

For discussion
on 26 October 2011

Legislative Council Panel on Transport

Latest Progress of Hong Kong-Zhuhai-Macao Bridge Infrastructure Projects in Hong Kong

Purpose

This paper reports to Members the latest progress regarding the works programme of the Hong Kong-Zhuhai-Macao Bridge (HZMB) related local projects in Hong Kong, and seeks Members' support for making funding applications to the Public Works Sub-committee (PWSC) and the Finance Committee (FC) of the Legislative Council (LegCo) for taking forward the construction works in respect of the Hong Kong Boundary Crossing Facilities (HKBCF) and Hong Kong Link Road (HKLR), as well as the detailed design, site investigation and advance works for the Tuen Mun-Chap Lap Kok Link (TM-CLKL).

Background

2. The HZMB project is a major cross-boundary transport infrastructure project that has been adequately discussed in the community and has been under planning for a long time. It has very important strategic value in terms of further enhancement of the economic development between Hong Kong, the Mainland and Macao. The HZMB will be the world's longest dual three-lane carriageway in the form of bridge-cum-tunnel structure sea-crossing, linking Hong Kong, Zhuhai and Macao. The three Governments plan to complete and commission the HZMB in 2016. The commissioning of the project will bring a new era to the transportation connections between Hong Kong, the Mainland and Macao. The HZMB will not only inject impetus to Hong Kong's long-term economic development, but also bring new opportunities to various key

sectors in Hong Kong, such as tourism, financial, trading, commercial and logistics industries etc.

3. The Administration has discussed with LegCo on the construction of the HZMB for a number of times. Up to now, the FC has approved funding of about \$10.2 billion (in money-of-the-day (MOD) prices) for various HZMB related items. Major items include :

- (a) Funding of \$9,280 million (in MOD prices) for preliminary design, site investigation, detailed design and construction of the HZMB Main Bridge (approved by the FC in February 2009 and May 2009);
- (b) Funding of \$621.9 million (in MOD prices) for engagement of consultants to undertake detailed design and site investigation of the HKBCF (approved by the FC in May 2009);
- (c) Funding of \$46.6 million (in MOD prices) for the costs shouldered by the Government of the Hong Kong Special Administrative Region (HKSAR) before the commencement of the HZMB (approved by the FC in June 2008);
- (d) Funding of \$86.9 million (in MOD prices) for engagement of consultants to undertake site investigation and preliminary design of the HKBCF (approved by the FC in June 2008);
- (e) Funding of \$88.6 million (in MOD prices) for engagement of consultants to undertake site investigation and preliminary design of the TM-CLKL and Tuen Mun Western Bypass (TMWB) (approved by the FC in January 2008); and
- (f) Funding of \$58.9 million (in MOD prices) for investigation and preliminary design of the HZMB Hong Kong Section and North Lantau Highway Connection (now called HKLR) (approved by the FC in December 2003).

Works and Progress

The Main Bridge

4. The State Council, at its executive meeting on 28 October 2009, formally approved the Feasibility Study report of the HZMB Project. 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. Preliminary design of the project and technical design of the bridge structures were approved by the Ministry of Transport in March 2010 and October 2010 respectively. Works of the Design and Build Contract for the Immersed Tube Tunnel and Two Artificial Islands for the HZMB Main Bridge, the most important contract of the Main Bridge, has commenced. 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.

Works in Hong Kong and related Tasks

5. The latest development of the key related infrastructure projects in Hong Kong (namely the HKBCF, HKLR, and TM-CLKL) is set out below :

(a) HKBCF

6. The HKBCF is to be built on reclaimed land of about 130 hectares at the north-eastern waters off the Hong Kong International Airport (HKIA). Apart from reclamation required for land formation, the works at the HKBCF will also include the construction of required superstructures and infrastructures (including cargo and passenger related facilities, Government buildings, public transport interchange, transport and electrical & mechanical facilities, environmental measures etc.).

7. Site investigation and detailed design of the reclamation for the HKBCF are completed. Tender for the reclamation works contract was invited in February 2011 and was closed on 8 July 2011. The Highways Department (HyD) has finished assessing all submitted tenders. Separately, detailed design of the superstructures and infrastructures of the HKBCF was commenced in December 2010. If LegCo approves the funding, we will award the reclamation contracts as soon as possible to commence the project in end 2011. We plan to complete the HKBCF as well as other HZMB-related projects at the same time to tie in with the target of

commissioning the Bridge by end 2016.

(b) HKLR

8. The HKLR connects the Main Bridge of the HZMB from the Guangdong-Hong Kong boundary to the HKBCF. The alignment of the HKLR is in the form of a sea viaduct along the Airport Channel and the relevant preliminary design and investigation of the HKLR have been completed. Pre-qualification of tenderers for the Design and Build (D&B) contract of HKLR has commenced. If LegCo approves the funding, we will take forward the detailed design and construction as soon as possible so as to complete the project by end 2016.

(c) TM-CLKL

9. The TM-CLKL, together with the TMWB currently under planning¹, will provide the most direct route between Northwest New Territories, the HKBCF, the HKIA as well as other parts of Lantau. Upon completion, the new route will significantly reduce the journey time between Northwest New Territories and Lantau, and provide an alternative access route to the HKIA, apart from the existing North Lantau Highway (NLH). The TM-CLKL is about 9 kilometres (km) long, which connects Tuen Mun and HZMB HKBCF by mainly a viaduct of around 1 km long and a sub-sea tunnel of around 5km long; and a viaduct of around 3 km long to connect the HKBCF and the NLH in the south, for which this southern section of the TM-CLKL is functionally a main road connecting the HKBCF with North Lantau. Hence, we need to dovetail this section with the commissioning of the HZMB.

10. Regarding the advance works of the TM-CLKL, if LegCo approves the funding, the reclamation works of the HZMB HKBCF and the reclamation of the southern landfall of the TM-CLKL will commence together as one project, and will be implemented through one works

¹ HyD conducted a series of consultation with the Tuen Mun and Yuen Long District Councils, Tuen Mun Rural Committee and Heung Yee Kuk in November 2010. On the basis of the views collected, the HyD will fine-tune the design accordingly with a view to taking forward the project further. We are currently conducting the investigation works and preliminary design of the TMWB and will seek funding for the detailed design.

contract. This will reduce the scope of construction of seawalls, thus reducing the impact on the environment to a minimum. Detailed design and site investigation works were completed between 2009 and 2010. If the funding application is approved, we will commence the advance works of the TM-CLKL as soon as possible to take forward the reclamation works of the HKBCF together as one works contract. We also plan to commence the detailed design and the site investigation works for the remaining part of the TM-CLKL as soon as possible, with a view to opening the southern section of the TM-CLKL connecting the HZMB HKBCF with the NLH in 2016 to tie in with the commissioning the HZMB.

Implications of Judicial Review (JR) Case

11. The Administration originally planned to commence the construction works of the HZMB related local projects before end 2010. A Tung Chung resident filed an application to the Court of First Instance (CFI) for leave for JR against the decisions of the Director of Environmental Protection (DEP) as regards the approval of the Environmental Impact Assessment (EIA) Reports and the granting of Environmental Permits (EPs) relating to the HZMB HKBCF and HKLR projects on 22 January 2010. The CFI handed down its judgment on 18 April 2011. The EPs for the HZMB HKBCF and HKLR projects were quashed and the works could not commence.

12. Since the CFI's judgment involved important legal viewpoints and posed significant implications on the execution of the Environmental Impact Assessment Ordinance (Cap 499), the DEP lodged an appeal against the judgment. The Court of Appeal handed down its judgment on 27 September 2011 allowing the appeal of the DEP unanimously and confirmed the validity of the EPs issued by the DEP for the HZMB related local projects. We have accordingly resumed the statutory and funding procedures of the HZMB related local projects that are not completed because of the legal proceedings.

13. We plan to seek funding from the FC in November. If the funding application is approved, we plan to commence the HZMB related local projects at the end of this year. We will endeavour to strengthen the

manpower and adjust the works and construction method in order to compress the works programme, with a view to completing the works and commissioning the Bridge in 2016 as scheduled. Because of the legal proceedings, the construction commencement programme has about one year's difference with the original one. We estimate that the overall cost increase for the HZMB related local projects due to JR is about \$6.5 billion (in MOD prices). The main reasons include the need to adjust the construction method to compress the works programme such that the Bridge can be commissioned as scheduled, as well as the increase in construction prices. If the projects are not taken forward as soon as possible, we anticipate that the cost will continue to rise significantly.

14. In the HZMB JR case, although the applicant has explicitly excluded the TM-CLKL EIA from the JR application, the construction schedule has been affected (by about a year) because the TM-CLKL southern landfall reclamation (exit of the sub-sea tunnel) will be taken forward as the same works contract together with the reclamation of the HKBCF and to be constructed under the same contract.

15. We originally planned to commission the TM-CLKL together with the HZMB, but now we will implement the project by phases. As the 3 km viaduct of southern connection connecting the HKBCF with the NLH has to be commissioned to dovetail with the commissioning of the HZMB, we will, through arrangement of works, complete the southern connection in 2016. As the sub-sea tunnel connecting HKBCF with Tuen Mun will not affect the commissioning of the HZMB, this part of the works will be completed in 2017.

16. 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 HKLR has to connect the road leading to the eastern artificial island at the Mainland 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 so that the HZMB cannot be commissioned by end 2016, it would incur direct financial loss and indirect economic loss not only to Hong Kong, but also to the

Mainland and Macao. Therefore, we hope that the 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 complete in tandem for commissioning of the HZMB by end 2016.

Situation of Other Major Transport Infrastructure Projects

17. At the meeting of the Panel on Transport on 13 October 2011, Members requested the Administration to report on the present position of the major transport infrastructure projects which were affected by the JR of the EIA Report of the HZMB. Relevant information is set out at **Appendix I**.

Recommendation

18. We recommend to seek approval from the PWSC and FC for the following funding proposals to commence the works for the three projects mentioned above. They are –

- a. \$ 30,433.9 million (in MOD prices) for the construction of the HZMB HKBCF;
- b. \$ 16,189.9 million (in MOD prices) for the detailed design and construction of the HKLR; and
- c. \$ 1,909.6 million (in MOD prices) for the detailed design, site investigation and advance works of the TM-CLKL.

Detailed justifications for and background of the funding proposals above are set out in the respective draft PWSC papers at **Appendix II**, **Appendix III** and **Appendix IV**.

Advice Sought

19. Members are invited to comment on the proposed funding applications above. We hope that Members would support the submission

of the above funding proposals to the PWSC for discussion on 8 November so that the HZMB related local projects can be commenced by the end of this year.

Transport and Housing Bureau
October 2011

**Impact of Judicial Review of Environment Impact Assessment Report
of Hong Kong-Zhuhai-Macao Bridge Project
on Major Transport Infrastructure Projects**

At the meeting of the Panel on Transport on 13 October 2011, Members requested the Administration to report on the present position of the major transport infrastructure projects which were affected by the judicial review (JR) of the Environment Impact Assessment (EIA) Report of the Hong Kong-Zhuhai-Macao Bridge project (HZMB). This Appendix updates Members on the latest progress of the following affected major infrastructure projects :

- Shatin to Central Link (SCL);
- Central Kowloon Route (CKR);
- Trunk Road T2;
- Tseung Kwan O-Lam Tin Tunnel (TKO-LTT) and Cross Bay Link (CBL);
- Tsuen Wan Bypass, Widening of Tsuen Wan Road (TWR) between Tsuen Tsing Interchange and Kwai Tsing Interchange and associated junction improvement works; and
- Tuen Mun Western Bypass (TMWB)

Latest Progress of Major Infrastructure Projects

2. The Court of Appeal (CA) handed down its judgment in respect of the JR of the EIA Report of the HZMB local projects on 27 September 2011, unanimously allowed the Director of Environmental Protection (DEP)'s appeal. The judgment confirmed the validity of the environmental permits issued by the DEP. As such, the procedures of the major infrastructure projects which were not finished because of the JR could be resumed. The latest developments of these projects are set out below :

SCL

3. Since the gazetting of the SCL scheme in November 2010, we have been striving to optimize the design of the SCL project and studying the feasibility of making appropriate amendments in response to the public concerns and views. We have arranged the first stage gazette of the proposed amendments on the railway scheme in July this year. We envisage that the consultation on SCL and study of the railways design will be completed within this year, and all proposed amendments will be announced before the end of 2011.

4. The EIA Reports for SCL were originally completed and MTR Corporation Limited (MTRCL) submitted the concerned EIA Reports to Environmental Protection Department as early as in February this year. However, in view of the JR of the EIA Report of the HZMB local projects, MTRCL withdrew the concerned reports in April this year. Taking into account the judgment of the Court of Appeal on 27 September 2011 that the appeal of the DEP was unanimously allowed, MTRCL has re-submitted the concerned EIA Reports to the Environmental Protection Department for approval. Compared with the original submission timeframe of the EIA Reports which was in February this year, it has been delayed for eight months. We plan to expedite the delayed EIA and statutory procedures, and will strive to compress the concerned procedures as far as possible. We endeavour to complete the statutory procedures and EIA processes for the SCL project before mid 2012. Although we have a very tight timeframe, our target is to submit funding application to FC in Q2 2012 for this item, and strive to commence construction in 2012.

CKR

5. The CKR is a major component of Route 6, comprising a 4.7 km dual three-lane trunk road, of which 3.9 km is in tunnel section. The CKR will connect the West Kowloon reclamation area in the west and with the future Kai Tak Development in the east to cater for the future traffic demand arising from the major infrastructure developments in East Kowloon and West Kowloon, including the West Kowloon Cultural District, the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Hong Kong Section) Terminus and Kai Tak Development.

6. The Highways Department (HyD) completed the preliminary design for CKR in 2010. To further take forward the project, the HyD engaged a consultant to undertake the detailed design. During the detailed design stage, the Department has continued to maintain close liaison with the public, taken forward EIA and enhanced the design with a view to minimizing the environmental impact of the project. In view of the Court of First Instance (CFI)'s judgment on the need of conducting a "stand-alone" baseline assessment, HyD had to review the comprehensiveness of the on-going EIA and consider how best to meet the requirements imposed by CFI's judgment, hence the progress of the EIA was slowed down. The CA has recently handed down its judgment, unanimously allowed the DEP's appeal. We have continued to take forward the EIA for the project. The detailed design for the project started in June 2011, and we plan to consult the public on the detailed design in early 2012.

Trunk Road T2

7. The proposed Trunk Road T2 is a dual two-lane trunk road of approximately 3.6 km long, connecting CKR and TKO-LTT, of which about 2.6 km is in tunnel section. Trunk Road T2, together with the proposed CKR and TKO-LTT, will form Route 6 in the strategic road network, providing the necessary relief to the congested road network in central and eastern Kowloon areas, and reduce the related environmental impacts on these areas.

8. Originally, the preliminary site investigation works, preliminary design works and EIA have been commenced. In view of the uncertainties brought about by the JR, the Civil Engineering and Development Department (CEDD) had to review the comprehensiveness of the on-going EIA and consider how best to meet the requirements on baseline assessment imposed by CFI's judgment, hence the work was affected. After the CA's judgment, the Department has continued to take forward the work concerned and will strive to complete it as soon as possible.

TKO-LTT and CBL

9. The TKO-LTT will connect the proposed Trunk Road T2 in Kai Tak Development in the West, and then through CKR linking to West Kowloon. This will form the Route 6. Moreover, we also plan to build the CBL connecting the TKO-LTT with the southeast area of Tseung Kwan O (TKO) New Town, so as to provide a bypass for vehicular traffic, and avoid traffic congestion at TKO town centre.

10. We started the investigation and preliminary design study for the TKO-LTT and CBL in March 2009. Originally, the EIA has been commenced. In view of the JR concerning the need of conducting a “stand-alone” baseline assessment, CEDD had to review the comprehensiveness of the on-going EIA and consider how best to meet the requirements on baseline assessment. After the CA’s judgment, the related EIA has been resumed. Separately, the preferred design option of CBL has been chosen after going through a series of public engagement activities in 2010, and the preliminary design is now in progress.

Tsuen Wan Bypass, Widening of TWR between Tsuen Tsing Interchange and Kwai Tsing Interchange and associated junction improvement works

11. To enhance the capacity of the roads concerned, the captioned project comprises the construction of two one-lane viaducts parallel to the existing TWR between Tuen Mun Road and Hoi Kok Street; and widening of the existing at grade section of TWR from dual three-lane to dual five-lane between Tsuen Tsing Interchange and Kwai Tsing Interchange. Similar to the other projects mentioned above, the EIA for the project was underway but was affected by the CFI’s judgment on the JR of HZMB. After the CA’s judgment, we have been taking forward the design and EIA for project. CEDD strives to complete the work as soon as possible.

TMWB

12. The TMWB is about 9 km long, with a southern tunnel section of approximately 5 km connecting the proposed slip road to Tuen Mun – Chek Lap Kok Link at Pillar Point. The northern portal is located at the east of Tsun Wen Road / Tsing Tin Road Interchange. The northern

viaduct is about 4 km long, emerging from the existing Tsing Tin Road Viaduct, to connect to the Shenzhen Western Corridor near Yick Yuen.

13. Same as the other projects mentioned above, the EIA for the project was being affected by the uncertainties of the need to conduct “stand-alone” baseline assessment. In view of the CA’s judgment, we are taking forward the design and EIA for the project. We are proceeding with the traffic impact assessment, EIA and preliminary design, and we will consult the public on the mitigation measures recommended in the EIA in due course, and enhance the design as necessary.

Transport and Housing Bureau
October 2011

**For discussion
on 8 November 2011**

PWSC(2011-12)30

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 serve the Hong Kong–Zhuhai–Macao Bridge (HZMB).

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 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 proposed location, plans, cross sections and artist's impression of the HKBCF are at Enclosures 2 to 8.

5. Tender assessment for the main reclamation contract has been completed. Subject to the approval of 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.

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, the Department 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.

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 Legislative Council 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 about 150 hectares (ha) artificial island (including about 130 ha reclamation for the HKBCF and about 20 ha³ reclamation for the TM-CLKL Southern Landfall) would provide land mainly for accommodating clearance and transport facilities for the HZMB. The HKBCF reclamation and TM-CLKL Southern Landfall reclamation are the same project to be carried out together, and will be implemented through one contract, so as to save a length of approximately 1.8 kilometres (km) of permanent seawall⁴. The ground investigation works for the HKBCF 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 carrying out reclamation. Non-dredge reclamation method will be used for both the seawall and main reclamation (illustrated in Enclosure 9). There is no need to dredge the soft marine mud in the seabed before backfilling. 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. Conventional 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 of marine mud to be dredged and disposed of as well as backfilling material (compared to the conventional 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 entire about 150 ha artificial island by about \$670 million (in MOD prices). If funding is approved 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 commissioning in end 2016.

³ The estimated cost of reclamation for the TM-CLKL Southern Landfall is supported by **825TH** "TM-CLKL and Tuen Mun Western Bypass". Refer to 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 conventional 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 the various user departments on the HKBCF. A list of the main buildings and accommodation to be provided in the HKBCF is attached at Enclosure 10, and the master layout plan, floor plans, cross sections and artist impression of the key buildings are shown in Enclosures 3 to 7 respectively.

14. Among the buildings, the Passenger Clearance Building (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 environmental friendly designs (details set out in paragraphs 39 to 42 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 the 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, the appropriate level of commercial or retail facilities 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 package. 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 (see paragraph 21 below), broken down as follows –

		\$ million
(a) Reclamation ⁶		5,950.1
(i) About 4.1 km seawall construction for HKBCF island	2,395.3	
(ii) About 130 ha reclamation for HKBCF island	3,419.5	
(iii) About 6 ha reclamation along Airport for roads connecting to the Airport	135.3	
(b) At-grade roadworks 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 ⁷ of about 9 000 m ²	466.8	

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. 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 of totaling about 7 000 m ²	153.6
(e)	Drainage works, sewerage works and waterworks ⁸ , and common utilities enclosures ⁹	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 and its cover / lighting	340.0
(ii)	Travellators in bus area / Public transport interchange	68.3
(iii)	Car parks	56.5
(iv)	Fencing	81.4

⁸ The building cost for the sewerage works and waterworks (including sewerage treatment plant and pumping stations area) not included under this item but the building items.

⁹ The common utilities enclosure are to accommodate the utilities to avoid road digging for maintenance in future operation.

		\$ million
(g)	E&M works for roads, viaducts, underpasses, common utility enclosures, footbridges and subways	429.2
(h)	Building piling	817.8
(i)	Buildings ¹⁰	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 ¹¹	1,216.3
(m)	Additional energy conservation measures	125.0
(n)	Traffic control and surveillance system (TCSS)	194.8
(o)	Landscape works ¹²	431.5
(p)	Environmental mitigation measures including environmental monitoring and auditing	120.7

¹⁰ 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**.

¹¹ 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.

¹² The landscaping works include 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	
(q) Consultants' fees	253.0	
(i) Contract administration	140.3	
(ii) management of resident site staff (RSS)	105.9	
(iii)Independent Environmental Project Office (ENPO) ¹³ and independent environmental checker services	6.8	
(r) Remuneration of RSS	1,443.2	
(s) Electrical and Mechanical Services Trading Fund (EMSTF) charges ¹⁴	35.5	
(t) Duty visits outside Hong Kong ¹⁵	1.9	
(u) Contingencies	2,214.8	
	Sub-total	24,363.3 (in September 2011 prices)
(v) Provision for price adjustment	6,070.6	
	Total	30,433.9 (in MOD prices)

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

¹³ 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.

¹⁴ 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.

¹⁵ 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.

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, and consider the estimated project cost reasonable.

18. For the HZMB related local projects¹⁶, 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 projects¹⁷. Therefore, we now plan to submit in November 2011 the funding application of the HZMB related local projects to the FC. If the funding application is approved, the construction of these projects will commence by end 2011. Since the schedule of the construction commencement is different by about 1 year from the original timetable, we estimate that the overall cost increase for the HZMB related local projects is about \$6.5 billion in MOD prices. This is because of : (i) adjustment in construction method to compress the construction timetable in order to ensure the commissioning of the HZMB in end 2016 (the associated cost increase is about \$4.15 billion); and (ii) the increase in construction prices (the 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 judicial review of the HZMB local projects, which includes the additional costs for: (i) adjustment of construction method to accelerate construction of the HKBCF infrastructures, facilities and buildings etc., including adopting more sand fill and associated plant / equipment for the reclamation works, and the use of additional manpower, equipment and facilities (the associated cost increase is about \$4.05 billion) for accelerating the works progress; and (ii) increase in construction prices (the associated cost increase is about \$2.25 billion). The remaining \$0.2 billion of the aforesaid \$6.5 billion cost increase is induced 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.

19. 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

¹⁶ Including the HKBCF, HKLR, and advance works for the TM-CLKL.

