

第二十七期中九龍幹線通訊

Issue No. 27 - Central Kowloon Route (CKR) Newsletter

九龍灣的臨時填海

中九龍幹線的第二期公眾參與活動在2012年12月初展開。到目前我們已如期舉行多項公眾參與活動，並將在2013年2月2日舉辦公眾論壇，專題討論在九龍灣進行臨時填海，以在海床建造中九龍幹線的海底隧道。本期通訊亦就這課題作專題報導。

中九龍幹線的走線

中九龍幹線全長4.7公里，採用雙程三線分隔車道的設計，連接西九龍的油麻地交匯處與東九龍的啟德發展區和九龍灣道路網，成為貫通中九龍的快速道路。

我們在2007年至2009年進行勘測及初步設計研究檢討過往在中九龍幹線研究過的40多個走線方案，經過就現有樓宇/設施、環境、土地及交通方面影響的詳細比較，再參考公眾參與過程中所收集到的意見，選取現時的走線。選取的走線已獲立法會、油尖旺、九龍城和觀塘區議會的普遍支持。

中九龍幹線主要由3.9公里長的隧道組成，西起友翔道，沿甘肅街，經彌敦道進入京士柏、何文田、馬頭圍、馬頭角，再經過九龍灣，在啟德發展區返回地面。隧道主要在深入地底的岩層建造。所以，建造中九龍幹線的隧道不會影響現有樓宇的地基，亦不涉及收回及遷拆任何私人樓宇。

Temporary Reclamation in Kowloon Bay

The Phase 2 Public Engagement exercise for Central Kowloon Route (CKR) commenced in early December 2012. We have organized a series of public engagement activities as scheduled and will conduct a public forum on 2 February 2013 to discuss the temporary reclamation in Kowloon Bay for construction of an underwater tunnel. This issue of newsletter will report on this topic.

The Alignment of CKR

CKR is a 4.7km long dual 3-lane trunk road across central Kowloon linking West Kowloon at Yau Ma Tei Interchange with the Kai Tak Development and road network at Kowloon Bay in East Kowloon.

In the investigation and preliminary design stage in 2007 to 2009, we reviewed over 40 alignment options in the previous CKR studies. The present alignment was selected after comparing the impacts of the various options on buildings / community facilities, environment, land and transport and making reference to public comments collected in the public engagement exercise. The selected alignment was generally supported by Legislative Council, Yau Tsim Mong, Kowloon City and Kwun Tong District Councils.

The alignment of CKR mainly consists of a 3.9 km long tunnel starting from Yau Cheung Road, running along Kansu Street, crossing Nathan Road and entering King's Park, Ho Man Tin, Ma Tau Wai and Ma Tau Kok, crossing Kowloon Bay and surfacing again in Kai Tak Development Area. The tunnel will be constructed mainly in rock stratum deep underground. Hence, the construction of CKR will not affect the existing building foundations and will not involve resumption and demolition of any private buildings.



《保護海港條例》

幹線由九龍城碼頭至啟德發展區一段長約370米的隧道會經過九龍灣海床。由於現場的各種限制，該段隧道需以臨時填海方法建造。

由於工程涉及在維多利亞港進行臨時填海，我們須要按《保護海港條例》的要求提出具有力和令人信服的資料，證明臨時填海有凌駕性的公眾需要；並無其他合理可替代填海的方案；以及建議的臨時填海範圍亦是最小的。

Protection of the Harbour Ordinance

A 370 m long section of the CKR tunnel between the Kowloon City Ferry Pier to the Kai Tak Development Area will pass through the seabed of Kowloon Bay. Due to various site constraints, it will have to be constructed using the temporary reclamation method.

Since the works involve temporary reclamation in the Victoria Harbour, according to the Protection of the Harbour Ordinance, we have to demonstrate with cogent and convincing materials that there is an overriding public need for reclamation; there is no reasonable alternative to reclamation; and the proposed extent of temporary reclamation is the minimum.

