Harbourfront Commission

For discussion
on 7 January 2013

HC/05/2013

Central Kowloon Route -
Phase 2 Public Engagement Exercise

PURPOSE

This paper briefs the Commission on proposed temporary reclamation in Kowloon Bay for constructing the underwater tunnel of the Central Kowloon Route (CKR).

BACKGROUND

2. CKR is a 4.7km long dual-three lane trunk road with about 3.9 km of tunnel linking Yau Ma Tei Interchange in West Kowloon with the road network in Kai Tak Development and Kowloon Bay in East Kowloon. The layout plan of CKR is at **Annex 1**.

3. Highways Department (HyD) commenced the investigation and preliminary design (I&PD) Assignment of CKR in 2007 and conducted the first phase of public engagement in parallel to collect public views on the project. The first phase of public engagement was completed in 2009. We worked out the preferred alignment of CKR and the general arrangements for reprovisioning of the affected public facilities taking into account public feedback. We also obtained the support of the Legislative Council Panel on Transport, the concerned District Councils and the public for these proposals.

4. The I&PD assignment was completed at the end of 2010. We commissioned the Design and Construction (D&C) Assignment in 2011 to undertake the detailed design of CKR and work out the construction arrangements. We are also conducting the Environmental Impact Assessment (EIA) for the project in parallel and are refining the design of CKR taking into account the EIA findings so as to improve the environmental performance of the project.

5. With notable progress achieved on the D&C Assignment, we started the second phase of public engagement for CKR in early December 2012 to consult the public on the detailed design and construction arrangements.

6. We aim to finalize the EIA report in parallel with public engagement and will apply to the Director of Environmental Protection for approval for the EIA report and issue of the Environmental Permit in accordance with the procedures of the EIA Ordinance. The CKR project will then be gazetted in accordance with the Roads (Works, Use and Compensation) Ordinance. After completion of the required statutory procedures, we will apply to Legislative Council for funding to carry out the works in accordance with the procedures for the Public Works Programme. We anticipate that the project will commence in around 2015 for completion in about five years.

7. Further information on the CKR project are included on the project website at www.ckr-hyd.hk

PREFERRED ALIGNMENT

8. In identifying the most appropriate alignment option for CKR, the consultants of the I&PD Assignment reviewed more than 40 proposals considered in previous consultancy studies on CKR including tunnel and flyover options running through various parts of the Kowloon Peninsula as far north as Boundary Street and as far south as the harbour area at the southern tip of Tsim Sha Tsui. The review confirmed that, taking into account factors such as environmental impacts, land impacts, traffic implications and connections to existing road networks, the tunnel options were better than flyover options and among the tunnel options those running through central Kowloon were more favourable than those running through south and north Kowloon.

9. The consultants then looked into the alignment options for the eastern and western ends of the CKR which will be connected by a deep bored tunnel across central Kowloon. For the eastern end, the consultants concluded that the preferred option should follow the previous indicative alignment which is located generally in areas

geologically suitable for tunneling works. It will run through the open area in Kowloon City Ferry Pier thus avoiding the adjacent residential buildings.

CKR AND THE HARBOUR

10. The following issues on CKR are related to the harbourfront –

(a) construction of a section of underwater tunnel about 370 m in length in the seabed of Kowloon Bay;

(b) Yau Ma Tei –

(i) slip roads connecting CKR with Yau Ma Tei Interchange;

(ii) noise barriers and enclosures for the slip roads and the section of Gascoigne Road Flyover between Nathan Road and Tung Kun Street;

(iii) landscape decks at the tunnel portal; and

(iv) the West Ventilation Building to be constructed at Yau Ma Tei Interchange;

(c) Ma Tau Kok –

(i) temporary relocation of Kowloon City Ferry Pier Public Transport Interchange (PTI) for construction of the CKR cut-and-cover tunnel and reinstatement of the interchange upon completion of construction works;

(ii) landscape deck covering the PTI to mitigate environmental impact; and

(iii) a 40 m wide by 160 m long waterfront promenade to be constructed in front of the PTI in accordance with the Kai Tak OZP No. S/K22/4;

(d) Kai Tak Development (KTD) –

(i) Kai Tak Interchange with slip roads connecting CKR with Kai Fuk Road, Kai Cheung Road, Road D2 and the South Apron of KTD; and

(ii) East Ventilation Building and Administration Building for CKR to be constructed adjacent to the tunnel portal of the Kai Tak Tunnel.

11. This paper focuses on the proposed temporary reclamation at Kowloon Bay for the construction of the underwater tunnel of CKR. We will consult the Commission on the elements of CKR mentioned in paragraphs 10(b) to (d) separately at a later stage.

COMPLIANCE WITH PHO

12. As the underwater tunnel will be constructed in the seabed of Kowloon Bay, it will not involve any permanent reclamation. However, it has been found in the I&PD Study that because of various site constraints temporary reclamation will be required for the construction of the tunnel. In the judgment of the Court of Final Appeal (CFA) on *Town Planning Board v Society for the Protection of the Harbour Limited* delivered on 9 January 2004, the CFA held that there is a presumption under the Protection of the Harbour Ordinance (Cap 531) (PHO) against reclamation in the Victoria Harbour which could only be rebutted if an overriding public need for reclamation has been established. Moreover,

it has to be proved that there is no reasonable alternative and that the proposed extent of reclamation does not go beyond the minimum of that which is required by the overriding need. These requirements are addressed in the ensuing paragraphs.

OVERRIDING PUBLIC NEED

13. The term "overriding public need" would include the economic, environmental and social needs of the community and must be compelling and present.

(A) Traffic Justifications

14. The traffic along the existing major east-west corridors in central Kowloon, including Lung Cheung Road, Boundary Street, Prince Edward Road West, Argyle Street, Waterloo Road, Gascoigne Road Flyover and Chatham Road North is approaching or has exceeded their design capacities resulting in frequent serious traffic congestion.

15. The main function of CKR is to provide an alternative strategic route for diverting traffic away from the existing east-west corridor to alleviate traffic congestion and cater for anticipated traffic growth. In this regard, the current journey time between West Kowloon and Kowloon Bay is over 25 minutes (representing an average speed of 11 km/hr). Without CKR, the journey time will increase to over 35 minutes in 2021 (representing an average speed of 8 km/hr). On the other hand, with CKR, the journey time will reduce to 5 minutes only. The predicted traffic conditions in 2021 with and without CKR are shown at **Annex 2**. The general improvements in traffic conditions over central Kowloon resulting from the commissioning of CKR will also benefit adjacent areas including Wong Tai Sin, Ho Man Tin and Kowloon City.

16. The functions of CKR cannot be replaced by local traffic management and improvement measures because the area on both sides of the existing east-west corridors are highly developed leaving little or no room for further road widening. Also, local road/junction improvement works and traffic control measures can only alleviate local traffic

problems in the short term and cannot resolve the problems resulting from the need for a strategic route connecting east and west Kowloon.

(B) Connectivity

17. CKR will connect with the highways on the eastern and western sides of Kowloon thus forming a key component of the strategic road network. In this regard, the Kai Tak Interchange on the eastern side will connect CKR with the road network in Kowloon Bay, Kwun Tong and Kai Tak Development (KTD), making it convenient to travel between these areas and West Kowloon. CKR together with the proposed Trunk Road T2 at KTD and Tseung Kwan O – Lam Tin Tunnel will form Route 6 with a total length of 12.5km that will directly link up West Kowloon with Tseung Kwan O.

18. The Yau Ma Tei Interchange located on the western side will provide comprehensive slip roads connecting West Kowloon Highway and Lin Cheung Road. Vehicles can use West Kowloon Highway to access Western Harbour Crossing and Hong Kong Island in the south, Kwai Tsing Container Terminal and Hong Kong International Airport in the west as well as Northwest New Territories in the north. Vehicles can also access the West Kowloon Development Area, West Kowloon Terminus of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) and West Kowloon Cultural District via Lin Cheung Road.

(C) Other Benefits

19. On the economy, reduction in journey time resulting from CKR will enhance connection between districts and sustain economic development. On the environment, the diversion of traffic away from existing east-west corridors will reduce air and noise pollution resulting from traffic congestion. Enhanced connectivity and relief of traffic congestion will also improve mobility of the public satisfying social need of the community.