¹⁷ 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.

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.

20. 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 HKLR has to connect the road leading to the eastern artificial island at the Mainland 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 the HZMB not able to be commissioned by end 2016, it would incur 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 complete in tandem for commissioning of the HZMB by end 2016.

21. 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>

22. We have derived the MOD estimate on the basis of the Government's latest assumption 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 using the following contract requirements—

- (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 works and the HKLR infrastructure 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.

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

PUBLIC CONSULTATION

24. 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, and 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 Consultation in respect of Environmental Impact Assessment Reports

25. 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 Island 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 judicial review and appeal, the Court of Appeal confirmed the validity of the EPs. Refer to footnote 17 for details.

26. According to the conditions of the EP, we shall submit the findings of the preliminary study on the Marine Park at Brothers Islands¹⁸ 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

27. 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/11 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 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.

¹⁸ 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.

28. 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.

29. In respect of the unresolved objections as mentioned in paragraph 27 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 will authorise 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 will be gazetted on 21 October 2011.

30. We will brief 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 application for the works for the projects (including the HKBCF) on 26 October 2011.

ENVIRONMENTAL IMPLICATIONS

31. 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 measures. Key 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.

32. During the detailed design of the reclamation works, HyD developed an innovative 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.

33. 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 and 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 maximize the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

34. 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.

35. 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.

36. 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

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.

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 (9.0%) 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).

37. 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.

38. 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 CONSERVATION MEASURES

39. 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;

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.

- (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.

40. For renewable energy technologies, we will adopt photovoltaic system, solar hot water heating and solar powered landscape lighting.

41. For green features, there will be green roof on some of the ancillary buildings for environment and amenity benefits.

42. For recycled features, we will adopt rainwater harvesting for irrigation; space planning to facilitate separation, collection and storage of recyclable materials; and collection of food waste for composting for horticultural treatments.

43. The total estimated additional cost for adoption of the above features is around \$125.0 million (including \$26.0 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

44. 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

45. We have reviewed the design of the Project to minimize 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

46. 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.

47. We included **834TH** “HZMB HKBCF” in Category B in March 2008.

48. 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.

49. 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.

50. We engaged consultants in July and September 2009 to undertake the ground investigation and detailed design for the reclamation 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 assessment of tenders for the above reclamation works are jointly funded under **839TH** and a TM-

CLKL's Category D item under **Subhead 6100TX** "Highways works, studies and investigations for items in Category D of the Public Works Programme".

51. 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 at the Airport Island entrusted from the HKBCF project. The tendering for the works contract (including the HKBCF project's works) is in progress and the works will commence as soon as possible. The contract procurement including preparation of tender documents and assessment of tenders for the above works contract is jointly funded under **839TH** and a HKLR's Category D item under **Subhead 6100TX** "Highways works, studies and investigations for items in Category D of the Public Works Programme".

52. 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 on going.

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

54. We originally scheduled to commence the construction of the HZMB related local projects before end 2010. We therefore set out their expenditure forecasts in the Estimates for 2010-11 and 2011-12. Apart from considering the estimates prepared at the time of the Estimates, we have in this funding application also considered the cost increases due to the deferral of about a year in works commencement because of the judicial review proceedings, and the adoption of the more environmental friendly non-dredge reclamation method as well as the additional costs due to factors such as design development, and forecast of increase in material cost and construction cost, etc.

55. Of the 752 trees within the project boundary (all at 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 2 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 square metres of grassed area.

56. 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.

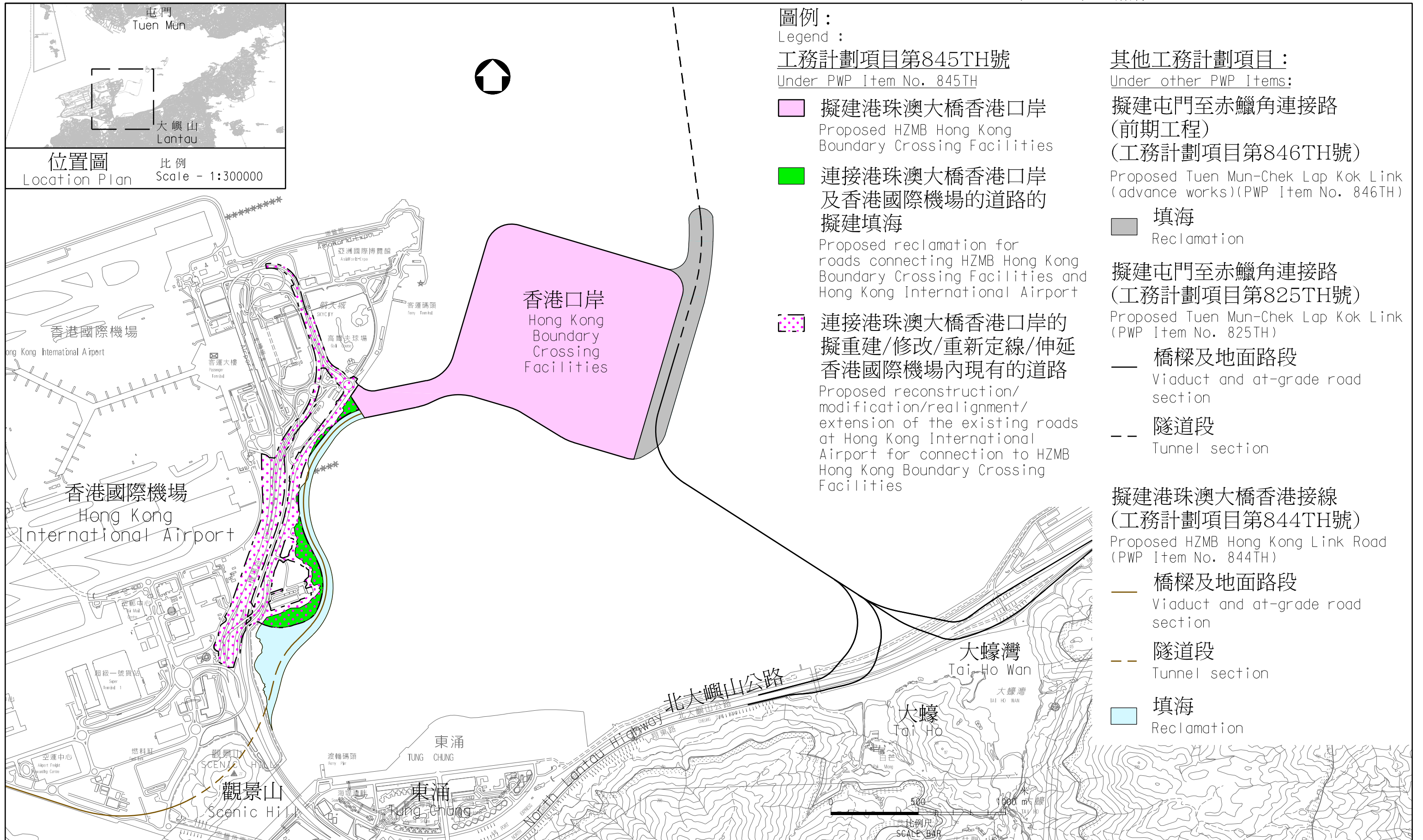
2. With the approval of the State Council to proceed with the preparatory work for the Hong Kong-Zhuhai-Macao Bridge (HZMB), the governments of Guangdong Province, the HKSAR and the Macao Special Administrative Region (the three governments) in 2003 established an HZMB Advance Work Coordination Group (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 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.



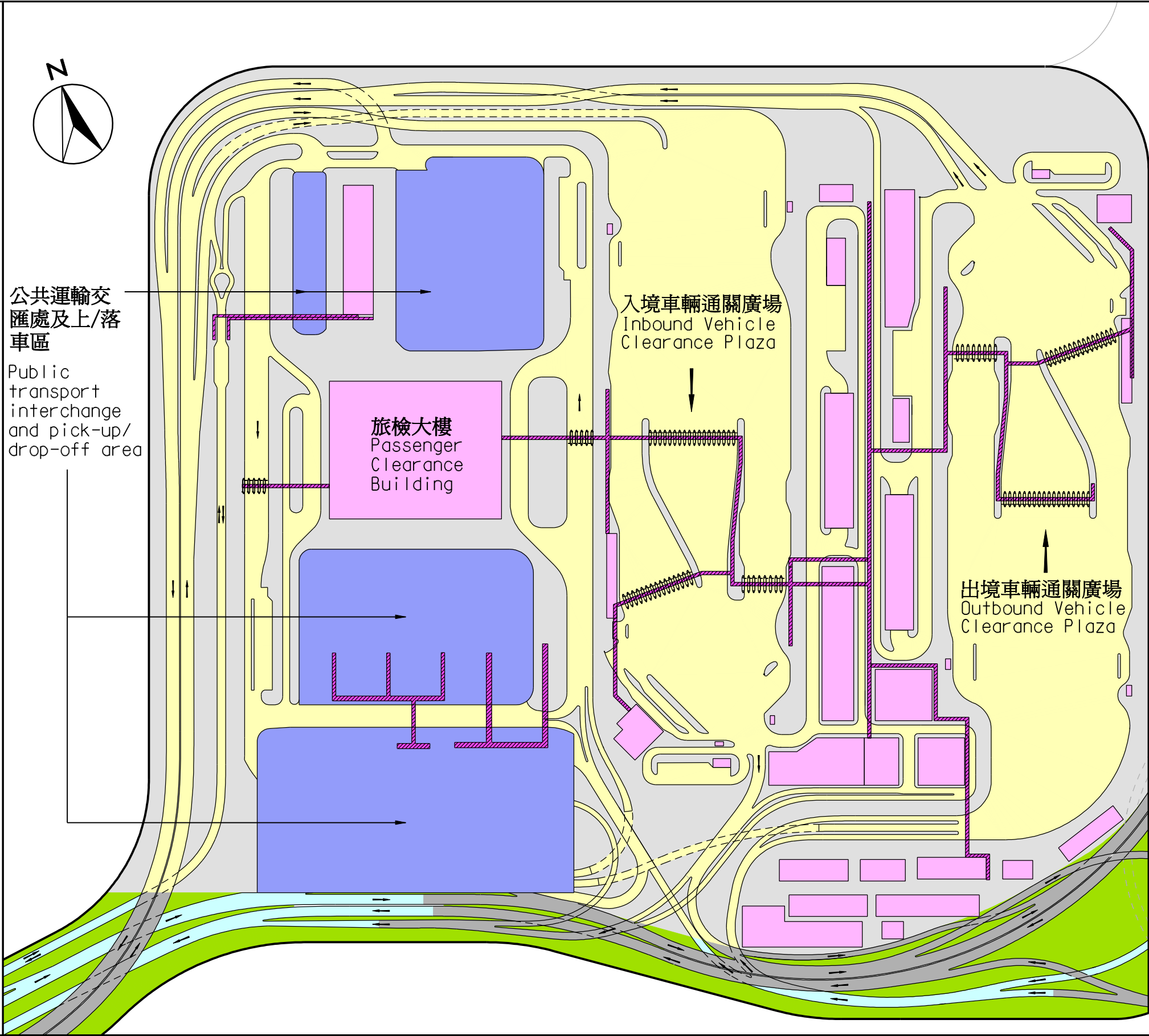
工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程

PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge (HZMB)
Hong Kong Boundary Crossing Facilities - Reclamation and Superstructures

圖則編號 plan no. HZM6845TH-SK0001	比例 scale 1:20000
HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE	
	HIGHWAYS DEPARTMENT HONG KONG
路政署	香港

圖例
Legend

- 擬建行人路和美化市容地帶 (大約布局)
Proposed footpath and amenity area (approximate layout)
- 擬建公共運輸交匯處及上落車區 (大約位置)
Proposed public transport interchange and pick-up/drop-off area (approximate location)
- 擬建行車道 (大約布局)
Proposed carriageway (approximate layout)
- 擬建行人天橋 (大約位置)
Proposed footbridge (approximate location)
- 擬建高架道路
Proposed viaduct
- 擬建地面行車道
Proposed at-grade carriageway
- 擬建美化市容地帶
Proposed amenity area
- 擬建建築物 (大約位置及只供指示用途)
Proposed building (approximate location and for indicative purpose only)
- 行車方向
Traffic direction
- 擬建檢查亭 (大約位置及只供指示用途)
Proposed kiosk (approximate location and for indicative purpose only)



屯門至赤鱸角
連接路(其他
工務計劃項目)
Tuen Mun -
Chek Lap Kok
Link (under
other PWP
Item)

註釋
NOTE
1.道路的路線和建築物的位
置只供指示用途。
The alignment of roads
and location of
buildings shown are
indicative only.

縮寫 Abbreviations

DH 衛生署
Department of Health


圖例 Legend

 入境檢查區
Immigration
clearance zone

 海關檢查區
Customs clearance zone

 清關後區
Post clearance zone


辦公室
Office

 後勤地方/機房
 Back of
 house/plant room


 公廁
Public toilet

 室內綠化區域
Indoor planting area

 室外綠化區域
Outdoor planting area

 衛生署健康檢查站
DH Health
Screening Station

 緊急出入口
Mean of escape/access

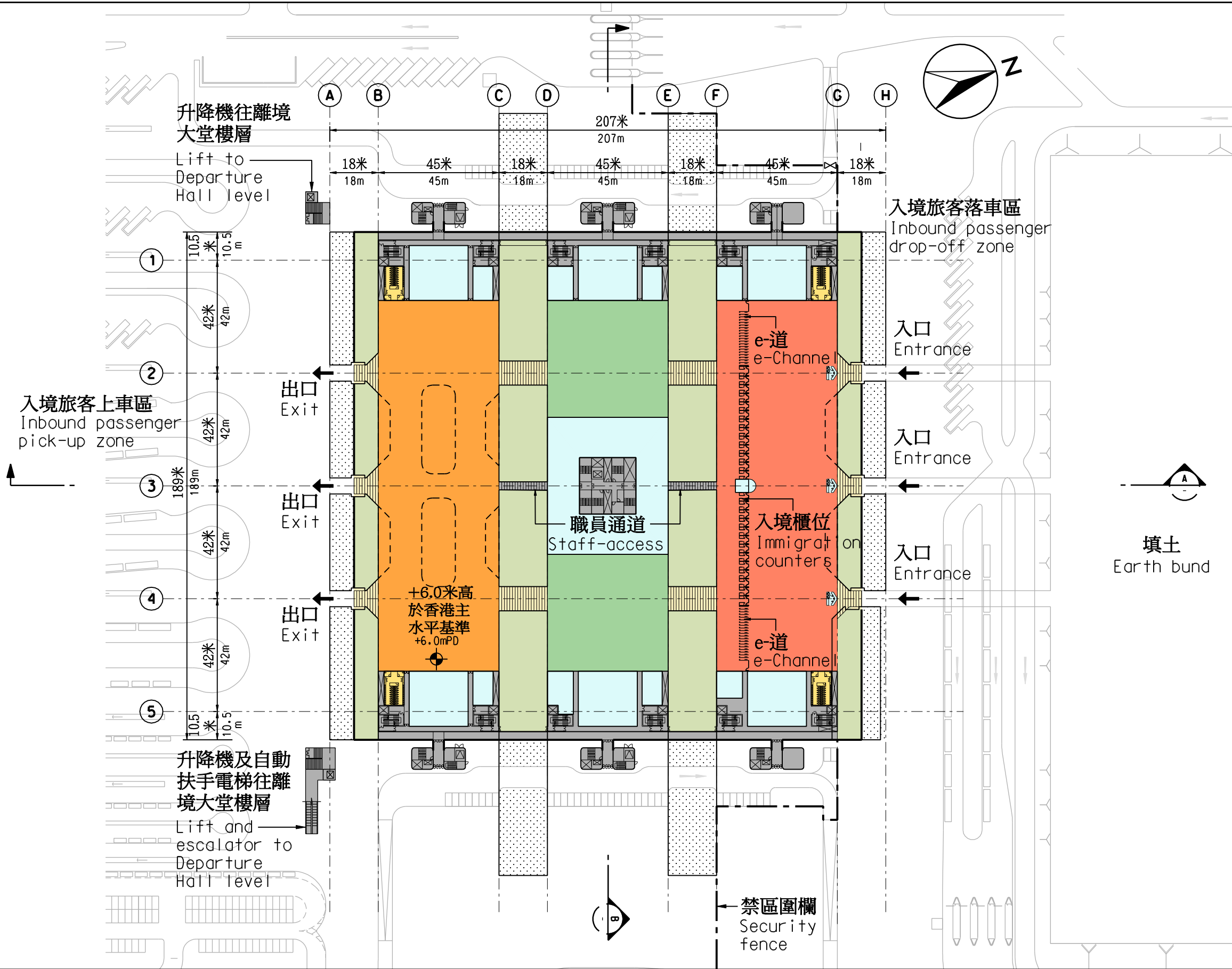
 大約地面水平
Approximate level

註釋 NOTE

1. 所有地面水準均以香港主水平基準為計算根據，並以米為單位。
All levels refer to Hong Kong Principal Datum (PD) and are in metres(m).
2. 在工程項目進行時，
布局及細節可能再作調整。
Layout and details are subject to further development when the project proceeds.

工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程
旅檢大樓的平面圖 - 地面平面圖 (入境樓層)

PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities (HKBCF) - Reclamation and Superstructures
Passenger Clearance Building - Ground Floor Plan (Arrival Hall Level)



圖則編號 plan no.	比例 scale
HZM6845TH-SK0401	1:1500

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE



HIGHWAYS
DEPARTMENT
HONG KONG

縮寫 Abbreviations

DH 衛生署
Department of Health

圖例 Legend

出境檢查區
Immigration clearance zone

海關檢查區
Customs clearance zone

清關後區
Post clearance zone

辦公室
Office

後勤地方/機房
Back of house/plant room

公廁
Public toilet

室內綠化區域
Indoor planting area

室外綠化區域
Outdoor planting area

衛生署健康檢查站
DH Health Screening Station

緊急出入口
Mean of escape/access

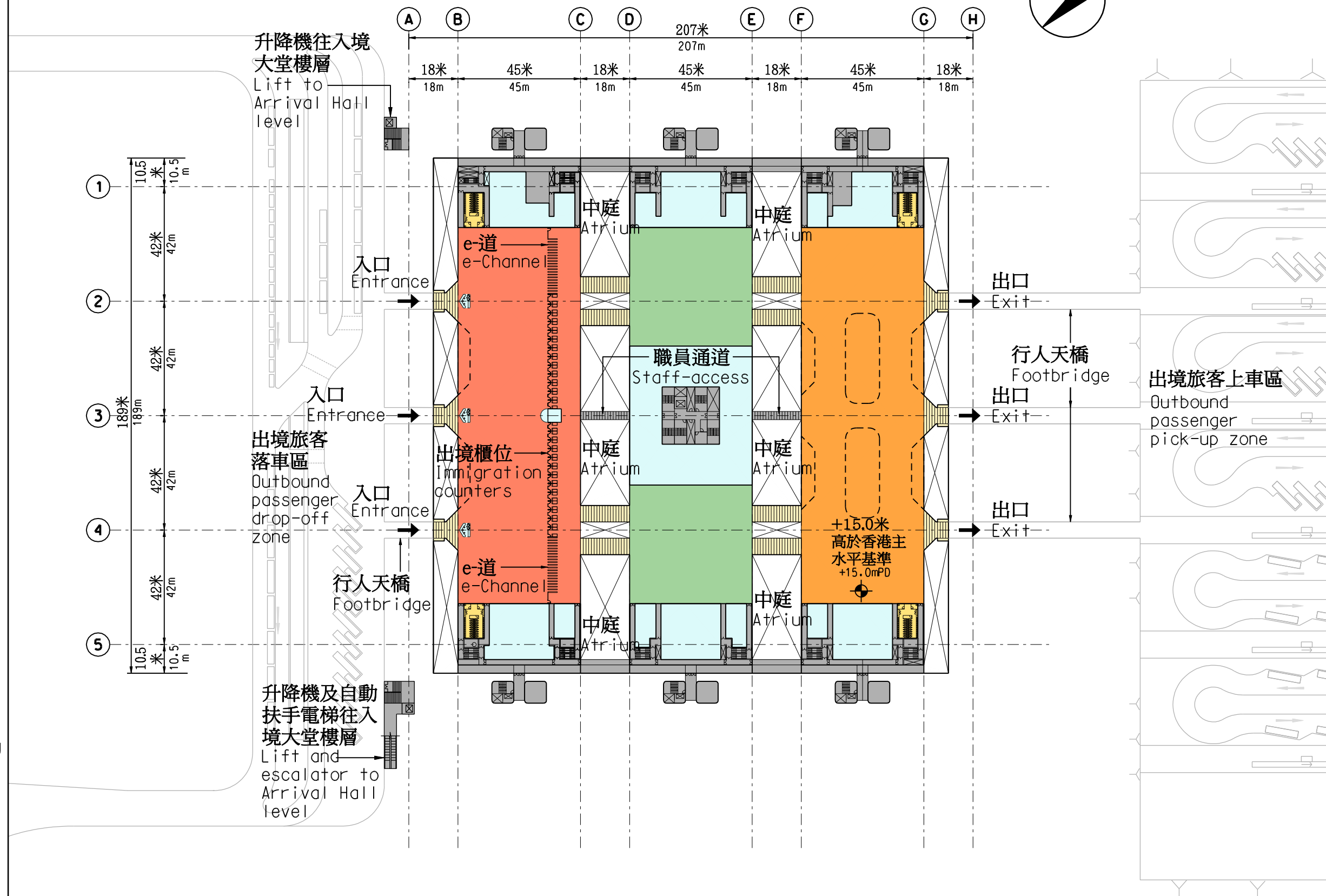
大約地面水平
Approximate level

註釋 NOTE

- 所有地面水準均以香港主水平基準為計算根據，並以米為單位。
All levels refer to Hong Kong Principal Datum (PD) and are in metres(m).
- 在工程項目進行時，
布局及細節可能再作調整。
Layout and details are subject to further development when the project proceeds.

