for highways, electrical and mechanical maintenance teams, bulk tool and equipment rooms.
9	Miscellaneous buildings / facilities	9 000	Refuse collection point, water and sewage pumping stations, sewage treatment plant, public toilets and vent shaft building, etc.

* Subject to further refinement when project proceeds, and excluding any proposed outdoor yards etc in construction floor area.

845TH – Hong Kong–Zhuhai–Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures

Breakdown of Estimates for Consultants’ Fees and Resident Site Staff Costs
(in September 2011 prices)

		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a) Consultants’ fees for contract administration ^(Note 2)	Professional	-	-	-	116.8
	Technical	-	-	-	23.5
				Sub-total	140.3
(b) Resident site staff costs ^(Note 3)	Professional	8 384	38	1.6	837.2
	Technical	21 013	14	1.6	711.9
				Sub-total	1,549.1
Comprising:-					
(i) Consultants’ fee for management of resident site staff					105.9
(ii) Remuneration of resident site staff					1,443.2
(c) Consultants’ fee for Independent Environmental Project Office and independent environmental checker ^(Note 4) services	Professional	38	38	2.0	4.7
	Technical	49	14	2.0	2.1
				Sub-total	6.8
				Total	1,696.2

* MPS = Master Pay Scale

Note

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. A multiplier of 2.0 is applied to the average MPS point to estimate the cost of staff employed in the consultants’ offices. (As at now, MPS pt. 38 = \$62,410 per month and MPS pt. 14 = \$21,175 per month).
2. The consultants’ staff cost for the contract administration is calculated in accordance with the following existing consultancies –
 - (a) Agreement No. CE 28/2009(CE) “HZMB HKBCF (Reclamation Works) – Design and Construction” (for the reclamation works of the HKBCF under **845TH** and TM-CLKL southern landfall under **825TH**);
 - (b) Agreement No. CE 36/2009(HY) “HZMB Hong Kong Link Road – Tender and Construction” (for the HKLR works under **844TH** and some road and reclamation works in the Airport under **845TH**); and

- (c) Agreement No. CE 13/2010(CE) “HZMB HKBCF (Superstructures and Infrastructures) – Design and Construction” (for the HKBCF superstructures and infrastructure works under **845TH**, TCSS works (except civil works provision and power supply) of the HKLR under **844TH** and TCSS works (except civil works provision and power supply) of the TM-CLKL southern connection under **825TH**).

The construction and completion phases of the assignments will only be executed subject to Finance Committee’s approval to upgrade **825TH**, **844TH** and **845TH** to Category A.

3. We will only know the actual man-months and actual costs after the completion of the construction works.
4. We will only know the actual costs after the consultants have been selected.

**Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR)
and Hong Kong Boundary Crossing Facilities (HKBCF)**

Public Consultation and Engagement since 2003

We have briefed the Panel on Transport of the Legislative Council (the Panel) on the progress of the HZMB project from time to time since 2003. On 25 June 2004, we briefed the Panel on the commissioning of the investigation and preliminary design study for the HKLR (the then Hong Kong Section of HZMB and Connection with North Lantau Highway).

2. In April 2005, we consulted the Advisory Council on the Environment (ACE) and the representatives of green groups (including World Wide Fund, Friends of the Earth, Green Power, Conservancy Association, Green Lantau Association, Living Islands Movements and Save Our Shorelines), on the alignment options of the HKLR and the landing point of the HZMB.

3. The ACE members and representatives of the green groups gave useful suggestions on the scope of the environmental impact assessment (EIA) study. We also briefed the Panel, Islands District Council (IDC) and Town Planning Board in May and June 2005. From September 2005 to April 2006, we carried out further consultation with the IDC, ACE, Rural Committees of Tung Chung, Tai O and Mui Wo, Lantau Area Committee, Antiquities Advisory Board, Port Operations Committee, Provisional Local Vessels Advisory Committee, Country and Marine Park Board, as well as the green groups mentioned in paragraph 2 above. In general, the western alignment along the Airport Channel was supported because of the smaller impact to the environment and the existing facilities. However, for the eastern alignment (the Connection with North Lantau Highway), there was no majority support on either the sea viaduct or tunnel options. In response to the suggestions from various parties, such eastern alignment has not been pursued. The alignment has been adjusted to the current alignment along the Airport Island to connect with the HKBCF.

4. In July 2007, we also consulted green groups and fishermen representatives on their views on the possible HKBCF site locations. Most of the green groups agreed that a reclamation to the north-east of the Airport would have a smaller environmental impact than the other options and thus would be worthy of further consideration. Some however expressed objection to reclamation, irrespective of location, as a matter of principle. The fishermen representatives also expressed their objection to any reclamation for fear that it would affect their fisheries production.

5. We consulted the IDC on the possible options for the location of the HKBCF on 19 September 2007. Some members supported the option of locating the HKBCF at the waters off the north-east of the Airport due to its potential synergy benefits with the Airport and the overall economic benefits to the whole of Hong Kong. Some members however indicated their preference to locating the HKBCF near San Shek Wan to help boost the local development and economy. Nevertheless, we do not recommend the San Shek Wan option due to its adverse impact on Chinese White Dolphins and its significant adverse noise, air, visual and landscape impacts, including significant hill cutting, removal of woodland with landscape value and clearance of an archaeological site.