20. Given the important function of CKR in relieving the current traffic congestion and its economic, environmental and social benefits, there is a present and overriding public need for construction of CKR.

ALTERNATIVES TO RECLAMATION

21. With the overriding public need for CKR established, we have examined whether there are alternatives to reclamation by considering –

(a) whether the underwater tunnel (at **Annexes 3a to 3c**) included in the preferred alignment can be constructed in Kowloon Bay using methods that will not require temporary reclamation; and

(b) if not, whether there are alternative alignments that will not involve any reclamation.

(A) Method of Construction

22. We have considered the following methods which will not involve reclamation –

(a) immersed tube tunnel (IMT); and

(b) tunnel boring machine (TBM).

Immersed tube tunnel

23. IMT involves floating and sinking precast units into place below the seabed level like Cross Harbour Tunnel, Eastern Harbour Crossing and Western Harbour Crossing. Before sinking the precast units, excavation of a trench to founding level of the tunnel box is required.

24. However, to avoid land resumption of private buildings, CKR tunnel must pass relatively deeply underneath under Ma Tau Kok, which in turn would require a very deep trench (up to about 28m deep below the seabed, with side slopes). A typical section is shown on **Annex 4a** and the extent of dredging trench is shown on **Annex 4b**. This would undermine a large portion of existing seawall, Ma Tau Kok Public Pier, Kowloon City Ferry Pier and the pier of the Hong Kong and China Gas Co. Ltd (HKCG) and affect the stability of the onshore HKCG gas station and

the buildings behind Ma Tau Kok seawalls. Floating of precast units via an approach channel into Kowloon Bay would also require extensive dredging of the seabed of Kowloon Bay as shown on **Annex 4c**.

25. IMT method is therefore not a reasonable alternative for avoiding reclamation.

Tunnel boring machine

26. This method involves boring of circular tunnel section through the soil under the existing seabed. The bored tunnel surface will then be protected with tunnel concrete lining. For the dual 3-lane trunk road configuration with an additional climbing lane in eastbound carriageway, a circular tunnel bore of up to 20.5m diameter would be required.

27. For tunnelling beneath the soil in Kowloon Bay, the TBM construction would require a minimum soil cover of approximately 1.5 times the diameter of the bored tunnel above the tunnel to ensure ground stability in the vicinity. Throughout the Kowloon Bay, the soil cover would not be sufficient for safe construction with TBM. A typical section is shown on **Annex 5**.

(B) Alternative alignments

28. Having established that temporary reclamation is the only safe and practical method for constructing the underwater tunnel in Kowloon Bay under the preferred alignment, we have also considered whether there are alternative alignments that do not require reclamation. In this regard, we have considered the alignments labeled as "A", "C", "D" and "E" at **Annex 6**. (The preferred alignment is shown at the same Annex and labeled as "B").

Inland Option (Alignment A)

29. We have examined whether there are alignment options which will not involve reclamation. One of these is Alignment A at Annex 6. If the tunnel form is adopted, Alignment A will need to climb up gradually from the underground level at Ma Tau Wai to the ground

level at Kai Tak Interchange. As the tunnel alignment will be in conflict with the foundations of private buildings in Ma Tau Wai, dozens of private buildings need to be resumed and demolished. Alignment A is therefore not a reasonable alternative.

Marine Option (Alignments C to E)

30. We have also considered three marine alignments, namely C to E at Annex 6 passing through existing road corridors. These alignments will also necessitate demolition of several private buildings in To Kwa Wan. On the marine side, for alignments C to E, the corresponding lengths of the underwater tunnel ranges from 810 m to 1150 m, in which about 510 m of the underwater tunnel adjacent to Kai Tak seawall can only be constructed by cut-and-cover tunnel with temporary reclamation. Since Alignments C to E will involve resumption and demolition of private properties and larger extent of temporary reclamation, they are not reasonable alternatives.

Method of Construction Involving Temporary Reclamation

31. The analysis in the foregoing paragraphs shows that –

(a) the underwater tunnel in the preferred alignment cannot be constructed using methods that do not involve reclamation; and

(b) there are no reasonable alternative alignments that do not involve reclamation.

32. On the only remaining construction method that involves temporary reclamation as at shown **Annex 7**, construction will be carried out in two stages as shown at **Annex 8a** and **Annex 8b**, viz –

(a) Stage 1 – involving the construction of about 180 m of underwater tunnel on the eastern side of Kowloon Bay adjacent to KTD; and

(b) Stage 2 – involving the construction of about 190 m of underwater tunnel on the western side of Kowloon Bay adjacent to KTD.

33. The typical section of cut-and-cover tunnel at temporary reclamation is illustrated at **Annex 9** and the construction sequence for each stage is as follows –

(a) construction of seawalls using pipe piles to enclose the area to be reclaimed for the construction of the tunnel;

(b) reclamation of the space enclosed by the seawalls;

(c) construction of the diaphragm walls that will form part of the permanent structure of the tunnels on the temporary reclamation;

(d) excavation of the materials enclosed by the diaphragm wall to the founding level for construction of the structure of the tunnel;

(e) backfilling the excavation to the original seabed level upon the completion of the construction of the tunnel structure; and

(f) remove the temporary reclamation and restore the seabed to the original level.

34. The temporary reclamation will be required to provide a safe working platform for constructing the diaphragm walls. Diaphragm walls are proposed for constructing the underwater tunnel by cut-and-cover method because they are reliable and well-proven for constructing similar tunnel structures.

35. This proposed method of construction will satisfy the following constraints –

(a) preserving the existing marine facilities, such as Ma Tau Kok Public Pier, Kowloon City Ferry Pier, Hong Kong and China

Gas Company's (HKCG) Pier and associated onshore gas station, Ma Tau Kok and Kai Tak seawalls;

(b) maintaining normal operation of the stormwater outfall discharging into Kowloon Bay; and

(c) maintaining normal operation of the Kowloon City Ferry Pier and the HKCG Pier and its associated onshore gas station.

36. The consultants have also considered the following key factors on selection of feasible construction methods –

(a) minimization of reclamation;

(b) environmental impacts;

(c) allowing a reliable, safe and low risk construction method based on the available engineering techniques; and

(d) maintaining a fair and competitive open tendering (since the proposed construction method is proven and widely adopted).

MINIMUM EXTENT OF TEMPOARY RECLAMATION

37. The length of the temporary reclamation proposed is the minimum because the alignment of the underwater tunnel follows the shortest path connecting Ma Tau Kok with KTD taking into the need of avoiding resumption of private properties and making effective connection with the road network in KTD. As illustrated at Annex 9, the width of the temporary reclamation is about 90 m and will provide a working platform of about 20 m in width along the diaphragm walls. According to the experience acquired in constructing the underwater tunnel of the Central-Wan Chai Bypass in Causeway Bay Typhoon Shelter, this is the minimum width required for various construction operations and circulation of construction vehicles.

38. The area of the temporary reclamation for Stage 1 and 2 will be 1.8 ha and 2.0 ha respectively and will be the minimum extent of reclamation required for constructing the underwater tunnel since both the lengths and widths of the temporary reclamations will be the minimum. The construction works for each stage will be completed in about 26 months.

39. The temporary reclamation works will be removed after construction of the tunnel section and the reinstatement of the existing seabed. 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.

CONCLUSION

40. The foregoing analysis shows that –

(a) there is an overriding public need for the construction of CKR;

(b) the construction of the underwater tunnel of CKR in Kowloon Bay will involve temporary reclamation and there are no reasonable alternatives that will not involve reclamation; and

(c) the extent of temporary reclamation proposed is the minimum for fulfilling the overriding public need.

41. 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 CKR underwater tunnel at Kowloon Bay.

