Central Kowloon Route

Project Profile

September 2006

Highways Department

Central Kowloon Route

Project Profile

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1. INTRODUCTION

1.1 Background

The proposed Central Kowloon Route (CKR) is a dual 3-lane trunk road across the Kowloon peninsula linking the West Kowloon Reclamation in the west and the proposed Kai Tak Development (previously known as South East Kowloon Development) in the east. CKR will connect the West Kowloon Highway at Yau Ma Tei Interchange to the proposed Trunk Road T2 at Kai Tak Development.

An application for an environmental impact assessment (EIA) study brief with a project profile (No. PP-158/2002) for CKR based on a dual 2-lane tunnel configuration was submitted by Highways Department to the Director of Environmental Protection on 5.1.2002 and a study brief (ref. no. ESB-096/2002) was issued on 18.2.2002.

Following a review of the traffic forecasts in early 2002, a dual 3-lane tunnel configuration has now been adopted to meet future traffic demand. This revised project profile is submitted with a new application for an EIA study brief for the Project in the revised lane configuration.

2. BASIC INFORMATION

2.1 Project Title

Central Kowloon Route

2.2 Purpose and Nature of the Project

The major objective of the Project is to relieve the vehicular traffic loading on the existing urban distributor roads across the Kowloon peninsula, including Boundary Street, Prince Edward Road, Argyle Street, Waterloo Road, Chatham Road North and Gascoigne Road Flyover. A dual 3-lane tunnel is proposed between the West Kowloon Reclamation and the Kai Tak Development.

2.3 Name of Project Proponent

Highways Department, HKSAR Government

2.4 Location and Scale of Project

The location of the Project is shown in Drawing No. HMW6461TH-SK0011. The scope of the Project includes the following:-

a) provision of elevated and at-grade slip road connections between the tunnel and the road network on the West Kowloon Reclamation, including modifications to the Yau Ma Tei Interchange

b) re-alignment of drainage culverts on the West Kowloon Reclamation affected by the tunnel

c) replacement of a section of Hoi Wang Road (currently at-grade) by an elevated road

d) construction of tunnel ramps, a tunnel portal and a ventilation building west of Ferry Street

e) cut and cover tunnels between Ferry Street and Shanghai Street; and between To Kwa Wan Road and Kowloon City Ferry Pier

f) bored tunnel between Shanghai Street and To Kwa Wan Road

g) central ventilation building at the junction of Chung Hau Street and Fat Kwong Street, near Sheung Lok Street

h) construction of a supply-air-only ventilation building at the junction of To Kwa Wan Road and San Ma Tau Street

i) demolition and reprovisioning (if required) of the Yau Ma Tei Police Station, Yau Ma Tei Jockey Club Polyclinic and Yau Ma Tei Specialist Clinic Extension, Yau Ma Tei Multi-storey Car Park Building, Kowloon Government Offices and other minor government facilities

j) demolition of industrial buildings at the junction of To Kwa Wan Road and San Ma Tau Street

k) tunnel between Kowloon City Ferry Pier and Kai Tak Runway (probably in the form of an immersed tube tunnel)

l) cut and cover tunnel or depressed road between Kai Tak Runway and the Interchange with Kai Cheung Road, Kai Fuk Road and Trunk Road T2 on the Kai Tak Development

m) a tunnel portal at the Kai Tak Runway; a ventilation building and an administration building in the proposed Kai Tak Development

n) provision of connection roads at eastern end

2.5 Number and Types of Designated Projects

The proposed CKR will be a trunk road, and is classified as a single Designated Project under Category A (including both A.1 & A.7) in Part I of Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO).

2.6 Name and Telephone Number of Contact Person

Mr. Martin Kwan (Senior Engineer 1/Central Kowloon Route)
Major Works Project Management Office
Highways Department

Tel. No. 2762 3646 Fax No. 2761 4864

3. OUTLINE OF THE PLANNING AND IMPLEMENTATION PROGRAMME

3.1 Project Planning and Implementation

Investigation study (including EIA), preliminary design and detailed design will be carried out by consultants.

3.2 Project Timetable

According to the tentative programme, the investigation study, EIA and preliminary design of the Project are anticipated to commence in early 2007. Construction works of CKR are expected to commence in 2012 for completion in 2016.