凌駕性公眾需要

現時連接九龍東西的主要道路，包括龍翔道、界限街、太子道西、亞皆老街、窩打老道、加士居道行車天橋以及漆咸道北等的交通負荷已接近飽和，經常出現交通擠塞情況。政府已在過往實施各項地區性改善工程和交通管制措施以改善交通情況。惟道路兩旁土地經已發展，可以用以進行改善的空間十分有限。所以這些措施只能在局部地區帶來有限的短期紓緩作用。要徹底改善來往中九龍東西方向交通的問題，必需透過盡早完成中九龍幹線，提供一條快速替代道路，繞過現時擠塞的路段，並增加道路容量以應付東西向的交通。據估算，在2021年早上繁忙時間使用中九龍幹線來往九龍灣與西九龍的行車時間只需約5分鐘，與沒有中九龍幹線的情況比較節省約25至30分鐘。萬一有任何九龍東西幹道受阻，造成嚴重擠塞，中九龍幹線更能發揮作用。

除解決交通擠塞外，中九龍幹線亦具經濟、社會及環境效益。在經濟方面，估計在2030年中九龍幹線可為市民每日節省超過12萬小時人次的行程時間，經濟價值約為每年26億元。節省行車時間更可促進地區間的聯繫，支持經濟及社會持續發展。在環境方面，中九龍幹線將現有連接九龍東西部主要道路的交通分流，減少地面道路的車輛數目，從而紓緩交通擠塞所造成的污染，改善環境。

由於有迫切需要建造中九龍幹線以紓緩現有九龍區主要東西幹道的交通擠塞、而幹線亦具環境改善及經濟和社會效益，建造中九龍幹線是有凌駕性的公眾需要。

Overriding Public Need

The traffic on existing major east-west link in Kowloon, including Lung Cheung Road, Boundary Street, Prince Edward Road West, Argyle Street, Waterloo Road, Gascoigne Road Flyover and Chatham Road North is nearing saturation and traffic congestion frequently occurs. The Government has implemented local traffic management and improvement measures. However, since the areas on both sides of the existing east-west corridors are highly developed, there is little or no room for improvement. As a result, these measures can only alleviate local traffic problems in the short term. To effectively resolve the east-west traffic problems in Central Kowloon, CKR should be commissioned as soon as possible to provide an alternative route to bypass congested road sections and increase the capacity for east-west traffic movements. It is estimated that the journey time between West Kowloon and Kowloon Bay in the morning peak in 2021 would only take about 5 minutes resulting in a saving of 25 to 30 minutes as compared to that without CKR. CKR is more important if there is any serious traffic congestion resulting from blockage of any east-west corridor.

Apart from alleviating the existing traffic congestions, CKR will also yield economic, social and environmental benefits. On economic aspect, it is estimated that by 2030, the daily travel time savings will reach 120 thousands passenger hours bringing an economic value of \$2.6 billion per annum. Reduction in journey time will also improve connection between districts supporting the sustainable economic and social developments. On the environmental aspect, CKR will divert traffic away from major east-west corridors and reduce traffic at surface level thus mitigating the pollution resulting from traffic congestion and improving the environment.

Since there is an urgent need for the construction of CKR to alleviate the existing traffic congestions and CKR can also improve the environment and yield economic and social benefits, there is an overriding public need for constructing CKR.

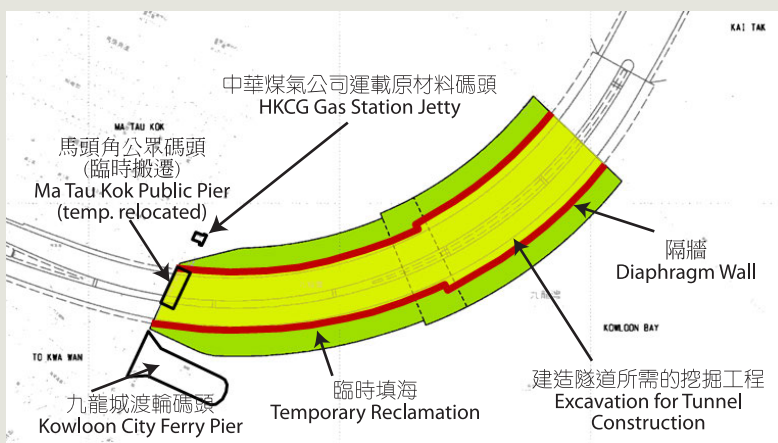


填海範圍

海底隧道會在符合道路設計的安全標準的大前提下，以最直接及最短的路線連接馬頭角及啟德發展區。所以，現時所需的臨時填海的長度是最短的。填海的闊度約為90米，會在連續隔牆的兩旁提供各約20米闊的工作平台。按中環灣仔繞道項目在銅鑼灣避風塘建造海底隧道的經驗，這闊度僅足夠進行各項建造操作及供建築車輛運行，所以亦是最小的。

Extent of Reclamation

The proposed underwater tunnel will connect Ma Tau Kok and Kai Tak Development through the most direct and shortest route taking into the need for complying with road design standards and safety requirements. As such, the length of the required temporary reclamation is the minimum. The width of the temporary reclamation is about 90 m and will provide about a 20m-wide working platform on each side of the diaphragm wall. According to the experience of the construction of underwater tunnel in Central-Wan Chai Bypass project in the Causeway Bay Typhoon Shelter, this width is just adequate for the various construction activities and circulation of construction vehicles and is therefore also the minimum.