6. From September 2008 to October 2008, we conducted a series of public engagement on the HKLR, HKBCF, Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) including ten focus group meetings with Chairmen of the Islands, Tuen Mun and Yuen Long District Councils, professional institutions, Heung Yee Kuk, Lantau Area Committee, Area Committees in Tuen Mun, trade associations, fisherman groups, marine industry and green groups; and held two public workshops concerning the Hong Kong-Shenzhen-Zhuhai corridor¹ at Tung Chung and Tuen Mun. To further engage views concerning the Hong Kong-Shenzhen-Zhuhai corridor from local residents, 13 meetings with Tung Chung residents, Tai O Rural Committee and Tung Chung Rural Committee were held in early 2009.

7. During these public engagement exercises, some Tung Chung residents expressed concerns over the environmental and visual impacts that might be caused by the HKBCF proposed to be located at the waters off the north-east of the Airport Island, and expressed their preference of locating the HKBCF at the west side of the Airport Island instead. Furthermore, some residents, particularly the rural community represented by Tai O Rural Committee, expressed their preference of locating the HKBCF at San Shek Wan to help boost the local development and economy as well as improving the vehicular access to Tai O and San Shek Wan. We have explained that these two alternatives are not considered suitable, primarily on grounds that they pose significant problems in hydraulics and environmental conservation, and in the case of the San Shek Wan options, noise and air quality impact on Sha Lo Wan (SLW) and San Shek Wan. We also explained that these options could not achieve a road network with synergistic effect as strategic as the gazetted HKBCF location. That said, we have modified the viaduct portion at SLW by increasing the span length so that visual impact caused by the HKLR to SLW residents could be reduced. During the public consultation, the Tung Chung residents also showed great concern over the visual impact due to the HKLR sea viaduct option in front of Tung Chung. We have replaced this option by the tunnel-cum-at-grade road scheme.

¹ Hong Kong-Shenzhen-Zhuhai Corridor comprises: (i) HZMB HKLR and HKBCF; and (ii) TM-CLKL and TMWB.

8. On 17 April 2009, the IDC was consulted on our proposed HKBCF at the waters off the north-east of the Airport, as well as on the HKLR and TM-CLKL projects. Although some IDC members had indicated their preference for a HKBCF west of the Airport Island, most of the IDC members supported the implementation of the HZMB project with the HKBCF at the above-proposed location. The Administration will continue to explore the appropriate means for taking forward the suggestion of “bridgehead economy”.

9. We consulted the Panel in April and May 2008 regarding our plan to seek funding for the investigation and preliminary design of the HKBCF. We also consulted the Panel in April 2009 regarding our plan to seek funding for the detailed design and associated site investigation of the HKBCF. The Panel supported the funding applications. In June 2008 and May 2009, the Finance Committee approved the funding for the two proposals respectively.

10. With the commissioning of the detailed design study for the HKBCF superstructures, we briefed the various public transport trade representatives² on the HZMB and related local projects between February and April 2011. In general, they supported the early construction of the HZMB. At the same time, they raised a number of enquiries / suggestions on the future operation of the HZMB and the public transport interchange at the HKBCF. The Administration will take the above suggestions into account when deciding on the various public transport services to be provided on the bridge and the HKBCF in due course.

² Including the non-franchise bus operators, franchise bus operators, taxi trades, goods vehicle trades, green mini bus operators.

**Details of Objections and Representations of
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities**

**A. Objections under Foreshore and Sea-bed (Reclamations) Ordinance
(Chapter 127) in respect of the Reclamation Works Gazetted on 12 and 19
June 2009**

During the statutory period for objection, 789 objections were received. Out of these objections, 69 have subsequently been withdrawn unconditionally. Among the remaining 720 objections, 31 contain incorrect/did not provide contact details, 3 have been withdrawn conditionally (but we could not fully meet the conditions) and 686 objections were maintained. These 720 objections were thus considered unresolved. The details of the objections are described as follows.

Group I

2. There are 767 objections lodged in the form of standard email template. Most of these objectors are residents of Tung Chung. Their major concerns included the possible negative impacts on the residents of Tung Chung, the ecology of the area, the natural hillside and coastline of Lantau Island and the coastal protection area (CPA) at east Chek Lap Kok Island. They also suggested to develop alternative solutions, such as integrating the Hong Kong Boundary Crossing Facilities (HKBCF) and the Hong Kong Link Road (HKLR) at south-west and north of the Airport Island respectively. The Administration has responded to the objectors' concerns that robust and comprehensive environmental impact assessments (EIA) had been conducted for the projects. The EIAs have evaluated possible environmental impacts during both construction and operational phases, including potential impacts on air quality, noise, water quality, waste management, ecology, fisheries, landscape and visual impact. Results indicated that the project met the requirements under the EIA Ordinance (Cap. 499) (EIAO) fully when mitigation measures in specified areas are taken. Moreover, the Administration has assessed various alternative locations for the proposed works and explained to the objectors the reasons why the alternative solutions suggested by them were not considered feasible.