工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程
旅檢大樓的平面圖 - 一樓平面圖 (出境樓層)

PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities (HKBCF) - Reclamation and Superstructures
Passenger Clearance Building - First Floor Plan (Departure Hall Level)



圖則編號 plan no.
H2M6845TH-SK0501

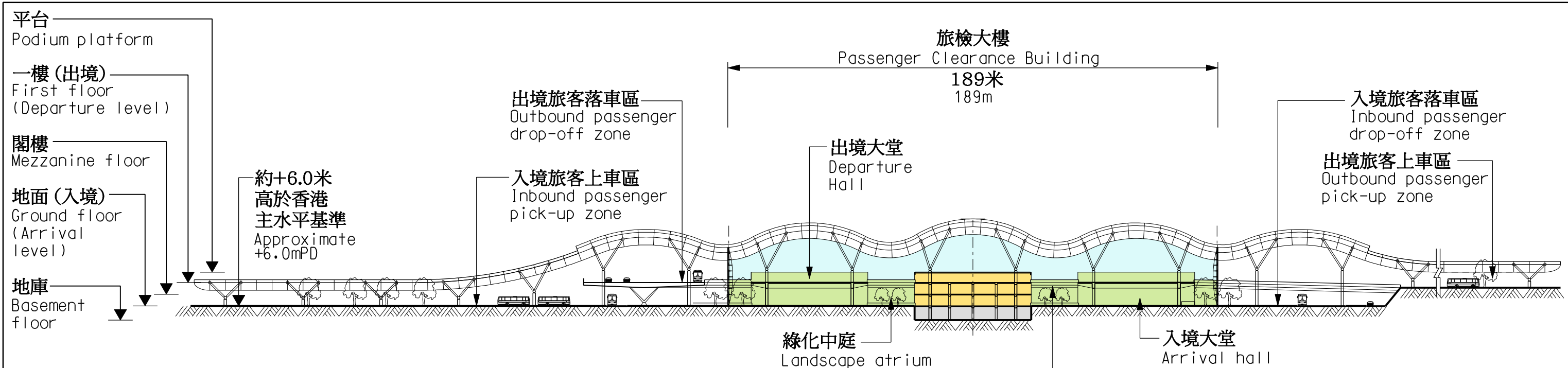
比例 scale
1:1500

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE

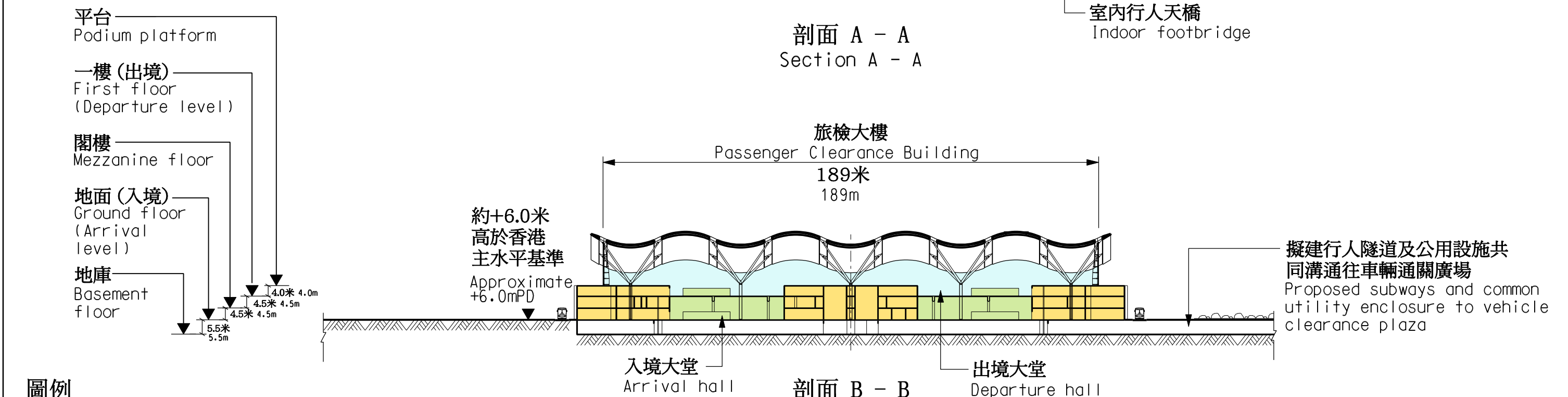


HIGHWAYS
DEPARTMENT
HONG KONG

路政署
香港



剖面 A - A
Section A - A



剖面 B - B
Section B - B

圖例

Legend

- 辦公室
Office
- 機房
Plant room
- 出入境大堂
Departure/Arrival hall

註釋 NOTE

- 所有地面水準均以香港主水平基準為計算根據, 並以米為單位。
All levels refer to Hong Kong Principal Datum (PD) and are in metres (m).
- 在工程項目進行時, 布局及細節可能再作調整。
Layout and details are subject to further development when the project proceeds.


工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程
旅檢大樓-剖面圖

PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities (HKBCF) - Reclamation and Superstructures
Passenger Clearance Building - Sections

圖則編號 plan no.	比例 scale
HZM6845TH-SK0601	1:1500
HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE	
	HIGHWAYS DEPARTMENT HONG KONG
路政署	香港

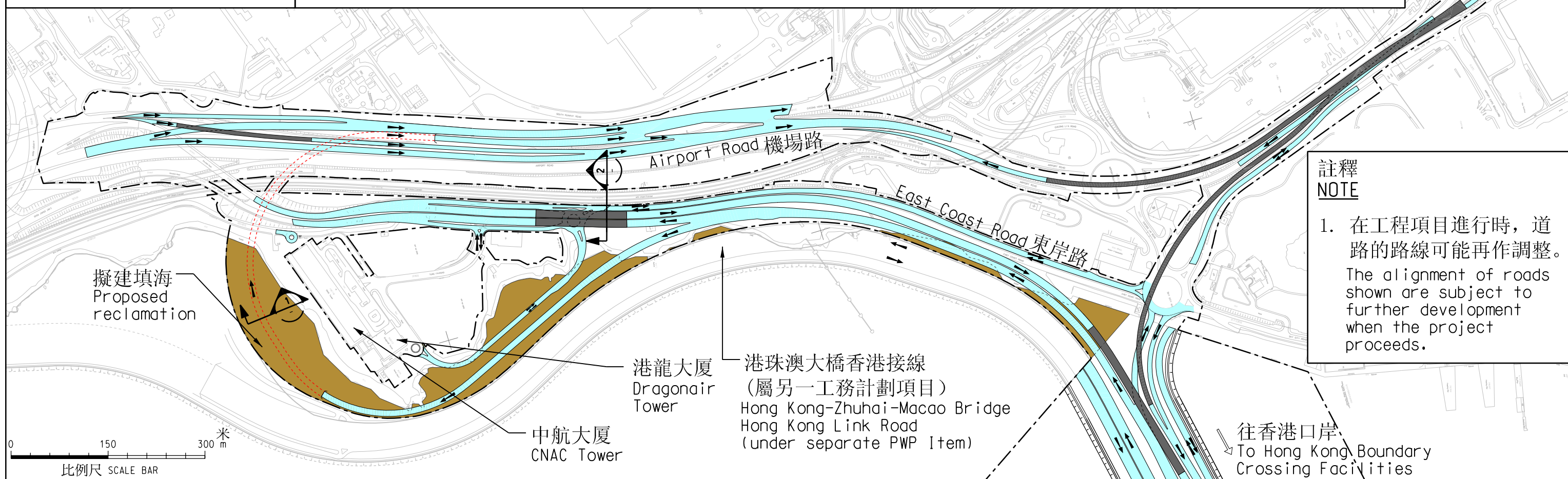
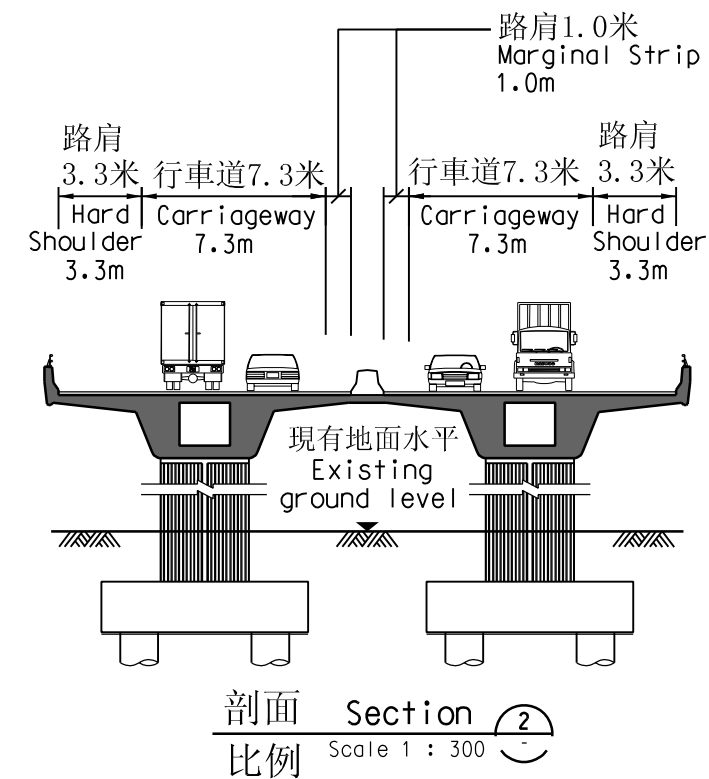
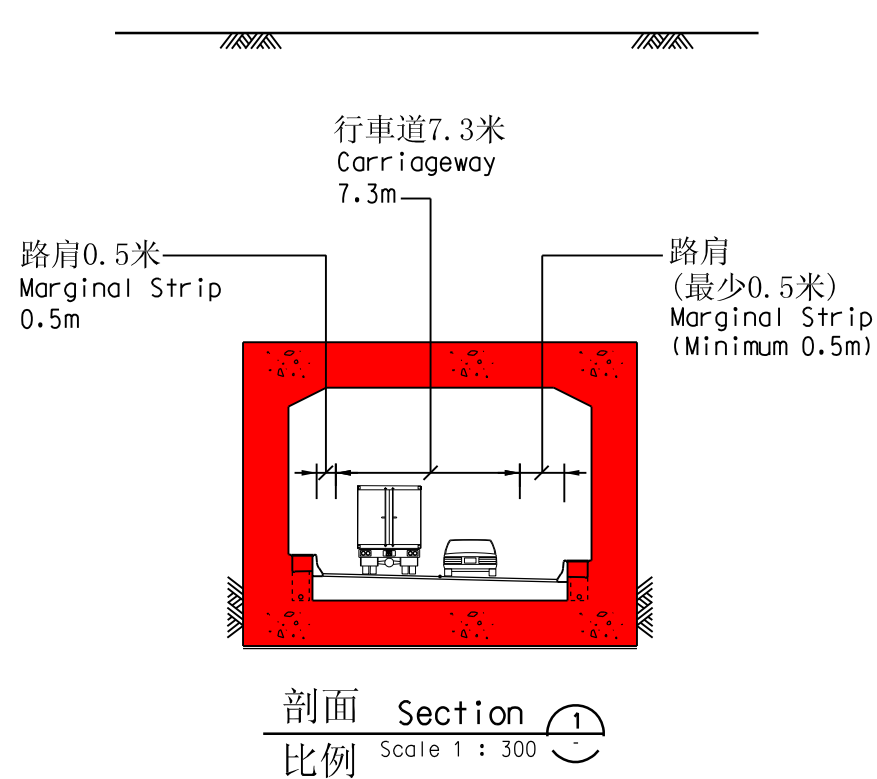


工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程
香港口岸旅檢大樓構思圖(西北面展望圖)
PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities (HKBCF) - Reclamation and Superstructures
Artist Impression of HKBCF Passenger Clearance Building (Perspective from Northwest Direction)

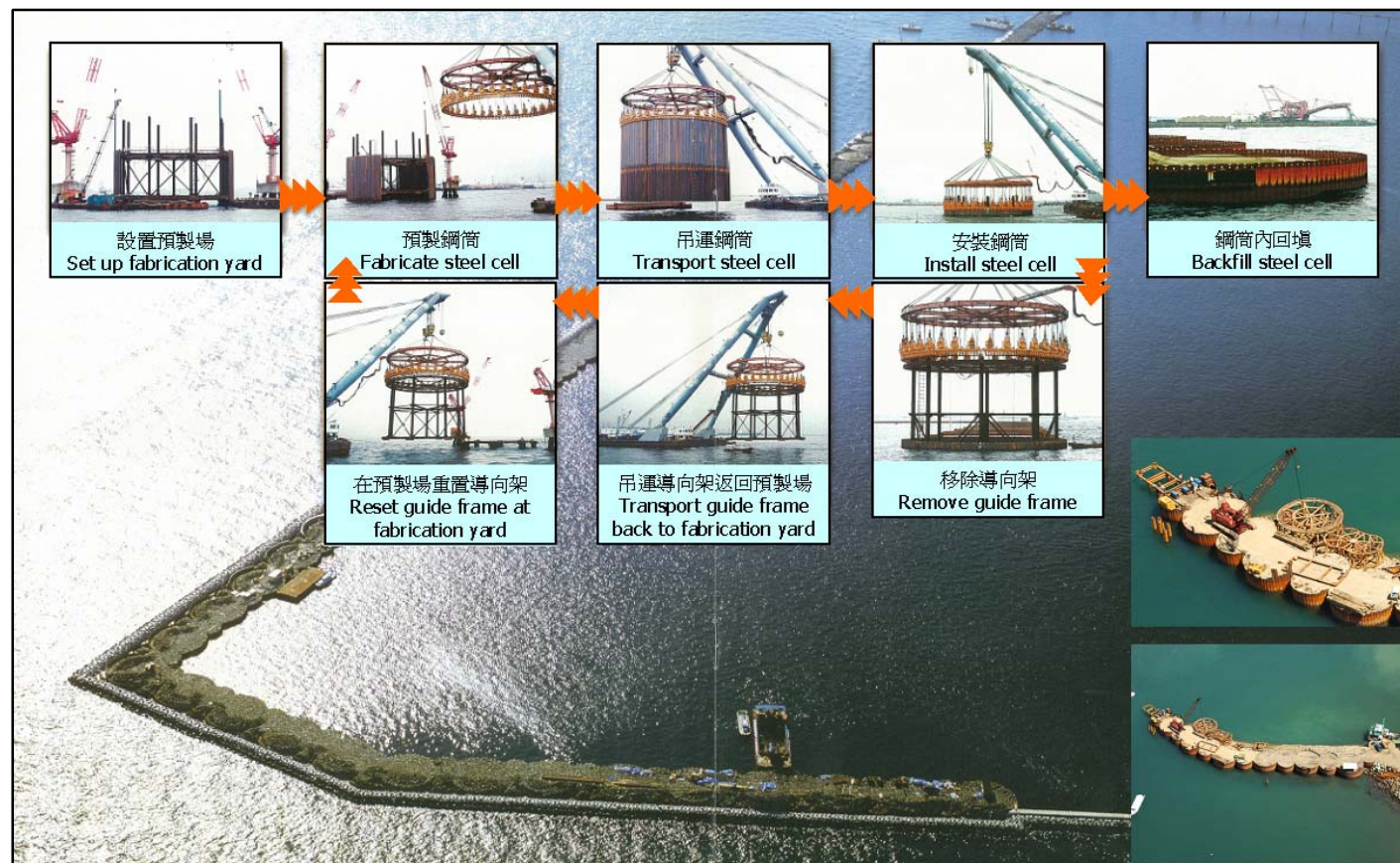
圖則編號 plan no. H2M6845TH-SK0702	比例 scale N.T.S.
HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG PROJECT MANAGEMENT OFFICE	
	HIGHWAYS DEPARTMENT HONG KONG
	路政署 香港

圖例
LEGEND

- 施工範圍
Limit of works area
- 擬建高架道路
Proposed viaducts
- 擬建地面道路
Proposed at-grade roads
- 擬建行車隧道
Proposed tunnels/
underpasses
- ← 行車方向
Traffic direction
- 擬建海堤
Proposed seawall
- 擬建填海
Proposed reclamation



工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程
機場島上之道路工程
PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities - Reclamation and Superstructures
Roadworks on Airport Island



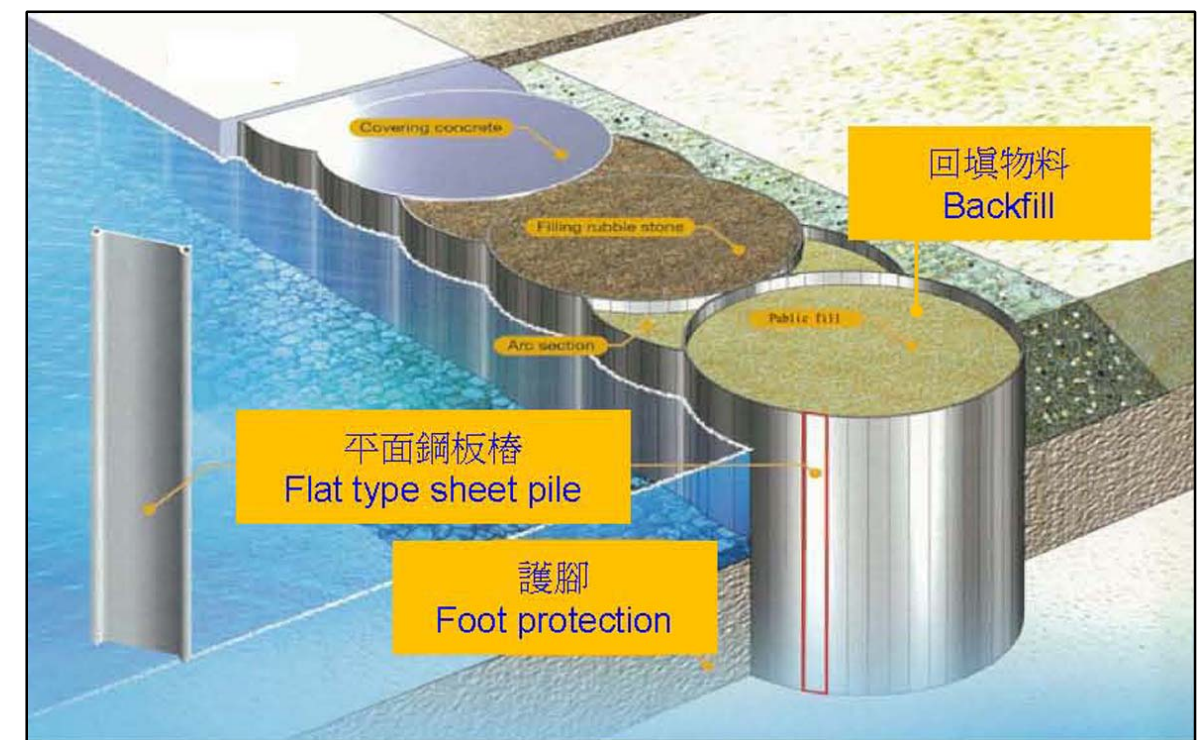
組建鋼筒流程(祇作圖示作用)

Flow Chart of the Prefabricated Cell Method (for illustration only)

不浚挖式填海的好處

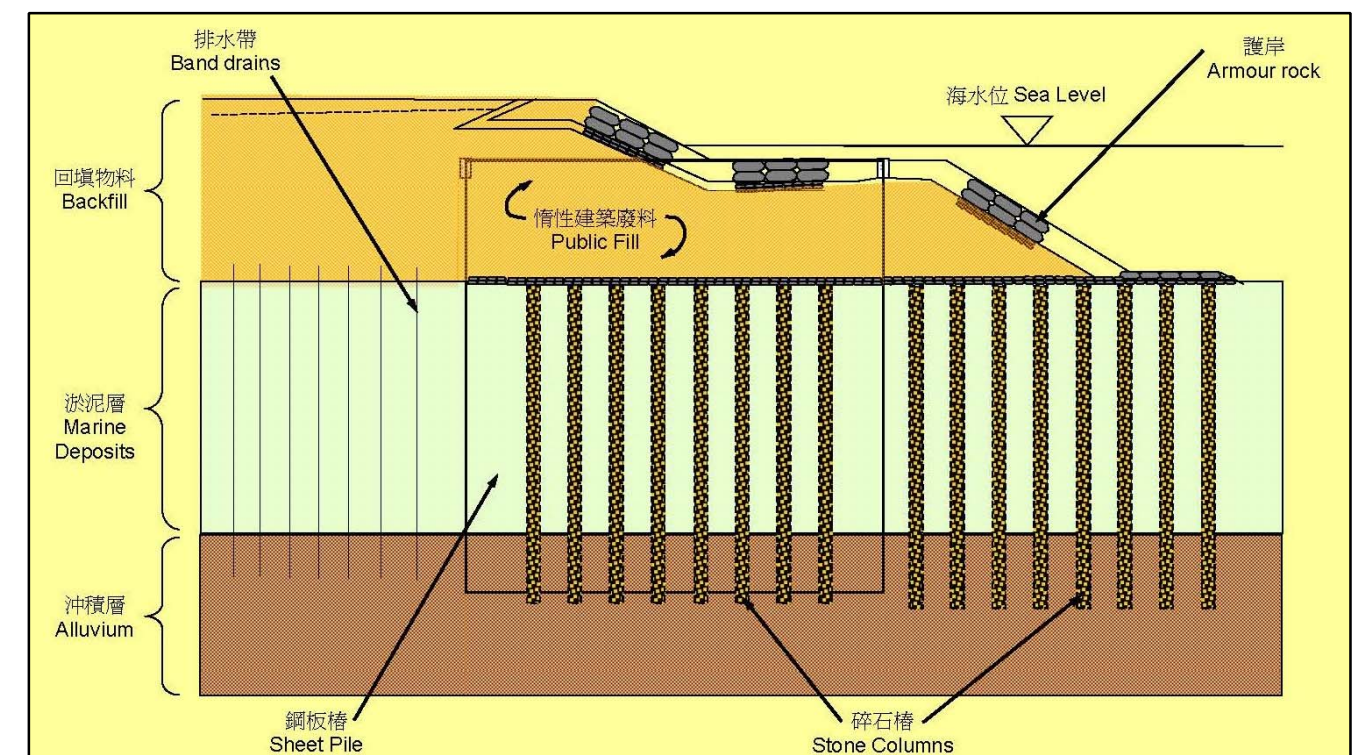
Benefits of Non-dredge Reclamation

- 減少約97%淤泥浚挖及傾倒量
Reduce dredging and disposal of marine mud by about 97%
- 減少約一半回填物料用量
Reduce backfilling material by about one half
- 減少約70%沉積物懸浮量
Reduce suspended particles by about 70%
- 減少約一半建築期間海上交通量
Reduce construction marine traffic by about one half



鋼筒結構立體視像(祇作圖示作用)

Isometric View of Steel Cells (for illustration only)



典型剖面

Typical Section

工務計劃項目第845TH號 港珠澳大橋香港口岸 - 填海及口岸設施工程
不浚挖式填海方法

PWP Item No. 845TH - Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities - Reclamation and Superstructures
Non-Dredge Reclamation Method

HXM6845TH-SK0015

N.T.S.