PUBLIC CONSULTATION

(A) Phase 1 Public Engagement

42. Public engagement activities were carried out as part of the preparation of draft Cogent and Convincing Materials Report in the I&PD stage. A public forum was held in To Kwa Wan on 7 February 2009 to discuss the construction arrangement of CKR tunnel in Kowloon Bay. A professional forum attended by members of Hong Kong Institution of Engineers, Hong Kong Institute of Architects, Hong Kong Institute of Surveyors, Hong Kong Institute of Planners, Hong Kong Construction Association and representatives of Mass Transit Railway Corporation Limited was held on 20 June 2009 to discuss the developments of the alignment options and likely impacts of the project on public facilities and the environment. Another public forum was held on 18 July 2009 to discuss the proposed temporary reclamation in Kowloon Bay.

(B) Phase 2 Public Engagement

43. CKR is currently at the detailed design stage. We have started the Phase 2 public engagement activities from 5 December 2012 to gather public views for further improvement to the detailed design of the CKR. We will conduct a series of public consultation activities on the proposed temporary reclamation in Kowloon Bay. The following table lists out the key public engagement activities –

Date	**Key Activities**
Dec 2012 – Jan 2013	Stakeholders briefing cum focus group meetings
13 Dec 2012	Consultation with Yau Tsim Mong District Council
8 Jan 2013	Consultation with Kwun Tong District Council
8 Jan 2013	Consultation with Wong Tai Sin District Council
10 Jan 2013	Professional forum for Temporary Reclamation
17 Jan 2013	Consultation with Kowloon City District Council
12 Jan 2013	Public forum in Yau Ma Tei
19 Jan 2013	Public forum in Kowloon City
2 Feb 2013	Public forum for Temporary Reclamation
Q2 2013	Report to the Task Forces of Harbourfront Commission

44. In particular, a pubic forum will be held on 2 February 2013 to collect public views on the CKR tunnel section at Kowloon Bay and on the following issues –

(a) Is there an overriding public need for CKR?

(b) If so, can the need be fulfilled using reasonable alternative options that will not involve reclamation?

(c) If not, is the proposed extent of the temporary reclamation minimum for satisfying the overriding public need?

45. We will report to the Task Force on Kai Tak Harbourfront Development and the Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing of Harbourfront Commission on the results of the public consultations for temporary reclamation and other issues in relation to the harbourfront in the second quarter of 2013.

ADVICE SOUGHT

46. Members are invited to note the alignment of CKR and recognise the overriding public need for the temporary reclamation for the construction of CKR.

Major Works Project Management Office
Highways Department
December 2012

Attachments

Annex 1 – CKR Genearl Layout Plan

Annex 2 – CKR Anticipated Traffic Condition in 2021

Annex 3a – CKR Underwater Tunnel Layout Plan at Kowloon Bay

Annex 3b – CKR Underwater Tunnel Typical Section

Annex 3c – CKR Underwater Tunnel Longitudinal Section

Annex 4a – Typical Section through Immersed Tube Tunnel (IMT)

Annex 4b – Extent of Dredged Trench for Immersed Tube Tunnel (IMT)

Annex 4c – Extent of Dredged Trench for Approach Transporting Immersed Tube Tunnel (IMT)

Annex 5 – Typical Section through Bored Tunnel

Annex 6 – CKR Alignment options

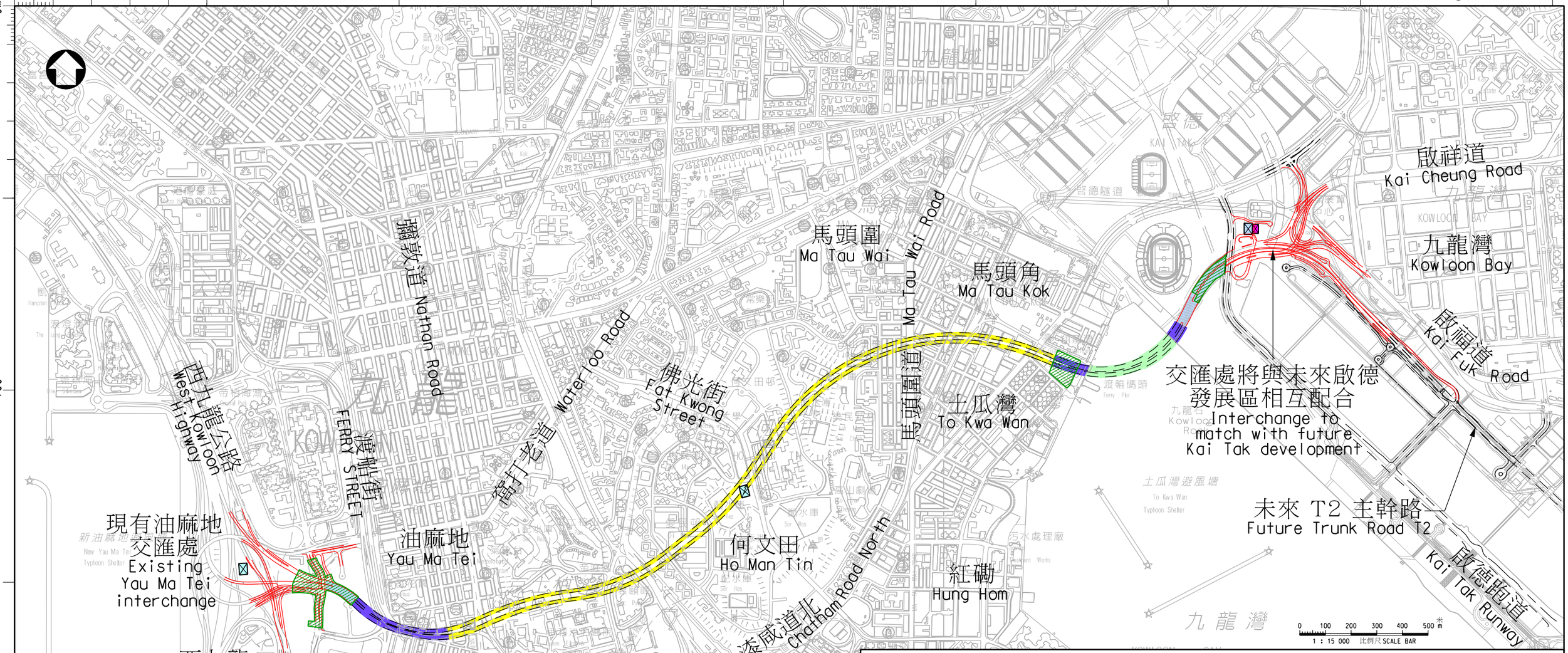
Annex 7 – Temporary Reclamation Layout Plan

Annex 8a – Construction Staging in Kowloon Bay (Stage 1)

Annex 8b – Construction Staging in Kowloon Bay (Stage 2)

Annex 9 – Typical Section of Cut-and-Cover Tunnel at Temporary Reclamation

Annex 1



圖例
Legend:

- 擬建鑽挖式隧道 Proposed bored tunnel
- 擬建明挖回填式隧道 Proposed cut-and-cover tunnel
- 擬建海底隧道 Proposed underwater tunnel
- 擬建高架/地面道路 Proposed elevated/at-grade road
- 擬建低於地面道路 Proposed depressed road
- 擬建綠化平台 Proposed landscaped deck
- 擬建通風大樓 Proposed ventilation building
- 擬建行政大樓 Proposed adminstration building

圖則名稱 plan title

中九龍幹線 - 總平面圖
Central Kowloon Route - General layout plan

設計 designed	C.W.KO 14/12/12	繪圖 drawn	M.W.YAN 14/12/12	圖則編號 plan no.	HMW6461TH-SK0385
覆核 checked	C.W.KO 14/12/12	批准 approved	M.S.LAM 14/12/12	比例 scale	A3 1:15000 A4 N.T.S.