3. Upon completion of the objection resolution exercise, a total of 66 objections were withdrawn unconditionally. No responses were received from 449 objections and 221 objections were maintained. There were 31 objections received with incorrect contact detail or did not provide contact details. Therefore, these 701 objections are considered unresolved.

Group II

4. 14 objectors lodged 15 objections via the same standard email template as those objections described in paragraph 2 above. These objectors, however, have raised additional or further concerns via various means and the Administration's responses are as shown below:

- (a) Some raised concerns on lack of engagement with Tung Chung residents; aggravating the pollution level and hence affecting the Tung Chung environment due to HZMB traffic and future Airport development; and the impact on Tung Chung scenery, lighting glare, etc. Some suggested keeping the works away from Tung Chung by landing the HZMB at Tuen Mun; moving Tuen Mun-Chek Lap Kok Link (TM-CLKL) southern connection further north; or putting more roadworks in the form of tunnels. The Administration has explained that the project met the requirements under the EIAO and that extensive public engagement / consultation on the various site options for HKBCF and alignment options for HKLR and TM-CLKL had indeed been conducted. The Administration has also explained to the objectors the reasons why the various alternative options including their suggested ones were not considered feasible.
- (b) Some raised concerns on the future developments at Tung Chung and north Lantau area including the third runway of the Airport, and made various suggestions on the development proposals including mainly requests for coordinated developments in one go. The Administration has explained that the programme and layout of the future development of the airport was not yet determined, and hence could not be considered in one go. However, the cumulative environmental impacts due to the concurrent projects at Tung Chung and north Lantau area had already been assessed in the Administration's EIA studies.
- (c) One objector perceived conflict of interest arising from the EIA findings provided by the project consultant engaged by Highways Department (HyD) for HKBCF and HKLR. The Administration has explained that it was common practice for project consultants to conduct the respective EIA studies for the projects; and under the EIA mechanism, the EIA reports were discussed and endorsed by the Advisory Council on the Environment (ACE), which is a non-governmental organisation¹ consisting of environmental experts, green groups, academics etc.
- (d) One objector had further suggested that HyD should consider replacing the vehicular bridge by a freight or passenger rail bridge. He also suggested different new rail alignments. In response, the Administration explained that the option of incorporating railways into the HZMB had been critically examined during the feasibility study stage and was not considered viable due to various factors including demand forecast, technical requirements, financial viability etc.

¹ ACE is a non-statutory advisory body and the Council comprises members from different background, who are appointed by the Chief Executive to keep under review the state of the environment in Hong Kong, and to advise the Government, through the Secretary for the Environment, on appropriate measures which might be taken to combat pollution of all kinds and to protect and sustain the environment.

5. Upon completion of the objection resolution exercise, 1 objection was withdrawn unconditionally. No responses were received from 2 objections and 10 objections were maintained. The remaining 2 objections were withdrawn conditionally (but the Administration could not fully meet the conditions). Therefore, these 14 objections are considered unresolved.

Other unresolved objections

6. A fishermen group raised concern on the loss of fishing grounds due to the proposed works, which will affect the livelihood of fishermen. Reasonable compensation was requested. The Administration has explained that with the implementation of mitigation measures, the sediment plumes would be confined to areas close to the construction sites. The projects would not cause significant impact on the water quality at the fish culture zones or major capture fisheries areas. Moreover, one-off ex-gratia allowance payment will be made, in accordance with the current policy, to eligible fishermen who will be affected by the proposed works. The objector wished to maintain its objection. Therefore this objection is considered unresolved.

7. An individual raised concern on the possible environmental impacts on the residents of Tung Chung and supported the HKBCF to be located at the west of the Airport and HKLR to run along the north of the Airport. The Administration has responded that the EIA for the project confirmed that the project met the requirements under the EIA Ordinance. We also explained to the objector the reasons why his suggested alternative solutions were considered not feasible. The objector wished to maintain his objection. Therefore this objection is considered unresolved.

8. A non-profit making organisation lodged an objection which was similar to those objections described in paragraph 2. The objector had further stated that the health impact on people, in addition to other environmental impacts, due to the projects had not been assessed in the EIAs, and the suggestion to adopt mandatory electronic toll payment or territory-wide electronic road pricing so as to avoid or significantly reduce the size of the toll plaza of TM-CLKL. The Administration has responded that the health aspect had been addressed by detailed impact assessment during the EIA study on various relevant aspects, including impact assessment on air quality, noise, water quality etc. The EIA confirmed that the projects comply with the requirements under the EIAO fully. The Administration has also explained that mandatory electronic tolling or territory-wide electronic road pricing scheme was not feasible at the present stage in view of controversial issues such as personal privacy and public acceptability. The objector wished to maintain his objection. Therefore this objection is considered unresolved.