3.3 Interaction with Other Projects

The Project will interact with the following projects (The list below is not intended to be exhaustive and will be reviewed during the EIA study) -

3.3.1 The eastern landfall of the CKR will be on the proposed Kai Tak Development, and depends to a large extent on the programme and proposals for the Kai Tak Development. There will be close liaison and coordination between the two projects to ensure that all engineering, environmental and programme aspects are taken into account. Civil Engineering and Development Department will commission a Schedule 3 EIA study for the Kai Tak Development, which will cover a number of Schedule 2 projects, including part of the CKR and Trunk Road T2.

3.3.2 The western cut and cover section will affect the existing Gascoigne Road Flyover in Yau Ma Tei. Widening of this flyover to a dual 2-lane facility is being planned and it will be undertaken as a separate project. The interface issues will be studied at the preliminary design stage, with regards to programme, land, environmental and engineering issues.

3.3.3 The Project will have interfaces with the proposed Shatin to Central Link and Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link railway projects. The interface issues will be studied at the preliminary design stage, with regards to programme, land, environmental and engineering issues.

4. Identification of Possible Impacts on the Environment

4.1 Introduction

This section identifies the likely environmental impact of the proposed works in both the construction and operation phases.

4.2 Construction Phase

4.2.1 Gaseous Emissions

During the bored tunnel works, fresh air must be provided throughout the tunnel, and fumes and stale air extracted. The point of emission of the exhaust fumes must be situated so as not to impact on sensitive receivers. Vehicle and plant exhaust emissions may contribute to air pollutants, particularly at the tunnel portals.

4.2.2 Dust

The major pollutant during construction of the Project will be particulate matter. This will arise from various construction activities including the excavation of materials, the handling and stockpiling of materials, site erosion, any in-situ concrete batching plant and vehicle movements on unpaved roads and site areas.

4.2.3 Noise

Potential sources of noise impact will arise from drilling and blasting, general earthworks and spoil removal, piling and diaphragm wall construction, elevated and ground level road construction, concreting and general construction activities. Night-time working is likely, particularly within the bored tunnel section. Apart from the actual blasting activity, this is unlikely to cause major impacts except at the tunnel portals during disposal of spoil. Appropriate measures will be required to control the level of noise in accordance with statutory requirements.

4.2.4 Traffic

Construction traffic will add to the overall traffic volume in the vicinity of the tunnel portals and at the sites of the ventilation buildings.

4.2.5 Water Quality

Potential water quality impacts may be caused by runoff and erosion from site surfaces, earthworks or stockpiles; bentonite slurry from diaphragm wall construction; grouting materials during tunneling; concrete batching plant washout and drainage from dust suppression sprays; fuel, oil and lubricants from construction equipment. In addition, general construction activities have the potential to cause water pollution as a result of improper disposal and poor site practices. Site waste materials such as packaging, used materials and general waste, as well as spillage of oil, diesel or solvents will have either a negative aesthetic or chemical impact on water quality. Sewage effluent produced by the on-site workforce will require proper facilities and disposal via the existing sewerage system.

For the construction of immersed tube tunnel, handling and disposal methods including the use of mechanical grabs, silt curtains and selection of appropriate vessel size will be necessary to reduce the release of suspended solids and nutrients in the water column during dredging of sediments. Contaminated sediment will be handled according to the current Environment, Transport and Works Bureau requirements for disposal in open sea or confined marine pits.

4.2.6 Construction Waste

Construction waste will consist of excavated waste, chemical waste and general refuse. Some excavated material from the cut and cover tunnels may be contaminated and this will need to be identified, separated and disposed of in accordance with statutory requirements. Material from the bored tunnels will either be stockpiled for use on site or transported off site for disposal. Construction waste should be sorted on site into construction and demolition waste which will be disposed of at landfills, and other inert materials such as soil, rock, concrete, asphalt, brick, which will be sent to public filling areas or other tips.

4.2.7 Dangerous Goods

It is likely that an explosive magazine will be required to store explosives prior to their use within the bored tunnel. The location of the magazine will need to be carefully chosen.

4.2.8 Visual Appearance

During the construction period, the visual appearance of the area surrounding the interfaces between bored tunnel and cut and cover tunnels will be affected. This will be of particular concern in the Yau Ma Tei area, where a number of multi-storey buildings are to be demolished, and where the Gascoigne Road Flyover will be temporarily diverted.