建造九龍灣海底隧道需要進行臨時填海
Temporary reclamation at Kowloon Bay
required for cut-and-cover tunnel
construction

中環灣仔繞道工程的臨時填海
Temporary reclamation for Central Wan Chai Bypass



結論：

總括而言，在九龍灣進行臨時填海以建造中九龍幹線的海底隧道具凌駕性公眾需要。同時，沒有合理的不涉及填海的替代方案。而建議的填海範圍亦是最小。所以，在九龍灣進行臨時填海，符合《保護海港條例》的三項測試準則。

Conclusion:

In conclusion, there is an overriding public need for the construction of the underwater tunnel portion of Central Kowloon Route by temporary reclamation in Kowloon Bay. Furthermore, there is no reasonable alternative that does not involve reclamation. The extent of reclamation is also the minimum. Hence, the temporary reclamation in Kowloon Bay fulfils the three testing principles in the Protection of Harbour Ordinance.

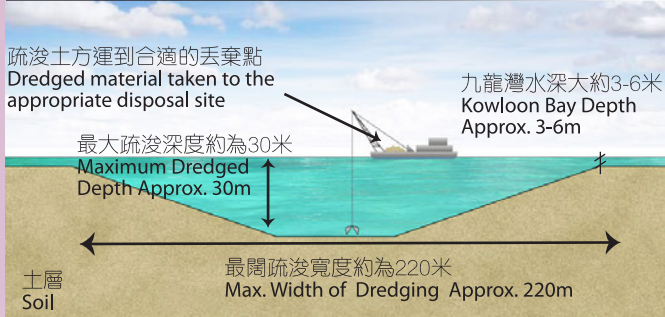
選取走線 - 無需填海的建造方法

在確定中九龍幹線的凌駕性公眾需要後，我們亦考慮是否可以用不需填海的方法建造中九龍幹線的海底隧道。如沒有的話，有沒有不涉及填海的走線。

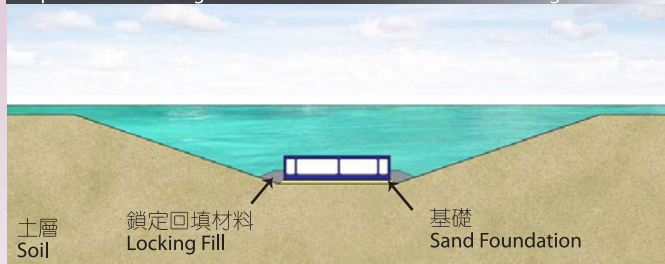
(1) 沉管隧道

我們曾考慮的其中一個建造方法是採用沉管隧道。但這方法需疏浚大量海泥，在海床形成約220多米闊及深達30米的疏浚槽，以放置沉管。疏浚槽會影響馬頭角海堤、啟德海堤及馬頭角海堤附近私人樓宇的地基。在施工期間亦需臨時搬遷中華煤氣公司運載原材料的碼頭、馬頭角公眾碼頭，以及九龍城渡輪碼頭。因此，以沉管方法建造海底隧道，並不是合理的替代方案。

第一階段 - 在海床進行大面積疏浚
Step 1 - Extensive dredging of existing sea bed



第三階段 - 沉放及接駁預製組件和回填鎖定
Step 3 - Sink and Merge Pre-Cast Tunnel Units and Place Locking Fill



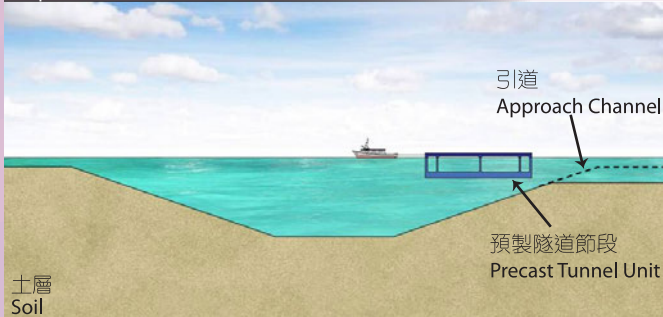
Selected Alignment – Construction Method Not Requiring Reclamation

After confirming the overriding public need of CKR, we have also considered whether there are alternative construction methods that do not involve reclamation. If not, whether there is any alternative alignments that do not involve reclamation.

