For discussion
on 25 November 2008

Legislative Council Panel on Development

Central - Wan Chai Bypass and Wan Chai Development Phase II Temporary Reclamation and Reprovisioning Arrangements for Affected Vessels in Causeway Bay Typhoon Shelter

PURPOSE

This paper seeks Members' view on –

(a) the temporary reclamation required for the construction of the Central-Wan Chai Bypass and Island Eastern Corridor Link (the Trunk Road);

(b) the reprovisioning arrangements for the vessels in the Causeway Bay Typhoon Shelter (CBTS) affected during the Trunk Road construction; and

(c) the supplementary information on comparison of the Trunk Road tunnel and flyover options prepared by

the Administration under the Wan Chai Development Phase II project (WDII) in response to a recent judicial review[1] relating to the Trunk Road project.

BACKGROUND

2. At the meeting of the Panel on Planning, Lands and Works on 29 May 2007, we reported the progress of the WDII project and the Trunk Road project. We also informed the Panel that the gazetting of the concerned plans and schemes was scheduled in July 2007.

3. The Trunk Road scheme was gazetted on 27 July 2007 under the Roads (Works, Use and Compensation) Ordinance (Cap. 370). The proposed amendments to the draft Wan Chai North Outline Zoning Plan (OZP) No. S/H25/1 and the draft North Point OZP No. S/H8/21 incorporating the Tunnel Option of the Trunk Road (the Trunk Road Tunnel) under the Town Planning Ordinance (Cap. 131) and the proposed reclamation in WDII under the Foreshore and Sea-bed (Reclamations) Ordinance (Cap. 127) were also gazetted on the same day. Temporary reclamation for the Trunk Road Tunnel construction in the CBTS and ex-Wan Chai Public Cargo Working Area (ex-PCWA) and a temporary breakwater for on-site reprovisioning of the affected mooring and anchorages in the CBTS were proposed in the Trunk Road scheme.

4. The Court of First Instance (CFI) ruled in the above mentioned JR on 20 March 2008 that the Protection of the Harbour Ordinance (PHO)

[1] The judicial review applied for by the Society for Protection of the Harbour on 3 October 2007.

(Cap. 531) applies to the proposed temporary reclamation works referred to in the Trunk Road scheme gazetted under the Roads (Works, Use and Compensation) Ordinance (Cap. 370).

FURTHER STUDIES ON THE TRUNK ROAD CONSTRUCTION

5. In the light of the CFI's judgment on the application of the PHO to temporary reclamation, we have engaged consultants to examine the overriding public need of the temporary reclamation for constructing the Trunk Road Tunnel and their compliance with the PHO. Details are set out in paragraphs 8-10 below.

6. Subsequently, we have carefully examined the reprovisioning options of the affected moorings and anchorages in the CBTS, including off-site reprovisioning options as alternatives to the temporary breakwater for on-site reprovisioning. Details are set out in paragraphs 11-14 below.

7. We have also prepared materials to supplement the "Report on Cogent and Convincing Materials to Demonstrate Compliance with the Overriding Public Need Test" (the CCM Report) issued in February 2007 to address specifically the reclamation requirements, with particular reference to the temporary reclamation requirements under WDII, of the feasible Trunk Road options. Details are set out in paragraphs 15-22 below.

TEMPORARY RECLAMATION FOR TUNNEL CONSTRUCTION

8. The consultants have critically examined various methods for constructing the Trunk Road Tunnel beneath the seabed of the CBTS and

ex-PCWA and concluded that the cut-and-cover method using diaphragm walls which requires temporary reclamation is the only safe, feasible and practicable method of construction for the Trunk Road Tunnel in the CBTS and ex-PCWA. The consultants' findings have also been confirmed by an independent reviewer employed by the Government.

9. The consultants' findings are presented to the public from April to August 2008 through a series of public engagement activities including public and professional forums, seminars, consultation with District Councils and the HEC, as well as liaison with other concerned parties. The consultants' findings and the views of the public are given in the report entitled "Report on Construction of the Trunk Road Tunnel in Causeway Bay Typhoon Shelter and ex-Wan Chai Public Cargo Working Area" which has been uploaded onto the website of Highways Department at the following link: **http://www.hyd.gov.hk/eng/major/road/projects/6579th/Report%20on%20Tunnel%20Construction.pdf**. A copy of this report has been deposited at the LegCo Secretariat for Members' reference. A summary of the report is at **Annex A.**

10. The conclusion is that without temporary reclamation, the Trunk Road Tunnel cannot be safely and practically constructed. There is an overriding public need for the temporary reclamations in the CBTS and ex-PCWA for the Trunk Road Tunnel construction. The temporary reclamation will be kept to the minimum and be removed. The seabed will be reinstated after the completion of the construction works in the CBTS and ex-PCWA.

REPROVISIONING OPTIONS FOR AFFECTED MOORINGS AND ANCHORAGES IN THE CBTS

11. After investigation, the consultants have identified six main reprovisioning options for the affected moorings and anchorages in the CBTS. These options are described in more detail in the "Information Paper on Reprovisioning Arrangements of Affected Moorings & Anchorage during Trunk Road Construction at the Causeway Bay Typhoon Shelter" at **Annex B**.

12. In September 2008, a series of discussion sessions with the CBTS users were held on the various reprovisioning options for the moorings and anchorages in the CBTS affected by the construction of the Trunk Road Tunnel. Questionnaires were also issued to all CBTS users to collect their views. The opinions collected from the CBTS users, including the users of the anchorage and private mooring areas and the Royal Hong Kong Yacht Club, reflected their general will to stay at or near the CBTS during construction. Various reasons on their needs to stay were raised and discussed during the sessions. Such views were then analysed with the assistance from the Public Policy Research Institute of the Hong Kong Polytechnic University. Taking into consideration of the opinions of the CBTS users, we then formulated the recommended reprovisioning arrangements whereby the pleasure vessels in the private mooring area will be reprovisioned off-site whilst all other vessels can moor in the CBTS or ex-PCWA. The option is derived based on considerations of minimizing the possible impacts and hardship on the livelihood of the CBTS users.

13. We further consulted the CBTS users on the recommended reprovisioning arrangements at a meeting on 18 October 2008. The users were generally agreeable to the recommended reprovisioning arrangements. A public forum was also held on 25 October to gauge the views of the public. The recommended reprovisioning arrangements and the views of

the CBTS users and the public are summarized at **Annex B**.

14. Having identified the feasible and practicable reprovisioning arrangements which do not involve temporary reclamation works i.e. the construction of a temporary breakwater, we should not proceed with the other reprovisioning options requiring temporary reclamation in compliance with the PHO. The originally proposed temporary breakwater to the north of the CBTS will hence no longer be required. Arrangements will be made for the amendment of the gazetted Trunk Road scheme to delete the originally proposed temporary breakwater.

REVIEW ON THE COMPARISON OF THE TRUNK ROAD CONSTRUCTION OPTIONS

15. According to the judgment of the Court of Final Appeal (CFA) in January 2004, the presumption against reclamation as set out in the PHO could be rebutted only if an overriding public need for reclamation (the Overriding Public Need Test) is demonstrated in accordance with the CFA's judgment. In considering what is a reasonable alternative to reclamation, all circumstances should be considered, including economic, environmental, social implications of each alternative; cost, time and delay involved would also be relevant.

16. While the feasible Trunk Road options have been evaluated in Chapter 4 of the CCM Report, details on temporary reclamation were at that time not specifically elaborated in the comparison of feasible Trunk Road options i.e. the Tunnel Option and the Flyover Option, on the ground of the temporary nature of those works.

17. In line with the CFI's judgment on the application of PHO to temporary reclamation, the CCM Report has now been supplemented, with additional materials, to address specifically the reclamation requirements of the feasible Trunk Road options, including the temporary reclamation requirements, and then the comparison of the Tunnel and Flyover Options with some further elaboration on their relative performance in all relevant aspects, for the purposes of assessing both Options by reference to the Overriding Public Need Test. The report entitled "Report on Comparison of Trunk Road Tunnel & Flyover Options in accordance with the Overriding Public Need Test" has been uploaded onto the website of Civil Engineering and Development Department at the following link: **http://www.cedd.gov.hk/eng/topics/wdii/report.htm**. A copy of this report has been deposited at the LegCo Secretariat for Members' reference. A summary paper of the report is at **Annex C.**

18. In summary, both the estimated extents of permanent and temporary reclamation of the Tunnel Option are larger than that of the Flyover Option and the relevant data are tabulated below:

Permanent Reclamation

	Tunnel Option	**Flyover Option**
land formation pile caps and dolphins[2]	12.7 ha 0.1 ha	9.8 ha 0.4 ha

[2] While the pile caps and protective dolphin structures are not land formed with soil, they are solid structures rising up from the seabed to above water level, and these will permanently occupy the water area of the Harbour. The pile caps form a solid platform in the water on which the road structure rests; they are therefore considered as reclamation in the meaning of PHO. In the CCM Report, this area overlaps with the 0.4 ha area of "flyover structures over water" and thus is not separately counted. For

Temporary Reclamation

	Tunnel Option	**Flyover Option**
At the stage when the area of temporary reclamation is the largest[3]	CBTS: 3.7 ha ex-PCWA: 1.2 ha	CBTS and ex-PCWA: 3.3 ha North Point: 0.1 ha

19. The comparison of the Tunnel Option and Flyover Option in the CCM Report has been reviewed taking into account the CFI's judgment in relation to temporary reclamation. Taking into account the following social, environmental and economic implications, we consider that the Flyover Option, even though it requires a lesser extent of both permanent and temporary reclamation, should not be regarded as a reasonable alternative to the Tunnel Option:

- In respect of protection of the Harbour, the Flyover Option will affect a substantially greater area of the Harbour than the Tunnel Option (as shown in Table 3.1 of the "Report on Comparison of Trunk Road Tunnel & Flyover Options in accordance with the Overriding Public Need Test", an additional 2.3ha of the sea will be covered by the flyover structures and an additional 4.0ha of the sea will be affected by the flyover structures). As such, the

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the avoidance of doubt, it is identified separately in the "Report on Comparison of Trunk Road Tunnel & Flyover Options in accordance with the Overriding Public Need Test".

[3] As the temporary reclamation would be carried out in stages, the area of temporary reclamation at any one time will differ. The area of temporary reclamation at the stage when it is the largest is tabulated for comparison purpose.

Flyover Option has a major drawback in terms of protection and preservation of the Harbour as intended by the PHO.[4]

- Unlike the Tunnel Option, the Flyover Option cannot meet public aspirations for harbour-front enhancement or accommodate reasonably expected harbour-front planning improvements, which will enhance the harbour's accessibility to the public. Land use opportunities for providing quality harbour-front areas for the people of Hong Kong will also be constrained.

- The Flyover Option goes against the strong desire of the public for the Trunk Road to be underground rather than, in effect, an extension of the elevated Island Eastern Corridor along the shoreline.

- In terms of traffic disruption, construction of the Flyover Option will cause severe disruption to traffic flows and substantial delay to journey times, compared to the Tunnel Option which can be constructed with minimal traffic disruption or delay.