9. Another objector was a charitable institution on nature conservation. Its main concern is the impacts due to the HKLR on geological landforms, notably the shorelines of Lantau Island and the CPA at east of the Airport Island. It suggested locating HKBCF at the south-west of the Airport and the HKLR along the north of the Airport. The Administration has explained that the Administration had assessed and confirmed the ecological and geophysical value of the existing shoreline at the east of the Airport was of low significance; that the terrestrial and marine ecology found there was common species in Hong Kong; and that the natural habitat thereat could easily be re-colonized on the rock amours along the future seawall. Also, the HKLR will not touch the natural coastline between Sha Lo Wan and Sham Wat, and the bridge / viaduct will span across the Sha Lo Wan headland by means of long span structure to minimise any visual impact. The objector replied that they would withdraw their objections if a few conditions could be met. Though the Administration will endeavor to minimize the impacts of the projects at detailed design stage, the Administration cannot commit the government at this stage especially on the request to permit public access to the new coastline along the HKLR (due to the closed area restriction), and the suggestion to incorporate the geological heritage assessment into future EIA study briefs as Director of Environmental Protection (DEP) is the authority to determine the EIA study brief requirements according to the specific circumstances of individual projects. Since the withdrawal is conditional, the objection is considered unresolved.

10. Another objector was also a conservation organisation. Its main concern is that the proposed works would likely bring considerable negative impacts to marine environment, marine ecology (Chinese White Dolphins (CWD)), fisheries, water quality and the hydrodynamics at and near the proposed construction site. The Administration has explained that the EIA for the project had demonstrated that the project met the requirements under the EIAO fully. Moreover, to further enhance preservation on dolphin ecology, the Administration will seek to designate the Brother Islands as a marine park in accordance with the Marine Parks Ordinance (Cap. 476) upon completion of the project. The Administration has further explained to the objector the various reasons why the suggested alternative proposals including integrating the HKBCF with the airport at its west side and integrating the HKLR with the airport at its north side, to adopt a viaduct option to replace the reclamation for HKLR along the Airport east coast, and to remove the southwest reclamation of the HKBCF were not considered feasible. As the objector has not further responded to the Administration's response letters and minutes of the meeting, the objection is considered to be maintained. Therefore this objection is unresolved.

Other objections which were withdrawn unconditionally

11. The objector is a conservation organisation. Its main concern is the preservation of the CPA at the east of Airport Island. It suggested various alternative solutions (such as using viaduct or sub-sea tunnel) for HKLR along the Airports east coast to preserve this coastline as much as possible. In response, the Administration explained the various assessments conducted under the EIA study for the project together with the reasons why its suggested solutions were not considered feasible. The Administration explained that the said shoreline had not exhibited or developed any particular ecological and geological importance over the years; that the terrestrial and marine ecology found there were common species in Hong Kong; and that the natural habitat thereat could easily be re-colonized upon completion of our project by constructing the seawall with natural rock armours. In response to our explanation, the objector withdrew the objection unconditionally. Therefore this objection is considered resolved.

12. Another objector was a utility company. Its main concern is whether the proposed works would affect the feasibility of their proposed utility line from Tuen Mun to Chek Lap Kok in future. The Administration explained that the proposed works would not completely rule out the feasibility of the proposed utility line route. In response to the Administration's explanation, the objector withdrew the objection unconditionally. The objection, thus, is considered resolved.

B. Representations under Town Planning Ordinance (Chapter 131) in respect of Draft Chek Lap Kok Outline Zoning Plan No. S/I-CLK/11 Gazetted on 12 and 19 June 2009

13. During the exhibition of the draft Chek Lap Kok Outline Zoning Plan No. S/I-CLK/11, a total of 789 representations were received. Subsequently, 7 representations were withdrawn and one representation was considered invalid as the subject of representation was not related to the amendment. Excluding these, the number of valid representations was 781. The details of the representations are described as follows.

Group I

14. There are 780 representations which were concerned with the proposed HKBCF, HKLR and TM-CLKL, and the related supporting facilities and the proposed rezoning of natural coastline of Chek Lap Kok Island. Among them, 777 were submitted by individuals of the public in the form of standard emails. The remaining three of them were submitted by three conservation organisations, two of which were the same objectors in respect of the objections under Cap. 127 mentioned in paragraphs 9 and 10 above. The major grounds of representations are summarized as follows:

Site Selection of the HKBCF and alignment of the HKLR

- (a) there were general concerns on the location of the HKBCF and the alignment of the HKLR such that the project would bring traffic pollution to the Area. There were also concerns on the proximity of the facilities to the existing and future residents of Tung Chung and that the long security road (for users before and after going through Hong Kong customs, immigration and quarantine) should be reduced significantly;

Public Engagement

- (b) there were concerns that there was no comprehensive assessment on all feasible alternatives for detailed public consideration including locating the HKBCF to the south-west and the HKLR to the north and as part of the Airport Island. The proposal should include freight and passenger rail lines connecting to the container port and Lok Ma Chau to avoid container trucks passing through the urban areas. There was also concern on a lack of engagement with Tung Chung residents; and

Impacts on the Natural Coastline and Damage to the Natural Hillside

- (c) the natural shore, zoned “CPA”, was originally a partial compensation for the loss of headland and its coastline at Sha Lo Wan during the construction of the Chek Lap Kok airport (Airport). There were concerns that the proposed removal of the natural coastline would set a negative precedent on the reliability of the environmental mitigation measures and the Government’s ability and willingness to respect them. Such proposal would contravene the original planning intention for the “CPA” zone. The proposed amendments failed to minimize the impact on hydrodynamics, particularly the water movement between north and south of the proposed HKBCF and the water channel between the Airport and Lantau Island.