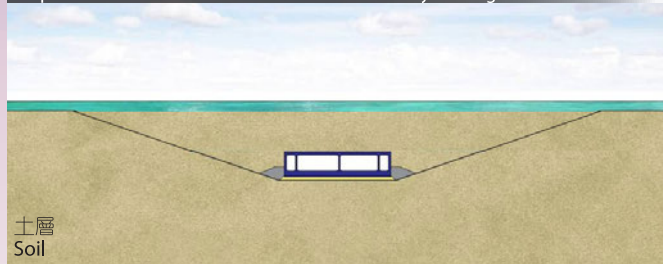
(1) Immersed Tube Tunnel (IMT)

We have considered the IMT construction method. However, this method would involve dredging considerable volume of marine mud to form a trench about 220 m wide and 30 m deep in the seabed for placing the IMT components. The trench will affect the structural integrity of the existing Ma Tau Kok and Kai Tak seawalls, and foundation of the private buildings adjacent to the seawall. The jetty of Hong Kong China Gas Co for transporting raw materials, the Ma Tau Kok Public Pier and the Kowloon City Ferry Pier would also have to be relocated during the construction period. IMT is therefore also not a reasonable alternative.

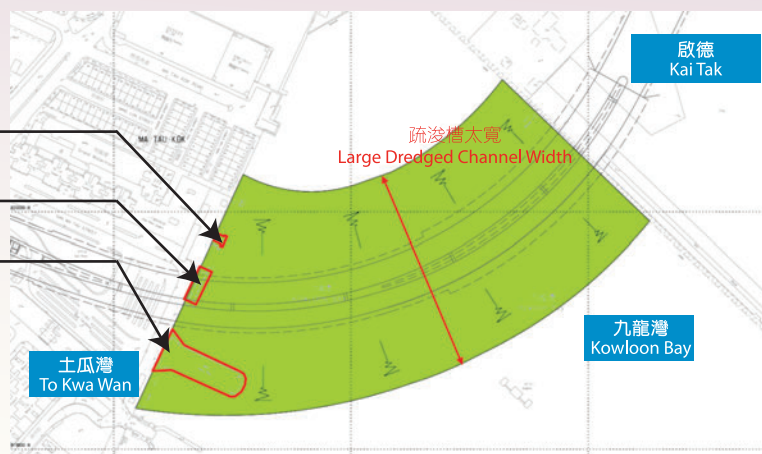
第二階段 - 將預製隧道組件浮運到指定地點
Step 2 - Float Pre-Cast Tunnel Unit into Position



第四階段 - 回填把海床恢復原狀
Step 4 - Backfill and Restore Sea Bed to as Previously Existing



中華煤氣公司運載
原材料碼頭
HKCG Gas Station Jetty
馬頭角公眾碼頭
Ma Tau Kok Public Pier
九龍城渡輪碼頭
Kowloon City Ferry Pier