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE



HIGHWAYS
DEPARTMENT
HONG KONG

香港
路政署

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.
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

Main Buildings / Facilities		Approximate Construction Floor Area (CFA) (square meters)*	Major / Special Accommodation
			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	837.2
		Technical	21 013	14	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	4.7
		Technical	49	14	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 arrive at the full staff costs including the consultants' overheads and profit as the staff will be employed in the consultants' offices. (At present, MPS pt. 38 = \$62,410 per month and MPS pt. 14 = \$21,175 per month).
2. The consultants' staff cost for the contract administration and preparation of as-built drawings 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 **846TH**);
 - (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 phase and completion phase of the assignments will only be executed subject to Finance Committee’s approval to upgrade **825TH, 844TH, 845TH and 846TH** to Category A.

3. We will only know the actual man-months and actual costs after the completion of the construction works.
4. The actual costs will only be known 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, Island 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/11A 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 reprovision 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
	<ul style="list-style-type: none"> ● Compensation on resumption of portions of a lot with a total area of 30 604.4 square metres (m²) ● 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 m² ● Compensation on creation of rights of temporary occupation of portions of a lot with a total area of 264 689.3 m² ● 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 <u>(Say 83.22)</u>

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).

**For discussion
on 8 November 2011**

PWSC(2011-12)31

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

844TH – Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road

Members are invited to recommend to Finance Committee the upgrading of **844TH** to Category A at an estimated cost of \$16,189.9 million in money-of-the-day prices for the design and construction of the Hong Kong–Zhuhai–Macao Bridge Hong Kong Link Road.

PROBLEM

We need to construct the Hong Kong Link Road (HKLR) to connect the Hong Kong–Zhuhai–Macao Bridge (HZMB) Main Bridge from the Hong Kong Special Administrative Region (HKSAR) boundary to the Hong Kong Boundary Crossing Facilities (HKBCF).

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade **844TH** to Category A at an estimated cost of \$16,189.9 million in money-of-the-day (MOD) prices for the design and construction of the HKLR.

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. **844TH** (the Project) involves the construction of the HKLR, which is dual three-lane road of about 12 kilometres (km) connecting the HZMB Main Bridge at the HKSAR boundary with the proposed HKBCF at the north-east of the Airport Island, the scope of which comprises the following –

- (a) construction of approximately 9.4 km long dual three-lane viaduct connecting the HZMB Main Bridge from the HKSAR boundary to the Scenic Hill at the Airport Island;
- (b) construction of approximately 1 km long dual three-lane tunnel passing through the Scenic Hill and underneath the existing Airport Road and Airport Express Line, and daylighting at a new reclamation along the east coast of the Airport Island (see item (d) below), plus construction of associated tunnel operation and maintenance facilities for the tunnel;
- (c) construction of approximately 1.6 km long dual three-lane at grade road along the east coast of the Airport Island between the tunnel exit and the HZMB HKBCF;
- (d) construction of a seawall of approximately 2.3 km long and reclamation of approximately 17 hectares (ha) of land along the east coast of the Airport Island for the construction of the proposed HZMB HKLR and the proposed associated tunnel operation and maintenance facilities to the proposed tunnel at Scenic Hill and the ancillary works;

- (e) relocation and reprovision of an existing weather station located at east coast of Airport Island, upgrading and modification of an existing wind profiler station at Sha Lo Wan, and provision of anemometers on the HKLR viaduct and the Airport Island; and
- (f) associated ancillary works, including civil, structural, building, electrical and mechanical (E&M), geotechnical, site investigation, marine, environmental protection, slope, landscaping and drainage works, fire services, environmental mitigation measures, and traffic control and surveillance systems (TCSS).

Plans and artist's impression showing the proposed works are at **Enclosure 2**.

5. Subject to the approval of the Finance Committee (FC), we will commence the detailed design and construction works of the proposed Project under Design and Build (D&B) contracts as soon as possible. We plan to complete the HKLR in tandem with other HZMB projects to dovetail with the commissioning of the HZMB in end 2016. Tenders for the first D&B contract of the HKLR (refer to footnote 3 for details) have already been invited to enable works to commence as early as possible after funds are approved.

JUSTIFICATION

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

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%

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 for Construction of HKLR

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.

Development of HKLR during Investigation and Preliminary Design

8. After funding approval from the Legislative Council (LegCo) in December 2003, we commenced the investigation and preliminary design consultancy in March 2004. In the course of the study, the HZMB Task Force² decided that the three governments should set up their own boundary crossing facilities within their respective territories. On this basis, we recommended the alignment design of the HKLR to be in the form of a sea viaduct along the Airport Channel, given the proposed location of the HKBCF at the waters off the north-east of the Airport Island. We briefed the Panel on Transport of LegCo on this development in April 2008 (refer to details in LegCo Paper CB(1)1317/07-08(04)).

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).)

9. At end of 2008, we conducted a series of public consultations in respect of the HZMB local projects and subsequently further fine-tuned the design of the road to address public concerns. On the basis of the preliminary design as recommended by the investigation and the preliminary design consultancy completed in October 2010, the HKLR will be a dual three-lane highway of about 12km long that links the HZMB Main Bridge at the HKSAR boundary and the HKBCF located at the northeastern waters of the Airport Island.

10. The HKLR, starting from the HKSAR boundary, will be in the form of a sea viaduct running across the western waters of Hong Kong to reach Lantau Island. The viaduct then spans over the headland between San Shek Wan and Sha Lo Wan of Lantau Island without physical contact with Lantau Island. It continues to run along the southern side of the Airport Channel with long span structures to avoid disturbance to the natural shoreline and to minimize visual impact. To reduce impact on water flow in the Airport Channel, the foundations of the viaduct within the Airport Channel will be buried under the seabed. The viaduct lands at the Airport Island after passing the landing point of the southern runway and the Government Flying Services helicopter base, and from there onward its columns and foundations are to be put on the sloping seawall of the Airport Island without touching the Airport Channel.

11. To address the concerns expressed by Tung Chung residents over visual impact, the HKLR will adopt an alignment passing through the Scenic Hill in the form of an approximately 1 km long tunnel which daylight at the approximately 17 ha new reclamation formed to the east coast of the Airport Island after passing under the Airport Road and Airport Express Railway. The HKLR continues to connect to the HKBCF in the form of an approximately 1.6 km long at-grade highway running on reclamation along the east coast of the Airport.

Proposed Detailed Design and Construction Contract

12. The construction of the Main Bridge of the HZMB within Mainland waters and the Zhuhai Macao Boundary Crossing Facilities commenced in December 2009 and are progress well for opening in 2016. In order to ensure the opening of the Bridge, the related projects of the three places must be completed within the same timeframe with the Main Bridge. Our carefully considered view is that the HKLR works should be delivered under D&B contracts.

13. Under the proposed D&B contracts³, the contractors will carry out the detailed design and perform the works in appropriate sequences to suit their works

3 There will be two D&B contracts for HKLR. The first one covers the section from Scenic Hill to HKBCF, which have already been invited and is targeted to commence in early 2012. The second one

programme to meet the tight and compressed programme of the project (The commencement date of the HZMB related local projects was changed from the original of before end 2010 to end 2011). For example, site work and construction works can proceed before completion of detailed design so that the overall time required could be reduced. Moreover, the contractors could use their expertise in design and related construction methods to allow smoother works process and better control of the works programme. Time will be saved as a result. This programme's advantage is a particularly important consideration for this mega-sized multi-discipline project, which requires to be completed on time for the commissioning of the HZMB by end 2016. D&B contracts have also been adopted in other major infrastructure projects in Hong Kong, such as Ting Kau Bridge and Kap Shui Mun Bridge.

FINANCIAL IMPLICATIONS

14. We estimate the capital cost of **844TH** to be \$16,189.9 million in MOD prices (please see paragraph 28 below), broken down as follows –

			\$ million
(a)	Viaduct structures		7,137.3
	(i)	about 7.2 km long sea viaduct from HKSAR boundary to Airport Island	6,005.3
	(ii)	about 2.2 km long land viaduct along Airport Island to Scenic Hill	1,132.0
(b)	Tunnel construction works		1,473.0
	(i)	about 0.5 km long tunnel passing through Scenic Hill and underneath Airport Road and Airport Express Line	825.1
	(ii)	about 0.5 km long tunnel underneath reclamation	647.9
(c)	About 2.3 km long Seawall along Airport east coast		752.5

covers the section from HKSAR Boundary to Scenic Hill, which preparation for tendering is underway and is targeted to commence in April 2012.

		\$ million
(d)	About 17 ha reclamation along Airport east coast	387.3
(e)	At-grade roads within reclamation	312.9
(f)	Drainage works for HKLR (including box culverts, pipe works and pump sumps)	139.7
(g)	Building structures	201.9
	(i) tunnel portal ventilation building	44.8
	(ii) administration building	147.9
	(iii) other buildings	9.2
(h)	Building services	65.6
	(i) tunnel portal ventilation building	23.2
	(ii) administration building	40.7
	(iii) other buildings	1.7
(i)	Landscaping works	46.2
(j)	E&M works for viaduct, tunnel and at-grade roads	482.1
(k)	TCSS	169.0
(l)	Relocation and reprovision of an existing weather station currently located at east coast of Airport Island, upgrading and modification of an existing wind profiler station at Sha Lo Wan, and provision of anemometers on the HKLR viaduct and the Airport Island	16.7

		\$ million
(m)	Environmental mitigation measures including environmental monitoring and auditing	241.6
(n)	Consultants' fees	62.4
(i)	detailed design and contract administration	32.5
(ii)	management of resident site staff (RSS)	26.5
(iii)	independent Environmental Project Office (ENPO) ⁴ and independent environmental checker services	3.4
(o)	Remuneration of RSS	841.4
(p)	Electrical and Mechanical Services Trading Fund (EMSTF) charges ⁵	10.8
(q)	Contingencies	1,234.0
	Sub-total	<u>13,574.4</u> (in September 2011 prices)
(r)	Provision for price adjustment	<u>2,615.5</u>
	Total	<u>16,189.9</u> (in MOD prices)

15. On paragraph 14(a), the estimated cost of \$7,137.3 million (in September 2011 prices) for the viaduct structures covers an approximately 7.2 km

4 The Environmental Permit for the HKLR project requires the setting up of an independent ENPO before the commencement of the HKLR 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.

5 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 (EMSD). 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.

long sea viaduct from HKSAR boundary to Airport Island (with span length from 75 metres to 180 metres), and approximately 2.2 km long land viaduct founded on the existing seawall of Airport Island to Scenic Hill (with span length of around 60 metres). The costs include foundations, superstructures, and ship impact protection works. The estimate has also taken into account the construction method by precast segmental construction for typical span viaduct section and in-situ construction for long span viaduct section as well as temporary traffic arrangement measures.

16. On paragraph 14(b), the estimated cost of \$1,473.0 million (in September 2011 prices) for the tunnel construction works covers the construction of an approximately 0.5 km long tunnel passing through Scenic Hill and underneath Airport Road and Airport Express Line, and approximately 0.5 km long tunnel within reclamation formed under this Project. The estimate has taken into account the temporary traffic arrangement measures.

17. On paragraphs 14(c) and (d), the estimated cost of \$752.5 million (in September 2011 prices) for the seawall covers the construction of an approximately 2.3 km long seawall, while the estimated cost of \$387.3 million (in September 2011 prices) for reclamation covers the reclamation to form approximately 17 ha of land along the east coast of the Airport Island for the construction of the tunnel, the at-grade roads, the Tunnel Operation and Maintenance Area, and ancillary works. The estimate has taken into account the adoption of the non-dredge reclamation method (see paragraph 37 below).

18. On paragraph 14(e), the estimated cost of \$312.9 million (in September 2011 prices) for at-grade roads covers earthworks for the construction of the approximately 1.6 km long at-grade road along the east coast of the Airport Island and roads within the Tunnel Operation and Maintenance Area, road pavements, street furniture, traffic signs, road marking, street lighting, utilities and temporary traffic arrangement measures.

19. On paragraph 14(f), the estimated cost of \$139.7 million (in September 2011 prices) for drainage works covers works for the viaduct, tunnel, at-grade roads and Tunnel Operation and Maintenance Area.

20. On paragraphs 14(g), and (h), the estimated cost of \$201.9 million (in September 2011 prices) for building structures and \$65.6 million (in September

2011 prices) for building services covers the construction of a tunnel portal ventilation building at the western tunnel portal, a two-storey high administration building and other buildings including control rooms for TCSS for the entire HKLR, tunnel operation and maintenance facilities, workshops, storerooms, vehicle retention sites and associated facilities, in addition to accommodation for Tunnel/Control Area staff, in the Tunnel Operation and Maintenance Area.

21. On paragraph 14(i), the estimated cost of \$46.2 million (in September 2011 prices) for landscaping works covers the construction of landscaping area of approximately 7 ha including planting at the columns of the land viaduct along Airport Island, tunnel portals, along at-grade roads and within Tunnel Operation and Maintenance Area.

22. On paragraph 14(j), the estimated cost of \$482.1 million (in September 2011 prices) for E&M works covers works for viaduct, tunnel, at-grade roads and Tunnel Operation and Maintenance Area.

23. On paragraph 14(k), the estimated cost of \$169.0 million (in September 2011 prices) for TCSS covers works for viaduct, tunnel, at-grade roads and Tunnel Operation and Maintenance Area.

24. On paragraph 14(n) and 14(o), the detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at Enclosure 3.

25. For the HZMB related local projects⁶, 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) case⁷, 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 of the Environmental Impact Assessment (EIA) Reports and the granting of Environmental Permits (EPs) relating to the HKBCF and HKLR projects. Therefore, we now plan to submit in November 2011 the funding application of the HZMB related local projects to the

⁶ Including the HKBCF, HKLR, and advance works for the TM-CLKL.

⁷ 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.

FC. If funding is approved, the construction of these projects will commence by end 2011. Since the schedule of the construction commencement is different by about one year, we estimate that there will be overall cost increase for the HZMB related local projects is about \$6.5 billion in MOD prices due to: (i) the revised construction method to compress the construction period in order to ensure commissioning of the HZMB by end 2016 (the associated cost increase is about \$4.15 billion); and (ii) the increase in construction prices (the associated cost increase is about \$2.35 billion). If the works are not implemented immediately, we anticipate that the cost will continue to rise significantly. If the construction of HKLR could not commence in early 2012, we also need to adjust the construction method to catch up the delay and this will lead to cost increase.

26. 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 and the Mainland. 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.

27. 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 HKLR has to connect the road leading to the eastern artificial island at the Mainland 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 the HZMB cannot be commissioned by end 2016, it would incur direct financial loss and indirect economic loss not only to Hong Kong, but also to the Mainland and Macao. Therefore, we hope that the 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 complete in tandem for commissioning of the HZMB by end 2016.

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

Year	\$ million (September 2011 prices)	Price Adjustment Factor	\$ million (MOD)
2011 – 2012	1.7	1.00000	1.7
2012 – 2013	1,447.5	1.05375	1,525.3
2013 – 2014	3,048.6	1.11171	3,389.2
2014 – 2015	3,845.6	1.17285	4,510.3
2015 – 2016	2,752.5	1.23736	3,405.8
2016 – 2017	1,221.1	1.30541	1,594.0
2017 – 2018	836.7	1.37721	1,152.3
2018 – 2019	420.7	1.45296	611.3
	<hr/> 13,574.4 <hr/>		<hr/> 16,189.9 <hr/>

29. We have derived the MOD estimate on the basis of the Government's latest forecast of 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 detailed design and construction of the HKLR under D&B contracts on a lump sum basis because we can clearly define the scope of works in advance. Moreover, we will also engage a separate consultant to set up an independent ENPO on a lump sum basis, and with provision for price adjustments in the consultancy agreement.

30. We estimate the annual recurrent expenditure arising from the Project to be \$151.4 million.

PUBLIC CONSULTATION

31. We have commenced our public consultation and engagement activities on the HZMB HKBCF and HKLR projects since 2003. In gist, we have consulted LegCo and the Advisory Council on the Environment (ACE), and engaged 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 4**.

Latest Consultation in respect of EIA Reports

32. 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 Island 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 judicial review and appeal, the Court of Appeal confirmed the validity of the EPs. Refer to footnote 8 for details.

Objection-handling Process in respect of Amendment to Chek Lap Kok Outline Zoning Plan and Road Works

33. We gazetted on 12 and 19 June 2009 the draft Chek Lap Kok Outline Zoning Plan (OZP) No. S/I-CLK/11⁸ under the Town Planning Ordinance (Cap. 131). We also gazetted the HKLR road scheme and plans (cover both the roads and reclamation works) on 7 and 14 August 2009 under the Roads (Works, Use and Compensation) Ordinance (Cap. 370). During the statutory objection period, 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 expressing 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 5**. Despite our effort in resolving the objections, 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.

8 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.

34. In respect of the unresolved objections and representations as mentioned in paragraph 33 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 approved the amendment of the Chek Lap Kok OZP under the Town Planning Ordinance and authorised the road scheme of the HKLR project without modification under the Roads (Works, Use and Compensation) Ordinance. The notices of authorisation for the road schemes of the HKLR project and the Chek Lap Kok OZP will be gazetted on 21 October 2011.

35. We will brief 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 application for the works for the projects (including the HKLR) on 26 October 2011.

ENVIRONMENTAL IMPLICATIONS

36. The HKLR project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) and EP is required for the construction and operation of the HKLR. An EIA was conducted for the HKLR to evaluate possible environmental impact 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 measures. Key findings of the EIA study and some major mitigation measures recommended are listed at **Enclosure 6**. 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 HKLR project.

37. During the review of the necessary reclamation, the Highways Department (HyD) developed a new non-dredge reclamation method, which can reduce dredging by about 87% (about 5.20 million cubic metres); sandfilling by about 70% (about 2.70 million tonnes); the release of marine suspended solids by about 60%; and frequency of marine traffics by about 45%. The environmental impact is greatly reduced by 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. on the use of site hoardings and signboards such 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 contractor 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 to public fill reception facilities⁹. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise 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 HKLR EIA report. In particular, underwater percussive piling method will be forbidden to avoid disturbance to Chinese White Dolphins.

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

9 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.

41. We estimate that the project will consume in total about 2.24 million tonnes of inert construction waste (soft public fill) during the reclamation process; however will generate in total about 1.81 million tonnes of construction waste. Of these, we will reuse about 0.49 million tonnes (27.0%) of inert construction waste on site and about 0.65 million tonnes (35.8%) of inert construction waste on other construction site(s) and deliver about 0.67 million tonnes (37.0%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining about 4 000 tonnes (0.2%) 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 \$18.46 million for this project (based on an unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne¹⁰ at landfills).

42. We estimate that the construction works will generate about 0.75 million cubic metres (m³) of marine mud. We will dispose of the dredged marine mud at respective designated disposal sites to be allocated by the Marine Fill Committee¹¹ or other disposal sites to be agreed by the Marine Fill Committee and the Environmental Protection Department.

43. 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.

44. We have included the costs of implementing the environmental mitigation measures including, an environmental monitoring and audit programme, (\$241.6 million) in the overall project estimate.

HERITAGE IMPLICATIONS

45. This project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

10 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.

11 The Marine Fill Committee (MFC) is an intra-governmental committee responsible for identifying and managing the supply and demand of marine fill resources for all Government, quasi-Government and major private projects. The MFC is also responsible for the provision and management of disposal capacities for dredged/excavated sediment.

LAND ACQUISITION

46. We have reviewed the design of the project to minimize the extent of land acquisition. We need to resume about 11 707.3 square metres (m²) of private land, and create easements and other permanent rights of about 80 622.3 m² and rights of temporary occupation of about 147 314.6 m² of private land. We will also clear about 47 740.8 m² of Government Land. No structure will be affected due to land resumption and clearance. Ex-gratia allowance, e.g. “Tun Fu” ceremonies, 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 \$99.63 million to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance costs is at **Enclosure 7**.

BACKGROUND INFORMATION

47. In October 2002, we engaged consultants to undertake a Preliminary Environmental Review (PER) at an estimated cost of \$1.3 million under **Subhead 6100TX** “Highways works, studies and investigations for items in Category D of the Public Works Programme”. The consultants completed the PER in December 2002.

48. In September 2003, we engaged consultants to undertake an Ecological Baseline Survey at an estimated cost of \$1.3 million under **Subhead 6100TX** “Highways works, studies and investigations for items in Category D of the Public Works Programme”. The consultant completed the survey in June 2004.

49. We upgraded **787TH** “Hong Kong – Zhuhai – Macao Bridge Hong Kong Section and North Lantau Highway Connection – investigation and preliminary design” to Category A in December 2003 at an estimated cost of \$58.9 million in MOD prices. We engaged consultants in March 2004 to undertake the investigation and preliminary design study for the project. The consultants completed the associated investigation and the preliminary design in October 2010.

50. We engaged consultants in September 2010 to undertake the tender documentation of the project at an estimated cost of \$18.4 million in MOD prices under **Subhead 6100TX** “Highways works, studies and investigations for items in Category D of the Public Works Programme”.

51. We engaged consultants in December 2010 to undertake the detailed design for the superstructures and infrastructures of the HKBCF under **839TH** “Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities – detailed design and site investigation”, which included the TCSS works for the HKLR project. The part of the TCSS works for the HKLR will be funded by **844TH**, after the funding application is approved.

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

53. We originally scheduled to commence the construction of the HZMB related local projects before end 2010. We therefore set out the expenditure forecast for the HKLR in the Estimates for 2011-12. Apart from considering the estimates prepared at the time of the Estimates, we have in this funding application also considered the cost increases due to the deferral of about a year in works commencement because of the judicial review proceedings, and the adoption of the more environmental friendly non-dredge reclamation method as well as the additional costs due to factors such as design development, and forecast of increase in material cost and construction cost, etc.

54. Of the 8 481 trees within the project boundary, 7 783 trees will be preserved. The proposed construction works will involve the removal of 698 trees, including 576 trees to be felled and 122 trees to be replanted within the project site subject to finalization of design. All trees to be removed are not important trees¹². We will incorporate planting proposals as part of the project, including about 900 trees and 5 000 shrubs, as well as 37 000 m² of grassed area.

12 An “important tree” 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) tree of cultural, historical or memorable significance e.g. Fung Shui tree, tree 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, tree 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 equal or exceeding 25 m.

55. We estimate that the proposed works will create about 4 580 jobs (860 for professional/technical staff and 3 720 for labourers) providing a total employment of 174 100 man-months.

Transport and Housing Bureau
November 2011

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.