15. Some representers put for the following proposals:

- (a) to reassess the overall scheme and further evaluate other alternative solutions;
- (b) to locate the HKBCF to the west of the Airport to avoid the reclamation of the “CPA”, “Other Specified Uses” (“OU”) annotated “(Highways Maintenance Area)” and “OU (Amenity)” zones;
- (c) to adopt a viaduct option along the eastern coast in order to protect the water body and the natural shoreline along the “CPA” zone if HKBCF had to be located on the northeastern water of the Airport; and

- (d) to preserve the remaining natural features such as the natural coast on the eastern shore of Chek Lap Kok.

16. The Board decided not to uphold the above representations for the following reasons:

- (a) the main purpose of the HKBCF was to provide facilities for cross-boundary cargo processing and passenger clearance. Together with the HZMB Main Bridge and the HKLR as well as the Tuen Mun Western Bypass (TMWB) and TM-CLKL, the proposed HKBCF site as shown on the draft Chek Lap Kok OZP No. S/I-CLK/11 would enable the formation of a strategic road network linking Hong Kong, Zhuhai, Macao and Shenzhen, thereby further enhancing the transportation and aviation hub status of Hong Kong. The synergy effect would be considerable. With its proximity to the Hong Kong International Airport, the HKBCF would serve as a strategic multi-modal transportation hub, and air / land transit of passengers could easily switch to different modes of transport;
- (b) the present proposed location and configuration of the HKBCF and the Southern Landfall of TM-CLKL, and the alignment of the HKLR were considered appropriate in technical, environmental and engineering terms, as confirmed by a series of consultancy studies;
- (c) the HKLR and HKBCF were located about 700 metres (m) and 2 kilometres (km) respectively from the residential developments at Tung Chung waterfront. Also, maximum building height restrictions had been stipulated on the draft Chek Lap Kok OZP to regulate the development height profile of the HKBCF. Furthermore, the environmental implications of the HKBCF, HKLR and TM-CLKL had already been assessed and the respective EIA studies concluded that with appropriate mitigation measures implemented, the potential environmental impacts would be acceptable. The respective EIA reports had been approved with conditions by DEP under the EIA Ordinance on 23 October 2009;
- (d) extensive consultation and public engagement exercises had been conducted by HyD, and the alignment of HKLR amended to address the concern of some Tung Chung residents. The rationale of adopting the present proposals had also been fully explained to the residents and relevant stakeholders;
- (e) a representer's suggestion to locate the HKBCF and HKLR at the southwest and north of the Airport was not supported as there was inadequate information to demonstrate that such suggestion was technically and environmentally feasible and was better than the presently proposed location;

- (f) a representer's suggested viaduct option for the HKBCF southwest reclamation and HKLR along the east coast of the Airport was considered less favourable than reclamation as it would involve massive amount of columns which might trap rubbish underneath, jeopardise tree planting alongside for visual enhancement, and non provision of suitable habitat for ecological species to establish; and
- (g) railway provision in HZMB had not been included in the territorial railway planning and development. The representer's suggestion was not consistent with the current infrastructure planning and also not viable from engineering and financial viability view points.

Group II: Another Representation

17. Another representer (being an organisation formed by professionals in the field of transport policy and planning) opined that the draft Chek Lap Kok Outline Zoning Plan (OZP) had not fully taken account of the requirements of air logistics development when logistic industry was one of the four pillars driving and sustaining the economy of Hong Kong. Flexible land use zonings should thus be provided to facilitate air logistics development. To cater for evolution of freight forwarding and logistics industry and the increase in container vehicles delivering goods to the airport, it was proposed that the relevant OZP Notes of the Commercial ("C"), "OU" annotated "Airport Services Area" and "OU" annotated "Business Park" zones should be amended. The representer also requested for information on the breakdown of the site area for the proposed "OU" annotated "Highways Maintenance Area" zone and to be informed of the mitigation measures for the rezoning of the "CPA" which was the coastline of the original Chek Lap Kok Island. However, the Town Planning Board decided not to uphold this representation for the following reasons:

- (a) there was ample space at the Airport Island reserved for air logistics development. A total of 137.99 hectares (ha) and 44.74 ha of land for "OU (Airport Service Area)" and "OU (Business Park)" zones respectively had been designated on the draft Chek Lap Kok OZP in which various 'Cargo Handling and Forwarding Facility' uses, including cargo handling facility, cargo working area, logistics centre and freight forwarding services centre uses were always permitted in those two zones. In addition, distribution centre use was always permitted;
- (b) the reclamation area proposed for highways maintenance area was essential for the provision of backup area for operation and maintenance of the HKLR and to form protection for the HKLR's tunnel and its portal on the eastern coast of Chek Lap Kok. There was no strong planning justification for using the site for distribution centre and / or logistics centre uses; and

- (c) environmentally sensitive design for the new sea frontage could be adopted to mitigate the loss of the natural coast so as to provide a suitable habitat for the existing species to re-establish in the new location. Greening could also be provided along the new seawall to enhance the environment.

Other representations which were withdrawn unconditionally or considered invalid

18. 7 representations were withdrawn and one representation was considered invalid as the subject of representation was not related to the amendment.