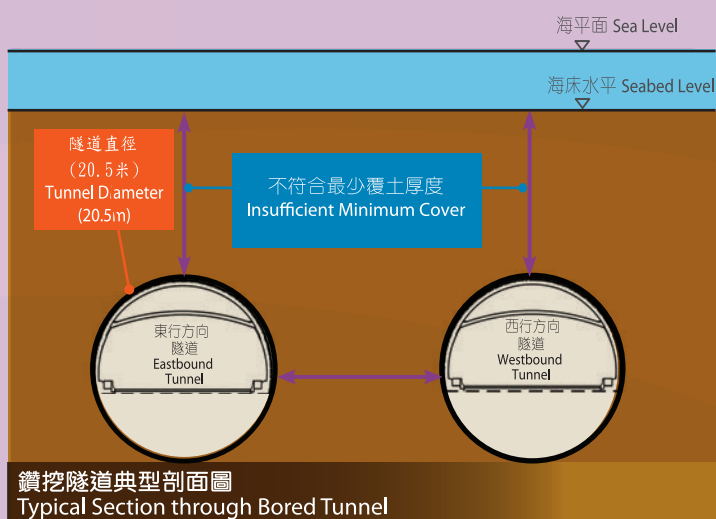


沉管式隧道建造方法並不是合理的替代方案

IMT construction method is not a reasonable alternative

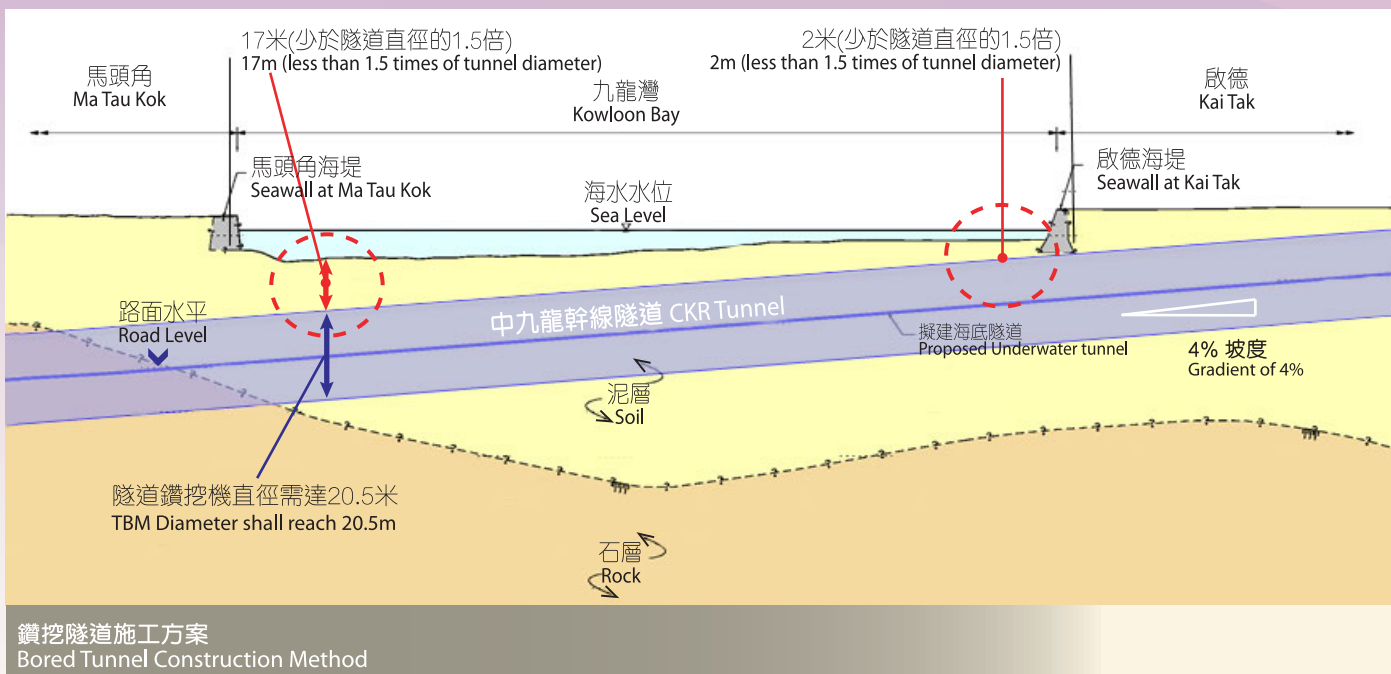
(2) 隧道鑽挖機

我們亦曾考慮採用隧道鑽挖機。如使用隧道鑽挖機，需要在完成隧道壁前，加大隧道內的氣壓，以保持隧道的穩定。但由於海底隧道上的海床泥層厚度不足，海水有機會湧入隧道，影響施工安全。所以，以隧道鑽挖機建造海底隧道亦不是合理的替代方案。



(2) Tunnel Boring Machine (TBM)

We have also considered the use of tunnel boring machine. If this method is adopted, the pressure within tunnel needs to be increased before the completion of tunnel lining to maintain the tunnel stability. Since there is insufficient soil cover at the seabed above the underwater tunnel, there is a risk for the sea water intruding into the tunnel and affecting the construction safety. Therefore, this option is also not a reasonable alternative.