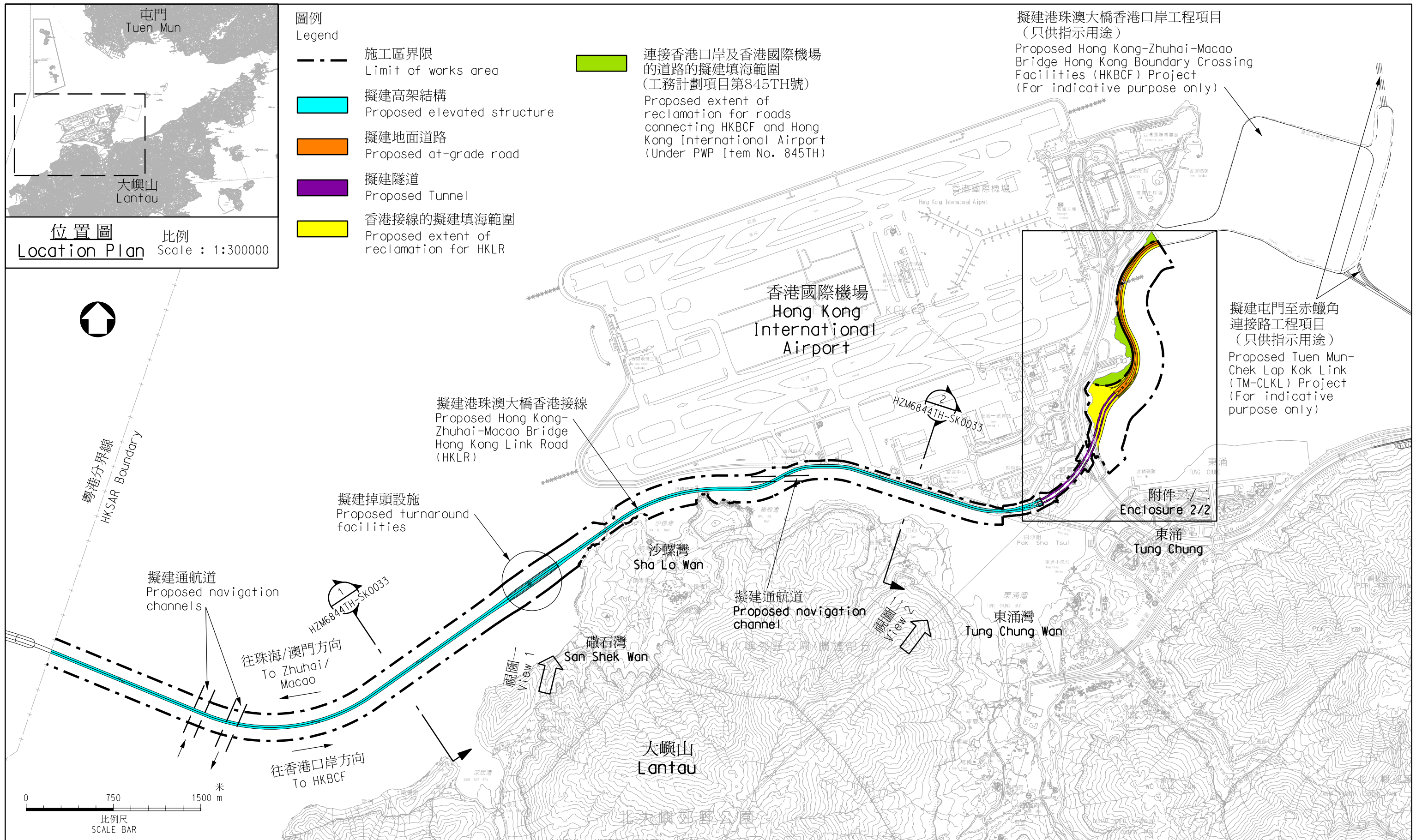
2. With the approval of the State Council to proceed with the preparatory work for the Hong Kong-Zhuhai-Macao Bridge (HZMB), the governments of Guangdong Province, the HKSAR and the Macao Special Administrative Region (the three governments) in 2003 established an HZMB Advance Work Coordination Group (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 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

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

Authority is responsible for co-ordinating the construction, operation, maintenance and management of the HZMB Main Bridge, and implementing various policies of the Committee.



工務計劃項目第844TH號 - 港珠澳大橋香港接線

PWP Item No. 844TH - Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road

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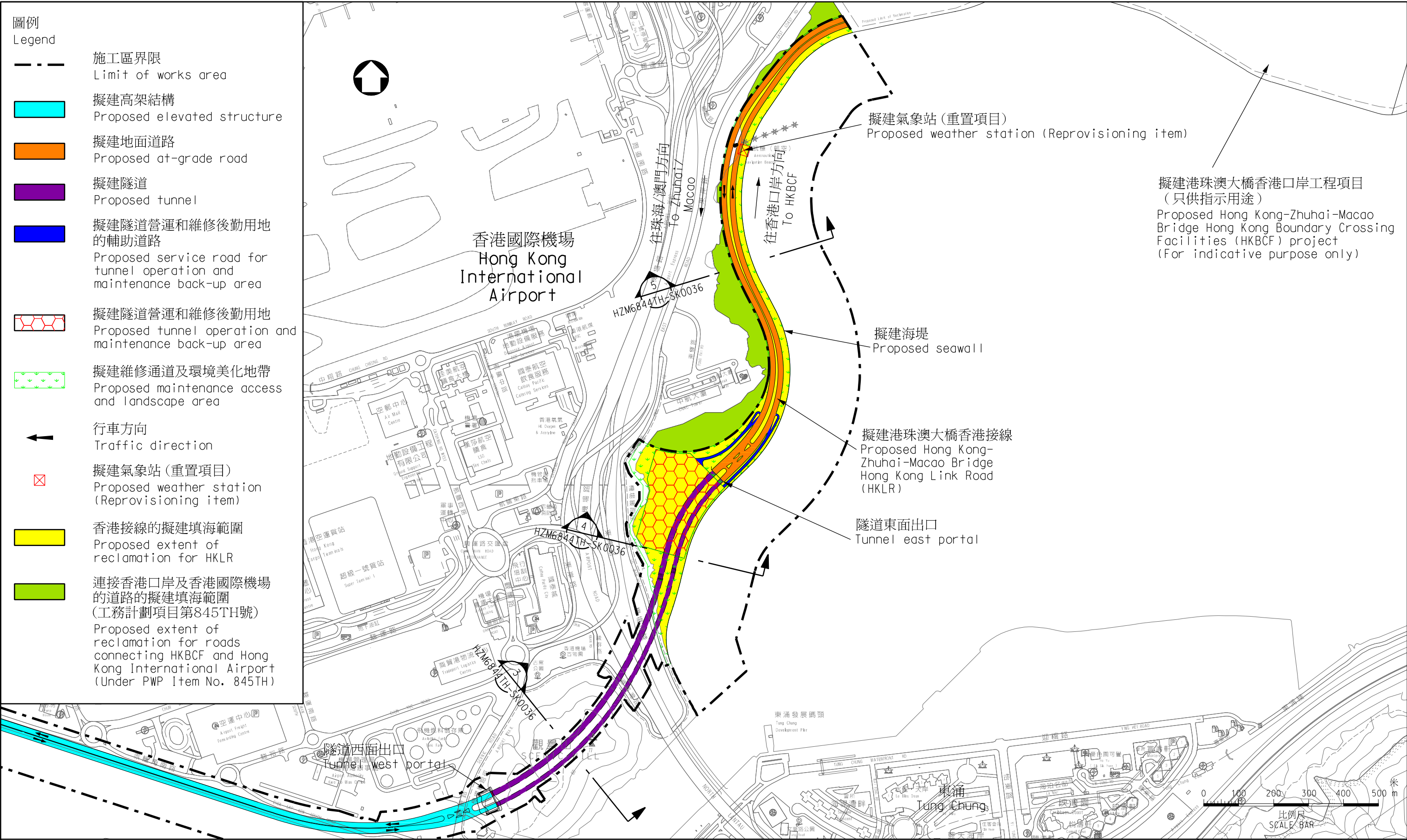
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HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE



HIGHWAYS
DEPARTMENT
HONG KONG

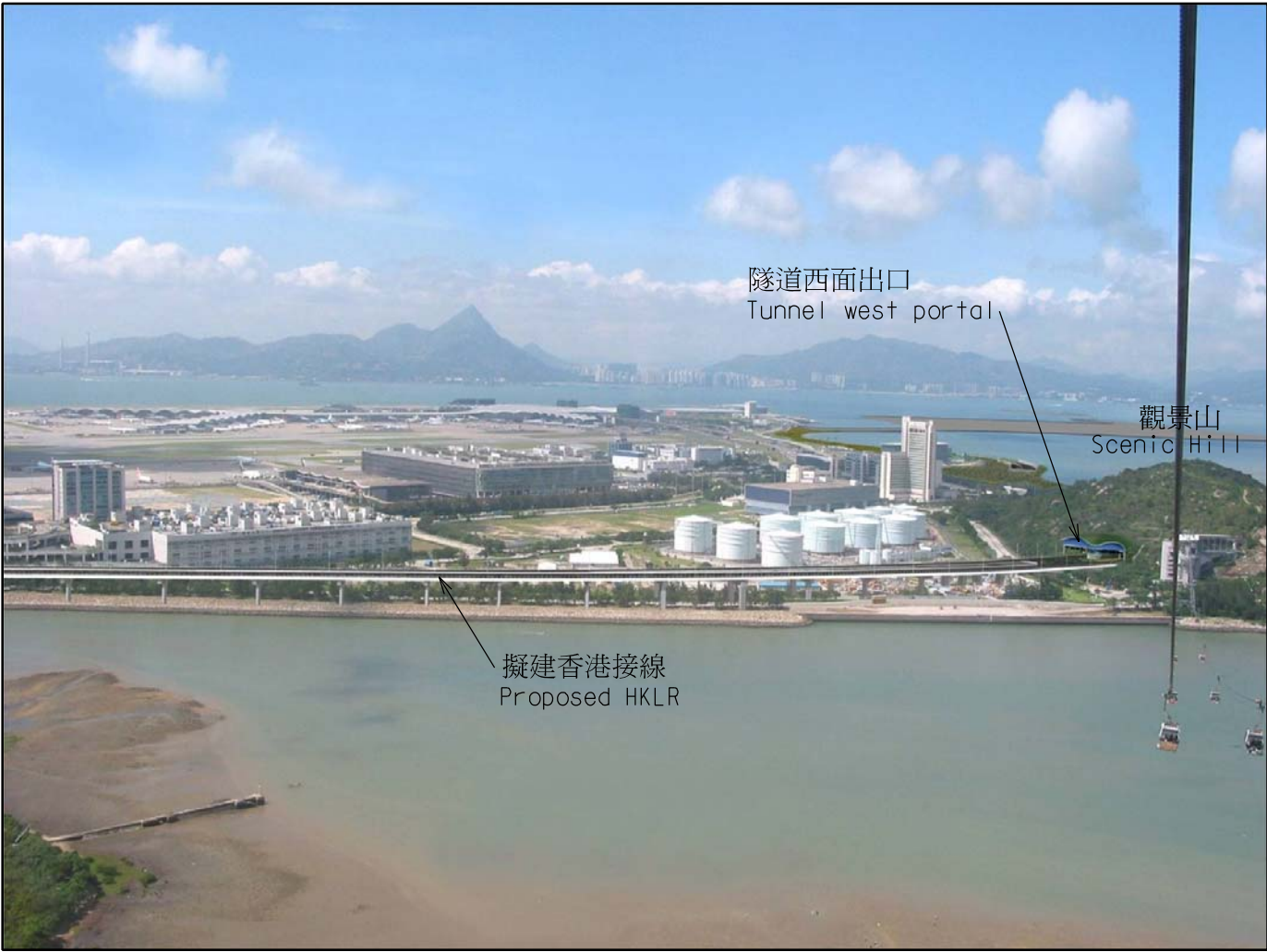
路政署
香港



工務計劃項目第844TH號 - 港珠澳大橋香港接線
PWP Item No. 844TH - Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road



視圖1 - 香港接線自西面水域至機場島
View 1 - HKLR from Western Waters to Airport Island



視圖2 - 香港接線沿機場島海堤至位於觀景山之隧道西面出口
View 2 - HKLR along seawall of Airport Island to tunnel west portal at Scenic Hill

工務計劃項目第844TH號 - 港珠澳大橋香港接線
PWP Item No. 844TH - Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road

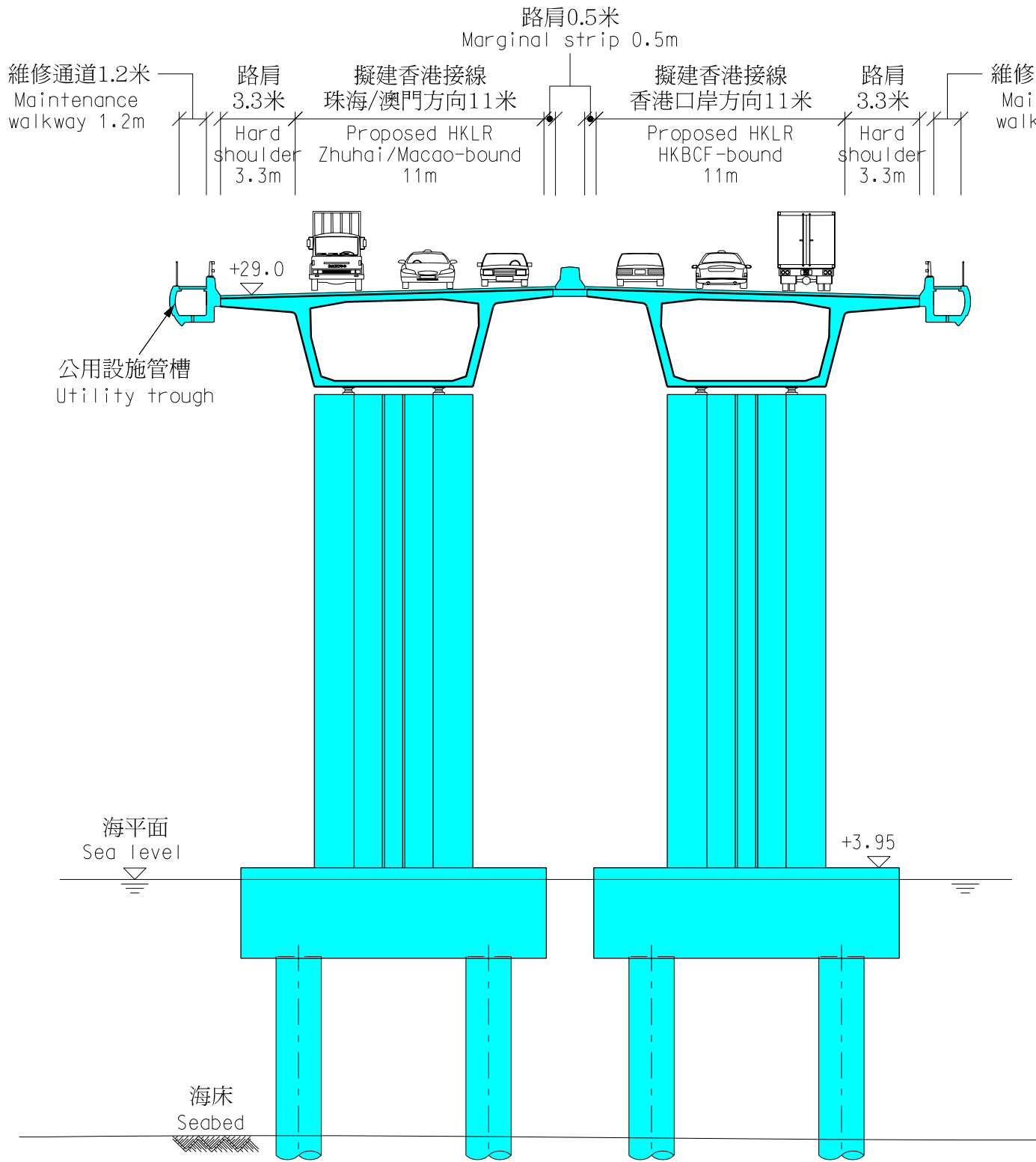
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HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE

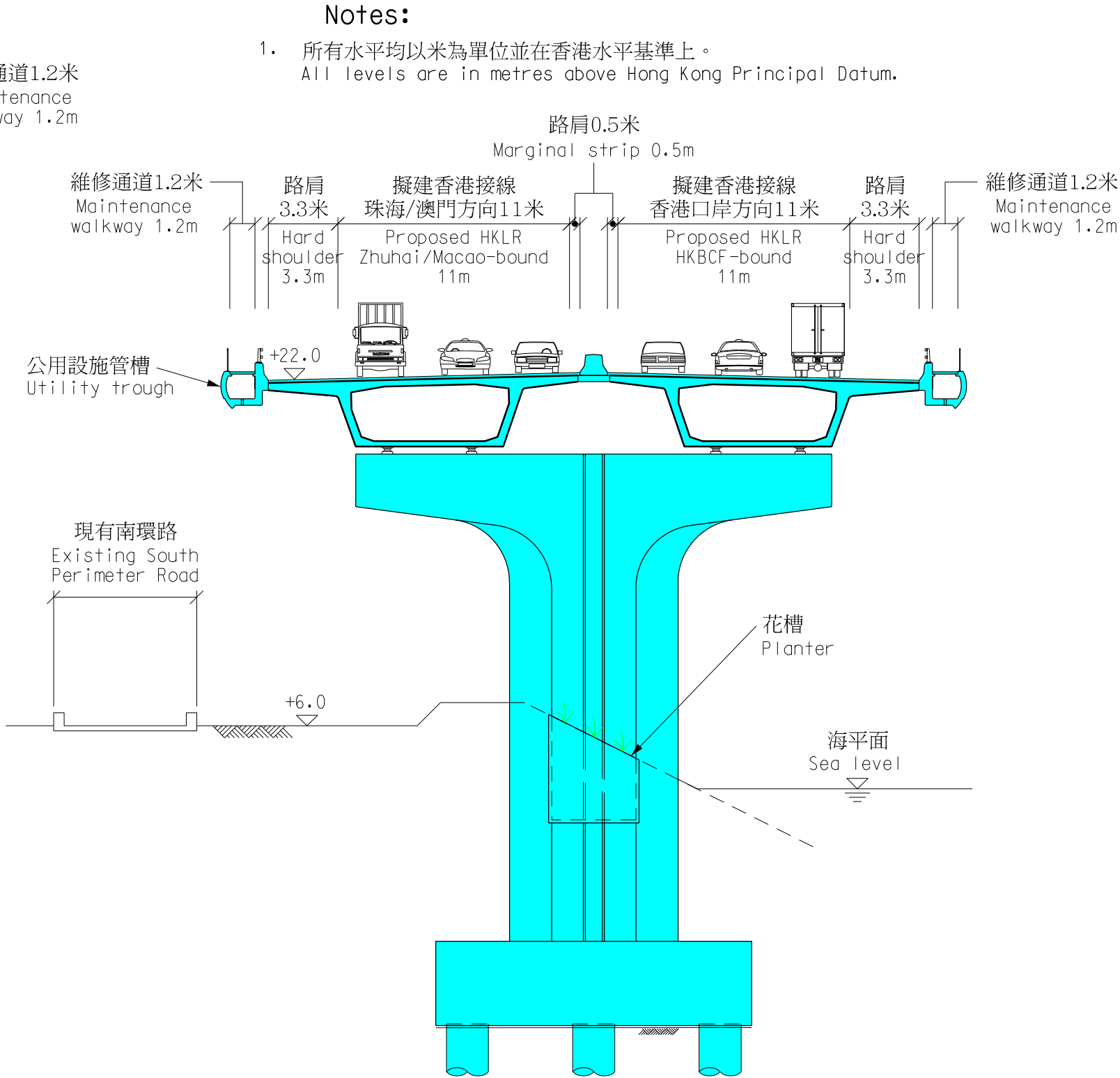


HIGHWAYS
DEPARTMENT
HONG KONG

路政署
香港



切面 Section 1
比例 Scale 1:250 HZM6844TH-SK0024



切面 Section 2
比例 Scale 1:250 HZM6844TH-SK0024

Notes:

- 所有水平均以米為單位並在香港水平基準上。
All levels are in metres above Hong Kong Principal Datum.