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Annex 2

圖則名稱 plan title

中九龍幹線
- 2021年預測的交通情況

Central Kowloon Route
- Anticipated Traffic Condition in 2021

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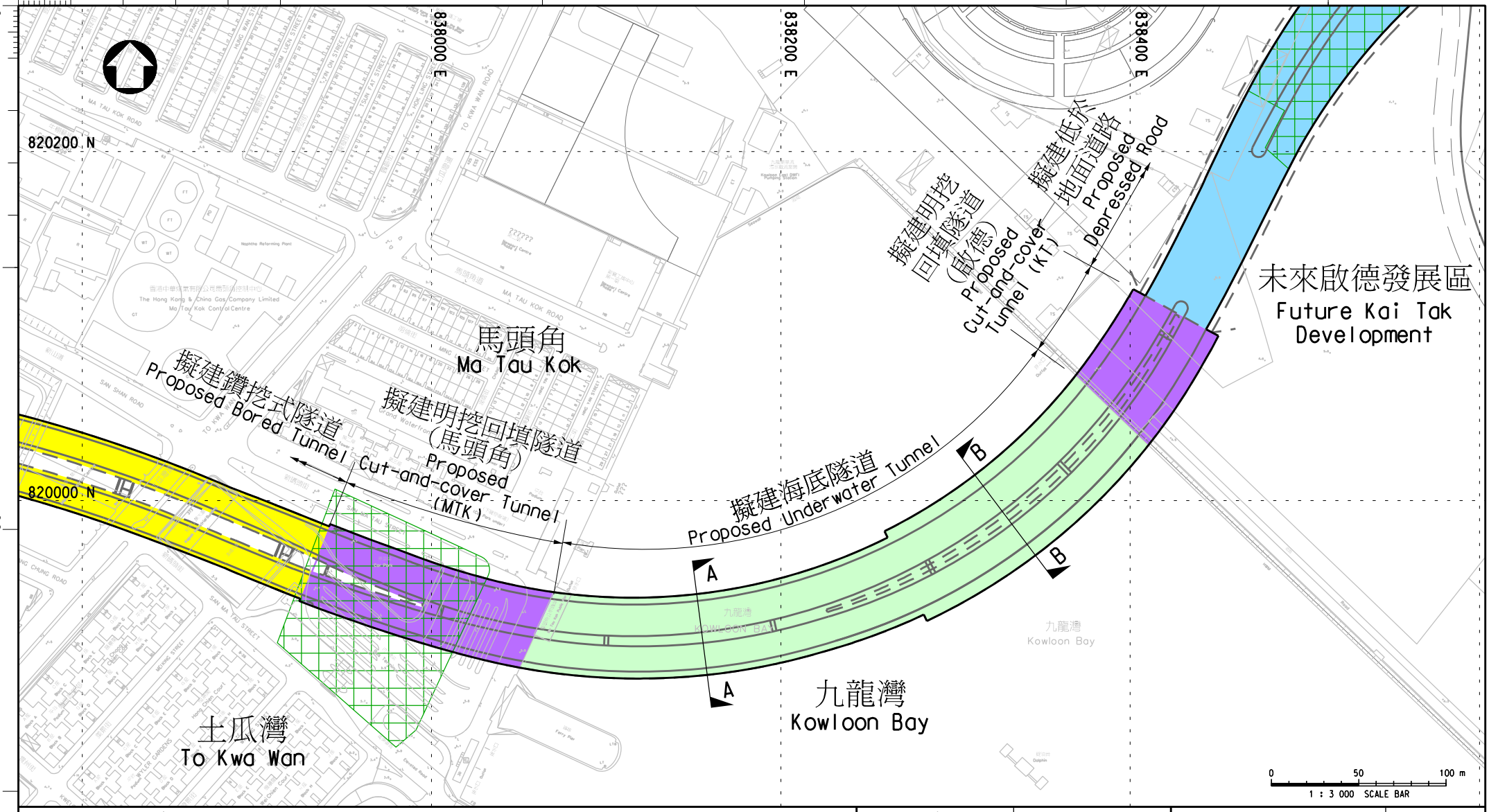
Annex 3a



圖則名稱 plan title

中九龍幹線 - 九龍灣海底隧道平面圖

Central Kowloon Route - Underwater Tunnel Layout Plan at Kowloon Bay

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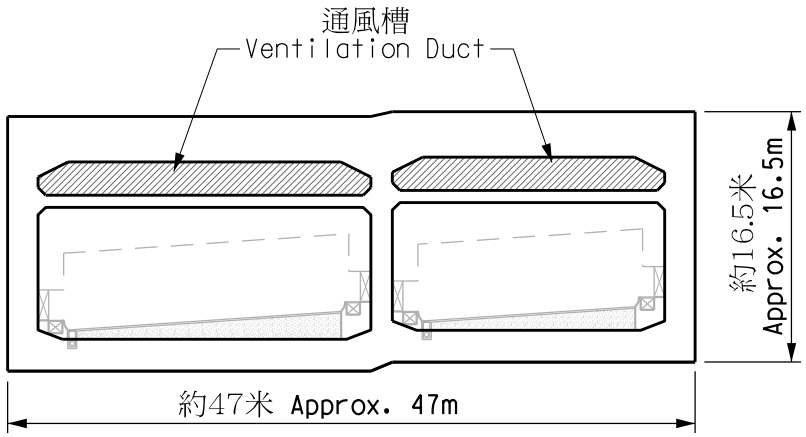
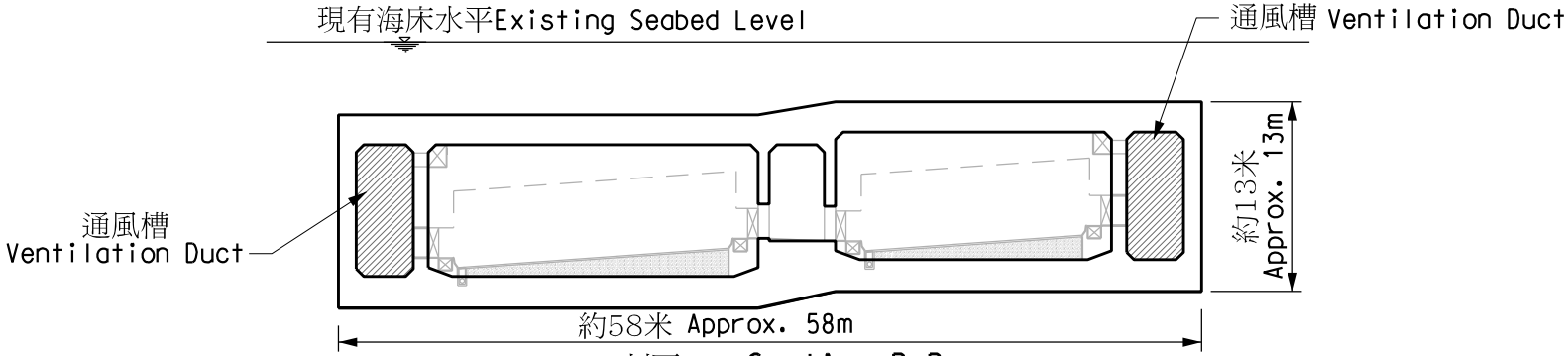