C. Objections under Roads (Works, Use and Compensation) Ordinance (Chapter 370) in respect of Hong Kong Boundary Crossing Facilities' Road Scheme and Plans Gazetted on 7 and 14 August 2009

19. During the statutory period for objection, 611 objections were received. Out of these objections, 44 have subsequently been withdrawn unconditionally. Among the remaining 567 objections, 20 contain incorrect contact details / did not provide contact details, 5 have offered conditions for withdrawal (but we could not fully meet the conditions) and 542 objections were maintained. These 567 objections were thus considered unresolved. The details of the objections are described as follows.

Group I

20. These 198 objections were lodged in the form of standard letters. These objectors are mostly residents of SLW Village who objected to both the HKBCF project covered by the Scheme and the HKLR project covered by the road scheme separately gazetted under the Ordinance. In the five types of standard letters involving similar concerns, the objectors disagreed to the gazetted HKBCF location as well as the HKLR alignment and raised concerns on the environmental and "Fung Shui" impacts. 71 objectors also requested for transportation improvement for SLW. The Administration has responded that the robust and comprehensive EIA studies for the HKBCF and HKLR projects showed that the projects would meet the requirements under the EIAO fully when mitigation measures in specified areas are taken. The Administration has also explained the advantages of the gazetted layouts and that a slip road from HKLR to SLW could not be arranged due to road operation, traffic management and safety considerations. However, the Government would pay close attention to development of the relevant areas to review and consider the possibility to provide a separate link to SLW.

21. Upon completion of the objection resolution exercise, 12 objections were withdrawn unconditionally. Of the remaining 186 objections, no responses were received from 89 objections, 78 objections were maintained, while 19 objections were received with incorrect contact details or did not provide contact details and follow up was not possible. These 186 objections are considered unresolved.

Group II

22. There were 125 objections lodged in the form of one of the five types of standard letters described in paragraph 20 above. These objectors, objecting against the HKBCF and HKLR projects, are also mostly SLW villagers. On top of the common concerns (as set out in paragraph 20), they raised additional or further concerns – either in the objection notices, in subsequent correspondence / contacts with the HyD, or at objection-handling meeting(s) – including the possible adverse impact on marine traffic along Airport Channel due to the HKLR and insufficient publicity and consultation regarding the project. Some objectors also suggested that the HKLR should adopt tunnel form instead of viaduct at Airport Channel or to build the HKLR at north of the Airport. Apart from those responses set out in paragraph 20 above, the Administration has explained that marine access to SLW would be maintained as far as possible during the construction stage and would be maintained at the operation stage of HKLR; that extensive public consultation had been conducted; and the reasons why their suggested tunnel or alignment options were not feasible. Upon completion of the objection resolution exercise, 3 objections were withdrawn unconditionally. Of the remaining 122 objections, 1 objection has offered condition for withdrawal (the condition could not be met) while 121 objections were maintained. Therefore, the 122 objections are considered unresolved.

Group III

23. These 237 objections in the form of a standard e-mail template were against the HKBCF, HKLR and TM-CLKL projects gazetted under the Ordinance. A number of objectors have additional comments which were in line with or similar to the content of the standard e-mail template. About half of these objectors are Tung Chung residents. The objectors raised concerns on the failure of the Administration to develop alternative solutions and the possible negative impacts arising from the three projects on the residents of Tung Chung and the environment, the natural hillside and coastline of Lantau Island and the CPA at the east of Chek Lap Kok Island. They suggested integrating the HKBCF and HKLR at the south-west and north of the Airport Island respectively. In response, the Administration has explained that the robust and comprehensive EIAs had been conducted for the three projects and that different site and alignment options had been considered before the gazetted schemes were recommended. The Administration has also explained the reasons why their suggested location / alignment options for the HKBCF / HKLR were not considered feasible. The Administration has also

explained that the proposed scheme for the HKBCF and HKLR projects would not touch the natural hillside and coastline of Lantau Island. The Administration has further explained that the terrestrial and marine ecology found at the CPA was common species in Hong Kong and that the natural habitat thereat could easily be re-colonized on the rock amours along the future seawall. Upon completion of the objection resolution exercise, 26 objections were withdrawn unconditionally. As for the remaining 211 objections, no responses were received from 165 objections and 45 objections were maintained, while 1 objection was received with incorrect contact details and follow-up was not possible. These 211 objections are considered unresolved.

Group IV

24. There were 47 objections lodged via the same standard e-mail template as that mentioned in paragraph 23 above. These objectors also raised additional concerns or further suggestions via various means (either in the objection notices, in subsequent correspondence / contacts with HyD, or at objection handling meeting(s) and our responses were as follows –