- In respect of the environment, the Flyover Option will cause relatively greater air and noise impacts, and have significant adverse visual impact than the Tunnel Option.

20. It is noted that the Flyover Option does perform better than the Tunnel option in respect of construction time and costs, but this benefit is outweighed by the above negative factors.

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[4] The affected area is not "reclamation" within the meaning of the PHO.

21. In overall terms, the Tunnel Option performs better than the Flyover Option. The Tunnel Option has its own merits because it:

- will affect less areas of the Harbour;
- will have more opportunities for harbour-front enhancement and provide better access to the waterfront;
- has received public support through extensive public engagement activities;
- will cause less traffic disruption during construction;
- will cause less extensive air and noise impacts;
- will have no adverse visual impact.

22. We are therefore of the view that, after consideration of all relevant factors, in particular the social and environmental implications, the Flyover Option is not regarded as a reasonable alternative to the Tunnel Option even though the latter requires an additional permanent reclamation of 2.6ha and an additional temporary reclamation of 1.5ha. Details are provided in Chapter 3 of the "Report on Comparison of Trunk Road Tunnel & Flyover Options in accordance with the Overriding Public Need Test".

PUBLIC CONSULTATION

23. The public has been consulted on the findings of the methods of construction for the Trunk Road in the CBTS and ex-PCWA from April to August 2008. From the consultation exercise, it was generally agreeable that without temporary reclamation, the Trunk Road Tunnel cannot be safely and

practically constructed.

24. As mentioned in paragraph 12 above, consultation with the CBTS users on the reprovisioning options for affected moorings and anchorages in the CBTS was held in September and October 2008. The recommended reprovisioning arrangements whereby the pleasure vessels in the private mooring area will be reprovisioned off-site whilst all other vessels can moor in the CBTS or ex-PCWA was formulated.

25. A public forum was held on 25 October 2008 to brief the public on the overall findings on the temporary reclamation required for the construction of the Trunk Road, the reprovisioning arrangements for the affected vessels in the CBTS and the updated comparison of the Tunnel Option and Flyover Option and to seek their further views. There was unanimous support of the Tunnel Option and general support of the recommended reprovisioning arrangements at the forum. General sentiment to implement the Trunk Road as soon as possible was also expressed. Consultation with the Harbourfront Enhancement Committee was held on 31 October 2008. At the meeting, members expressed their support to both the recommended reprovisioning arrangements and the Tunnel Option. The Planning, Works and Housing Committee of the Eastern District Council, the Traffic and Transport Committee of the Central and Western District Council and the Southern District Council were consulted and all supported the recommended reprovisioning arrangements and the Tunnel Option. The Wan Chai District Council will also be consulted on 18 November 2008.

ADVICE SOUGHT

26. Members are invited to offer their views on this paper.

Annexes

Annex A Summary of Report on Construction of the Trunk Road Tunnel in Causeway Bay Typhoon Shelter and ex-Wan Chai Public Cargo Working Area

Annex B Information Paper on Reprovisioning Arrangements of Affected Moorings & Anchorage during Trunk Road Construction at the Causeway Bay Typhoon Shelter

Annex C Summary of Report on Comparison of Trunk Road Tunnel & Flyover Options in accordance with the Overriding Public Need Test

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Development Bureau
Transport and Housing Bureau
Civil Engineering and Development Department
Highways Department
November 2008

Annex A

Summary of Report on Construction of the Trunk Road Tunnel in Causeway Bay Typhoon Shelter and ex-Wan Chai Public Cargo Working Area

1. Background

In the light of the Court of First Instance (CFI)'s judgment in a judicial review on 20 March 2008 that the PHO applies to the proposed temporary reclamations referred to in the road scheme of the Trunk Road, we engaged the consultants to examine the overriding public need for the temporary reclamation that is required for constructing the Trunk Road tunnel as well as its compliance with the Protection of the Harbour Ordinance (PHO) and to consult the public about the findings.

2. Temporary Reclamation for Tunnel Construction

2.1 The consultants have critically examined various currently available construction techniques for constructing the Trunk Road tunnel beneath the seabed in the Causeway Bay Typhoon Shelter (CBTS) and ex-Wan Chai Public Cargo Working Area (ex-PCWA), including "Immersed Tube Tunnel Construction", "Bored Tunnel Construction" and "Cut-and-cover Tunnel Construction". These alternatives encompass the range of possible forms of construction based on well proven and reliable techniques commonly adopted for tunnel construction.

Immersed Tube Tunnel Construction

2.2 Immersed tube tunnel ("IMT") involves floating precast concrete units to the site and then sinking them into place just below the seabed level. Before sinking the precast units, excavation of a deep trench (up to 30m deep as required by the alignment of the Trunk Road) and removal of soft materials from the seabed are required to provide a firm foundation. Due to the close proximity, excavation of this deep trench will affect roads and services behind the southern seawalls (e.g., Victoria Park Road and intakes of the cooling systems), typhoon shelter breakwater, operation of the CBTS and the Cross Harbour Tunnel (CHT) structure may also be damaged, thus paralysing one of the most vital road links in Hong Kong. Floating of precast units into the CBTS would also require dredging of

the seabed from –4mPD to about –10mPD along the transit route of precast units. This would seriously affect the continual operation of the typhoon shelter.

Bored Tunnel Construction

2.3 This method involves boring circular tunnel section through the soil and rock under the existing seabed using Tunnel Boring Machine (TBM). For the dual 3-lane carriageways tunnel configuration, two separate circular tunnel bores of at least 15.5m in diameter would be required. For the soft seabed sediments in the CBTS, this construction method would require a minimum soil cover of at least 1.5 times the diameter of the bored tunnel above the tunnel to ensure ground stability in the vicinity. Throughout the CBTS, the soil cover would not be sufficient to allow construction by TBM. The extent of permanent reclamation along the Wan Chai and North Point shorelines would also be increased due to greater separation required between eastbound and westbound bored tunnels to ensure ground stability.

Cut-and-Cover Construction

2.4 For cut-and-cover construction using diaphragm walls, the diaphragm walls would be constructed first to form an enclosure. The soil inside the diaphragm walls would then be excavated to the required bottom level for construction of tunnel. Upon completion, the space above the tunnel would then be backfilled to the original seabed level. Diaphragm wall construction is a reliable method used as retaining wall systems and foundations. The advantage is that they can be installed in close proximity to existing structures and provide effective retaining functions for soil and underground water behind the diaphragm walls. This method is well-suited to the construction of the deep Trunk Road tunnel with varying depths and complex tunnel and connection layout at the CBTS. This form of construction will not cause any disturbance to the existing adjacent infrastructure, does not have any minimum ground cover or clearance restrictions and requires the minimum extent of permanent reclamation at the adjoining areas.

2.5 In view of the above, it can be concluded that the only safe, feasible and practicable method of construction for the Trunk Road tunnel sections at the CBTS and ex-PCWA is by cut-and-cover method using diaphragm walls.

The Need for Temporary Reclamations

2.6 Construction of diaphragm walls by cut-and-cover method requires a dry working platform with safe working environment on which the contractor's construction plant could safely operate. It is not feasible to construct diaphragm walls through water. Therefore, when constructing the Trunk Road tunnel through the CBTS, a working platform would need to be formed first by temporary reclamation. This construction method would also enable staged construction works in the CBTS and ex-PCWA to minimize the mooring area to be affected at any one time; to maintain acceptable water quality standards; and to ensure uninterrupted seawater supply from the CBTS to the existing cooling systems for the adjacent buildings. It is evident that cut-and-cover method using diaphragm walls is the only safe, feasible and practicable approach for constructing the Trunk Road tunnel through the CBTS and the ex-PCWA although it will require temporary reclamation.

Minimum Extent of Temporary Reclamation

2.7 The minimum overall extents of temporary reclamation required to facilitate the construction of the Trunk Road tunnel beneath the seabed of the CBTS and the ex-PCWA are 6.4ha and 1.9ha respectively. Through a staged construction approach, it is estimated that the affected area of the Harbour in respect of temporary reclamation at any one time in the CBTS will range from 1.8ha to 3.7ha, whilst at the ex-PCWA the area of temporary reclamation will range from 0.7ha to 1.2ha. The durations of the individual temporary reclamation areas will vary from around 1 year to just over 3 years. The overall duration from the first stage up to the removal of the final stage of temporary reclamation will be around 6 years. These areas are the minimum extents of temporary reclamation required to meet the overriding public need for the construction of the Trunk Road tunnel.

Removal of Temporary Reclamation

2.8 The Government has committed in the road scheme gazetted on 27 July 2007 under the Roads (Works, Use and Compensation) Ordinance that the temporary reclamation works will be removed after construction of the Trunk Road tunnel and the existing sea-bed reinstated. Strict provisions will be added to the contract documents ensuring that the temporary reclamation works to be carried out by the contractor will be the minimum extent of temporary reclamation, the temporary reclamation will be removed after the completion of the tunnel construction, and seabed will be reinstated.

3. Public Engagement for Tunnel Construction

3.1 Since April 2008, the professional bodies, contractor association, relevant District Councils (DCs), the Harbour-front Enhancement Committee and the public have been engaged on the method of construction for the Trunk Road tunnel in the CBTS and the ex-PCWA as well as the associated temporary reclamation. The recommended method of cut-and-cover construction of the Trunk Road in temporary reclamation was generally received as the only safe, feasible and practicable method of construction.

Professional Institutes and Contractors

3.2 The concerned professional institutes and contractors expressed strong support for the project and agreement to the consideration that cut-and-cover construction is the only safe, feasible and practicable method in view of the various constraints and maintenance of operation in CBTS and ex-PCWA. They pressed for early implementation of the project. Some of them indicated concerns on the impact to the operation of the CBTS, precautionary measures against damaging the CHT, interface with the proposed Shatin-to-Central Link (SCL), dredging in CBTS and marine construction traffic arrangement within the CBTS.

District Councils

3.3 The four DCs of Hong Kong Island were consulted in July 2008. Members of the Central and Western DC, Wan Chai DC and Southern DC supported early implementation of the project and raised no objection to the proposed construction method. As the typhoon shelter falls within the boundary of Eastern DC, members decided to set up a Working Group to help foster the public engagement process. Through the Working Group, interested Eastern DC members could seek more detail information on the technical issues relating to the construction methods and related issues. Members of the Working Group were concerned about the re-provisioning arrangement for the CBTS and the environmental impacts of the project. We addressed these concerns at the working group meetings.

Public Forums

3.4 Two public forums were held on 19 July and 25 October 2008 respectively. The purpose of the public forum held on 19 July 2008 was to brief the public on our consultants' findings and to gauge public views. Public views were also collected through Internet. In general, the public did not indicate any strong objection to the proposed temporary reclamation for the Trunk Road tunnel construction. However, there were questions concerning matters of details, including the need for temporary reclamation for temporary typhoon shelter and the associated consultation plan, construction method of the Trunk Road tunnel beneath the CHT, whether a combination of the different methods for constructing the sections of CWB tunnels in CBTS and ex-PCWA can be considered, staging arrangement of the temporary reclamation, associated environmental impacts and impacts on the operation of the CBTS, marine construction traffic arrangement within the CBTS as well as the interface with the SCL, etc. The major concerns were addressed further at the public forum held on 25 October 2008. The public raised no further question and generally agreed the method of cut-and-cover construction of the Trunk Road tunnel in temporary reclamation as the only safe, feasible and practicable method of construction.