剖面 A-A Section A-A

排氣管道在上的海底隧道典型剖面圖

Typical Section of Underwater Tunnel with Top-Ventilation



剖面 B-B Section B-B

排氣管在兩側的海底隧道典型剖面圖

Typical Section of Underwater Tunnel with Side-Ventilation

圖則名稱 plan title 中九龍幹線 - 海底隧道典型剖面圖 Central Kowloon Route - Underwater Tunnel Typical Section	設計 designed C.W.KO 27/12/12 覆核 checked C.W.KO 27/12/12	繪圖 drawn M.W.YAN 27/12/12 批准 approved M.S.LAM 27/12/12	圖則編號 plan no. HMW6461TH-SK0406 比例 scale N.T.S.
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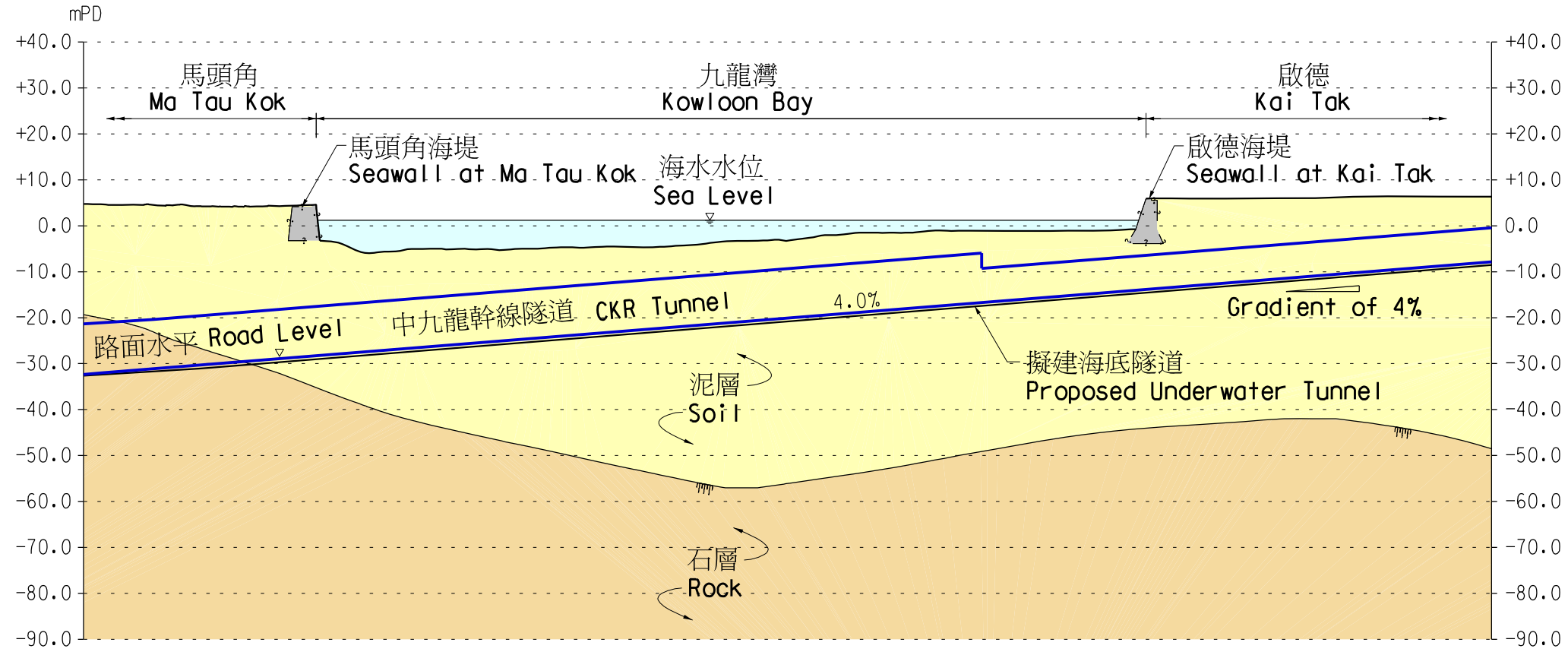
Annex 3c



圖則名稱 plan title

中九龍幹線 - 海底隧道縱向剖面圖

Central Kowloon Route - Underwater Tunnel
Longitudinal Section

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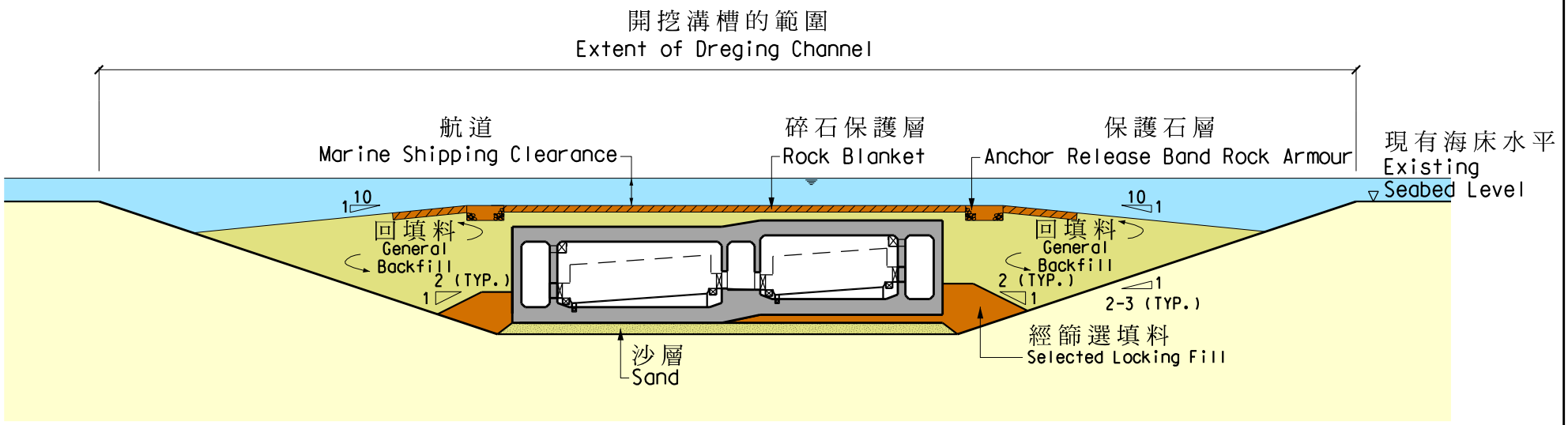
Annex 4a



圖則名稱 plan title

沉管式隧道典型剖面圖

Typical Section through Immersed Tube Tunnel (IMT)

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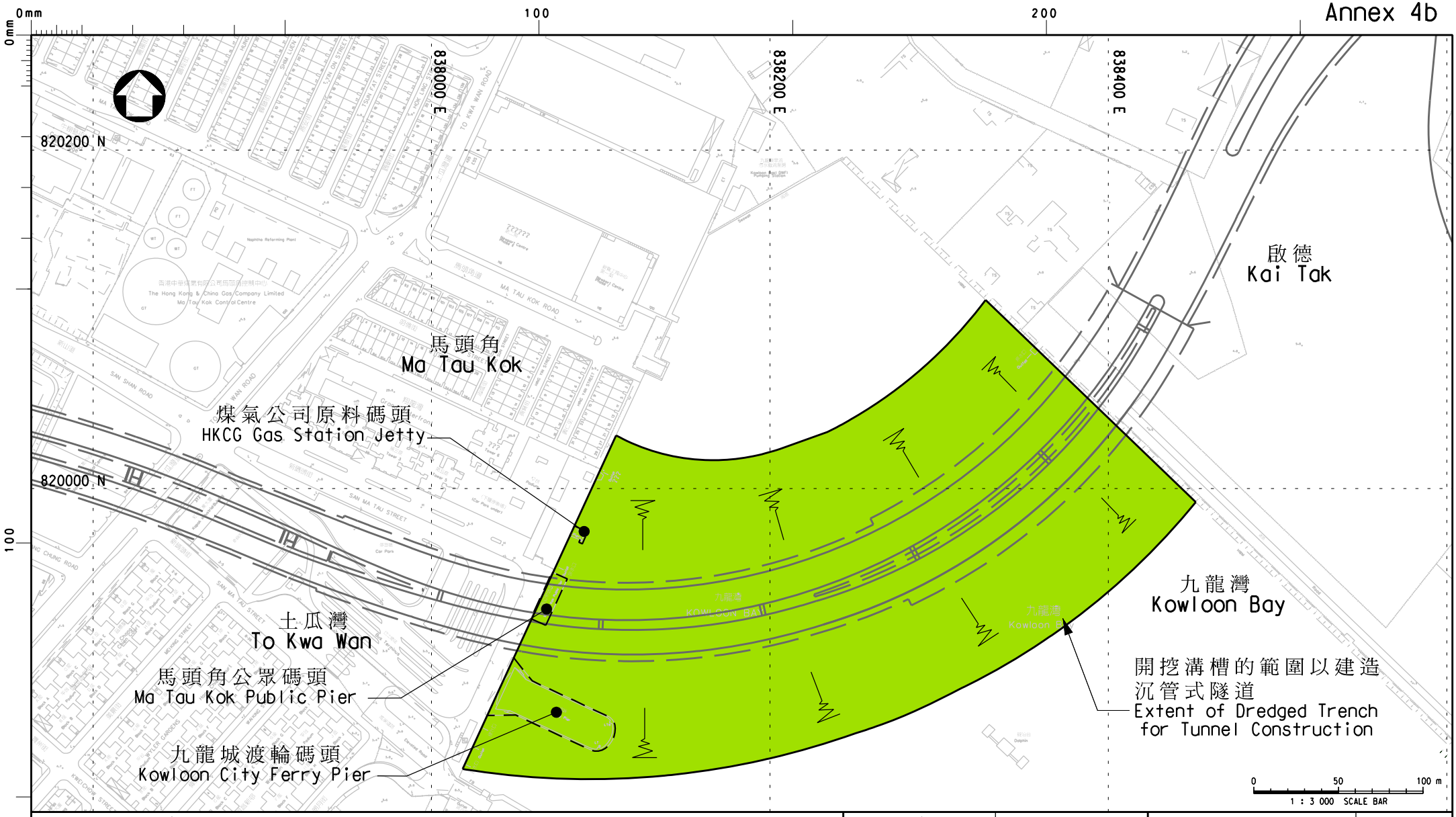
Annex 4b