- (a) Some objectors opined that the HZMB should not be built. Some suggested marine transport in lieu of HZMB. Some raised concern about adverse impact on the values of their coastal properties due to the projects. In response, the Administration has explained the strategic importance of the HZMB to the further economic development of Hong Kong, Macao and the Western Pearl River Delta region.
- (b) Some objectors provided various suggestions regarding the alignments or forms of the three projects (such as landing HZMB at Tuen Mun, putting more roadworks in the form of tunnels) or considering them together with the future third airport runway or Tung Chung developments. The Administration has explained the various drawbacks of their proposed options and the reasons why their proposed options were not feasible, and that the future Tung Chung or third runway development would be subject to further studies and hence could not be considered in one go.
- (c) Some objectors raised various concerns on sustainability and environmental issues, including that assessment of air quality impact should not be based on the existing Air Quality Objectives (AQOs) which were outdated and would be revised, the impact of the projects on human health, noise and visual impact, and light glare problem, and that the impact and prejudice to the health and well-being of the community had not been addressed in the EIA reports, etc. There were also concerns on global warming and peak oil crisis. In response, the Administration has explained that the Government was committed to sustainable development and has conducted robust EIAs for the three

projects. Regarding the concerns on AQOs, the Administration has responded that the AQOs were derived from scientific analyses of the relationship between pollutant concentrations in the air and the associated adverse effects of the polluted air on the health of the public. HyD's assessments had taken into account all the comments and requirements of the authority. The Administration has also responded that the health aspect had been addressed by detailed impact assessment during the EIA study on various relevant aspects, including air quality, noise, water quality etc. The EIA confirmed that the project would meet the current requirements under the EIAO fully when mitigation measures in specified areas are taken. Regarding the light glare problem, the Administration has responded that the HKLR and the HKBCF were in fact located well away from residential premises and the lights on the HKBCF would not be directly shining at them. The Administration would also study this issue in the detailed design stage and provide corresponding mitigation measures.

- (d) Some objectors raised particular concerns on CWD and impacts on wildlife habitat, worrying that the HZMB project would contribute to the extinction of these species. The Administration has explained that various mitigation measures, such as setting up of dolphin protection zone and dolphin monitoring plan, would be in place to protect the CWD. The Government has also made a firm commitment to seek designation of the waters around the Brothers Islands as a marine park in accordance with the statutory process. Moreover, the projects have also avoided all the ecological sensitive areas – for instance the HKLR alignment at Scenic Hill would be in tunnel form to avoid the habitat of Romer's tree frogs and the projects have avoided the nursery sites of horseshoe crabs in the area.
- (e) One objector raised particular concern on the geological heritage and natural coastline in the area and requested for public access to the relic and new artificial coastlines. The Administration has explained that the EIA report had considered landscape, visual impacts, and value of natural coastline according to the requirements under the Technical Memorandum under the EIAO. The objector offered to withdraw her objection if a few conditions could be met. Though the Administration will endeavour to minimize the impact in the detailed design stage, the Administration are unable to meet the conditions in full.
- (f) One objector raised concern on the public fairness of the EIA process. He complained about the logistics and meeting arrangement of the ACE. In response, the Administration has explained that the processing of the EIA reports followed the mechanism established under the EIAO and also by ACE which is a non-governmental organisation. Another objector opined that the approval of the EIA reports and issuance of the Environmental Permit are unlawful and irrational. In response, the Administration has explained that the DEP

was satisfied that the EIA reports met the requirements of the EIA study brief and the Technical Memorandum under the EIAO, the ACE had discussed and endorsed the three EIA reports after thorough discussion at its meeting on 12 October 2009, and it was only after such stringent scrutiny that the EIA reports were approved by DEP on 23 October 2009.

25. Upon completion of the objection resolution exercise, 2 objections were withdrawn unconditionally. Among the remaining 45 objections, 4 have offered conditions for withdrawal (the conditions cannot be fully met), no responses were received from 25 objections and 16 objections were maintained. Therefore, these 45 objections are considered unresolved.

Other unresolved objections

26. The same objectors described in paragraphs 6 and 10 lodged objection to the road scheme gazetted under Chapter 370 on similar grounds as their objections under Cap. 127 as set out in paragraphs 6 and 10 above. The Administration has responded similarly as in paragraphs 6 and 10.

27. Another objector was the same as the one mentioned in paragraph 8 above (who also lodged an objection under Cap. 127). Apart from raising similar concerns as those objections described in paragraph 23 above, in the objection letter, it also raised similar concern on the health impact on people and similar suggestion on the toll plaza for the TM-CLKL as described in paragraph 8. The Administration has explained similarly as above.

Other objection which was withdrawn unconditionally

28. The objector's major concern was that the building of HZMB would cause environmental damage, particularly to dolphins and horseshoe crabs. The objector also suggested that the HZMB should not be built. In response, the Administration has explained the urgent need to construct HZMB and the findings of EIA that had been carried out for the HZMB projects. Moreover, a series of mitigation measures would be implemented to minimize the impact on dolphins and horseshoe crabs. After considering the responses, the objector withdrew his objection unconditionally, and the objection, as recorded, is considered resolved.