Harbour-front Enhancement Committee

3.5 Members were briefed on 18 August 2008 on the proposed temporary reclamation for the Trunk Road tunnel construction. There was support from members for the Trunk Road project and acknowledgement of the need for temporary reclamation. Their concerns include operation of the CBTS during construction of the Trunk Road; potential interfaces with SCL; the potential of alternative tunnel boring techniques or mixed construction methods; arrangement of dredging works and treatment of the dredged marine mud. These concerns were responded to at the meeting, with further elaboration on why alternative construction methods were not feasible. Members also suggested that consideration should be given to improve connectivity to the harbour-front and further shorten the overall construction period and hence the impacts during construction. Members also requested early consultation with the CBTS users in order to arrive at a recommended reprovisioning arrangement.

3.6 Most of the comments received in the public engagement have been addressed or our responses have been further elaborated in the report namely "Construction of the Trunk Road Tunnel in Causeway Bay Typhoon Shelter and ex-Wan Chai

Public Cargo Working Area". However, some of the questions concern matters of details and would be addressed either in detailed design stage or construction stage.

4. Conclusion

Cut-and-cover method using diaphragm walls is the only safe, feasible and practicable method of construction for the Trunk Road tunnel at the CBTS and ex-PCWA, although it will require temporary reclamation. Without temporary reclamation, the Trunk Road tunnel cannot practically be constructed. There is consequently on technical ground an overriding public need for the temporary reclamation in the CBTS and the ex-PCWA for the Tunnel Option. The above findings and the public views gathered will form the basis of the cogent and convincing materials for the temporary reclamation for constructing the Trunk Road tunnel in the CBTS and the ex-PCWA. Through staged construction, temporary reclamation will be kept to the minimum and be removed and the seabed reinstated after construction of the Trunk Road tunnel.

Highways Department
November 2008

Annex B

Information Paper on Reprovisioning Arrangements of Affected Moorings & Anchorage during Trunk Road Construction at the Causeway Bay Typhoon Shelter

1. Introduction

1.1 The proposed Central - Wan Chai Bypass (CWB) is the missing link in the east-west strategic highway running along the northern shoreline of Hong Kong Island. It is of paramount importance to resolving the existing serious traffic congestion in this part of the Island.

1.2 CWB will pass through the Causeway Bay Typhoon Shelter (CBTS) in the form of a tunnel. Certain parts of the mooring and anchorage space in the typhoon shelter will be occupied at times during the construction period. According to the original plan in 2007, a temporary typhoon shelter immediately north of the existing CBTS was proposed to provide sheltered space for the affected vessels.

1.3 The proposed temporary typhoon shelter comprises a temporary breakwater and temporary piled wave walls which will be removed with the seabed reinstated upon completion of the works in the CBTS. This proposal and the road scheme for the CWB were gazetted under the Roads (Works, Use and Compensation) Ordinance on 27 July 2007 (Gazette Notice GN 4767).

1.4 In response to a judicial review, the Court of First Instance (CFI) ruled on 20 March 2008 that the Protection of the Harbour Ordinance (PHO) was applicable to all reclamations whether permanent or temporary, including the reclamations associated with the proposed temporary typhoon shelter and breakwater.

1.5 In line with the CFI's judgment on the application of the PHO to temporary reclamation, it is now necessary to demonstrate

that the reclamations associated with the proposed temporary typhoon shelter and breakwater can meet the 'overriding public need test' laid down by the Court of Final Appeal. Alternative means for reprovisioning of affected moorings and anchorages, including off-site reprovisioning, have to be duly considered. Public views and those of the stakeholders on the reprovisioning arrangements have to be equally considered.

1.6 Since April 2008, the public have been consulted on the method of construction for the CWB tunnel at the CBTS and the associated temporary reclamation. There was general support for the proposed temporary reclamation required for the tunnel construction although there were questions concerning matters of details. The extent of impact, during the construction stage, to the affected vessels within the CBTS and the various reprovisioning options can thus be assessed based on the proposed staging of construction sequence.

2. Existing Situation

2.1 The CBTS occupies a total water area of some 18ha. At present, the CBTS provides shelter for pleasure and business operating vessels together with some dwelling vessels and miscellaneous local crafts. As at April 2008, around 570 vessels use the CBTS as a base.

2.2 An aerial view of the existing typhoon shelter with layout of three distinct mooring/anchorage areas is attached at **Appendix 1**:

- The south-western triangle (**RHKYC Mooring Area**) contains a private mooring area allocated by MD to the Royal Hong Kong Yacht Club (RHKYC) for pleasure vessels. The water area occupied by the RHKYC moorings is around 3 ha holding approximately 152 vessels.

- The northern triangle (**Private Mooring Area**) contains individually licensed moorings allocated by Marine Department (MD) for private vessels. This water area is around 4.4 ha and 152 vessels are permitted to lay mooring within this area.

- The south-eastern triangle (**Anchorage Area**) occupying a water area of approximately 2.6 ha, is mainly used as an anchorage by dwelling vessels, work vessels, floating workshops and various local/miscellaneous crafts. Approximately 200 vessels are anchored in this area.

2.3 In the CBTS, a number of isolated vessels are found moored/anchored outside the above mooring/anchorage areas. There are altogether 12 licensed moorings and some 55 vessels anchored along the Causeway Bay Promenade seawall.

3. Reprovisioning Options

3.1 The CWB tunnel will be constructed by cut-and-cover method using diaphragm walls, which is the only safe, feasible and practicable method of construction. However, this cut-and-cover method requires the construction of a working platform above water level by means of temporary reclamation. These CWB construction works, including the contractor's works area, will impinge upon the anchorage area in the south-eastern corner of the CBTS (Anchorage Area) and upon the northern and south-western licensed moorings areas (Private and RHKYC Mooring Areas). **Appendix 2** shows the full extent of the CWB construction works. In all, roughly 100 vessels in the Anchorage Area and around 180 vessels in the Private and RHKYC Mooring Areas will be directly affected by the CWB construction works.

3.2 To maintain the effective operation of the CBTS and to minimise the number of affected vessels that will be disturbed by the construction works, and to enable water circulation within the typhoon shelter, the CWB tunnel construction works will be carried out in stages, with construction works commencing at both the eastern and western ends of the typhoon shelter and progressing inwards. Vessels in these areas will need to be temporarily relocated in stages to facilitate this staged construction of the CWB tunnel and the associated temporary reclamation. An illustrative construction staging plan for the works and the associated number of vessels affected at the CBTS is attached at **Appendix 3**. The total number of vessels affected in each stage of construction would be different, with the maximum of around 190 vessels (110 mooring vessels and 80 anchorage vessels) being affected at one time.

3.3 In formulating various reprovisioning options, it is necessary to take into consideration the following:

- the PHO implications;
- social impacts;
- disturbance to CBTS users;
- the urgent need for early relief to the existing serious traffic congestion; and
- impacts to the CWB construction programme.

3.4 After investigation, six options are identified to address the reprovisioning requirements. These include both on-site and off-site reprovisioning proposals of the affected mooring and anchorage areas in the CBTS.

3.5 **Option 1: On-Site Reprovisioning Using Temporary Typhoon Shelter**

3.5.1 Option 1 is same as the originally proposed works for the CWB and Island Eastern Corridor Link project published in Gazette Notice 4767 on 27 July 2007. All the vessels within the affected mooring and anchorage areas would be relocated to the temporary typhoon shelter immediately north of the existing CBTS.

3.5.2 With a temporary rubble mound breakwater and two temporary piled wave walls, a sheltered area of 3.9ha would be created as illustrated in **Appendix 4**. This arrangement would provide adequate sheltered mooring/anchorage area to meet the reprovisioning requirement during the construction period. Upon completion of the tunnel construction in around 6 years, the breakwater and the wave walls would be removed and the seabed reinstated.

3.5.3 Pros of this option:

(a) No significant disturbance to the CBTS users in their business and recreational activities. Affected mooring and anchorage vessels would be moved to the temporary typhoon shelter immediately outside the CBTS but still within the Victoria Harbour.

(b) No impact on the planned CWB construction programme.

3.5.4 Cons of this option:

In light of the CFI's ruling that the presumption against reclamation does apply to the temporary typhoon shelter and breakwater, it is necessary in compliance with PHO implications to first identify any reasonable alternative to the proposed reclamation (i.e. "no reclamation" option). This option might proceed if no other reasonable alternative involving no/less reclamation is available.

3.6 Option 2: On-Site Reprovisioning within Works Area

3.6.1 In this option, the principle of on-site reprovisioning is retained, but without the temporary typhoon shelter. Instead, the 1.9ha ex-PCWA basin would be used as temporary sheltered mooring area. Moreover, the existing Private Mooring Area would be more efficiently used by filling up the existing vacant space outside the construction works areas with a maximum capacity for around 50 vessels.

3.6.2 However, in using the ex-PCWA basin as mooring space and due to the limited water area available and the presence of the temporary Government helipad at the breakwater of the ex-PCWA, there would be insufficient mooring/anchorage space to accommodate the number of vessels affected under the originally planned construction programme. In view of the capacity constraint, the CWB construction programme would be increased. It would result in a significant delay of at least 2 years.

3.6.3 In addition, the ex-PCWA basin is not designed as a typhoon shelter and would not provide local vessels with the same level of protection as the CBTS during typhoon. Reclamations associated with some form of breakwater would be required to provide the same level of protection to the vessels. This again would have PHO implications and its justification would need to be demonstrated to comply with the 'overriding public need test'.

3.6.4 Pros of this option:

No significant disturbance to the CBTS users in their business and recreational activities. Affected mooring and anchorage vessels would be moved to temporary locations within the CBTS or the adjacent ex-PCWA basin in stages according to the construction sequence. They would be still located within the Victoria Harbour.

3.6.5 Cons of this option:

(a) PHO implications of the temporary breakwater, if the same level of typhoon shelter protection is to be provided.

(b) The revised construction staging for this option would prolong the overall construction programme for at least 2 years. Such delay to the overall CWB construction programme would have significant impact to the society as a whole.

(c) The economic consequences of the 2-year delay to the opening of the CWB, in monetary terms of the continuing traffic delays, would be significantly large.

3.7 Option 3: Staged Off-Site Reprovisioning for Different Groups of Vessels Affected by Different Stages of Construction Works

3.7.1 In general, the construction staging for off-site reprovisioning is similar to that as described in paragraph 3.2 above and Annex C.