圖則名稱 plan title

開挖溝槽的範圍以建造沉管式隧道

Extent of Dredged Trench for Immersed Tube Tunnel (IMT)

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Annex 4c

圖則名稱 plan title

開挖溝槽的範圍以運送沉管式隧道

Extent of Dredged Trench for Transporting Immersed Tube Tunnel (IMT)

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C.W.KO 27/12/12	Y.T.LAU 27/12/12	HMW6461TH-SK0410	N.T.S.
覆核 checked	批准 approved		
C.W.KO 27/12/12	M.S.LAM 27/12/12		

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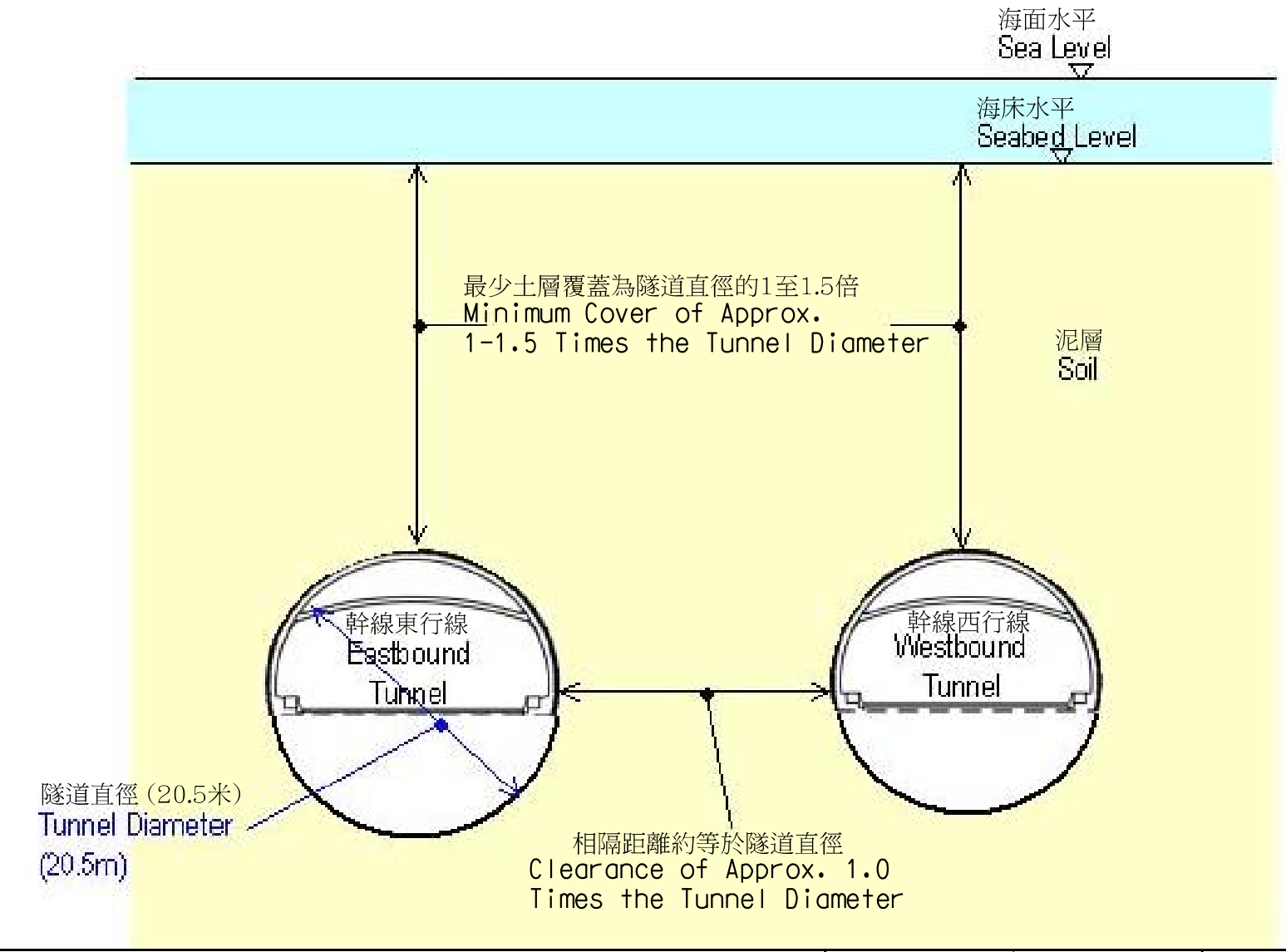
A4 210 x 297



圖則名稱 plan title

鑽挖隧道典型剖面圖

Typical Section through Bored Tunnel

設計 designed	繪圖 drawn	圖則編號 plan no.	比例 scale
C.W.KO 27/12/12	Y.T.LAU 27/12/12	HMW6461TH-SK0411	N.T.S.
覆核 checked	批准 approved		
C.W.KO 27/12/12	M.S.LAM 27/12/12		

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A4 210 x 297

Annex 6

在2007年勘測及初步設計階段已檢討超過40多條走線，經篩選後深入研究以下5條走線方案：

Over 40 alignment options had been reviewed at the investigation and preliminary stage in 2007, the following 5 options were selected for in-depth consideration:

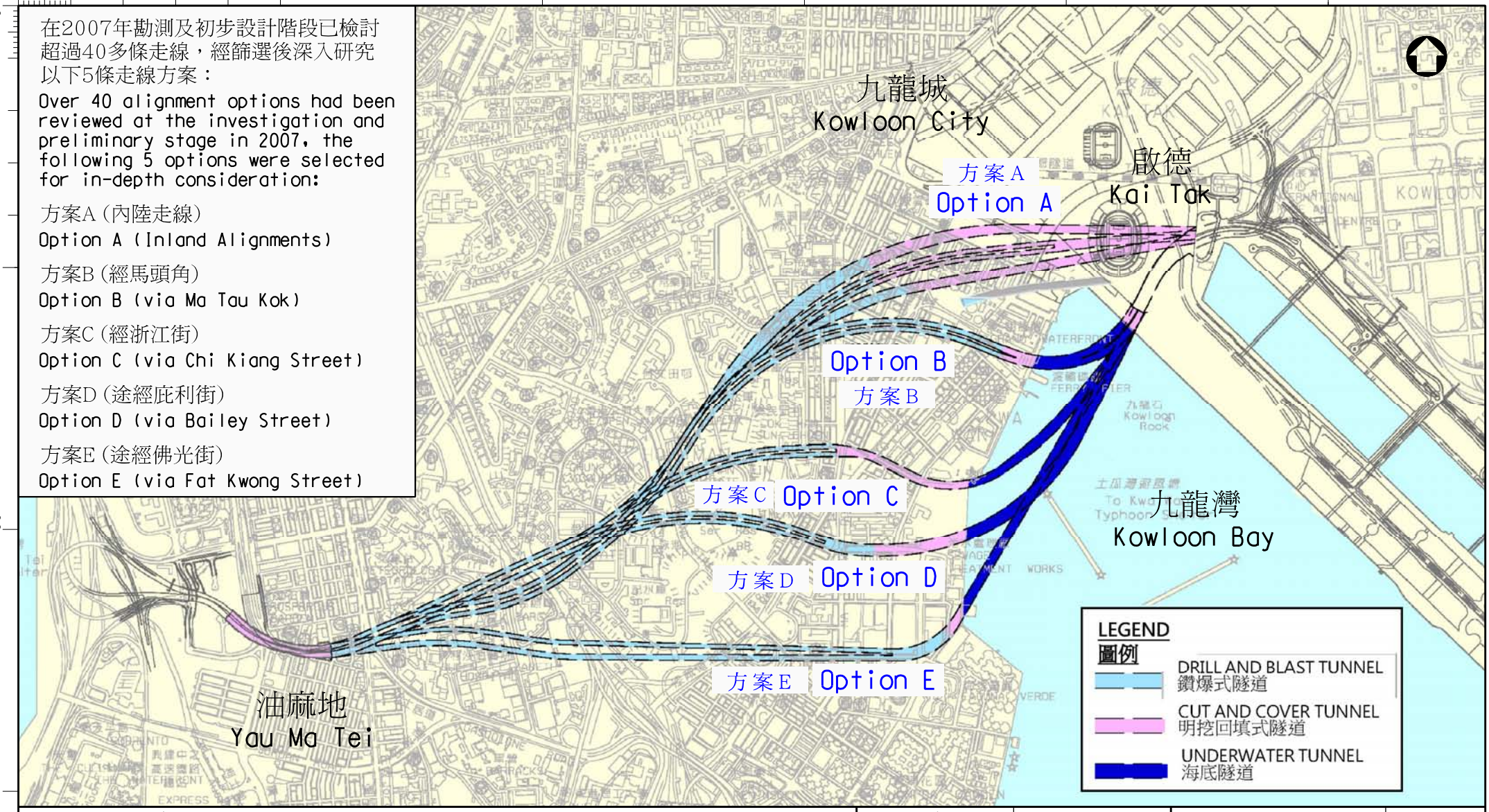
方案A（內陸走線）
Option A (Inland Alignments)

方案B（經馬頭角）
Option B (via Ma Tau Kok)

方案C（經浙江街）
Option C (via Chi Kiang Street)

方案D（途經庇利街）
Option D (via Bailey Street)

方案E（途經佛光街）
Option E (via Fat Kwong Street)



圖則名稱 plan title

中九龍幹線 - 走線方案

Central Kowloon Route - Alignment Options

設計 designed	繪圖 drawn	圖則編號 plan no.	比例 scale
C.W.KO 27/12/12	M.W.YAN 27/12/12	HMW6461TH-SK0404	N.T.S.
覆核 checked	批准 approved		
C.W.KO 27/12/12	M.S.LAM 27/12/12		

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Annex 7

圖則名稱 plan title

臨時填海平面圖

Temporary Reclamation Layout Plan

設計 designed	繪圖 drawn
C.W.KO 27/12/12	K.S.LEUNG 27/12/12
覆核 checked	批准 approved
C.W.KO 27/12/12	M.S.LAM 27/12/12

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圖則編號 plan no.	比例 scale
HMW6461TH-SK0414	1:3000

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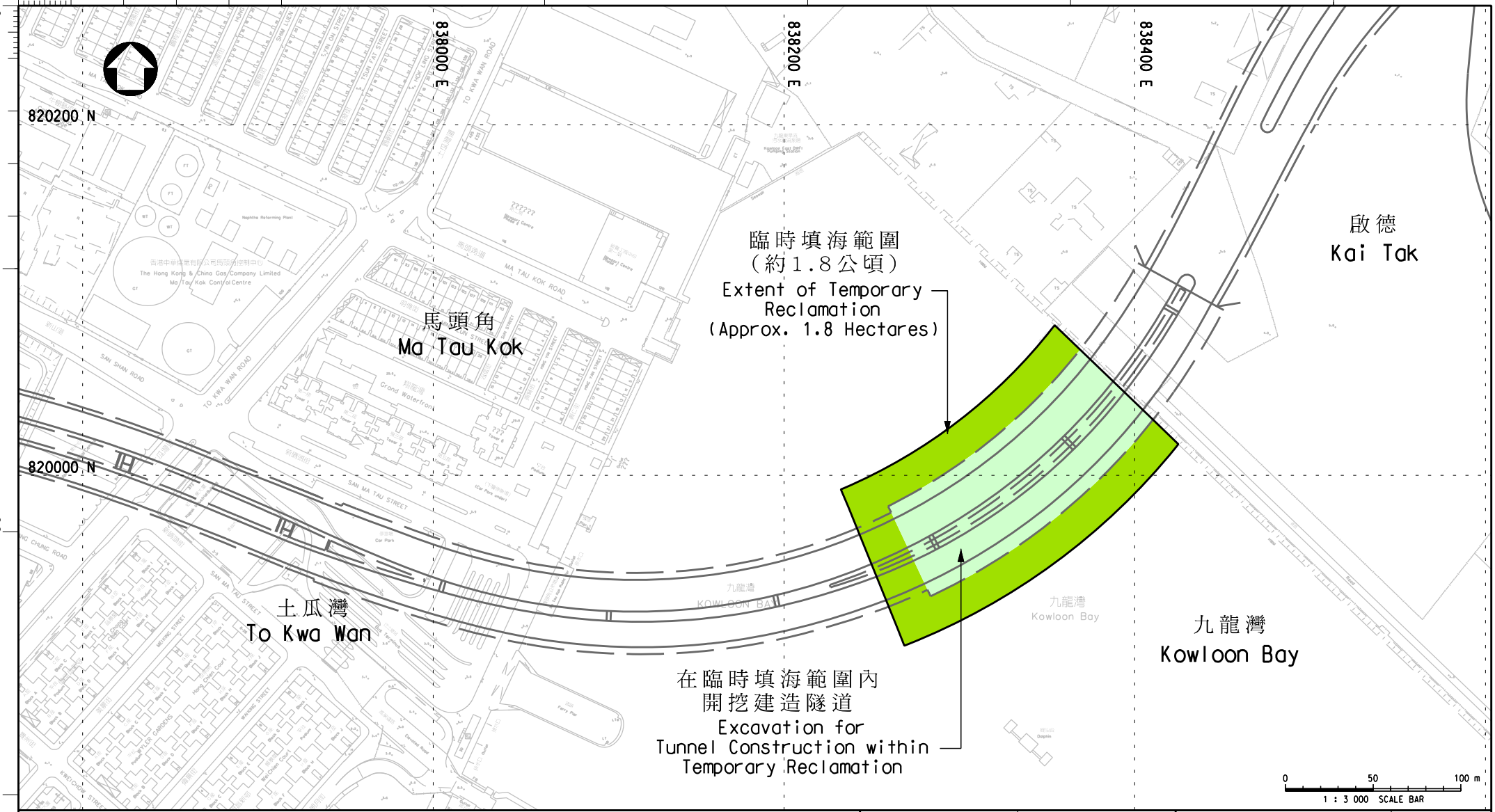
A4 210 x 297

Annex 8a



圖則名稱 plan title

九龍灣分階段建造方式(第一階段)

Construction Staging in Kowloon Bay (Stage 1)

設計 designed	繪圖 drawn	圖則編號 plan no.	比例 scale
C.W.KO 27/12/12	K.S.LEUNG 27/12/12	HMW6461TH-SK0415	1:3000
覆核 checked	批准 approved		
C.W.KO 27/12/12	M.S.LAM 27/12/12		