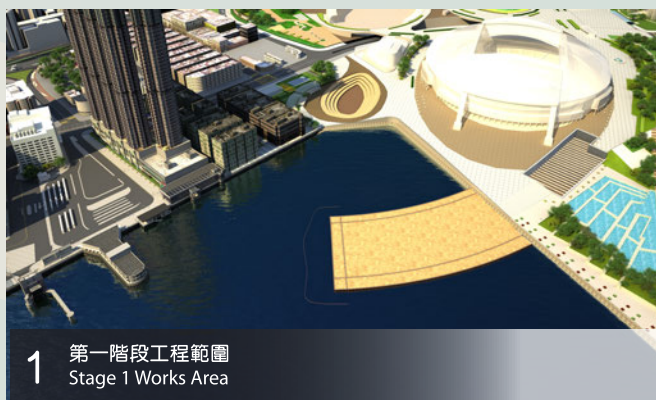
隧道鑽挖機亦不是合理的替代方案 TBM is not a reasonable alternative

選取走線 - 採用臨時填海的建造方法

由於沉管隧道及隧道鑽挖機均不是合理的替代方案，臨時填海配合明挖回填是唯一可行及安全的建造方法。

我們會沿海底隧道的走線以大型管樁建造臨時海堤。我們會在內進行填海作為施工的平台。我們會在這平台建造連續隔牆，形成圍堰，並在圍堰內進行挖掘工程，建造隧道的結構。隧道建成後會移除臨時填海及海堤，並回復海床原貌。

臨時填海工程會分兩階段進行。第一階段工程會先在九龍灣海域鄰近啟德發展區進行，興建面積約為1.8公頃的工地，以建造長約180米的隧道，需時大約26個月完成及回復海床原貌。第二階段工程會在九龍城渡輪碼頭對開海面進行，工地面積約為2.0公頃，建造長約190米的隧道，同樣需時大約26個月完成及回復海床原貌。

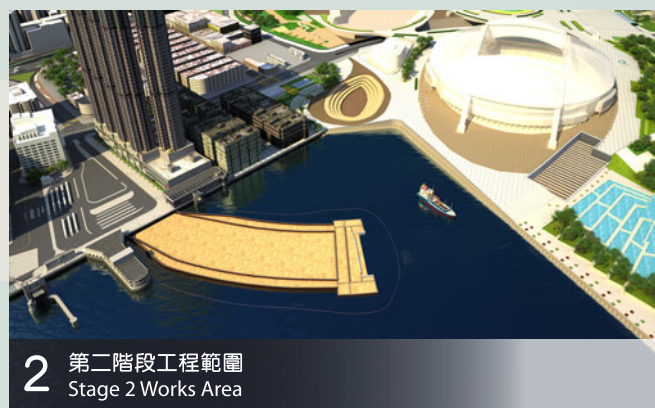


Selected Alignment - Construction Method Involving Temporary Reclamation

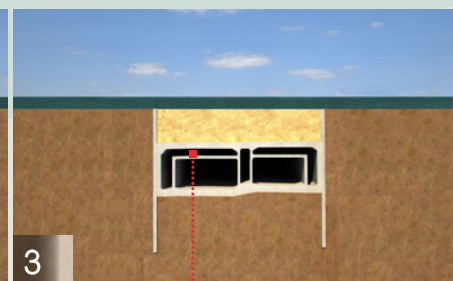
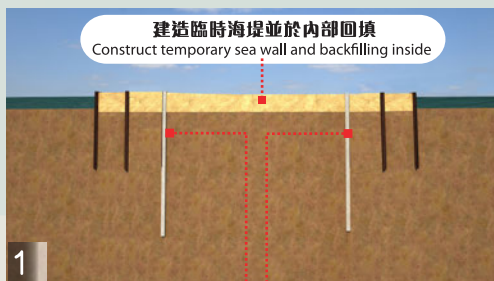
Since both the IMT and TBM methods are not reasonable alternatives, temporary reclamation with cut-and-cover construction is the only viable and safe construction method.

Temporary seawall will be constructed using large pipe-piles along the underwater tunnel alignment. The space enclosed by the temporary seawall will then be reclaimed to form a working platform. Diaphragm walls will be constructed on this platform to form a cofferdam. Excavation work will be carried out within the cofferdam to facilitate the construction of the tunnel structure. The temporary reclamation and seawall will be removed after the completion of the tunnel, and the seabed will be reinstated to its original level.

The temporary reclamation will be implemented in two stages. Stage 1 will proceed in the Kowloon Bay sea area near the Kai Tak Development Area to reclaim an approximately 1.8 hectares site for the construction of a 180 m long section of the tunnel which will take about 26 months to complete and reinstate the seabed to its original level. Stage 2 will proceed in the sea area fronting Kowloon City Ferry Pier to reclaim an approximately 2.0 hectares site for the construction of a tunnel of about a 190 m long section of the tunnel which will also take about 26 months to complete and reinstate the seabed to its original level.