4.2.9 Cultural Heritage Impacts

Construction of the cut and cover section of the tunnel in Yau Ma Tei will impact on the Yau Ma Tei Police Station, classified as a Grade 3 historical structure. Close to the Project, but not directly affected by it, is the Tin Hau Temple Complex, which is a Grade 2 historic building, and the Cattle Quarantine Area near San Shan Road, which has heritage value.

4.2.10 Ecological Impact

The Project is not inside a recognized site of conservation importance. It does not encroach on or affect important habitats and there are unlikely to be any species of conservation importance present. Ecological impacts during construction and operation will therefore be minimal.

4.3 Operation Phase

4.3.1 Gaseous Emissions

The ventilation system for the tunnel will provide fresh air for tunnel users and exhaust the stale air at ventilation buildings sited at both ends and at the ventilation building in Ho Man Tin.

4.3.2 Noise

During operation of the Project, potential noise impacts from the ventilation buildings, from the road connections to the Yau Ma Tei Interchange in the west, and at the portals are likely to be the main concerns.

4.3.3 Traffic

The Project will generate additional traffic in the Yau Ma Tei and Kowloon Bay areas, which will result in increased environmental impacts.

4.3.4 Water Quality

Surface water run-off from roads connecting to the tunnel entrances will be collected by a drainage system, and discharged away from any sensitive receivers. Within the tunnels, collecting gullies will be fitted with oil traps/petrol interceptors in order to eliminate the risk of explosion and to separate the discharge for safe disposal.

4.3.5 Visual Appearance

The major residual visual impacts will be the tunnel portals, ventilation buildings and administration building(s). These will need to be designed either in sympathy with the proposed surroundings or as a bold statement of their intended purpose, in order to make a feature of them.

5. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

5.1 General

There are existing sensitive receivers along the whole length of the Project. During the construction of cut and cover tunnels, at-grade and elevated roads and the ventilation building in West Kowloon, there will be impacts on sensitive receivers at Kansu Street, Man Cheong Street, Ching Ping Street and Hoi Wang Road. In East Kowloon, the main impact will be on Wyler Gardens at San Ma Tau Street. The construction and operation of the central ventilation building will impact on sensitive receivers at Fat Kwong Street and Chung Hau Street in Ho Man Tin. The tunnel emerges on the land within the Kai Tak Development. The Kai Tak Planning Review has taken into account the presence of the CKR and associated ventilation buildings.

5.2 Existing and Planned Developments

Representative sensitive receivers, likely to be affected during the construction and/or operation phases of the Project are listed in Table 5.1, and shown on Drawing Nos. HMW6461TH-SK0012 to HMW6461TH-SK0015.

Table 5.1 Representative Sensitive Receivers

Ref.	Sensitive Receiver	Type	Status
In Yau Ma Tei area			
1	Prosperous Garden	Residential	Existing
2	Hang Wan House, Public Square Street	Residential	Existing
3	Yau Ma Tei Police Station	Heritage	Existing
4	59A-59C Public Square Street	Residential	Existing
5	Yau Ma Tei Catholic primary School	Educational	Existing
6	Dickson Building, Kansu Street	Residential	Existing
7	Kum Lam Mansion, Kansu Street	Residential	Existing
8	Tin Hau Temple Complex	Heritage	Existing
9	Man Cheong Building	Residential	Existing
10	Man Wai Building	Residential	Existing
11	Future private development at Yan Cheung Road	Residential	Planned
In Ho Man Tin area			
13	Oi Man Estate	Residential	Existing
14	Ho Man Tin South Development	Residential	Existing
15	Fat Kwong Street Indoor Games Complex	LCSD Facility	Existing
16	Sheng Kung Hui Tsoi Kung Po Secondary School	Educational	Existing
17	Carmel English School	Educational	Existing
18	Development of ex-Valley Road Estate site	Residential	Planned
In To Kwa Wan area			
19	Grand Waterfront – Ex. Gasworks site at junction of To Kwa Wan Road and San Ma Tau Street	Residential	Under construction
20	Wyler Gardens	Residential	Existing

Notes:
1. Reference No.12 is not used.
2. This list is not exhaustive, and will be reviewed during the course of the EIA study.