3.7.2 Off-site reprovisioning can make up for the decrease in mooring/anchorage area in the CBTS during the CWB construction period. Similar to Option 2, the number of vessels required to be re-located off-site could first be reduced by filling up the existing vacant mooring space outside the works area within the Private Mooring Area which can accommodate a maximum of around 50 vessels. The remaining mooring and anchorage vessels which would be affected by the construction would be temporary re-located to different typhoon shelters in different groups during different stages of construction.

3.7.3 The affected anchorage vessels are proposed to be temporarily relocated to the Aberdeen Typhoon Shelter (West) (ABDTS(W)) or other available sheltered areas. The ABDTS(W) has a spare

capacity of around 3.8ha (this area accounts for the effects of fishing moratoria and during typhoon period), which can readily accommodate all of the 100 affected vessels from the CBTS Anchorage Area.

3.7.4 The affected private and RHKYC moorings are proposed to be temporarily relocated to other existing typhoon shelters and sheltered areas, such as the Aberdeen Typhoon Shelter (South) (ABDTS(S)), Cheung Chau, Middle Island, Tai Tam Bay and Plover Cove (east of Yim Tin Tsai) with a total capacity for around 200 vessels. Details of vacant moorings for pleasure vessels in typhoon shelters and sheltered anchorages are shown in **Appendix 5**. At present, the ABDTS(S) has spare capacity for private moorings which can accommodate about 100 to 130 pleasure vessels (depending on the length of the affected vessels) from the CBTS licensed mooring areas.

3.7.5 Re-locating only those vessels directly affected in each stage of construction may appear to be a fair arrangement. However, this would involve the relocation of both mooring and anchorage vessels in all the three mooring/anchorage areas in the CBTS. During different stages of construction, different groups of affected vessels would have to be relocated to different typhoon shelters for different durations and return back to the CBTS after the next group move out. Different vessels would have to be temporarily relocated to different areas at during times with different durations. Relocating a total of about 180 mooring vessels and 100 anchorage vessels in 4 stages would involve complicated logistical arrangements and disrupt a large numbers of the CBTS users.

3.7.6 Pros of this option:

No temporary reclamation is required. No PHO implications.

3.7.7 Cons of this option:

(a) Cause serious disturbance to part of the CBTS Anchorage Area users (local crafts) and part of the CBTS Private and RHKYC Mooring Area users (pleasure vessels).

(b) Involve complicated logistical arrangements and extensive disruptions to a large numbers of the CBTS users.

(c) Cutting the social and economic ties of some of the anchorage users would create adverse impact on their livelihood.

(d) The use of water space within ABDTS(W) will affect commercial and fishing vessels using this area as their base of operation.

3.8 Option 4: Off-Site Reprovisioning of the Anchorage Area

3.8.1 To avoid the disturbance to a large number of CBTS users at different stages, an alternative is to relocate the vessels in only one of the three mooring/anchorage areas throughout the whole construction period.

3.8.2 In Option 4, all vessels in the Anchorage Area are proposed to be temporarily relocated to the ABDTS(W) or other available sheltered areas. The ABDTS(W), with 3.8ha spare capacity, can readily accommodate all of the vessels in the Anchorage Area.

3.8.3 The affected vessels in the Private Mooring Area and RHKYC Mooring Area would then be accommodated in the vacant Anchorage Area and other parts of the CBTS which would not be affected by the CWB staged construction.

3.8.4 Pros of this option:

(a) No temporary reclamation is required. No PHO implications.

(b) No significant disturbance to the affected vessels in the Private and RHKYC Mooring Areas as they could still stay in the CBTS.

3.8.5 Cons of this option:

(a) Cause serious disturbance to the business operation of the Anchorage Area users (local crafts).

(b) Cutting the social and economic ties of the anchorage users would create additional adverse impact on their livelihood.

(c) The relocation of anchorages to the ABDTS(W) will affect the existing commercial and fishing vessels using this area as their base of operations and might generate conflicts between the existing and relocated users, such as conflicting berthing arrangement.

(d) Some of the Anchorage Area users worried that the vessels, in particular the older ones, may not be able to cope with the relocation required at different stages of reclamation.

3.9 Option 5: Off-Site Reprovisioning of the RHKYC Mooring Area

3.9.1 In Option 5, all vessels mooring in the RHKYC Mooring Area are proposed to be temporarily relocated to the ABDTS(S) and other typhoon shelters.

3.9.2 The affected vessels in the Private Mooring Area and Anchorage Area would then be accommodated in the vacated RHKYC Mooring Area and other parts of the CBTS which would not be affected by the CWB staged construction. There are at present 152 private vessels mooring in the RHKYC Mooring Area. Option 5 would disperse all these vessels from the RHKYC Club House on Kellett Island. This would disrupt the operation of the RHKYC and affect their sports and harbour events, such as yacht races and other activities that are held regularly within and outside the Victoria Harbour. In addition, moorings in the ABDTS(S) would need to be re-arranged to make space for the reprovisioning to accommodate the mooring of the RHKYC vessels in one group.

3.9.3 Pros of this option:

(a) No temporary reclamation is required. No PHO implications.

(b) No significant disturbance to the affected vessels in the Private Mooring Area and the Anchorage Area as they could still stay in the CBTS.

3.9.4 Cons of this option:

(a) Private vessels in the RHKYC Mooring area would be relocated to the ABDTS(S) and other typhoon shelters. It would cause serious disruption to the operation of the RHKYC and its sports and harbour events.

(b) Loss of employment for staff of RHKYC as a result of reduced operation and activities of the Club.

(c) Moorings in the ABDTS(S) would need to be rearranged to make space for accommodating the mooring of the RHKYC vessels in one group.

3.10 Option 6: Off-Site Reprovisioning of the Private Mooring Area

3.10.1 In Option 6, all vessels in the Private Mooring Area are proposed to be temporarily located to other existing typhoon shelters. The current spare capacity for private moorings in the ABDTS(S) can accommodate the majority of the pleasure vessels from the Private Mooring Area. The remaining vessels would be temporarily relocated to other typhoon shelters or sheltered areas.

3.10.2 The affected vessels in the RHKYC Mooring Area and the Anchorage Area would then be accommodated in the vacated Private Mooring Area.

3.10.3 Pros of this option:

(a) No temporary reclamation is required. No PHO implications.

(b) No significant disturbance to the affected vessels in the Anchorage Area and the operation of the RHKYC as they could still stay in the CBTS.

3.10.4 Cons of this option:

Pleasure vessels in the Private Mooring Area would be relocated to the ABDTS(S) and other typhoon shelters. It would cause disturbance to their recreational activities.

4 Public Engagement

4.1 Public participation is essential in the process of reaching a lawful, reasonable and viable option for the reprovisioning of the moorings/anchorages. We have carried out a two stages public engagement to invite all CBTS users and the public to express their views on the above six options as well as suggestions of other potential options.

4.2 First Stage Public Engagement

4.2.1 The first stage consultation was held from 6 to 22 September 2008. It included seven discussion sessions and a questionnaire survey. The participants were mainly stakeholders affected by the construction works in the CBTS, including anchorage vessel owners, pleasure vessel owners, and representatives of the RHKYC. On 24 April and 14 October 2008, we consulted the Local Vessel Advisory Committee which consists of experts from various marine related industries operations to seek their views on the reprovisioning arrangements. We also participated in a public forum organized by the Ad-hoc Working Group on Central-Wan Chai Bypass under Eastern District Council (EDC Ad-hoc Working Group) on 22 September 2008 attended by DC members, the CBTS users and residents of the Eastern District.

4.2.2 In order to achieve better understanding of the operation of the CBTS, a questionnaire was also distributed to the CBTS users to collect supplementary information on vessels, vessel owners and their preferred reprovisioning options, etc.

4.2.3 The Public Policy Research Institute (PPRI) of the Hong Kong Polytechnic University was engaged to facilitate the discussion sessions and to analyze the stakeholders' comments expressed in both the discussion sessions and the completed questionnaires.

4.2.4 Views of the stakeholders expressed at the seven discussion sessions, the EDC Ad-hoc Working Group and the questionnaires are summarized as follows:

(a) Anchorage vessels: Most anchorage users strongly opposed to off-site reprovisioning due to disruption to their daily living and business and the cost implications. They strongly requested to stay in the CBTS. Owners of the Tin Hau temple boat requested the Government to allow them to relocate on land to avoid affecting their worshipers. Some users expressed that the Government should re-house the affected boat dwellers, especially senior citizens. Some would like to be relocated to the southeast corner of the CBTS. Launch & ferry representatives in the area expressed that they were unwilling to be reprovisioned to Aberdeen.

(b) RHKYC vessels: Since the RHKYC's club house on land and its mooring area are mutually dependent, the Club expressed that any off-site reprovisioning arrangements would substantially cut off the access of the Club to the harbour. Due to the increased physical distance between the vessels and the club house, it would be more difficult for the members to gain access to the Club's services and facilities. Off-site reprovisioning would therefore severely affect the operation of the Club. Should RHKYC's moorings be reprovisioned off-site, their water sports operation would inevitably be scaled down, resulting in loss of business of the Club and to their contractors currently providing various services to the Club and their members. Inevitably, there would be loss of employment for the staff of the RHKYC.

(c) Private Mooring Area vessels: From the discussion sessions, we understand that there are both pleasure vessels and commercial vessels mooring within the Area. In general, the owners of the pleasure vessels who have replied in response to the questionnaire have no strong objection to moor outside the CBTS, such as Aberdeen Typhoon Shelter (South) (ABDTS(S)). As for the commercial vessels, there are about 20 vessels mooring within the Private Mooring Area. These vessels mainly

provide cruising service for tourists in the Harbour in short notice, usually 15 – 20 minutes. The owners expressed concerns about the time and cost implications and requested for temporary re-location within the Harbour in order to maintain their business operation. At further meetings between these owners, Highways Department and Marine Department, a consensus was reached that they can moor within the ex-PCWA basin to maintain their operation.

4.2.4 To formulate the recommended reprovisioning scheme, the views expressed by the stakeholders and the subsequent analysis carried out by PPRI were carefully reviewed. The recommended scheme was worked out with the aim to minimize the possible impacts and hardship on the livelihood of the CBTS users. In general, we recommend to adopt Option 6, that is to re-locate only the pleasure vessels in the Private Mooring Area to make space for accommodating the affected vessels in the RHKYC Mooring Area and the Anchorage Area. For vessels currently mooring within the Private Mooring Area which have business operation in the Victoria Harbour, they would be allowed to moor within the ex-PCWA during non-typhoon periods and other typhoon shelters during typhoon periods.

4.3 Second Stage Public Engagement

4.3.1 During the second stage public engagement exercise, the recommended reprovisioning arrangements were presented to the CBTS users at a discussion session held on 18 October 2008 and a public forum subsequently held on 25 October 2008. The recommended scheme received general support from the participants.

4.3.2. During further meetings with the CBTS users, some raised the question on the entitlement of the affected CBTS users for compensation of temporary occupation of water areas by construction works.