工務計劃項目第844TH號 - 港珠澳大橋香港接線
PWP Item No. 844TH - Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road

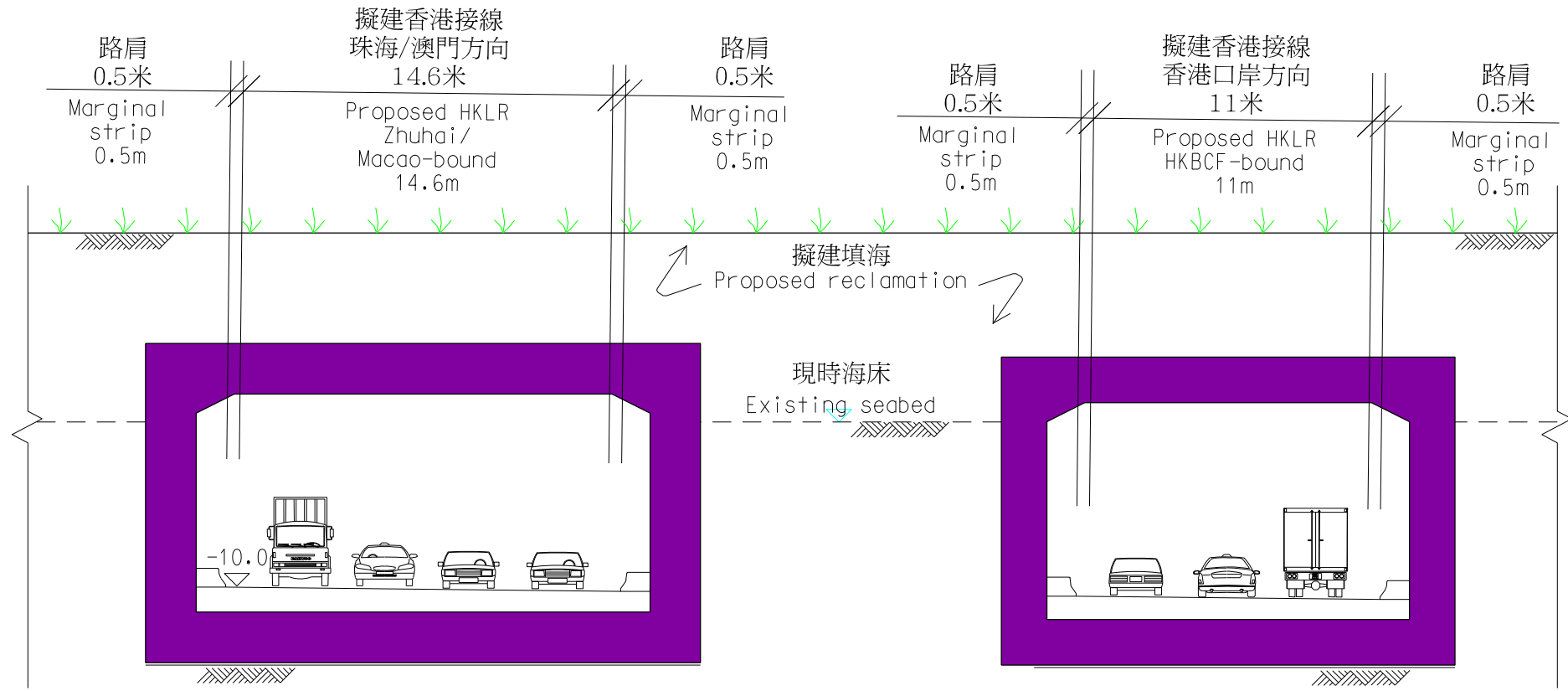
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HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG PROJECT MANAGEMENT OFFICE



HIGHWAYS
DEPARTMENT
HONG KONG

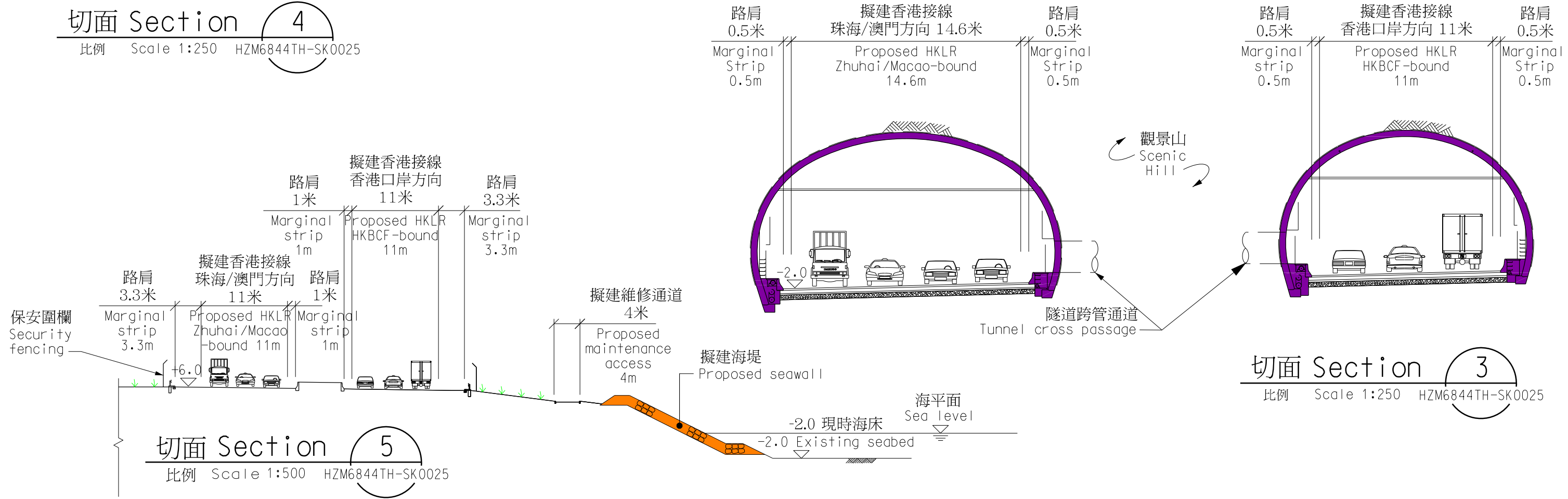
路政署
香港



註釋 Notes:
1. 所有水平均以米為單位並在香港水平基準上。
All levels are in metres above Hong Kong Principal Datum.

圖例 Legend
↓ ↓ ↓ 擬建環境美化地帶
Proposed landscape area

切面 Section 4
比例 Scale 1:250 HZM6844TH-SK0025



切面 Section 3
比例 Scale 1:250 HZM6844TH-SK0025

工務計劃項目第844TH號 - 港珠澳大橋香港接線
PWP Item No. 844TH - Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road

844TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Link Road

**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)
Consultants' fess for						
(a)	Detailed Design of TCSS ^(Note 2)	Professional	—	—	—	2.0
		Technical	—	—	—	1.4
(b)	Contract administration ^(Note 3)	Professional	—	—	—	22.5
		Technical	—	—	—	6.6
(c)	Independent Environmental Protection Office and independent environmental checker ^(Note 4) services	Professional	19	38	2.0	2.3
		Technical	25	14	2.0	1.1
					Sub-total	35.9
Resident site staff cost ^(Note 5)						
		Professional	3 239	38	1.6	323.4
		Technical	16 071	14	1.6	544.5
					Sub-total	867.9
Comprising –						
(i)	Consultants' fees for management of resident site staff					26.5
(ii)	Remuneration of resident site staff					841.4
					Total	867.9

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of resident site staff supplied by the consultants and a multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs for the staff to be employed in the consultants' offices. (At present, MPS pt. 38 = \$62,410 per month and MPS pt. 14 = \$21,175 per month).
2. The consultants' staff cost for the detailed design of TCSS works is calculated in accordance with the existing consultancy Agreement No. CE 13/2010 (CE) "HZMB HKBCF (Superstructures and Infrastructures) – Design and Construction" (including 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 phase and completion phase of the assignments will only be executed subject to Finance Committee's approval to upgrade **825TH**, **844TH**, **845TH** to Category A.
3. The consultants' staff cost for the contract administration is calculated in accordance with the following existing consultancies –
 - (a) Agreement No. CE 36/2009 (HY) "Tender and Construction of HZMB Hong Kong Link Road – Design and Construction" (including the HKLR works under **844TH**, and some road and reclamation works of the HKBCF in the Airport under **845TH**) and;
 - (b) Agreement No. CE 13/2010 (CE) "HZMB HKBCF (Superstructures and Infrastructures) – Design and Construction" (including 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 phase and completion phase of the assignments will only be executed subject to Finance Committee's approval to upgrade **825TH**, **844TH**, **845TH** to Category A.
4. The actual costs will only be known after the consultants have been selected.
5. The actual man-months and actual costs will only be known after completion of the construction works.

**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, Island 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 environmental concern groups and fishermen representatives on their views on the possible HKBCF site locations. Most of the environmental concern 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 Link Road**

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

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

2. There are 780 representations which were concerned with the proposed Hong Kong Boundary Crossing Facilities (HKBCF), Hong Kong Link Road (HKLR) and Tuen Mun-Chek Lap Kok Link (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. 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 “Costal Protection Area (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.
3. 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.
4. 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 Environmental Impact Assessment (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 Director of Environmental Protection (DEP) under the EIA Ordinance on 23 October 2009;
- (d) extensive consultation and public engagement exercises had been conducted by the Highways Department (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

5. 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

6. 7 representations were withdrawn and one representation was considered invalid as the subject of representation was not related to the amendment.

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

7. During the statutory period for objection, 613 objections were received. Out of these objections, 44 have subsequently been withdrawn unconditionally. Among the remaining 569 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 544 objections were maintained. These 569 objections were thus considered unresolved. The details of the objections are described as follows.

Group I

8. These 198 objections were lodged in the form of standard letters. These objectors are mostly residents of Sha Lo Wan (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.

9. 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

10. There were 125 objections lodged in the form of one of the five types of standard letters described in paragraph 7 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 7), they raised additional or further concerns – either in the objection notices, in subsequent correspondence / contacts with 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.

11. Apart from those responses set out in paragraph 7 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

12. One objector is a representative of SLW Villagers and one objector is the Chairman of the Tai O Rural Committee, both of whom joined at least one of the objection-handling meetings arranged for handling objections against both the HKLR and HKBCF projects. They disagreed to the gazetted HKLR alignment and raised concerns on the proximity of HKLR to SLW and the associated environmental and “Fung Shui” impacts. They also requested for transportation improvement by building a connecting road to SLW. The objectors opined that there had been insufficient consultation on the project, and suggested to adopt tunnel form instead of a viaduct form for HKLR at the Airport Channel or to build the HKLR at north of the Airport.

13. We responded that EIA for the HKLR showed that the project would meet the requirements under the EIAO when mitigation measures in specified areas are taken. We explained the reasons for adopting the gazetted alignment and why their suggested tunnel or alignment options would not be feasible, and that extensive public consultation had been conducted. We also explained that the requested connecting road is not possible due to road operation, traffic management and safety considerations, but the Government would pay close attention to the development of the relevant areas and review and consider the possibility to provide a link to SLW. The objectors maintained their objections and did not respond to further response provided by HyD. Hence these objections are considered unresolved.

Group IV

14. 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 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.

15. 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.

16. 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 V

17. There were 47 objections lodged via the same standard e-mail template as that mentioned in paragraph 13 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.

18. 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

19. A fishermen group raised concern on the loss of fishing grounds due to the proposed works of the HKLR and HKBCF, which, as claimed, will seriously affect the fishermen's living. Reasonable compensation was requested. In response, we explained that with the implementation of mitigation measures, the sediment plumes would be confined to areas close to the construction sites. The projects will not cause significant impact on the water quality at the fish culture zones and the major capture fisheries areas. That said, in accordance with current Government policy, an one-off ex-gratia allowance payment will be made to eligible fishermen who will be affected by the proposed works. Notwithstanding our explanation in

our written response and at the subsequent objection-handling meeting, the objector did not respond to the correspondence sent by the Administration to it after the meeting. Therefore, the objection is considered to be maintained and unresolved.

20. Another objector is a conservation organisation. Its main concern is that the proposed works of the HKLR and HKBCF would likely bring considerable negative impacts on the environment, including the marine environment, marine ecology (Chinese White Dolphin (CWD)), fisheries, water quality and the hydrodynamics at and near the proposed construction site, and it is inappropriate to gazette the projects until the environmental concerns are fully addressed with potential damages being proven to be acceptable or sufficiently mitigated. The objector also separately lodged objection to the TM-CLKL project on similar grounds. The Administration explained that the project met the requirements under the EIAO. 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 HKBCF project. The Administration further explained to the objector the various reasons why their suggested alternative proposals (including integrating the HKBCF with the Airport at its west side and integrating HKLR with the Airport at its north side; to adopt a viaduct option to replace the at-grade road on reclamation for HKLR along the Airport east coast; and to remove the southwest reclamation of the HKBCF) were not considered feasible. The objector attended an objection-handling meeting. He did not respond to the further responses from HyD which were sent to him further to the meeting. Hence the objection is considered to be maintained and thus remains unresolved.

21. Another objector is a non-profit making organisation. Its main concern is similar to those described in paragraph 13. The organisation also objected the construction of the toll plaza of TMCLKL. It suggested 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 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. The Administration has responded that the health aspect had been addressed by detailed impact assessment during the EIA study on various relevant aspects (see paragraph 16(c) above). 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. Notwithstanding our explanation in our written response and at the subsequent objection-handling meeting, the objector did not respond to the further responses from the Administration after the meeting. Therefore, the objection is considered to be maintained and unresolved.

Other objection which was withdrawn unconditionally

22. 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.

844TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Link Road

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 assessment results indicate that the air quality and noise impacts brought about by the project on Tung Chung will be minimal (The distance between HKLR and Tung Chung is about 700 m). • 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, impacts on water quality during construction stage will be limited to the vicinity of the site and fully comply with EIAO requirements. 	<ul style="list-style-type: none"> • Undertake the bored piling within metal casing. • Provide silt curtains closely surrounding the dredging point at all time throughout the dredging operation to minimize dispersion of sediment plumes. • Install perimeter silt curtain around the reclamation site and second layer of silt curtain around stone column installation to control plumes of suspended

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
		<p>solids.</p> <ul style="list-style-type: none"> • 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.
Impact on Chinese White Dolphins (CWD)	<ul style="list-style-type: none"> • The waters to the west of the Airport feature two areas of dolphin-conservation importance, viz the Sha Chau/Lung Kwu Chau Marine Park, and the water near Tai O Peninsula to Fan Lau. The HKLR alignment passes between the two high dolphin-density areas. Impacts to CWD along this alignment can be expected to be less significant than if the alignment is to pass directly through either of the high dolphin-density areas. 	<ul style="list-style-type: none"> • Install perimeter silt curtains around the site and set up a dolphin exclusion zone of 250m around the Project during the installation of the perimeter silt curtains and re-deployment of the perimeter silt curtains. If dolphins are observed in the exclusion zone, the installation/re-deployment works will be suspended until the dolphins have left the area. • Implement dolphin watching plan including regular checking of the silt curtain and monitor the waters outside the silt curtain.

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
	<ul style="list-style-type: none"> The construction and operation of the HKLR would cause marine habitat loss and potential water quality impacts, but the reclaimed area is not highly used by dolphins and is of very low coverage of common gorgonians. 	<ul style="list-style-type: none"> Carry out regular dolphin monitoring and monitor underwater noise from bored piling activities. Suspension of formation of underwater sockets into rock for the marine bored piles in May and June which is the peak calving season of Chinese White Dolphins. Banning of underwater percussive piling. Enforcement of vessel speed limit within the work areas to within 10 knots.
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 reprovision of artificial reefs (AR) as mitigation and enhancement measure for affecting the existing ARs inside a Marine Exclusion Zone.
Landscape and visual impacts	<ul style="list-style-type: none"> Loss of landscape resources of coastal water and inshore and offshore water landscape characters at the southwest, south and east of Hong Kong International Airport. However, the quantity of loss of the seawater resources and characters is relatively small in comparison to the large extent of adjacent 	<ul style="list-style-type: none"> Landscape impacts would be largely mitigated by tree preservation measures and compensatory planting and enhancement landscaping. Residual impact is considered negligible after the reinstated vegetation has matured. These measure will also improve the visual quality of the newly formed shoreline.

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
	<p>seawater landscape resource/character within inshore and offshore of Airport Island.</p> <ul style="list-style-type: none">● The semi-natural rocky shoreline along the southeast shoreline of Airport Island will be affected by the proposed reclamation for the at-grade section of HKLR.● Vegetation loss at Scenic Hill due to construction of the HKLR tunnel portal.	<ul style="list-style-type: none">● The HKLR adopts a section of tunnel and at-grade road in the vicinity of Tung Chung urban area which effectively reduces the level of potential residual visual impact to the Visual Sensitive Receivers located in the urban residential areas.

844TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Link Road**Breakdown of Land Resumption and Clearance Costs**

	\$ million
(I) Estimated Land Resumption and Clearance Costs	83.673
<ul style="list-style-type: none"> ● Compensation on resumption of portions of a lot with a total area of 11 707.3 m² ● Compensation on creation of easements and other permanent rights in, under or over portions of a lot with a total area of 80 622.3 m² ● Compensation on creation of rights of temporary occupation of portions of a lot with a total area of 147 314.6 m² ● 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	15.959

Total = 99.632
(Say 99.63)

**For discussion
on 8 November 2011**

PWSC(2011-12)32

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

825TH – Tuen Mun - Chek Lap Kok Link and Tuen Mun Western Bypass

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **825TH**, entitled “Tuen Mun – Chek Lap Kok Link – detailed design, site investigations and advance works”, to Category A at an estimated cost of \$1,909.6 million in money-of-the-day prices;
- (b) the retention of the remainder of **825TH** in Category B.

PROBLEM

We need to take forward the detailed design, site investigations and advance works of the Tuen Mun – Chek Lap Kok Link (TM-CLKL) so that it can be completed by phases to synchronise with the commissioning of the Hong Kong – Zhuhai – Macao Bridge (HZMB) and to meet the local traffic demand, thereby enhancing the overall efficiency of the transport network of Hong Kong.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade part of **825TH** to Category A at an estimated cost of \$1,909.6 million in money-of-the-day (MOD) prices to engage consultants to undertake the detailed design and associated site investigations for the TM-CLKL and to construct the advance TM-CLKL southern landfall reclamation works.

PROJECT SCOPE AND NATURE

3. The part of **825TH** that we now propose to upgrade to Category A comprises –

- (a) the construction of the advance works of the TM-CLKL, which comprises –
 - (i) construction of a permanent seawall approximately 2 kilometres (km) long;
 - (ii) reclamation to form extra land of approximately 20 hectares (ha) at the proposed reclamation of the Hong Kong Boundary Crossing Facilities (HKBCF) for the Southern Landfall of the TM-CLKL sub-sea tunnel. The reclamation works will be taken forward as the same works together with the HZMB HKBCF reclamation; and
 - (iii) implementation of the associated environmental protection and mitigation works; and
- (b) the detailed design and site investigations of the TM-CLKL as described in paragraph 4 below (save for the advance works as mentioned under (a) above¹), which includes –
 - (i) review of preliminary design;
 - (ii) detailed design;
 - (iii) site investigations for detailed design and the associated works supervision; and

¹ The detailed design of the advance works was funded under Subhead 6100TX (Highway works, studies and investigations for items in Category D of the Public Works Programme). Refer to paragraph 11 for details.

- (iv) preparation of tender documents and assisting in assessment of tenders.

Layout plans showing the location and conceptual layout of the TM-CLKL and its advance works (with artist's impression view) are at **Enclosure 1**.

4. The scope of the remainder of **825TH** comprises –
- (a) the construction of the TM-CLKL, a dual two-lane highway approximately 9 km² long connecting Tuen Mun Western Bypass (TMWB) at Tuen Mun Pillar Point in the north with the HKBCF and the Airport, and with North Lantau in the south, excluding the advance works described in paragraph 3(a) above. About 5 km of the TM-CLKL is in the form of sub-sea tunnel;
 - (b) the construction of the TMWB, a dual two-lane highway approximately 9 km long connecting Kong Sham Western Highway in the north and the TM-CLKL in the south; and
 - (c) the associated building, civil, structural, geotechnical, marine, electrical and mechanical, landscaping, and environmental protection and mitigation works for the two highways mentioned above.

5. We plan to commence the advance works as described in paragraph 3(a) above by end 2011 in order to tie in with the reclamation and associated works for the HZMB HKBCF which are targeted for completion by early 2016. We also plan to commence the detailed design and site investigations as described in paragraph 3(b) above by end 2011 for completion in mid 2015. Tenders have already been invited separately to enable the advance works and the detailed design consultancy to commence as soon as possible after funding approval.

² It comprises about 1 km of viaduct and about 5 km of sub-sea tunnel connecting Tuen Mun with the HZMB HKBCF, and about 3 km of viaduct connecting the HZMB HKBCF with the North Lantau Highway.

JUSTIFICATION

Strategic Need for TM-CLKL

6. The TM-CLKL greatly complements the HZMB project to produce synergy effect. It is a strategic link connecting the HZMB with Northwest New Territories (NWNT) and North Lantau to enhance cross-boundary transportation. Traffic can go to Shenzhen via the proposed TMWB, Kong Sham Western Highway and Shenzhen Bay Bridge by routing through its northern connection, and to North Lantau Highway (NLH) by routing through its southern connection. For the Pearl River Delta Region, the TM-CLKL thus helps complete a regional transportation network between Hong Kong, Macao, Shenzhen and Zhuhai, and is very important for fostering closer economic integration of Hong Kong with the Pearl River Delta Region.

7. For Hong Kong, this road network will bring about significant benefits in the following aspects –

(a) Benefiting the development of various sectors

Hong Kong will benefit from the expanded economic hinterland, which will provide ample opportunities for Hong Kong businesses to enlarge their operation in the Mainland. The improved cross-boundary connectivity will also benefit various domestic sectors, such as tourism, logistics, finance and commerce.

(b) Satisfying the transportation needs of Lantau and NWNT

The TM-CLKL is important for satisfying the rising transportation needs of Lantau and NWNT. Based on the NWNT Traffic and Infrastructure Review conducted by Transport Department in 2005, the existing traffic corridor comprising Tuen Mun Road, Ting Kau Bridge, Lantau Link and NLH will be operating beyond the capacity after 2017 due to the increase in cross-boundary traffic and projected developments in NWNT and North Lantau. The TM-CLKL is needed to cope with the anticipated increase in traffic demand between NWNT and Lantau.

(c) Improvement of journey time and road capacity between NWNT and Lantau

The proposed TM-CLKL, together with the TMWB³, will provide the most direct route between NWNT and Lantau, joining Kong Sham Western Highway, the port back-up areas in NWNT, Tuen Mun River Trade Terminal, Ecopark, the Airport and the HZMB. Upon completion, the new route will significantly reduce the journey time between NWNT and Lantau, and also release some capacity of the existing roads (such as Tuen Mun Road, Ting Kau Bridge, Lantau Link and NLH), and offer strong support to the logistics industry.

(d) Provision of an alternative route to Airport

There is also a need to provide an alternative road access independent of the existing traffic corridor to serve the Airport. At present, Lantau Link and the NLH form the only road corridor connecting the Airport and North Lantau with the urban area. In case of any incidents resulting in blockage of this corridor, the northern connection of the proposed TM-CLKL (connecting Tuen Mun with the HKBCF of the HZMB, which in turn connecting the Airport) will serve as an alternative and emergency route to the Airport independent of the NLH, thus reinforcing the Airport as an international and regional aviation hub. The landslide incident in June 2008 which blocked the NLH also illustrates the importance of having an alternative route connecting the Airport.

Development of TM-CLKL during Investigation and Preliminary Design

8. In May 2008, we engaged consultants to undertake the investigation and preliminary design (I&PD) study of the TM-CLKL to determine the alignment, general layout, land requirement and impacts of the TM-CLKL project. The I&PD consultancy has recommended the following –

³ In November 2010, the Highways Department (HyD) conducted a series of public consultation meetings with Tuen Mun and Yuen Long District Councils, Tuen Mun Rural Committee and Heung Yee Kuk. The HyD will refine the design of TMWB in response to the opinions received, with a view to further taking forward the project. We are currently taking forward the investigation and preliminary design of the TMWB while funding for its detailed design will be sought in due course.

- (a) with the selection of the northeast of the Airport for the HKBCF site, the TM-CLKL southern landfall reclamation will be taken forward as the same works together with the reclamation of the artificial island of HKBCF to save a length of approximately 1.8 km of permanent seawall⁴, thus minimizing the environmental impact;
- (b) with the TM-CLKL located at the east of the HKBCF, traffic from the HZMB can go directly to the NWNT via the TM-CLKL's northern connection or to the urban area via the TM-CLKL's southern connection and NLH. Traffic to/from the HKBCF will not need to route through Tung Chung and the Airport, thus minimizing the environmental and traffic impact on Tung Chung New Town;
- (c) the sub-sea tunnel is proposed to be constructed by tunnel boring machine (TBM) instead of the traditional immersed tube method. This construction method could greatly reduce dredging and disposal of substantial amount of marine sediment, avoid diversion of the submarine power cables currently serving the Airport and reduce the impact on the marine traffic on the busy Urmston Road. It also minimizes the impact on the marine ecology; and
- (d) for the works programme, to commence the TM-CLKL southern connection which connects the HZMB HKBCF with the NLH in 2016 to tie in with the commissioning of the HZMB and reduce the environmental and traffic impact to Tung Chung New Town; and to complete the TM-CLKL northern connection which connects the HZMB HKBCF with Tuen Mun in 2017 to alleviate the emergence of traffic congestion at Tuen Mun Road by 2017.