6. ENVIRONMENTAL PROTECTION MEASURES AND FURTHER ENVIRONMENTAL IMPLICATIONS

6.1 Noise

6.1.1 Construction Phase

A construction noise assessment will be undertaken as part of the EIA.

A number of different types of plant will be used during construction, including breakers, excavators, air compressors, cranes, drilling rigs, piling equipment and trucks, which could significantly contribute to high noise levels at the works sites. To mitigate the noise impacts from this equipment, the following measures will be considered:-

- Use of silenced equipment
- Use of mufflers, silencers and acoustic linings for noisy mechanical equipment
- Use of acoustic enclosures for stationary equipment
- Use of temporary acoustic barriers for noisy operations
- Siting of equipment
- Staging of work

6.1.2 Operation Phase

Mitigation options for reducing traffic and equipment noise during the operation phase include:

- Provision of barriers along elevated Hoi Wang Road in West Kowloon Reclamation
- Installation of silenced equipment and acoustic barriers within the ventilation buildings
- Use of low noise road surfacing
- Increasing the length of road in tunnel
- Planning of the landuses and building layouts adjacent to the eastern portal on the Kai Tak Development

6.2 Air Quality

6.2.1 Construction Phase

A construction dust assessment will be undertaken as part of the EIA.

The following dust control measures are recommended to minimize dust nuisance:

- The site should be wetted (using bowsers, sprays or vapour mists) to reduce dust
- Regular watering of haul roads in dry conditions
- Reduction of speed on unpaved roads
- Vehicle wheel and body washing facilities at site exits
- Tarpaulin covering of all dusty vehicle loads transported on and off site

6.2.2 Operation Phase

It is expected that dust, which is predominantly associated with construction, will not be an issue during the operation stage.

Exhaust gaseous emissions associated with the vehicular use of the CKR and the connecting road network will be the major source of air pollutants. Emissions from the ventilation buildings will impact on the air quality at specific locations. Cumulative impacts from the roads and the ventilation buildings on sensitive receivers will be investigated. In order to reduce impacts so as to meet the Air Quality Objectives, the following measures will be considered:-

- Providing buffer areas between the sources and the receivers
- Optimization of the design of the tunnel ventilation system, including the location of the ventilation buildings and height of the point of emission
- Planning of the areas adjacent to the roads and ventilation buildings

6.3 Water Quality

6.3.1 Construction Phase

Temporary drainage systems, with interceptor manholes and appropriate sediment settlement measures, will be required to trap oil pollutants and debris initiating from within the site, to adjust the pH level, and to separate pollutants prior to discharging into the appropriate drains or for removal off site. Specific measures will be required for the control of bentonite slurry during diaphragm wall construction. The following mitigation measures should also be considered:

- Before commencement of demolition works, sewer and drainage connections should be sealed to prevent debris entering the public sewers/drains
- Stockpiles should be covered to avoid erosion and washing of solid waste into the drainage system

6.3.2 Operation Phase

During the operation phase, additional pollutants will be generated by the increased traffic flows on connecting roads. The additional pollutant load will be sufficiently diluted during rainfalls that this is likely to be simply directed to the road drainage system.

Within the tunnel itself, pollutant levels in solution will be more concentrated. There will be natural leakage through the tunnel lining, accidental spillage of oil or fuel from vehicles, and wash water from cleansing of road surface and tunnel walls. This will be collected in the drainage system, and separated for safe disposal.

6.4 Waste

The main source of solid waste during the construction phase will be excavated spoil. Other material including surplus construction material, used products and municipal type waste will also be generated, all of which will be disposed of in accordance with

environmental guidelines. Moreover, site investigation should be carried out to assess whether, or not, contaminated materials will be encountered during cut and cover tunnel excavation in reclaimed ground.

To minimize impacts, the following should be taken into consideration:

- Construction vehicles to and from the site should be routed to avoid sensitive receivers where possible
- Solid materials and waste should be removed from site and taken to a designated disposal site
- Construction waste should be sorted into inert and non-inert materials, and disposed of at filling areas or landfill sites respectively
- Excavated rock from the tunnels should be processed and re-used, where possible, in the construction works or other projects.