4.3.3 Some users also expressed concerns on the safety of the aged vessels during vessel relocation and the cost of relocation. We advised them that a condition survey would be carried out by competent surveyors to verify that the vessels would be suitable

for relocation. Assistance would be provided to repair vessels to ensure its suitability for re-location. Both Marine Department and the vessel owners would be fully consulted and their agreement would be sought prior to the relocation. If necessary, the contractor would provide assistance for the relocation as well as the required relocation equipments. The contractor would be responsible for compensation for any damage caused to the vessels during relocation. The access and utility services within the CBTS such as water supply would also be maintained during whole period of construction.

4.3.4 During public consultation, vessel operators from the Mariners Club expressed concern about the operation of their vessels. Noting the frequent operation of their vessel within the Harbour, their vessels would be allowed to moor at ex-PCWA basin during non-typhoon periods and in ABDTS(S) during typhoon periods.

4.3.5 Representative of the Hong Kong & Kowloon Motor Boats and Tug Boats Association Ltd also raised concern whether there would be sufficient spaces at ex-PCWA to accommodate the business vessels. Our finding is that there would be sufficient mooring spaces to accommodate these vessels either at ex-PCWA or temporary anchorage space in the CBTS during construction.

4.3.6 A few individual users requested for special treatments to their vessels at the public forum. We would maintain a close dialogue with the CBTS users with a view to refining the recommended reprovisioning arrangements to accommodate their needs as far as possible.

5. Recommendation and Conclusion

5.1 Since Options 1 and 2 involve temporary reclamation, according to the requirements of the PHO, they can only be implemented unless there are no other technically feasible and acceptable reprovisioning alternatives available. After the formulation of reprovisioning Options 3 to 6 and the completion of the public engagement exercise, we conclude that there are technically feasible and acceptable reprovisioning alternatives and thus Option 1 to 2 should not be pursued. Options 3 and 4 would cause major impacts on the daily

operation and hardship on the livelihood of the local vessels. Option 5 would cause major disturbance to the operation of the RHKYC. After careful consideration of the views expressed by the CBTS users and all other relevant factors, Option 6 which involves the least disruption to the CBTS users is recommended as the preferred reprovisioning arrangements.

5.2 In conclusion, Option 6 is considered to be the technically feasible and more acceptable reprovisioning arrangements not involving any temporary reclamation. The originally proposed temporary breakwater to the north of the CBTS as shown in the gazetted CWB scheme will no longer be required and can be deleted from the scheme. This will result in a reduction of about 2.4 ha of temporary reclamation.

Highways Department
November 2008

Appendix

Appendix 1 An aerial view of CBTS with layout of three distinct mooring/anchorage areas

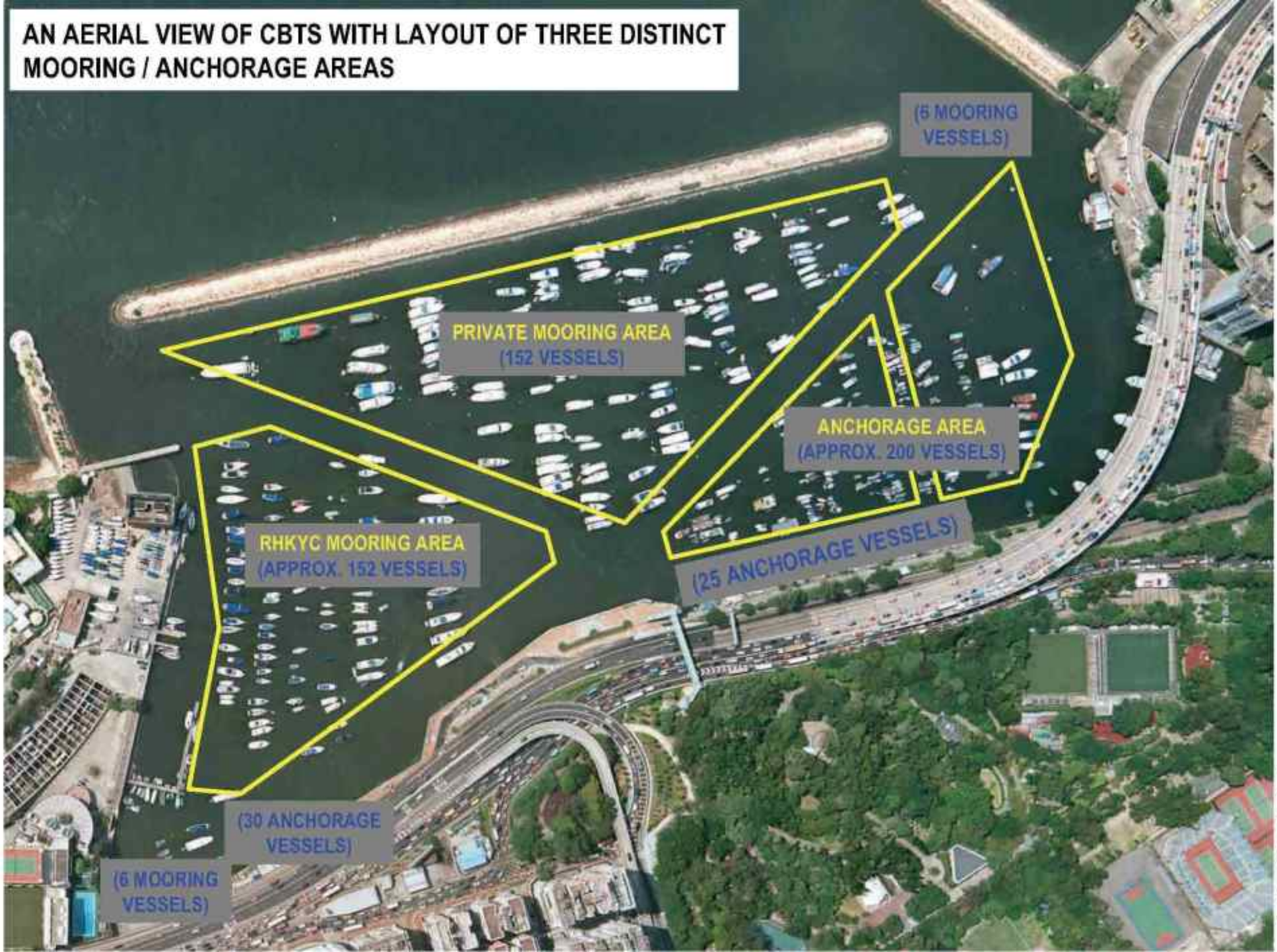
Appendix 2 Mooring/anchorage areas directly affected by construction works

Appendix 3 Illustration of anticipated construction stages and associated number of vessels affected

Appendix 4 Originally proposed temporary typhoon shelter/breakwater

Appendix 5 Schedule of vacant moorings for pleasure vessels in typhoon shelters and sheltered anchorages

AN AERIAL VIEW OF CBTS WITH LAYOUT OF THREE DISTINCT MOORING / ANCHORAGE AREAS



APPENDIX 1


MOORING / ANCHORAGE AREAS DIRECTLY AFFECTED BY CONSTRUCTION WORKS
(APPROX. 180 MOORING VESSELS)
(APPROX. 100 ANCHORAGE VESSELS)

APPENDIX 2

ILLUSTRATION OF ANTICIPATED CONSTRUCTION STAGES AND ASSOCIATED NUMBER OF VESSELS AFFECTED

APPENDIX 3


ORIGINALLY PROPOSED TEMPORARY TYPHOON SHELTER / BREAKWATER
PROPOSED TEMPORARY BREAKWATER
PROPOSED TEMPORARY PILED WAVE WALL
AREA OF TEMPORARY TYPHOON SHELTER
PROPOSED TEMPORARY PILED WAVE WALL
AREA AFFECTED BY CWB CONSTRUCTION

APPENDIX 4

APPENDIX 5

Schedule of Vacant Moorings for Pleasure Vessels in Typhoon Shelters and Sheltered Anchorages

Location	**No. of Vacant Moorings**		**Type of Mooring**
	Long boats (>8m LOA)	**Short boats (<8m LOA)**	
Typhoon Shelters			
Aberdeen South (Po Chong Wan)	100	130	Fore & Aft Moorings
Cheung Chau	20	20	Fore & Aft Moorings
Sheltered Anchorages			
Middle Island	5	11	Single Mooring
Plover Cove (East of Yim Tin Tsai)	53	88	Single Mooring
Tai Tam	5	5	Single Mooring
TOTAL	183	254	

Note: Maximum no. of CBTS moorings to be re-located off-site approximately
= 190 – 50*
= 140

* 50 vacant mooring spaces are available outside the contractor's works area within the Private Mooring Area of the CBTS.

Annex C

Summary of Report on Comparison of Trunk Road Tunnel & Flyover Options In Accordance With The Overriding Public Need Test

Introduction

1. The Court of Final Appeal ("CFA") judgment handed down on 9 January 2004 in respect of a judicial review that the presumption against reclamation in the Protection of the Harbour Ordinance ("PHO") can only be rebutted by establishing an overriding public need for reclamation ("the Overriding Public Need Test"), and that there must be cogent and convincing materials available to enable the decision-maker to be satisfied that the test is fulfilled for rebutting the presumption against reclamation.

2. Under the comprehensive planning and engineering review of development and reclamation proposals for the Wan Chai Development Phase II project ("the WDII Review") and through an extensive public engagement process entitled "Harbour-front Enhancement Review – Wan Chai, Causeway Bay and Adjoining Areas", under the steer of the then Harbour-front Enhancement Committee Sub-committee on WDII Review, undertaken from May 2005 to June 2007, a Trunk Road scheme (known as the Trunk Road Tunnel Variation 1, or "Trunk Road Tunnel") has been developed that satisfies the traffic and functional requirements for the Trunk Road. The Trunk Road comprises the Central-Wan Chai Bypass and Island Eastern Corridor Link. The Trunk Road scheme also accommodates harbour-front enhancement ideas that have been proposed by the public, and the scheme has the broad support of the public.

3. A report entitled "Report on Cogent and Convincing Materials to Demonstrate Compliance with the Overriding Public Need Test" ("CCM Report") was prepared in February 2007 setting out the process by which the Trunk Road scheme and its associated reclamation were derived and presents the "cogent and convincing materials" in support of the proposed reclamation required for such scheme under the PHO.

4. On 20 March 2008, the Court of First Instance ("CFI") of the High Court ruled that the PHO and the presumption against reclamation contained therein do apply to the proposed temporary reclamation works referred to in the Trunk Road scheme gazetted under the Roads (Works, Use and Compensation) Ordinance on 27 July 2007.

5. While the feasible options of the Trunk Road have been evaluated in Chapter 4 of the CCM Report issued in February 2007, details on temporary reclamation were not specifically elaborated in the comparison of feasible Trunk Road options i.e. the Tunnel Option and the Flyover Option at that time on the ground of the temporary nature of those works. The report on "Comparison of Trunk Road Tunnel & Flyover Options in Accordance with the Overriding Public Need Test" supplements Chapter 4 of the CCM Report with additional materials to address separately the reclamation requirements of the feasible Trunk Road options, including the temporary reclamation requirements, and then the comparison of the Tunnel and Flyover Options with some further elaboration on their relative performance in all relevant aspects for the purposes of assessing both Options by reference to the Overriding Public Need Test.