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. Carrying out the reclamation works in the same contract to provide the land required for the two projects will reduce the total length of the seawalls.

Proposed Advance Works and Detailed Design Consultancy

9. We will implement the southern connection and northern connection sub-sea tunnel by the design and build (D&B) approach, while the designer-led approach will be adopted to implement works such as the advance southern landfall reclamation, the design of the toll plaza and design of the tunnel buildings (such as the administration building).

Advance Works

10. As mentioned in paragraph 8(a) above, the TM-CLKL southern landfall reclamation and the HKBCF reclamation will be taken forward as the same works together with the reclamation of the artificial island of HKBCF to save a length of approximately 1.8 km of permanent seawall, thus minimizing the environmental impact. Moreover, in order to achieve a compatible seawall and reclamation design, enable better integration, and avoid complicated interfacing issues between the two projects at the construction stage, the detailed design needs to be carried out under the same consultancy and the reclamation works will be taken forward under the same contract for the two projects.

11. To implement the HKBCF reclamation, we engaged consultants in July and September 2009 to undertake the ground investigation and detailed design for the HKBCF reclamation works respectively after obtaining funding approval from the Finance Committee of LegCo in May 2009 for **839TH** “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities - detailed design and site investigation”. To match with the programme of the HKBCF’s reclamation, a Category D item was also created under **Subhead 6100TX** (Highway works, studies and investigations for items in Category D of the Public Works Programme) to fund the detailed design and tendering of the TM-CLKL southern landfall reclamation works (i.e., the advance works).

12. The detailed design for both parts of the reclamation has now been completed. A funding application is being made for the HKBCF reclamation works (please see PWSC paper PWSC(2011-12)30). To dovetail with the implementation programme of the HKBCF reclamation, we need to take forward the construction of the TM-CLKL southern landfall reclamation (as advance works) in parallel.

Environmental Protection Measures

13. We recommend adopting various environmental protection measures to minimise the possible environmental impact on the surrounding areas. The most important measure of which is the non-dredge reclamation method. With a view to minimising impact on the environment when reclaiming the artificial island, 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 carrying out reclamation⁵. The non-dredge construction method applies to both the seawall and main reclamation. Instead of dredging the soft marine mud in the seabed before backfilling, a series of interlocked large diameter steel cells (to be backfilled with inert construction and demolition material) will be sunk through the marine mud and fixed on the underlying firmer alluvium to form the perimeter seawall; while the conventional band drains and preloading method without dredging will be used for the main reclamation⁶.

14. The new non-dredge reclamation method can almost completely avoid dredging and significantly reduce the amount of marine mud to be disposed of, as well as significantly reducing the amount of backfilling material required (compared to the conventional mud dredging 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 construction can be reduced by about one half. Therefore, it is more environmentally friendly and sustainable for development. The above construction method will increase the cost of reclaiming the entire 150 ha artificial island by about \$670 million (in MOD prices).

Detailed Design

15. As mentioned in paragraph 9 above, we will implement works, such as the advance southern landfall reclamation, the design of the toll plaza and design of the tunnel buildings by the designer-led approach. We need to engage consultants under a detailed design consultancy to review the preliminary design, carry out the detailed design for the designer-led contracts, carry out the reference design for the D&B contracts, prepare tender documents, assist in the assessment of tenders, and supervise the site investigation works.

⁵ The 150 ha artificial island includes roughly 130 ha of reclamation for the HKBCF and 20 ha of reclamation for the TM-CLKL southern landfall. The TM-CLKL southern landfall reclamation will be taken forward as the same project with the reclamation of the artificial island of HKBCF to save a length of approximately 1.8 km of permanent seawall, thus minimizing the environment impact.

⁶ The conventional 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.

16. We now make funding application for the part of the work covered by the detailed design consultancy first, and will make funding application for the construction of the design and construction consultancy later. Our aim is to complete the southern connection in 2016 to cope with the commissioning of the HZMB, and to complete the northern connection in 2017 to cope with the forecast traffic demand.

FINANCIAL IMPLICATIONS

17. We estimate the cost of this part of **825TH** to be \$1,909.6 million in MOD prices, broken down as follows –

		\$ million
(a)	Construction of advance works –	1,321.6
(i)	Reclamation works	1,225.1
	(1) construct about 2 km long permanent seawall	706.3
	(2) reclaim about 20 ha of land	518.8
(ii)	Environmental mitigation measures including environmental monitoring and auditing	8.8
(iii)	Consultants' fees –	7.7
	(1) Contract administration	1.4
	(2) Management of resident site staff	5.8
	(3) Independent Environmental Project Office (ENPO) ⁷ and independent environmental checker services	0.5
(iv)	Remuneration of resident site staff	80.0

⁷ The Environmental Permit for the TM-CLKL project requires the setting up of an independent ENPO to be set up, before the commencement of the TM-CLKL construction, to oversee the cumulative environmental impacts arising from the TM-CLKL project and other concurrent projects in the adjoining area and to liaise closely with the Mainland project teams for the HZMB Main Bridge.

		\$ million
(b)	Consultants' fees for detailed design of the TM-CLKL –	63.9
(i)	review preliminary design and carry out reference design and detailed design	41.3
(ii)	prepare tender documents and assist in assessing tenders	9.6
(iii)	supervise site investigation	10.6
(iv)	Electrical and Mechanical Services Trading Fund (EMSTF) charges ⁸	2.4
(c)	Site investigations	120.6
(d)	Contingencies	150.3
	Sub-total	1,656.4 (in September 2011 prices)
(e)	Provision for price adjustment	253.2
	Total	1,909.6 (in MOD prices)

A breakdown of the estimated consultants' fees and resident site staff costs for the construction of the advance works is at **Enclosure 2**. A breakdown of the estimated consultants' fees for reviewing preliminary design, carrying out detailed design, preparing tender documents and assisting in assessing tenders of the TM-CLKL remaining works is at **Enclosure 3**.

18. For the HZMB related local projects⁹, we originally planned to commence construction before end 2010, but the works commencement date has been affected by the legal proceedings of the judicial review (JR) case of a Tung Chung resident who 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

⁸ 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 (EMSD). 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.

⁹ Including the HKBCF, HKLR projects and advance works for the TM-CLKL.

the granting of Environmental Permits (EPs) relating to the HKBCF and HKLR projects.¹⁰ Therefore, we now plan to submit in November 2011 the funding application of the HZMB related local projects to the FC. If approved, the construction of these projects will commence by end 2011. Since the schedule of the construction commencement is different by about one year, we estimate that there will be an overall cost increase for the HZMB related local projects of about \$6.5 billion in MOD prices due to: (i) the revised construction method to compress the construction period in order to ensure the HZMB commissioning by end 2016 (the associated cost increase is about \$4.15 billion); and (ii) the increase in construction prices (the associated cost increase is about \$2.35 billion). For the TM-CLKL advance works, out of the estimated cost of \$1,909.6 million in MOD prices, about \$0.2 billion arises from the additional cost due to the JR case, which includes: (i) the costs due to revising the construction method, including adopting more sand as filling material; and the use of additional manpower, equipment and facilities (the associated cost increase is about \$0.1 billion) for accelerating the works progress; and (ii) the increase in construction prices (the associated cost increase is about \$0.1 billion). The remaining \$6.3 billion out of the \$6.5 billion overall cost increase is because of the cost increases of the HKBCF project (see PWSC paper PWSC(2011-12)30). If the construction is further deferred, we anticipate that the cost would continue to increase significantly.

19. In the HZMB JR case, although the applicant has explicitly excluded the TM-CLKL EIA from the JR application, the construction schedule has been affected (by about a year) because the TM-CLKL southern landfall reclamation (exit of the sub-sea tunnel) will be taken forward as the same works together with the reclamation of HKBCF and to be constructed under the same contract.

20. We originally planned to commission the TM-CLKL together with the HZMB, but now we will implement the project by phases. As the 3 km viaduct of southern connection connecting the HKBCF with the NLH has to be commissioned to dovetail with the commissioning of the HZMB, we will, through arrangement of works, complete the southern connection in 2016. As the sub-sea tunnel portion connecting the HKBCF with Tuen Mun will not affect the commissioning of the HZMB, this part of works will be completed in 2017.

10 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.

21. 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, the 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.

22. 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 HKLR has to connect the road leading to the eastern artificial island at the Mainland 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 the HZMB cannot be commissioned by end 2016, it would incur direct financial loss and indirect economic loss not only to Hong Kong, but also to the Mainland and Macao. Therefore, we hope that the 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 complete in tandem for commissioning of the HZMB by end 2016.

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

Year	\$ million (September 2011 prices)	Price Adjustment Factor	\$ million (MOD)
2011 – 2012	15.6	1.00000	15.6
2012 – 2013	409.1	1.05375	431.1
2013 – 2014	426.8	1.11171	474.5
2014 – 2015	364.5	1.17285	427.5
2015 – 2016	249.6	1.23736	308.8
2016 – 2017	148.9	1.30541	194.4

Year	\$ million (September 2011 prices)	Price Adjustment Factor	\$ million (MOD)
2017 – 2018	41.9	1.37721	57.7
	<hr/> 1,656.4 <hr/>		<hr/> 1,909.6 <hr/>

24. We have derived the MOD estimate on the basis of the Government's latest set of assumption on the trend rate of change in the prices of public sector building and construction input for the period 2011 to 2018. Subject to funding approval, we will award the proposed consultancy for the detailed design of the TM-CLKL on a lump sum basis. We will deliver the reclamation works and site investigation works under standard re-measurement contract because the quantities of reclamation works and site investigation works involved will vary depending on actual ground conditions. We will also engage consultants for providing the ENPO and Independent Environmental Checker services on a lump sum basis. The related contracts will have provision for price adjustments.

25. The proposed detailed design and associated site investigation works and the advance works itself will not give rise to any recurrent expenditure.

PUBLIC CONSULTATION

26. On 23 November 2007, we consulted the LegCo Panel on Transport when seeking funds for the I&PD of the TM-CLKL and TMWB. The Panel supported the funding application. On 11 January 2008, the Finance Committee approved the funding.

27. From September 2008 to October 2008, we conducted a series of public engagement on the TM-CLKL, TMWB, HKBCF and HKLR, 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 corridor¹¹ 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.

¹¹ Hong Kong - Shenzhen - Zhuhai Corridor comprises: (i) HZMB HKLR and HKBCF; and (ii) TM-CLKL and TMWB.

28. In the context of the above public engagement exercises, the views of different groups and residents of Lantau and Tuen Mun on the overall layout and alignment of the TM-CLKL were collected. In general, the public was supportive of the proposed project and asked for its early implementation. However, some Tung Chung residents suggested that tunnel instead of sea viaduct should be considered for the southern connection between the HKBCF and the NLH. In this regard, we explained to them the drawbacks of the tunnel option, including the need for reclamation to protect the tunnel which would have potential impact on the navigation channel. To address the concerns raised by some Tuen Mun residents on the proximity of the TM-CLKL to Butterfly Beach, the northern landfall of the TM-CLKL sub-sea tunnel has been repositioned near the River Trade Terminal, thus maximising the distance from the beach.

29. We consulted the Islands District Council and Tuen Mun District Council on the proposed alignment of the TM-CLKL on 17 April 2009 and 5 May 2009 respectively. Members generally supported the implementation of the TM-CLKL.

Latest Consultation in respect of Environmental Impact Assessment Reports

30. We exhibited for public inspection the Environmental Impact Assessment (EIA) reports of the HKBCF, HKLR and TM-CLKL between 14 August and 12 September 2009. On 8 September 2009, we briefed the Islands District Council on the EIA findings. On 21 September 2009, we consulted the EIA Subcommittee of the Advisory Council on the Environment (ACE). On 12 October 2009, the ACE endorsed the EIA reports with conditions. The Director of Environmental Protection (DEP) approved the EIA reports with conditions on 23 October 2009 and issued the Environmental Permits (EP) on 4 November 2009.

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

31. We gazetted on 12 and 19 June 2009 the draft Chek Lap Kok Outline Zoning Plan (OZP) No. S/I-CLK/11¹² under the Town Planning Ordinance (Cap. 131). We also gazetted the TM-CLKL road scheme and plans (covering both the road and reclamation works) on 21 and 28 August 2009 under the Roads (Works, Use and Compensation) Ordinance (Cap. 370). During the statutory period for objection, 789 representations on the draft Chek Lap Kok OZP and 313 objections to the road scheme were received. Most of the objections and representations are in the

¹² 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 HZMB HKBCF, HZMB HKLR, and the Southern Landfall of TM-CLKL.

form of standard emails / letters / forms expressing concerns on the proposed works for their perceived negative impacts to Tung Chung residents, environment and ecology, and requesting alternative solutions. Descriptions of the representations / objections are spelled out in Enclosure 4. Despite our efforts in resolving the objections, 285 objections to the road scheme still remain unresolved. In respect of the 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 Town Planning Ordinance.

32. In respect of the unresolved objections as mentioned in paragraph 31 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 representations and unresolved objections, the presentations under the Town Planning Ordinance and the decision of the Town Planning Board, CE-in-C approved the amendment of the Chek Lap Kok OZP under the Town Planning Ordinance and the road scheme of the project without amendment under the Roads (Works, Use and Compensation) Ordinance. The notices of authorisation for the road scheme of the TM-CLKL and the Chek Lap Kok OZP will be gazetted on 21 October 2011.

33. We shall brief 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 application for the works for the projects (including TM-CLKL) on 26 October 2011.

ENVIRONMENTAL IMPLICATIONS

34. The TM-CLKL project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and an EP is required for the construction and operation of the TM-CLKL. The Director of Environmental Protection issued the EP for TM-CLKL on 4 November 2009. The EIA Report concluded that the environmental impact due to the proposed road scheme would be acceptable with the implementation of the recommended mitigation measures. We will implement the environmental mitigation measures, and environmental monitoring and auditing programme as recommended in the approved EIA Report for the TM-CLKL project and comply with relevant conditions under the EP and other statutory requirements for environmental protection. The recommended mitigation measures during construction of the advance works, with particular emphasis on the protection of Chinese White Dolphins living in the vicinity of the project site, are summarized at Enclosure 5.

35. The proposed detailed design consultancy and site investigation works will generate very little construction waste. We will require the consultants to fully consider measures to minimise the generation of construction waste and to reuse/recycle construction waste as much as possible in the construction of the remaining works of the TM-CLKL.

36. During the detailed design of the reclamation, the HyD developed a new non-dredge reclamation method. When compared with the scheme proposed in the 2009 EIA report, we can further reduce the dredging and disposal of marine deposits by about 3.8 million cubic metres; the demand for backfilling material by about one half; the release of marine suspended solids by about 70%; and the construction marine traffic during construction by about one half. The DEP issued the Variation of EP on 8 December 2010 for the non-dredge reclamation method.

37. At the planning and design stages, we have considered measures to reduce the generation of construction waste wherever possible (e.g. using site hoardings and signboards so that they can be recycled and reused in other projects, and adopting repetitive / modular design to enable reuse of formwork). In addition, we will also require the contractor 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 to public fill reception facilities¹³. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

38. At the construction stage of the advance works, we will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor whenever practicable 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.

¹³ 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.

39. With the adoption of the new non-dredge reclamation scheme, no dumping of dredged marine mud at designated dumping ground is required for the advance reclamation works. The minimal amount of dredged mud will be reused within site. We estimate that the advance works will consume in total about 2.61 million tonnes of inert construction waste (soft public fill) during the reclamation process. We estimate that the project will also generate in total about 1.26 million tonnes of construction waste. Of these, we will reuse about 0.28 million tonnes (22.2%) of inert construction waste on site and 0.09 million tonnes (7.2%) of inert construction waste on other construction site(s) and deliver 0.89 million tonnes¹⁴ (70.6%) of inert construction waste to public fill reception facilities for subsequent reuse. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$24.0 million (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne¹⁵ at landfills).

40. We will set up an independent ENPO before commencement of construction of 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.

HERITAGE IMPLICATIONS

41. The proposed detailed design, site investigation works and advance works 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

42. The proposed detailed design, site investigation works and advance works do not require any land acquisition. However, the advance works will affect the seabed. Under the established policy, ex-gratia allowance (EGA) will be offered to fishermen affected as a result of the loss of their habitual fishing grounds by the project. The estimated amount of the EGA payable to eligible fishermen is about \$1.8 million, which will be charged to **Head 701 - Land Acquisition**.

¹⁴ These are mainly the surcharge material to be removed after the settlement of the reclamation site is completed.

¹⁵ 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.

BACKGROUND INFORMATION

43. In November 2005, we engaged consultants to undertake the feasibility study of the TM-CLKL and TMWB at an estimated cost of \$11.8 million under **Subhead 6100TX** “Highway works, studies and investigations for items in Category D of the Public Works Programme“. We have completed the feasibility study in March 2007.

44. We upgraded part of **825TH** to Category A as **828TH** “Tuen Mun – Chek Lap Kok Link and Tuen Mun Western Bypass – investigation and preliminary design” in January 2008 at an estimated cost of \$88.6 million in MOD prices. We engaged consultants in May 2008 and August 2008 to undertake the I&PD studies for the TM-CLKL and TMWB respectively.

45. In September 2009, we engaged consultants to undertake the detailed design of the advance Southern Landfall reclamation works at an estimated cost of \$6.9 million under **Subhead 6100TX** “Highway works, studies and investigations for items in Category D of the Public Works Programme”, which was completed. We invited tender for the reclamation works in February 2011 and the tender assessment has been completed.

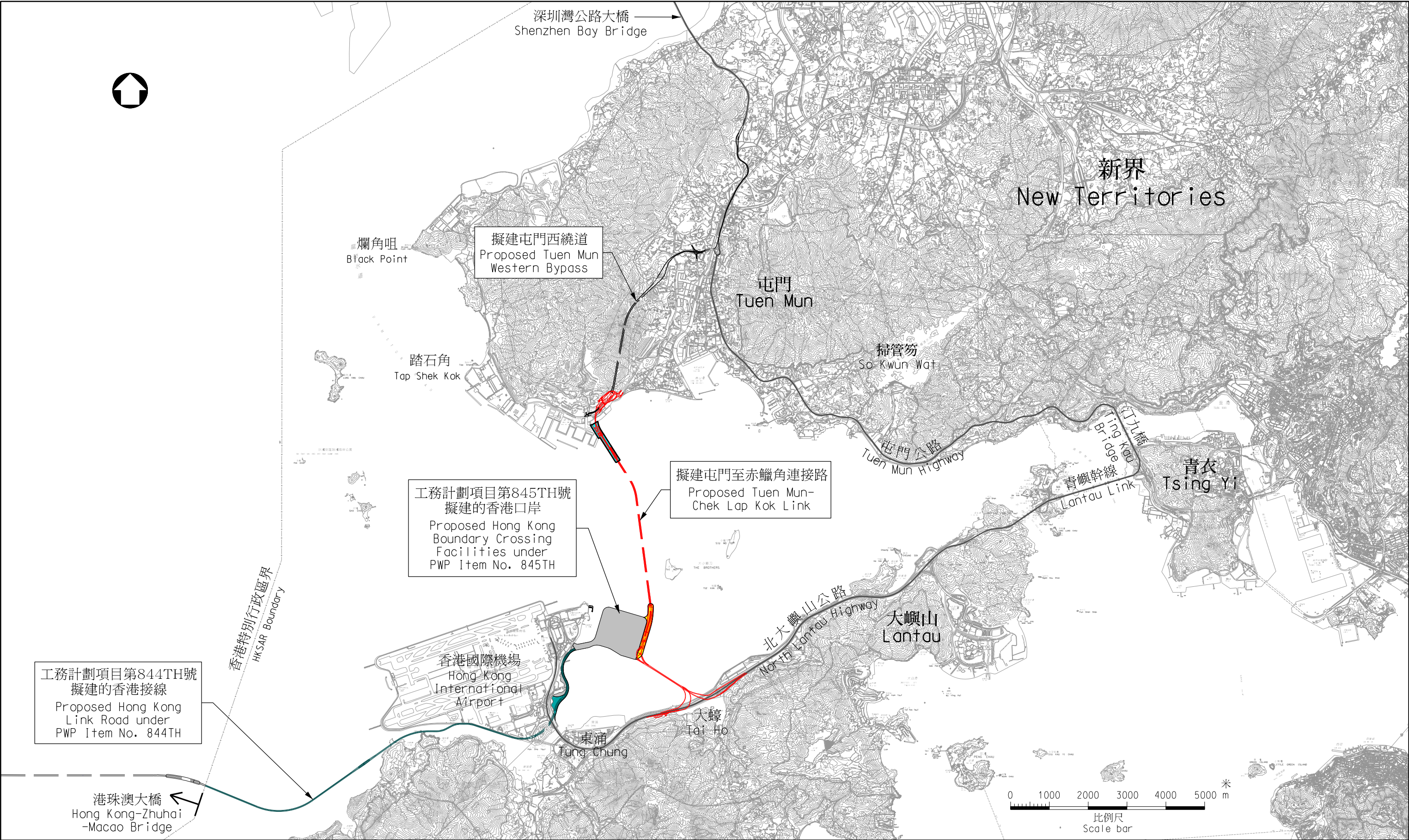
46. We invited the tenders separately for procuring consultants for detailed design of the TM-CLKL remaining works on 18 February 2011, and for the independent Environmental Project Office and independent environmental checker services on 23 February 2011. The tender assessment has been completed.


47. We originally scheduled to commence the construction of the HZMB related local projects before end 2010. We therefore set out their expenditure forecasts in the Estimates for 2010-11 and 2011-12. Apart from considering the estimates prepared at the time of the Estimates, we have in this funding application also considered the cost increases due to the deferral of about a year in works commencement because of the judicial review proceedings, and the adoption of the more environmental friendly non-dredge reclamation method as well as the additional costs due to factors such as design development, and forecast of increase in material cost and construction cost, etc.