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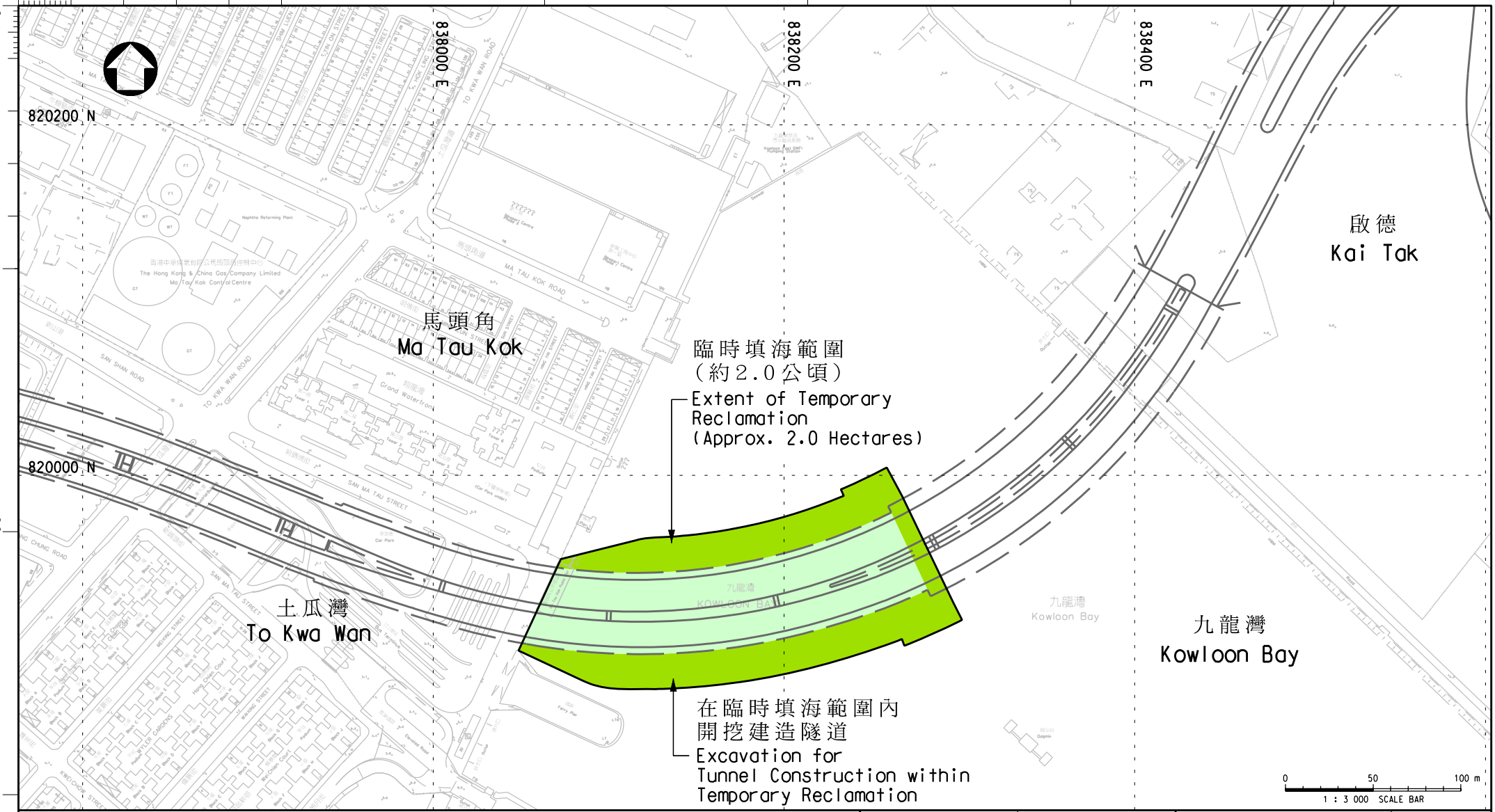
A4 210 x 297

Annex 8b



圖則名稱 plan title

九龍灣分階段建造方式(第二階段)

Construction Staging in Kowloon Bay (Stage 2)

設計 designed	繪圖 drawn	圖則編號 plan no.	比例 scale
C.W.KO 27/12/12	K.S.LEUNG 27/12/12	HMW6461TH-SK0416	1:3000
覆核 checked	批准 approved		
C.W.KO 27/12/12	M.S.LAM 27/12/12		

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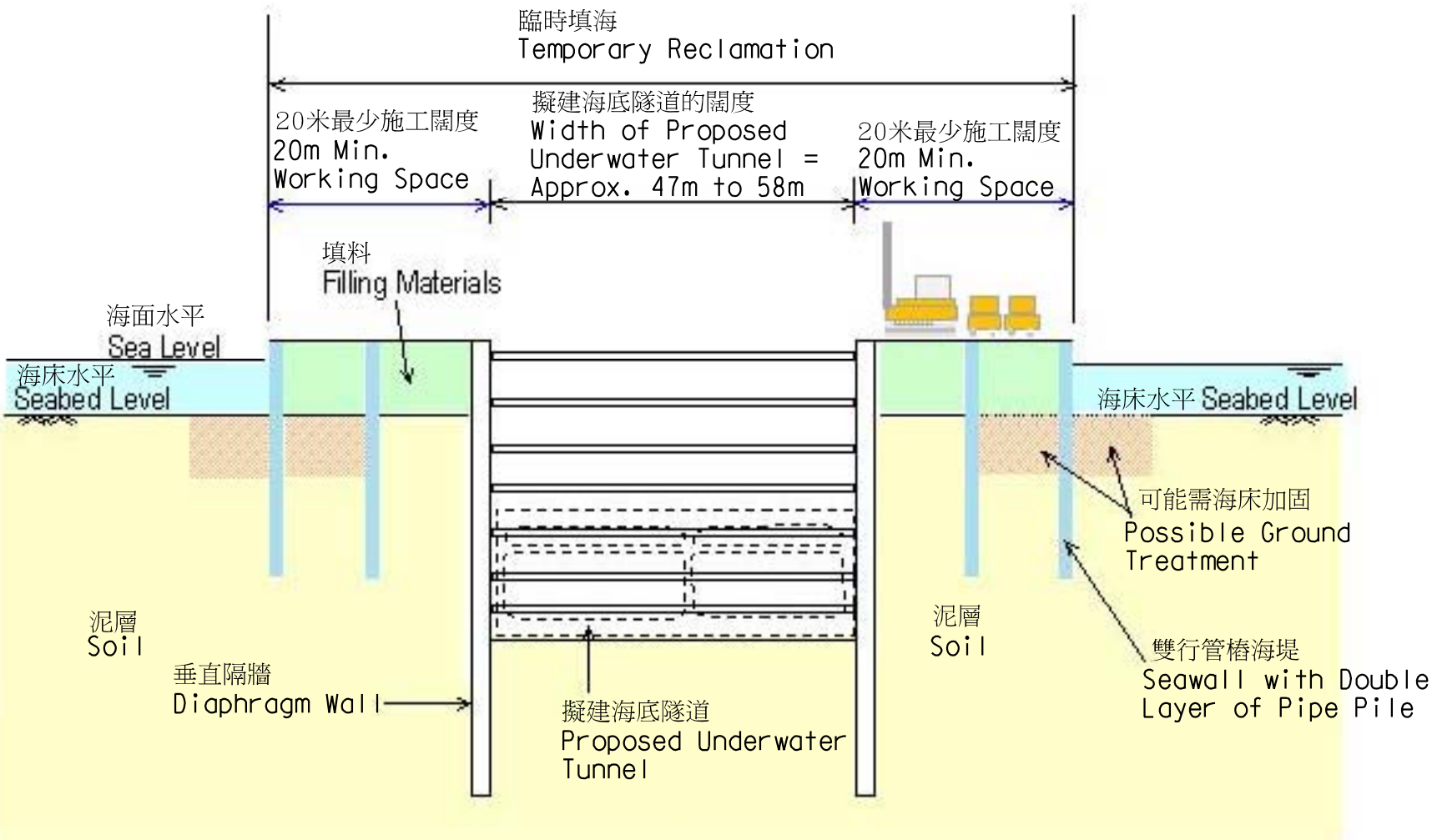
Annex 9



圖則名稱 plan title

臨時填海範圍內建造明控回填式隧道典型剖面圖

Typical Section of Cut-and-cover Tunnel at Temporary Reclamation

設計 designed	繪圖 drawn	圖則編號 plan no.	比例 scale
C.W.KO 27/12/12	Y.T.LAU 27/12/12	HMW6461TH-SK0413	N.T.S.
覆核 checked	批准 approved		
C.W.KO 27/12/12	M.S.LAM 27/12/12		

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