Trunk Road Options

6. All possible alignments for the Trunk Road, including "offshore corridor", "inland corridor" and "foreshore corridor", and including suggestions from the public, have been examined, taking into account land use and infrastructural constraints, with a view to determining if there are any option that would not require any reclamation for the Trunk Road construction. It is found that the feasible Trunk Road routing is along the foreshore of Wan Chai and Causeway Bay. However, foreshore alignments do require reclamation for Trunk Road tunnel construction at the western and eastern ends of WDII.

7. Alternative Trunk Road ideas have been examined to determine if they would constitute a feasible "no reclamation" option. It was concluded that there is no feasible "no reclamation" alignment for the Trunk Road.

8. Following the examination of alternative Trunk Road alignments and methods of construction, including consideration of public views, two feasible schemes for the Trunk Road have been determined: a Tunnel Option (that is based on the Tunnel Variation 1) and a Flyover Option.

9. For the Tunnel Option, the Trunk Road starts off at the connection with Central Reclamation Phase III ("CRIII"), crosses over the MTR Tsuen Wan Line tunnel, continues through the Hong Kong Convention & Exhibition Centre (HKCEC) water channel and along the Wan Chai shoreline, in cut-and-cover tunnel, in

reclamation. The Trunk Road tunnel drops below seabed at the eastern end of the Wan Chai shoreline, staying below seabed beneath the former Wan Chai Public Cargo Working Area ("ex-PCWA") basin, and then passing beneath the Cross Harbour Tunnel ("CHT") portal and approach ramp at a level below –30mPD. Continuing eastwards, the Trunk Road tunnel stays beneath the seabed of the Causeway Bay Typhoon Shelter ("CBTS"). The Trunk Road tunnel then rises up above seabed to the ground level tunnel portal to the east of the CBTS, where the Trunk Road then rises up on flyover structure to connect with the existing elevated Island Eastern Corridor (IEC). The Tunnel Option layout is shown in **Figure 2.1**.

10. For the Flyover Option, the Trunk Road starts off at the connection with CRIII, crosses over the MTR Tsuen Wan Line tunnel, continues through the Hong Kong Convention & Exhibition Centre (HKCEC) water channel and along the Wan Chai shoreline, in cut-and-cover tunnel, in reclamation, same as the Tunnel Option. Towards the eastern end of the Wan Chai waterfront, the Trunk Road tunnel rises up to a ground level tunnel portal and then onto an elevated road structure to cross over the ex-PCWA basin, then over Kellett Island and the CHT portal, and stays on the elevated structure over the full length of the CBTS and connects to the existing elevated IEC at the eastern side of the CBTS. The Flyover Option layout is shown in **Figure 2.2**.

Comparison of Feasible Trunk Road Options

Extent of Reclamation

11. For construction of the Trunk Road Tunnel Option, an area of 12.7ha of permanent reclamation is needed to meet essential engineering requirements for construction of the Trunk Road Tunnel Option. It comprises land formation at the HKCEC west area (3.7ha), in the HKCEC water channel (1.6ha), along the Wan Chai shoreline (4.1ha) and North Point shoreline (3.3ha). In addition, an area taken to be 0.1ha of permanent reclamation (pile caps and dolphins) is needed for the construction of the elevated Trunk Road connection to the IEC at North Point.

12. For the construction of the Trunk Road Flyover Option, an area of 9.8ha of permanent reclamation is needed to meet essential engineering requirements. It comprises land formation at the HKCEC west area (3.7ha), in the HKCEC water channel (1.6ha), along the Wan Chai shoreline (4.5ha). In addition, an area of about 0.4ha of permanent reclamation comprising pile caps and dolphins that physically

occupy water area of the Harbour in the ex-PCWA basin and in the CBTS is needed for the construction of the elevated road section of the Flyover Option.

13. In summary, the extents of permanent reclamation for the Tunnel Option and Flyover Option are estimated to be as follows:

	Tunnel Option	**Flyover Option**
Permanent Reclamation		
- land formation	12.7 ha	9.8 ha
- pile caps and dolphins	0.1 ha	0.4 ha

14. Alternative forms of construction have been examined for the construction of the Trunk Road Tunnel beneath the seabed of the CBTS and ex-PCWA to determine if there is any reasonable form of construction that would not require temporary works, in particular temporary reclamation. The only practically feasible form of construction for the Trunk Road is by cut-and-cover with diaphragm walls. This will require temporary reclamation to provide a dry working platform for the construction of the diaphragm walls and the cut-and-cover tunnel.

15. A minimum extent of temporary reclamation has been determined, that will serve solely to facilitate the Trunk Road Tunnel construction. Through a staged construction approach (**Figure 3.1**), the maximum affected area of the Harbour in respect of temporary reclamation in the CBTS will range from 1.8ha to a maximum of 3.7ha at any one time, for a period of 1 to just over 3 years for any given temporary reclamation area, whilst at the ex-PCWA the area of temporary reclamation will range from 0.7ha to a maximum of 1.2ha, with the durations of these temporary reclamation stages varying from 2.5 years to just over 3 years. These are the minimum extents of temporary reclamation required to facilitate the construction of the Trunk Road Tunnel Option. Further details are presented in the report on “Construction of the Trunk Road Tunnel in Causeway Bay Typhoon Shelter and at ex-Wan Chai Public Cargo Working Area” prepared by Highways Department.

16. For the Flyover Option, the new elevated Trunk Road has to connect to the IEC at the location of the Hing Fat Street slip roads. The section of the existing IEC

structure joining Victoria Park Road and the slip road from Hing Fat Street to the IEC have to be demolished and rebuilt for such connection. Temporary traffic diversions have to be arranged during the construction work to maintain the traffic flow.

17. The only reasonable and practically feasible manner in which the temporary traffic arrangement could be implemented, in order to maintain traffic flows through this area of construction and to facilitate the construction and demolition works of the Flyover Option, would be by temporary filling in of the south-eastern corner of the CBTS. The resultant temporary reclamation required for temporary traffic arrangements will fill in the south-eastern corner of the typhoon shelter, with an area of about 3.3ha as shown in **Figure 3.2**.

18. For the purpose of comparative appraisal of temporary reclamation areas for the Tunnel and Flyover Options, installation of noise barriers is also assumed for the Flyover Option along the existing IEC to a similar extent as would be provided for the Tunnel Option, so that both Trunk Road options would provide a similar level of benefit to North Point residents. However, it should be borne in mind that the actual extent of noise barrier required along the North Point shoreline beyond the physical tie-in of the Flyover Option to the existing IEC, in the event that the Flyover Option were to be implemented, would be subject to further detailed assessment including noise assessment under the Environmental Impact Assessment Ordinance. Along the North Point shoreline, a temporary diversion of the elevated IEC will be required to enable the reconstruction of the existing flyover structure with noise barriers. This traffic diversion would entail the construction of a temporary elevated flyover adjacent to the existing IEC. Concrete pile caps would need to be constructed in the Harbour and these would be regarded as temporary reclamation. This area of temporary reclamation would be about 0.1ha. This temporary reclamation could not, practically speaking, be implemented in stages, as the whole of the temporary traffic arrangements scheme would be required for the whole time.

19. Moreover, the temporary traffic arrangements at the south-eastern corner of the CBTS would be concurrent with those at North Point, so the temporary reclamation associated with the temporary bridge foundations would need to be in place at the same time as the temporary reclamation for traffic diversions in the CBTS.

20. Therefore, for the Flyover Option, the temporary reclamation area required for the construction of the Flyover Option that will be in place at any one time would be approximately 3.4ha, and this would be in place for a period of around 4 years.

This is considered to be the minimum overall extent of temporary reclamation required to facilitate the construction of the Trunk Road Flyover Option across the seabed of the ex-PCWA, CBTS and along the North Point shoreline.

21. In summary, the extents of temporary reclamation for the Tunnel Option and Flyover Option are estimated to be as follows:

	Tunnel Option	**Flyover Option**
Temporary Reclamation [1] (during construction)	CBTS: 3.7 ha ex-PCWA: 1.2 ha	CBTS & ex-PCWA: 3.3 ha North Point: 0.1 ha

[1] at the stage when the area of temporary reclamation is the largest

22. Based on the above, it is found that the Flyover Option will result in a lesser extent of permanent reclamation than the Tunnel Option of about 2.6ha, and the Flyover Option will require a lesser extent of temporary reclamation during construction than the Tunnel Option of about 1.5ha.

Performance of Tunnel and Flyover Options

23. Since the extent of reclamation required by the Tunnel Option is greater than that of the Flyover Option, it must, in line with the CFA judgment, be considered whether the Flyover Option is a "reasonable alternative" to the Tunnel Option, through consideration of all circumstances including "the social, environmental and economic implications".

24. The PHO requires the Harbour to be protected and preserved as a special public asset and a natural heritage of the Hong Kong people, and establishes a presumption against reclamation in the Harbour. Notwithstanding that there is an overriding need for reclamation for the project, it is essential to find the option that will best serve to protect and preserve the Harbour, with the minimum area of the Harbour affected by reclamation. In this regard, the area of the Harbour affected by the Trunk Road Tunnel and Flyover Options is of concern. In this connection, it must be understood that the affected area of the Harbour is not "reclamation" within the meaning of the PHO.

25. Therefore, when examining the Trunk Road options, it is not only the land formation by reclamation that should be of concern, but also the water areas of the Harbour affected by the scheme, in order to determine which option would serve best to protect and preserve the Harbour. In considering the affected area of the Harbour, the following aspects have been examined for comparison, besides the permanent and temporary reclamation:

(i) flyover structures over water (the plan area of elevated highway structures that cross over water); and

(ii) affected water area (areas of the Harbour obstructed by Trunk Road structures, or where marine uses are restricted).

26. The assessment of social, environmental and economic implications of the Flyover Option, in respect of the comparison on the performance of the Tunnel and Flyover Options, is summarised in Table 1.

Table 1 Comparison on Performance of Tunnel and Flyover Options

		Tunnel Option	**Flyover Option**
Social Implications			
Protection of the Harbour Affected area of the Harbour(1): (i) Flyover structures over water (ii) Affected water area (1) this is not "reclamation" within the meaning of the PHO		0.3 ha	2.6 ha 4.0 ha
Planning and land use considerations	Along Wan Chai shoreline	Land formed can be used for harbour-front enhancement and pedestrian access to the waterfront.	Land formed is partly occupied by the tunnel portal which limits the area for harbour-front enhancement and constrains pedestrian access to the waterfront.