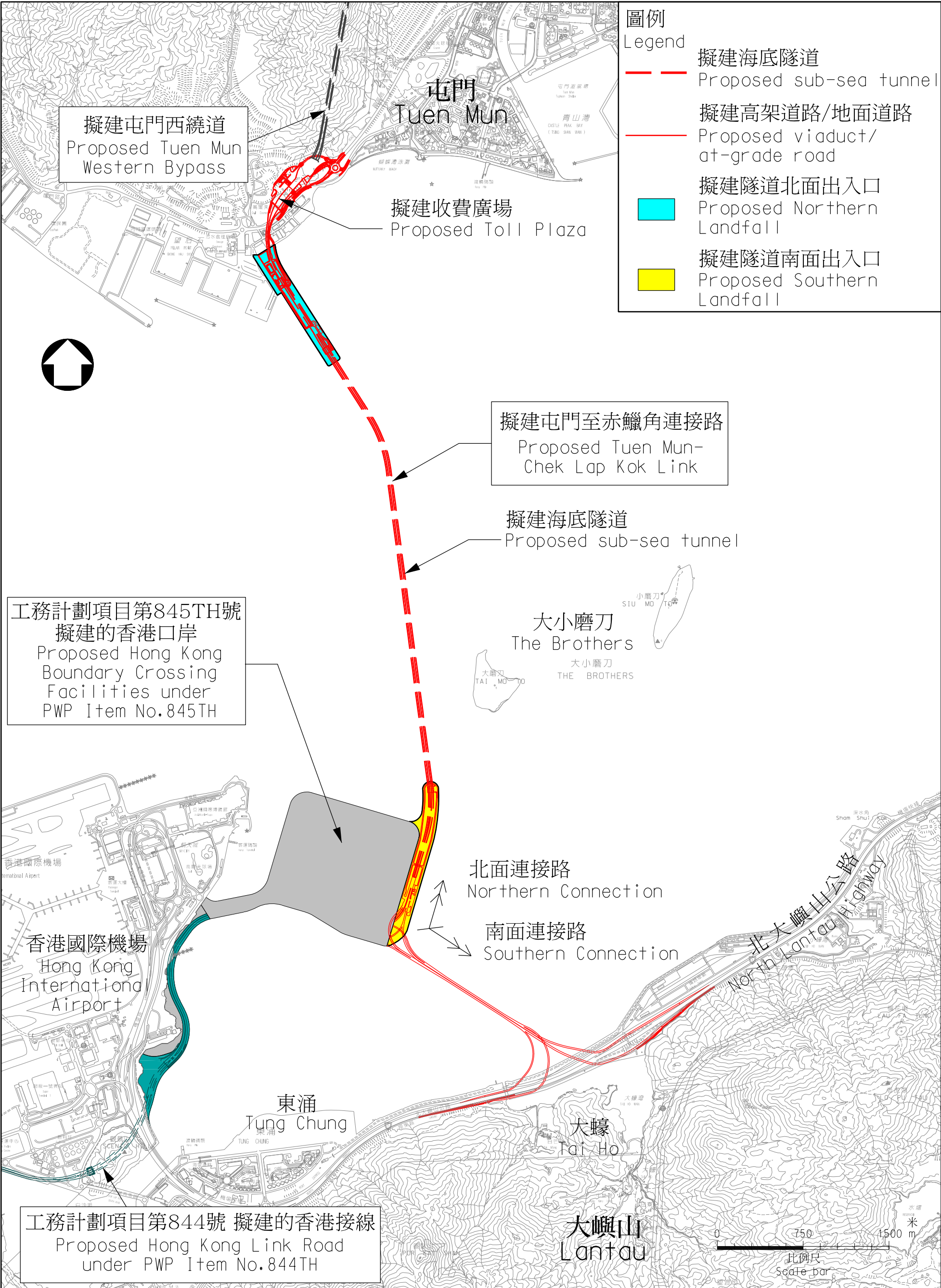
48. The proposed detailed design, associated site investigation works, and advance works will not involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation in the detailed design of the TM-CLKL project. We will also incorporate tree-planting arrangements, where possible, in the construction phase.


49. We estimate that the proposed detailed design consultancy, site investigations and advance works under the proposed upgrading of part of **825TH** to Category A, will create about 380 jobs (about 90 for professional / technical staff and 290 for workers) providing a total employment of 13 400 man-months.

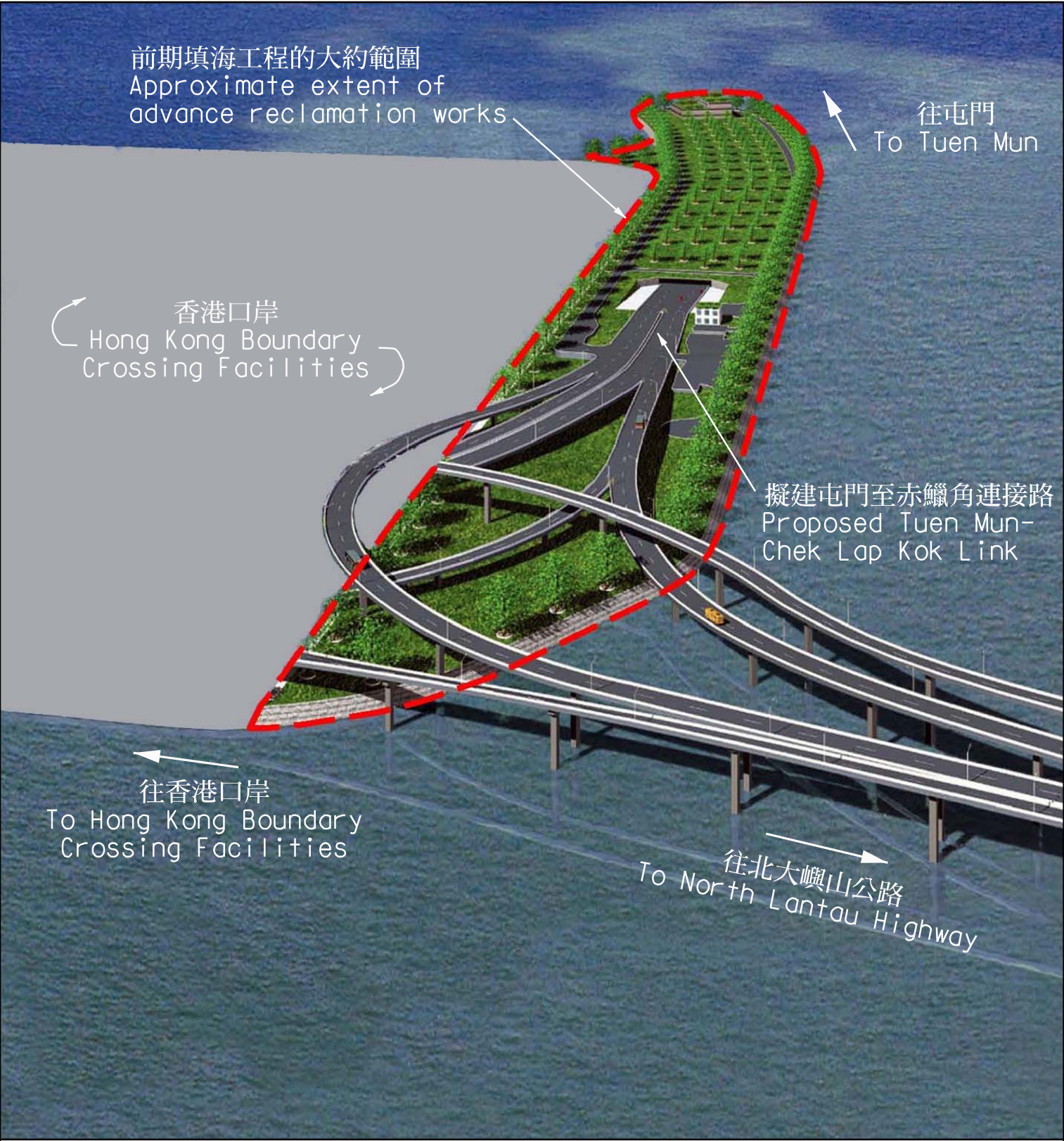
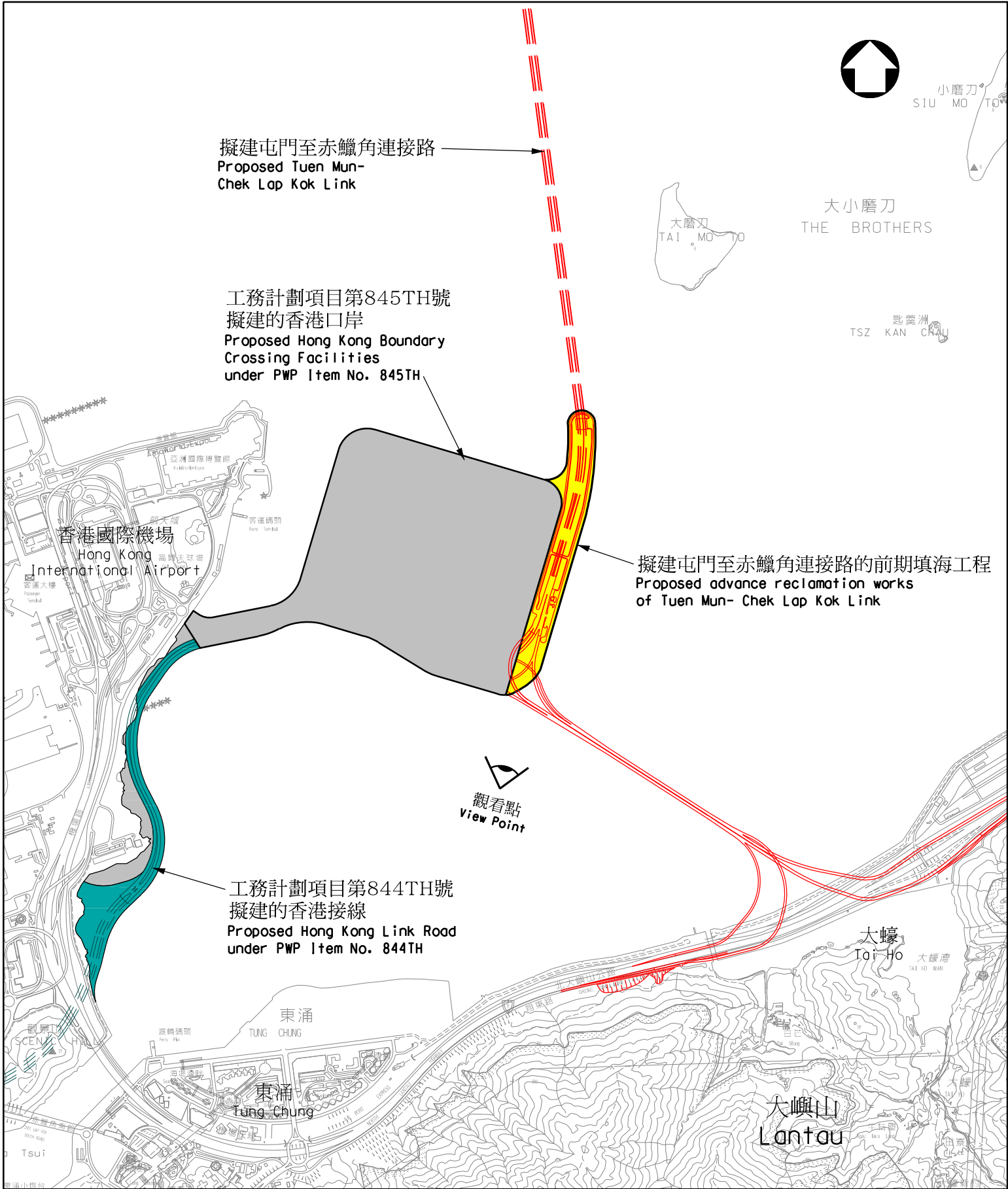
Transport and Housing Bureau
November 2011



圖則名稱 plan title 工務計劃項目第825TH號 - 屯門至赤鱗角連接路及屯門西繞道 - 位置圖 PWP Item No.825TH - Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass - Location Plan	圖則編號 plan no. HZM6825TH-SK0063	比例 scale 1:90000
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註：
Note:

1. 前期填海工程並不包括圖中所示的基建及環境美化工程。
The advance reclamation works will not cover the infrastructure and landscaping works shown.

2. 工程項目進行時，基建及環境美化工程的布局及細節可能再作調整。
The layout and details of the infrastructure and landscaping works are subject to further development when the project proceeds.

圖則編號 plan no. HZM6825TH-SK0066	比例 scale 1:25000
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**825TH – Tuen Mun-Chek Lap Kok Link and Tuen Mun Western Bypass
– Consultants’ Fees for Advance Works and Resident Site Staff Costs**

**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	-	-	-	0.7
		Technical	-	-	-	0.7
					Sub-total	<u>1.4</u>
(b)	Resident site staff costs ^(Note 3)	Professional	450	38	1.6	44.9
		Technical	1 206	14	1.6	<u>40.9</u>
					Sub-total	<u>85.8</u>
	Comprising:-					
(i)	Consultants’ fee for managing resident site staff					5.8
(ii)	Remuneration of resident site staff					80.0
(c)	Consultants’ fee for Environmental Project Office and Independent Environmental Checker ^(Note 4) services	Professional	2.4	38	2.0	0.3
		Technical	4.7	14	2.0	0.2
					Sub-total	<u>0.5</u>
					Total	87.7

* MPS = Master Pay Scale

Notes

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 and a multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs for the staff to be 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 existing consultancies 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**). The construction phase and completion phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **845TH and 825TH** to Category A.
3. We will know the actual man-months and actual costs after the completion of the construction works.
4. The actual man-months and actual costs will only be known after the consultants have been selected.

825TH – Tuen Mun – Chek Lap Kok Link and Tuen Mun Western Bypass – consultants’ fees for review of the preliminary design, carrying out detailed design and reference design, preparation of tender documents, assessment of tenders and supervision of site investigation works of TM-CLKL

**Breakdown of estimates for consultants’ fees
(in September 2011 prices)**

			Estimated man- months	Average MPS* salary point	Multiplier (Note ¹)	Estimated fee (\$ million)
(a) Consultants’ staff costs						
(i)	Reviewing preliminary design	Professional	55	38	2.0	6.9
		Technical	38	14	2.0	1.6
(ii)	carrying out detailed design	Professional	205	38	2.0	25.6
		Technical	170	14	2.0	7.2
(iii)	Preparing tender documents and assessing tenders	Professional	60	38	2.0	7.5
		Technical	50	14	2.0	2.1
(iv)	Supervising the site investigation works	Professional	36	38	2.0	4.5
		Technical	144	14	2.0	6.1
Total consultants’ staff costs						61.5

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs as the staff will be 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 figures given above are based on estimates with reference to the awarded consultancy agreements in HZMB Hong Kong Project Management Office. We will know the actual man-months and fees only after we have selected.

825TH – Tuen Mun – Chek Lap Kok Link and Tuen Mun Western Bypass – consultants’ fees for review of the preliminary design, carrying out detailed design and reference design, preparation of tender documents, assessment of tenders and supervision of site investigation works of TM-CLKL

**Breakdown of estimates for consultants’ fees
(in September 2011 prices)**

			Estimated man- months	Average MPS* salary point	Multiplier (Note ¹)	Estimated fee (\$ million)
(a) Consultants’ staff costs						
(i)	Reviewing preliminary design	Professional	55	38	2.0	6.9
		Technical	38	14	2.0	1.6
(ii)	carrying out detailed design	Professional	205	38	2.0	25.6
		Technical	170	14	2.0	7.2
(iii)	Preparing tender documents and assessing tenders	Professional	60	38	2.0	7.5
		Technical	50	14	2.0	2.1
(iv)	Supervising the site investigation works	Professional	36	38	2.0	4.5
		Technical	144	14	2.0	6.1
Total consultants’ staff costs						61.5

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Notes

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs as the staff will be 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 figures given above are based on estimates with reference to the awarded consultancy agreements in HZMB Hong Kong Project Management Office. We will know the actual man-months and fees only after we have selected.

**Details of the Statutory Representations and Objections
in respect of 825TH (Part) – Tuen Mun – Chek Lap Kok Link**

A. Representations in respect of the draft Chek Lap Kok Outline Zoning Plan (OZP) No. S/I-CLK/1¹ gazetted on 12 and 19 June 2009 under the Town Planning Ordinance (Cap. 131)

During the exhibition of the draft Chek Lap Kok OZP No. S/I-CLK/11, a total of 789 representations were received. Subsequently, 7 representations were withdrawn and one was considered invalid as the subject of representation was not related to the amendment. Excluding these, the number of valid representations was 781. The representations are divided into two Groups, with 780 representations under Group I and one representation under Group II.

Group I

2. 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 organizations. 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

¹ 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 HZMB HKBCF, HZMB HKLR, and the Southern Landfall of TM-CLKL.

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.
3. 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.
4. The Board decided not to uphold these 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 700m and 2 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 Environmental Impact Assessment (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 Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) 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

5. Another representer (being an organisation formed by professionals in the field of transport policy and planning) opined that the draft Chek Lap Kok 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”), “Other Specified Uses” (“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 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.

B. Objections in respect of the TM-CLKL road scheme and plan gazetted on 21 and 28 August 2009 under the Roads (Works, Use and Compensation) Ordinance (Cap. 370)

6. During the statutory period for objection, 313 objections were received. Out of these objections, 28 have subsequently been withdrawn unconditionally. Among the remaining 285 objections, 1 contains incorrect contact details, 31 have offered conditions for withdrawal (but we could not fully meet the conditions) and 253 objections were maintained. These 285 objections were thus considered unresolved. The details of the unresolved objections are set out below.

Group A1

7. These 27 objections are from a shipping/logistics company, its staff representatives and its business partners. The objectors' main concern was that the reclamation at Tuen Mun Area 40 for the construction of the TM-CLKL Northern Landfall would completely block off the marine frontage of a subsidiary of the company at Tuen Mun Town Lot 320. The objectors were of the view that this would result in a total shut down of the marine cargo handling operation of the subsidiary. And apart from affecting the subsidiary's business, the development of the logistics industry in Hong Kong would be hampered and the daily supply of livelihood/household items to Hong Kong would be disrupted.

8. The Administration has responded that alternative landing points for the TM-CLKL at Tuen Mun had been examined. Taking into consideration the various site and construction constraints, the most appropriate location for the proposed northern landing point for the TM-CLKL was considered to be at Tuen Mun Area 40.

9. The company proposed to withdraw its objection on the condition that Government would directly grant a piece of land with marine frontage at the proposed reclamation at Tuen Mun Area 40 to the company to allow the subsidiary to continue its marine cargo handling operation. Other objectors also indicated conditional withdrawal of objections in the event of satisfactory arrangement to allow the subsidiary to continue its operation. The Administration has informed the company that the proposal was not within the scope of the Ordinance and the request for an alternative site would involve a Private Treaty Grant and would have to be processed separately following the existing land grant procedure. As the withdrawals are conditional, these 27 objections are considered unresolved.

Group A2

10. The objector is a conservation organisation whose main concern is that the proposed works would likely bring considerable negative impact on the environment, including the marine environment, marine ecology (Chinese White Dolphin (CWD)), fisheries, water quality and hydrodynamics at and near the proposed construction site, and it is inappropriate to gazette the project until the environmental concerns are fully addressed with potential damages being proven to be acceptable or sufficiently mitigated. The objector also separately lodged objection to the HKLR and the HKBCF project on similar grounds.

11. The Administration has explained that the projects met the requirements under the EIAO. To further enhance preservation on dolphin ecology, the Administration would seek to designate the waters around the Brothers Islands as a marine park in accordance with the Marine Parks Ordinance immediately upon completion of the HKBCF project. The Administration has further explained to the objector the various reasons why their 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 at-grade road on reclamation for HKLR along the Airport east coast; and to remove the southwest reclamation of the HKBCF) were not considered feasible. The objector attended an objection-handling meeting. It did not respond to the further responses from the Administration which were sent to it further to the meeting. Hence the objection is considered to be maintained and thus remains unresolved.

Group C1

12. These 237 objections in the form of a standard e-mail template were against the HKLR, HKBCF and TM-CLKL projects gazetted under the Ordinance (hereafter collectively described as the three Projects). 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 projects on the residents of Tung Chung and the environment, the natural hillside and coastline of Lantau Island and the coastal protection area (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.

13. In response, the Administration has explained that robust and comprehensive EIA 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/the HKLR were not considered feasible. The Administration has further explained that the proposed scheme for the HKBCF and HKLR projects would not touch the natural hillside and coastline of

Lantau Island; 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 C2

14. There were 47 objections lodged via the same standard e-mail template as that mentioned in paragraph 12 above. These objectors also raised additional concerns or further suggestions via various means (either in the objection notices, in subsequent correspondence/contacts with the Administration, or at objection handling meeting(s)) and the Administration's 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 runway or Tung Chung developments. The Administration has explained the various drawbacks of their proposed options and the reasons why their proposed options are 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 will 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. The Administration's assessments have 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, and that the Administration would 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 we will endeavour to minimize the impact in the detailed design stage, the Administration is 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 Advisory Council on the Environment (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 organisation². 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

² The 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.

under the EIAO, the ACE has discussed and endorsed the three EIA reports after thorough discussion at a meeting with the objector, and it was only after such stringent scrutiny that the EIA reports were approved by DEP on 23 October 2009.

15. Upon completion of the objection resolution exercise, 2 objections were withdrawn unconditionally. Among the remaining 45 objectors, 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.

Group C3

16. The objector is a non-profit making organization. Apart from raising similar concerns as those objections described in paragraph 14 above, in the objection letter, the objector also objected to the construction of the toll plaza for the TM-CLKL. It suggested avoiding or significantly reducing the size of the toll plaza by making electronic tolling mandatory or by means of territory wide electronic road pricing scheme. 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.

17. In response, the Administration has explained that the health aspect had been addressed by detailed impact assessment during the EIA study as described in paragraph 14 (c) above; and that mandatory electronic tolling or territory wide ERP scheme were not feasible at the present stage in view of issues such as personal privacy and public acceptability. Notwithstanding the Administration's explanation, the objector did not respond to the correspondence sent by the Administration to it after the meeting. Therefore, the objection is considered to be maintained and unresolved.

825TH – Tuen Mun - Chek Lap Kok Link and Tuen Mun Western Bypass

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"> • Tuen Mun-Chek Lap Kok Link (TM-CLKL) Southern Landfall is located 2km away from Tung Chung. The assessment results indicate that the air quality and noise impacts brought 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 EIA Ordinance (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, impacts 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 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.

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
Impact on Chinese White Dolphins (CWD)	<ul style="list-style-type: none"> An in-depth study by dolphin experts indicates that locating the TM-CLKL Southern Landfall at the northeast waters of the Airport Island can keep it away from the dolphin active region on the western waters. Permanent loss of CWD habitat is a moderate impact requiring mitigation. 	<ul style="list-style-type: none"> Set up a dolphin exclusion zone of 250m around the Project during the installation of perimeter silt curtains around the TM-CLKL Southern Landfall reclamation site and any re-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. 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. Enforcement of vessel speed limit within the work areas to within 10 knots.
Ecological impact	<ul style="list-style-type: none"> The project has avoided ecological sensitive areas. 	<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.

Environmental Concerns	Key Findings of Environmental Impact Assessment	Major Mitigation Measures
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 reprovision of artificial reefs (AR) as mitigation and enhancement measure for affecting the existing ARs inside a Marine Exclusion Zone.
Landscape and visual impacts	<ul style="list-style-type: none">• TM-CLKL Southern Landfall is located 2km away from Tung Chung. Potential visual impact by TM-CLKL Southern Landfall will be negligible due to integration of TM-CLKL Southern Landfall and the 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.