海底隧道施工程序 Construction sequence of Underwater Tunnel



在臨時海堤平台上建造連續隔牆
Construct vertical diaphragm wall on temporary reclamation platform

挖掘到隧道水平，然後興建隧道
Excavate to the level of tunnel, then construct tunnel

隧道工程完成後，將隧道以上的空間回填到原來的海床水平，並移除海床上的臨時填海
After the completion of tunnel works, the space above tunnel will be backfilled to the original sea bed level, and the temporary reclamation above sea bed will be removed

曾經考慮的其他走線

我們在2007年至2009年進行勘測及初步設計研究亦曾探討有否其他替代走線，包括走線A，C至E，及選取的走線(走線B)。

走線A是全陸地走線，不涉及填海。惟走線A有一段約600米長的隧道會經土瓜灣木廠街一帶的數十幢私人樓宇。受影響的私人樓宇需要被收回及拆卸，以進行工程。走線A並不是合理的替代走線。

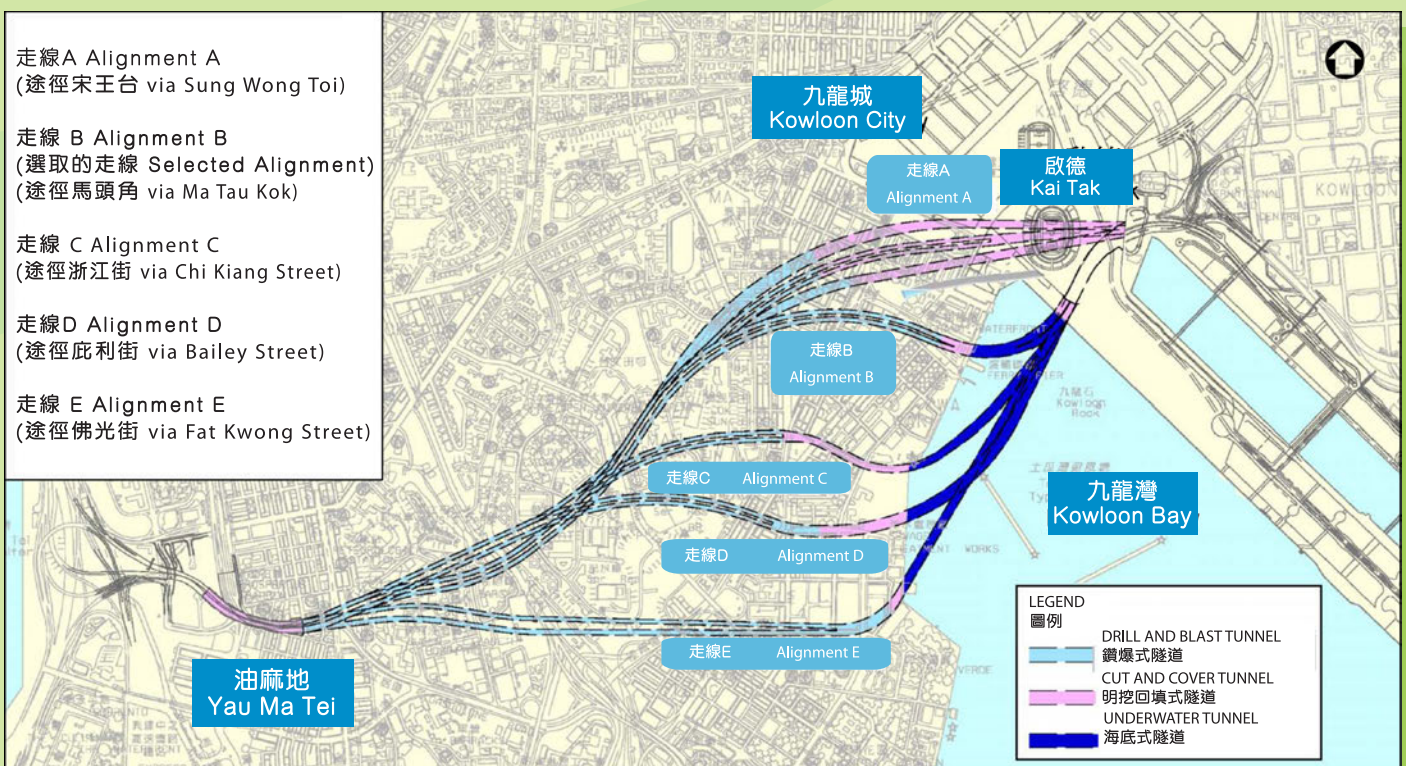
雖然走線C至E皆穿過現有道路及沿岸未發展的地帶，再經海路連接啟德交匯處，但亦會涉及收回及拆卸私人樓宇，而它們所需的填海範圍比走線B較大，所以走線C至E亦不是合理的替代走線。唯有走線B，即現時選取的走線，只需臨時使用現有的九龍城碼頭公共運輸交匯處進行建造工程，但不涉及收回及拆卸私人樓宇，而且所需的填海範圍亦最小。