		Tunnel Option	Flyover Option
	ex-PCWA	ex-PCWA basin can be developed into a vibrant marine recreational facility.	Bridge piers and the low headroom clearance of the flyover restrict the development of the ex-PCWA basin as a marine recreational facility.
	Northern side of Victoria Park	Victoria Park can be extended to the harbour-front via a landscaped deck over the roads. Part of the northern edge of the park will be affected by Slip Road 8.	With the flyover running along the northern side of Victoria Park, a landscaped deck for extension of Victoria Park is impractical.
	CBTS	The existing CBTS is preserved.	Part of the water area and the existing promenade will be occupied by bridge piers and marine uses will be restricted.
	North Point	The seaward portion of some existing and planned developments along the North Point shore will be affected and will require resumption. Part of land formed can be used for harbour-front enhancement and pedestrian access.	No major impact on the existing and planned developments at North Point. Significant new public open space not provided and harbour-front enhancement cannot be achieved.
	Continuous waterfront promenade	A continuous waterfront promenade in Wan Chai, Causeway Bay and North Point can be provided.	Flyover structures at CBTS disrupt the provision of a continuous waterfront promenade.
Public views		Overwhelming support throughout the public	No support during public engagement at the time

		Tunnel Option	Flyover Option
		engagement process.	when feasible Trunk Road options were being examined.
Impact to existing traffic		Traffic diversions at new tie-in to IEC, but no major traffic disruption.	Complex temporary traffic arrangements at CBTS and at connection with IEC at North Point. Major traffic disruption and delays at tie-in to IEC and due to reconstruction of Victoria Park Road connections.
Time of implementation (time of construction)		7 years	6 years
Environmental Implications			
Environmental nuisance and impacts during construction	Air quality	No construction air quality impacts.	No construction air quality impacts.
	Noise	Main concern is noise from demolition at IEC connection, which can be mitigated.	Main concern is noise from demolition at IEC connection, which can be mitigated, but twice the length of road structure to be demolished, therefore much more noise nuisance.
	Water quality	No major construction phase impacts.	No major construction phase impacts.
	Landscape and visual impacts	Substantial to moderate landscape impacts and moderate visual impacts during construction.	Substantial to moderate landscape impacts and moderate visual impacts during construction.

		Tunnel Option	Flyover Option
Operational environmental impacts	Air quality	No operational air quality impacts. Air quality at eastern portal mitigated through design.	Significant contribution to air pollution levels from open road emissions in Causeway Bay.
	Noise	With mitigation measures (noise barriers) at tie-in to IEC, no noise impacts.	Extensive mitigation (noise barriers all the way through Causeway Bay and North Point).
	Water quality	No major operational impacts.	No major operational impacts.
	Landscape and visual impacts	Overall urban landscape character would be enhanced, visual impacts are acceptable with mitigation in the short term and beneficial with mitigation in the long term.	Adverse impact to landscape character, significant adverse visual impacts in Wan Chai and Causeway Bay caused by flyover. Dominating visual presence of elevated road structure is against public desire.
Economic Implications			
Costs *(including WDII works & CWB in WDII)*	Total construction	HK$20B	HK$11B
	Total annual recurrent	HK$110M	HK$75M

27. After consideration of all the social, environmental and economic implications, the Flyover Option, even though it requires a lesser extent of permanent and temporary reclamation, should not be regarded as a reasonable alternative to the Tunnel Option for the following reasons:

- In respect of protection of the Harbour, the Flyover Option will affect a

substantially greater area of the Harbour than the Tunnel Option (some 6.3ha more), and as such the Flyover Option has a major drawback in terms of protection and preservation of the Harbour as intended by the PHO.

- Unlike the Tunnel Option, the Flyover Option cannot meet public aspirations for harbour-front enhancement or accommodate reasonably expected harbour-front planning improvements, and land use opportunities for providing similar extent and quality of harbour-front are comparatively limited.

- The Flyover Option goes against the public views and the strong desire by the public for the Trunk Road to be underground rather than, in effect, an extension of the elevated IEC along the shoreline.

- In terms of traffic disruption, construction of the Flyover Option will result in severe disruption to traffic flows and cause substantial delay to journey times, compared to the Tunnel Option which can be constructed with minimal traffic disruption or delay.

- In respect of the environment, the Flyover Option will, comparatively, cause greater air and noise impacts than the Tunnel Option. But it is the visual impact of the Flyover Option that is of greatest concern. Quite clearly, the dominating visual presence along the harbour-front of the Flyover Option goes against the public desire NOT to have an extension of the existing elevated IEC all the way along the Causeway Bay and Wan Chai shoreline. The underground tunnel of the Tunnel Option, on the other hand, will have no adverse visual impacts, and indeed the Tunnel Option will bring visual benefits in the end.

- From the PHO point of view and taking into account the added social and environmental value of harbour-front enhancement, the higher costs associated with a scheme that could fulfil all the above requirements would be considered money well justified. Therefore, although the Flyover Option does perform better than the Tunnel Option in respect of time for construction and costs, these are clearly outweighed by the above factors.

28. Overall, the Flyover Option is not considered a reasonable alternative to the Tunnel Option particularly in respect of key aspects of: protection of the Harbour,

harbour-front enhancement, environmental impacts and, not least, public acceptance.

29. In comparing the two options, it has been demonstrated that, in most respects, the Tunnel Option performs better than the Flyover Option. The Tunnel Option:

- will result in a lesser affected area of the Harbour;
- will have more opportunities for harbour-front enhancement and providing access to the waterfront;
- has received public support through extensive public engagement activities;
- will cause less traffic disruption during construction;
- will cause less extensive air and noise impacts; and
- will have no adverse visual impact.

Only in respect of time for construction and costs can the Flyover Option be seen as performing better than the Tunnel Option.

Conclusions

30. In comparing the extent of reclamation, the Flyover Option will result in a lesser extent of permanent reclamation than the Tunnel Option by around 2.6ha. The Flyover Option will also result in a lesser extent of temporary reclamation than the Tunnel Option by around 1.5ha during construction. However, the temporary reclamation of the Tunnel Option will be short term and will have no permanent effect on the Harbour. Moreover, such temporary reclamation is necessary with a view to avoiding more extensive permanent reclamation.

31. The Flyover Option is not considered a reasonable alternative to the Tunnel Option in that the Flyover Option, though involving a lesser degree of “reclamation” within the meaning of the PHO, will in fact affect a greater extent of the Harbour when other areas of the Harbour impinged upon by the infrastructure of the Flyover Option are taken into account, as well as in terms of limited harbour-front enhancement, severe traffic disruption during construction and, importantly, the environmental and

visual impacts – taking also into account the overwhelming public support for the Tunnel Option. The higher costs of the Tunnel Option in economic terms are not considered to be excessive bearing in mind that they are offset and, indeed, outweighed by the much more significant social and environmental benefits of the Tunnel Option in comparison with the Flyover Option. In all circumstances, including social, environmental and economic implications, it is therefore concluded that the Flyover Option is NOT a reasonable alternative to the Tunnel Option.

32. The Trunk Road Tunnel serves best to protect and preserve the Harbour, among all the options that have been assessed and is consistent with the PHO as clarified by the CFA judgment. This option has predominant public support as the preferred Trunk Road scheme, following extensive consultations with various public, advisory and relevant statutory bodies.

Civil Engineering and Development Department
October 2008

LEGEND :

- CUT & COVER TUNNEL
- ELEVATED STRUCTURE
- AT-GRADE ROAD
- EXTENT OF PERMANENT RECLAMATION (LAND FORMATION)

N

817 000 N

VICTORIA HARBOUR

EXISTING IEC

EXISTING CROSS HARBOUR TUNNEL

PROPOSED SCL RAILWAY ALIGNMENTS

SLIP ROAD 8

EXISTING MTR TSUEN WAN LINE

SLIP ROAD 1

SLIP ROAD 2

SLIP ROAD 3

TRUNK ROAD TUNNEL UNDER CRIII

EXPO DRIVE EAST PIER

CRIII LIMIT

WDII REVIEW STUDY AREA

HKCEC EXTENSION

HKCEC

816 000 N

CAUSEWAY BAY TYPHOON SHELTER

RHKYC

EX-PCWA BASIN

CROSS HARBOUR TUNNEL PORTAL

POC

VICTORIA PARK

WAN CHAI EAST SEWAGE SCREENING PLANT

PROPOSED NIL RAILWAY ALIGNMENT

EXISTING WAN CHAI FERRY PIER

836 000 E

837 000 E

838 000 E

DATE: 2008-10-15 15:20:03

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WAN CHAI DEVELOPMENT PHASE II – DESIGN AND CONSTRUCTION FOR TRUNK ROAD TUNNEL OPTION

TRUNK ROAD SCHEME - TUNNEL OPTION

FIGURE 2.1

p:\projects\60041297\DRAWING\REPORT\FLYOVER\CCM\ENGLISH\FL3\FIGURE 2.1.dgn

SCALE A3 1 : 8000

LEGEND :

- CUT & COVER TUNNEL
- ELEVATED STRUCTURE
- AT-GRADE ROAD
- EXTENT OF PERMANENT RECLAMATION (LAND FORMATION)

N

817 000 N

816 000 N

VICTORIA HARBOUR

EXISTING IEC

EXISTING CROSS HARBOUR TUNNEL

PROPOSED SCL RAILWAY ALIGNMENTS

EXISTING MTR TSUEN WAN LINE

SLIP ROAD 1

SLIP ROAD 2

SLIP ROAD 3

SLIP ROAD 8

TRUNK ROAD TUNNEL UNDER CRIII

EXPO DRIVE EAST PIER

CRIII LIMIT

WDII REVIEW STUDY AREA

HKCEC EXTENSION

HKCEC

RHKYC

EX-PCWA BASIN

CAUSEWAY BAY TYPHOON SHELTER

CROSS HARBOUR TUNNEL PORTAL

POC

VICTORIA PARK

PROPOSED NIL RAILWAY ALIGNMENT

EXISTING WAN CHAI FERRY PIER

5500
5100
4900
4700
4500
4300
4100
3900
3700
3500
3300
3100
2900
2700

836 000 E

837 000 E

838 000 E

DATE 2008-10-15 11:22:41

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WAN CHAI DEVELOPMENT PHASE II – DESIGN AND CONSTRUCTION FOR TRUNK ROAD TUNNEL OPTION