845TH – Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures
Environmental Concerns and Mitigation Measures

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
Air quality and noise impacts	<ul style="list-style-type: none"> • The Hong Kong Boundary Crossing Facilities (HKBCF) is located about 2 kilometres (km) away from Tung Chung. The assessment results indicate that the air quality and noise impacts brought about by the project on Tung Chung will be minimal. • The outcome of the Environmental Impact Assessment (EIA) on the project shows that the air and noise impacts fully comply with the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) requirements. 	<ul style="list-style-type: none"> • Carry out regular watering on all exposed soil. • Carry out regular monitoring of air quality and noise levels during construction.
Water quality impact	<ul style="list-style-type: none"> • The EIA shows that with suitable mitigation measures, impact on water quality during construction stage for the dredge seawall scheme will be limited to the vicinity of the site and fully comply with EIAO requirements. 	<ul style="list-style-type: none"> • Install perimeter silt curtain around the reclamation site and second layer of silt curtain around stone column installation to control plumes of suspended solids. • Complete leading seawall section before reclamation filling. • Control the number of filling barge trips and daily filling rate. • Carry out regular monitoring of water quality. • With adoption of the non-dredge reclamation method, the water quality impacts will be further significantly reduced. • Use grab dredgers, enclosed with cage type silt curtain for carrying out dredging works.
Impact on Chinese White Dolphins	<ul style="list-style-type: none"> • An in-depth study by dolphin experts indicates that locating the HKBCF at the 	<ul style="list-style-type: none"> • Set up a dolphin exclusion zone of 250 metres (m) during the installation of the perimeter silt curtains and any re-

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
(CWD)	<p>northeast waters of the Airport Island can keep it away from the dolphin active region on the western waters.</p> <ul style="list-style-type: none"> • Permanent loss of CWD habitat is a moderate impact requiring mitigation. 	<p>deployment of the perimeter silt curtains. If dolphins are observed in the exclusion zone, the installation / re-deployment works will be delayed until the dolphins have left the area.</p> <ul style="list-style-type: none"> • Implement dolphin watching plan including regular checking of the silt curtain and monitor the waters outside the silt curtain. • Use vibratory methods for installing steel cells instead of the more noisy underwater percussive method. • Loss of habitat to CWD due to the HKBCF reclamation and other concurrent projects in the western Hong Kong waters can be effectively mitigated by setting up a marine park as functional enhancement. • Enforcement of vessel speed limit within works areas to be within 10 knots.
Other ecological impact	<ul style="list-style-type: none"> • The project has avoided ecological sensitive areas. • With suitable mitigation measures, no residual impacts on horseshoe crabs and sea grass habitats in the vicinity. 	<ul style="list-style-type: none"> • Install perimeter silt curtain around the reclamation site and second layer of silt curtain around stone column installation to control plumes of suspended solids. • Complete leading seawall section before reclamation filling. • Control the number of filling barge trips and daily filling rate. • Carry out regular monitoring of water quality.

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
		<ul style="list-style-type: none"> • With adoption of the non-dredge reclamation method, the water quality impacts will be further significantly reduced.
Impact on fisheries	<ul style="list-style-type: none"> • Loss of fishing ground is not significant and fisheries impact is acceptable. 	<ul style="list-style-type: none"> • Additional and re-provision of artificial reefs (AR) as mitigation and enhancement measures for affecting the existing ARs inside a Marine Exclusion Zone.
Landscape and visual impacts	<ul style="list-style-type: none"> • The HKBCF is located about 2 km away from Tung Chung. Potential visual impact by the HKBCF will be negligible due to integration of the HKBCF and Airport in view of their similarity in appearance. 	<ul style="list-style-type: none"> • Aesthetic engineering and architectural design together with optimum greening treatment would further minimize any potential visual impacts.

**845TH – Hong Kong–Zhuhai–Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures**

Breakdown of the Land Resumption and Clearance Costs

	\$ million
(I) Estimated Land Resumption and Clearance Costs	70.683
● Compensation on resumption of portions of a lot with a total area of 30 604.4 square metres (m ²)	
● Compensation on creation of easements and other permanent rights in, under or over portions of a lot with a total area of 13 689.9 m ²	
● Compensation on creation of rights of temporary occupation of portions of a lot with a total area of 264 689.3 m ²	
● Ex-gratia allowance for miscellaneous indigenous villager matters e.g. “Tun Fu” ceremonies	
● Ex-gratia allowance payable to eligible fishermen	
(II) Interest and contingency payment	12.534
	Total = 83.217 (Say 83.22)

Summary of “Important Trees” Affected

Project No. : 845TH Project Title : Hong Kong–Zhuhai–Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation and Superstructures

Tree ref. no.	Tree species (Botanical name)	Tree maintenance department	Tree size			Form ⁽¹⁾ (Good / Fair / Poor)	Health condition (Good / Fair / Poor)	Amenity value (High / Medium / Low)	Survival rate after transplanting (High / Medium / Low)	Recommendation (Retain / Transplant / Fell)	Remarks (including justification for proposed tree removal / ecological and historical significance (if any) of affected trees, etc.)
			Overall height (metres)	Trunk diameter ⁽²⁾ (millimetres)	Average crown spread (metres)						
T8131	<i>Ficus microcarpa</i>	Airport Authority Hong Kong (AAHK)	14	1140	9	Good	Good	High	High	Transplant	Conflict with viaduct construction; no ecological and historical significance.
T8133	<i>Ficus microcarpa</i>	AAHK	13	1000	12	Good	Good	High	High	Transplant	Conflict with viaduct construction; no ecological and historical significance.

⁽¹⁾ Form of a tree will take account of the overall tree size, shape, and any special feature.

⁽²⁾ Trunk diameter of a tree refers to its diameter at breast height (i.e. measured at 1.3 metres above ground level).