Other Alternative Alignments Considered

In the Investigation and Preliminary Design stage between 2007 and 2009, we explored if there were other alternative alignments, including Alignments A, C to E, and the present Alignment (Alignment B).

Alignment A is an inland option which does not involve reclamation. However, it includes a 600m long tunnel which passes under tens of private buildings along Mok Cheong Street in To Kwa Wan. The affected private buildings would have to be resumed and demolished to implement the project. Alignment A is therefore not a reasonable alternative.

While Alignments C to E pass through existing roads and undeveloped areas along seashore and then across the sea to connect with Kai Tak Interchange, they also involve resumption and demolition of private buildings, and larger extent of temporary reclamation when compared with Alignment B. Therefore, Alignments C to E are also not reasonable alternatives. On the other hand, Alignment B only requires use of the Kowloon City Ferry Pier Public Transport Interchange for construction works but does not involve resumption and demolition of private properties, and the extent of temporary reclamation is the minimum.



第二期公眾參與活動

Phase 2 Public Engagement Exercise

我們在2012年12月初展開中九龍幹線的第二期公眾參與活動，以收集公眾對中九龍幹線的詳細設計及施工安排的意見。到目前，我們已按計劃舉行一連串的公眾參與活動，包括為沿線居民、環保團體、專業學會及其他持分者舉行10多場的焦點小組會議，以及於油麻地、何文田、土瓜灣和觀塘不同地點進行5次巡迴展覽。我們亦已諮詢油尖旺、九龍城、黃大仙及觀塘的區議會，和海濱事務委員會。此外，我們亦在2013年1月12日及1月19日分別在油尖旺區及九龍城區舉行兩場公眾論壇，廣泛探討中九龍幹線項目。我們藉此機會感謝各界人士積極參與並提供寶貴意見。

我們將在2013年2月2日舉辦專題論壇，討論九龍灣臨時填海。歡迎大家繼續踴躍出席。

We started the Phase 2 Public Engagement for CKR in early December 2012 to gather public views on the detailed design and construction arrangements of the project. A series of public engagement activities were carried out as scheduled, including over 10 focus group meetings with residents along the alignment of CKR, green groups, professional institutes and other stakeholders and five rounds of roving exhibitions at various locations in Yau Ma Tei, Ho Man Tin, To Kwa Wan and Kwun Tong. We have also consulted Yau Tsim Mong, Kowloon City, Wong Tai Sin and Kwun Tong District Councils, as well as the Harbourfront Commission. We have also conducted two public forums on 12 and 19 January 2013 in Yau Tsim Mong District and Kowloon City District respectively to collect views from the general public on CKR. We would like to express our gratitude to different sectors of the community for their active participation and valuable comments.

We will conduct a public forum on the temporary reclamation in Kowloon Bay on 2 February 2013 and will welcome your continued active participation.



請致電

2762-3601

預先登記

Please register by
calling 2762-3601

請踴躍參加
Please participate

聯絡資料 Contact Information

如對本工程有任何疑問及意見，可透過以下方法聯絡我們。
Should you have any enquiries and comments on the project, please contact us.

電話 Telephone



(852) 2762-3601

傳真 Fax



(852) 3764-0268

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www.ckr-hyd.hk

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九龍灣臨時填海專題討論 Public Forum for Temporary Reclamation in Kowloon Bay



2013年2月2日(星期六)
2 February 2013 (Sat)



下午2時半至5時半
2:30pm - 5:30pm

香港生產力促進局

Hong Kong Productivity Council

九龍塘達之路78號

78 Tat Chee Avenue, Kowloon Tong