TRUNK ROAD SCHEME - FLYOVER OPTION

FIGURE 2.2

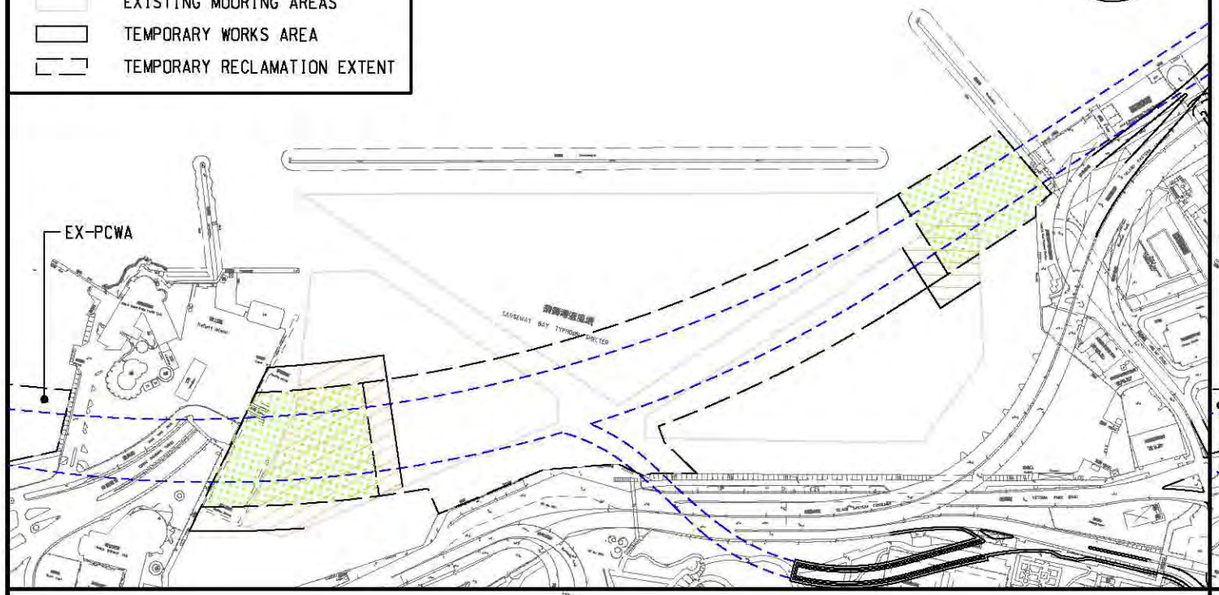
p:\projects\60041297\DRAWING\REPORT\FLYOVER\CCM\ENGLISH\FL3\FIGURE 2.2.dgn

SCALE A3 1 : 8000

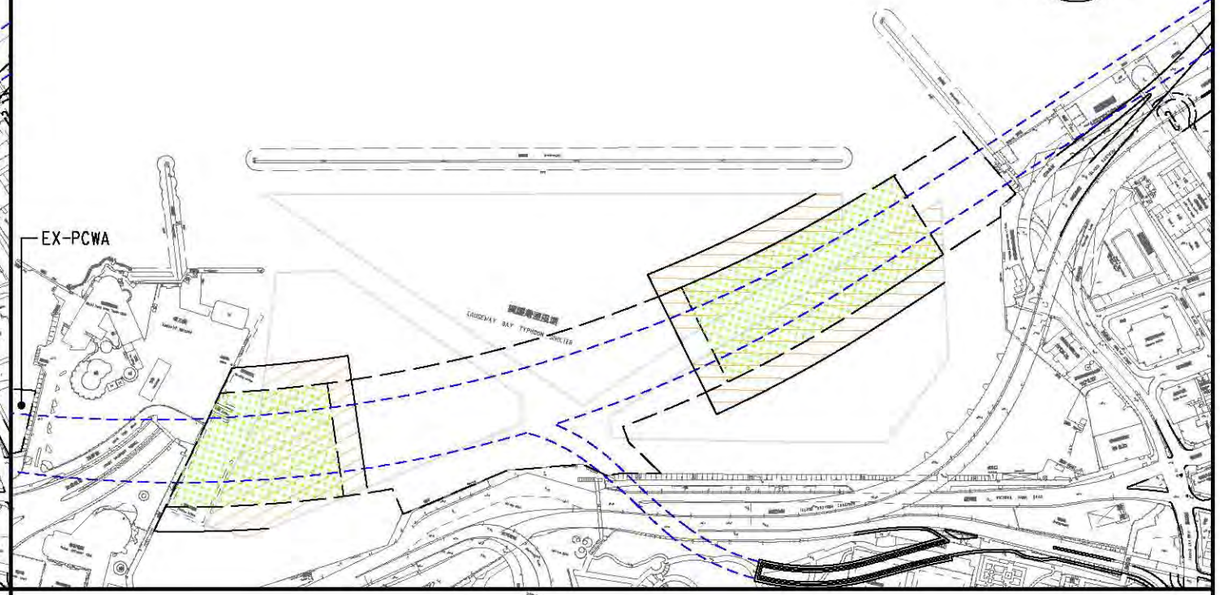
LEGEND:

- CWB TUNNEL
- ACTIVE TEMPORARY RECLAMATION AREAS
- AFFECTED MOORING AREAS
- EXISTING MOORING AREAS
- TEMPORARY WORKS AREA
- TEMPORARY RECLAMATION EXTENT

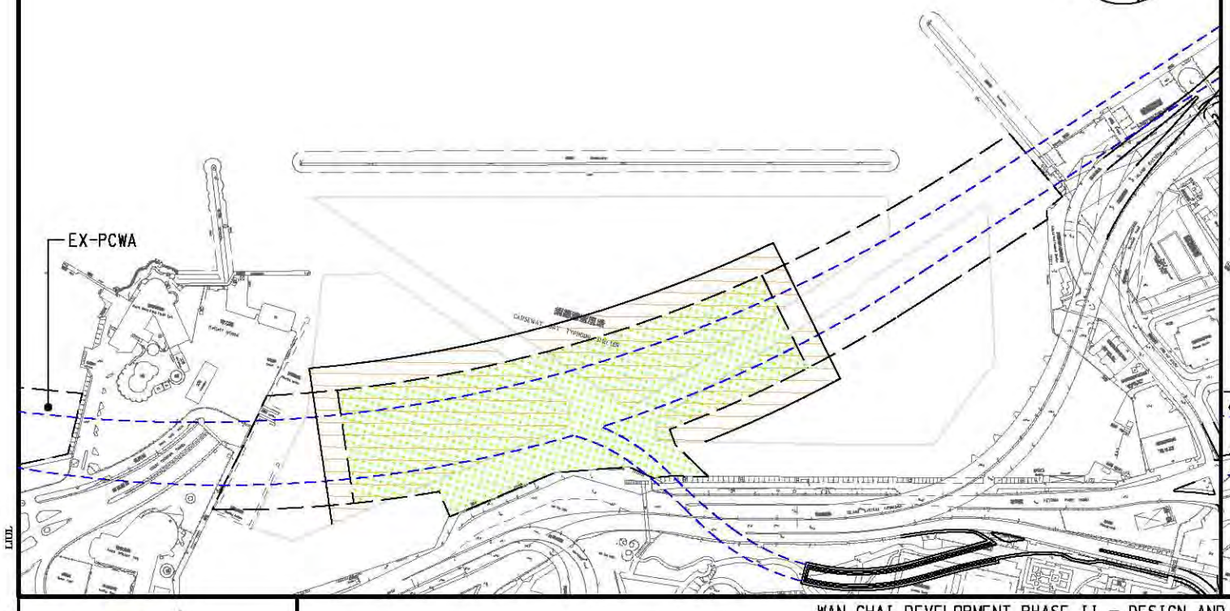
STAGE 1



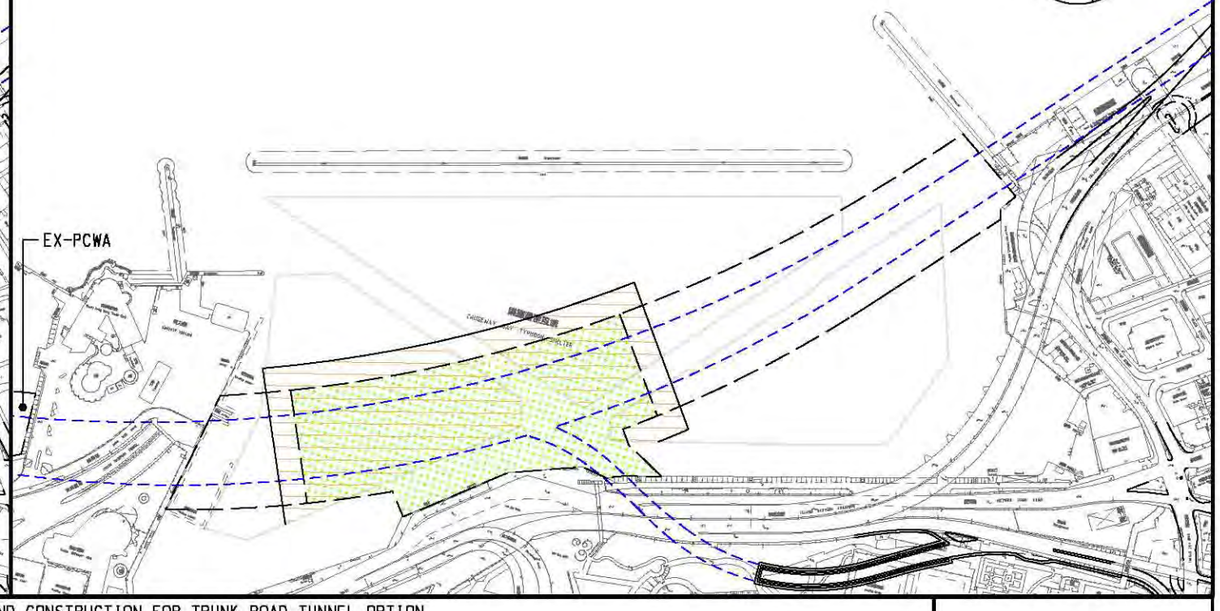
STAGE 2



STAGE 3



STAGE 4



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WAN CHAI DEVELOPMENT PHASE II – DESIGN AND CONSTRUCTION FOR TRUNK ROAD TUNNEL OPTION

CONSTRUCTION STAGING AT CBTS

FIGURE 3.1

Plot File by : 2008-9-16

p:\projects\60041297\DRAWING\REPORT\FLYOVER\CCM\FIGURE 3.1.dgn

LEGEND:

- TRUNK ROAD FLYOVER OPTION
- TEMPORARY RECLAMATION FOR TRAFFIC DIVERSION
- TEMPORARY RAMP STRUCTURE
- TEMPORARY TRAFFIC DIVERSIONS
- TRAFFIC FLOW
- PILE CAP FOR TEMPORARY BRIDGE

816 000 N

TRUNK ROAD

TEMPORARY ROAD B

TEMPORARY ROAD A

CAUSEWAY BAY TYPHOON SHELTER

TEMPORARY RAMP STRUCTURE Z

TEMPORARY BRIDGE STRUCTURE W

IEC(E/B)

IEC(W/B)

PROPOSED LOCATIONS OF PILE CAPS FOR TEMPORARY BRIDGE

EXISTING IEC

VICTORIA PARK ROAD (E/B)

VICTORIA PARK ROAD (W/B)

HING FAT STREET

TEMPORARY RAMP STRUCTURE X

TEMPORARY RAMP STRUCTURE Y

815 500 N

837 800 E

838 300 E

WAN CHAI DEVELOPMENT PHASE II – DESIGN AND CONSTRUCTION FOR TRUNK ROAD TUNNEL OPTION

TEMPORARY TRAFFIC DIVERSIONS FOR CONSTRUCTION OF IEC LINK AND RECONSTRUCTION OF EXISTING IEC WITH NOISE BARRIER IN FLYOVER OPTION

FIGURE 3.2

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Plot file by : 2008-10-13 akh

p:\projects\60041297\DRAWING\REPORT\FLYOVER\CBTS\FIGURE 3.2_R2.dgn

A3 1 : 5000