6.5 Further Environmental Implications

6.5.1 An explosive magazine will be required to store explosives prior to their use within the bored tunnel. The location will be subject to a Hazard Assessment, which will identify and eliminate any potential risks during the transport and storage of explosives.

6.5.2 Construction of the Project will take 4 years, and during this time there will be short term disruption to the public, particularly in the Yau Ma Tei area where demolition of existing buildings will precede the cut and cover tunnel construction. The tunnel will be constructed using top down techniques, so that as soon as the walls and roof are complete, construction can continue inside the tunnel box without affecting the environment at ground level. Nonetheless, the impact arising from the widening of Gascoigne Road Flyover should be considered.

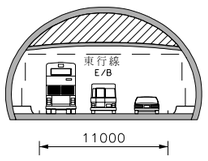
6.5.3 The impact on the Yau Ma Tei Police Station will be carefully considered in conjunction with the Antiquities Advisory Board, so that the building can be preserved as far as practicable for future sympathetic uses.

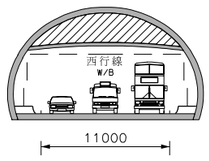
6.5.4 With proper implementation and monitoring of the mitigation measures proposed, adverse environmental impacts will be minimized, and kept within statutory limits, during both the construction and operation phases.

7. USE OF PREVIOUSLY APPROVED EIA REPORTS

No previously approved EIA report exists for the proposed project.

Drawings





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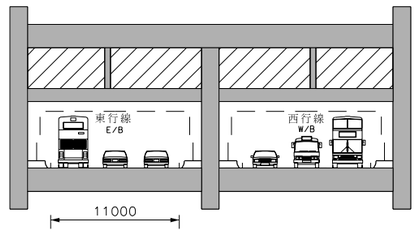
不按比例 N.T.S.



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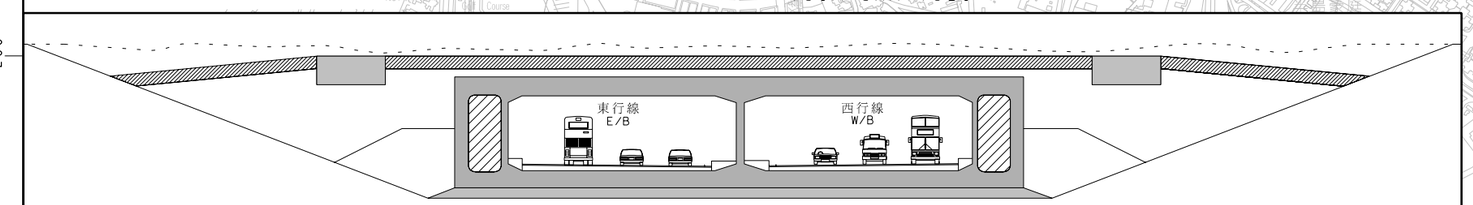

典型沉管式隧道橫切面
TYPICAL SECTION FOR IMMERSED TUBE TUNNEL
不按比例 N.T.S.

圖例
LEGEND :

- 鑽挖式隧道 BORED TUNNEL
- 明挖回填式隧道 CUT AND COVER TUNNEL
- 橫越九龍灣的隧道（可能以沉管式隧道模式興建） TUNNEL ACROSS KOWLOON BAY (PROBABLY IN FORM OF IMMERSED TUBE TUNNEL)
- 高架 / 地面 / 低於地面道路 ELEVATED / AT-GRADE / DEPRESSED ROAD
- 隧道出口 TUNNEL PORTAL
- 通風大樓 VENTILATION BUILDING
- 通風大樓（只限新鮮氣進入） VENTILATION BUILDING (FRESH AIR INTAKE ONLY)
- 行政大樓 ADMINISTRATION BUILDING

圖則名稱 drawing title

工務計劃項目第 6461TH 號 - 中九龍幹線
PWP ITEM NO. 6461TH - CENTRAL KOWLOON ROUTE

設計 designed	SIGNED	繪圖 drawn	SIGNED
C.K.LAM	12/09/06	W.L.LAM	12/09/06
覆核 checked	SIGNED	批准 approved	SIGNED
C.K.LAM	12/09/06	W.C.KWAN	12/09/06

主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

圖則編號 drawing no. HMW6461TH-SK0011

比例 scale 1:15000 或圖示 OR AS SHOWN

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

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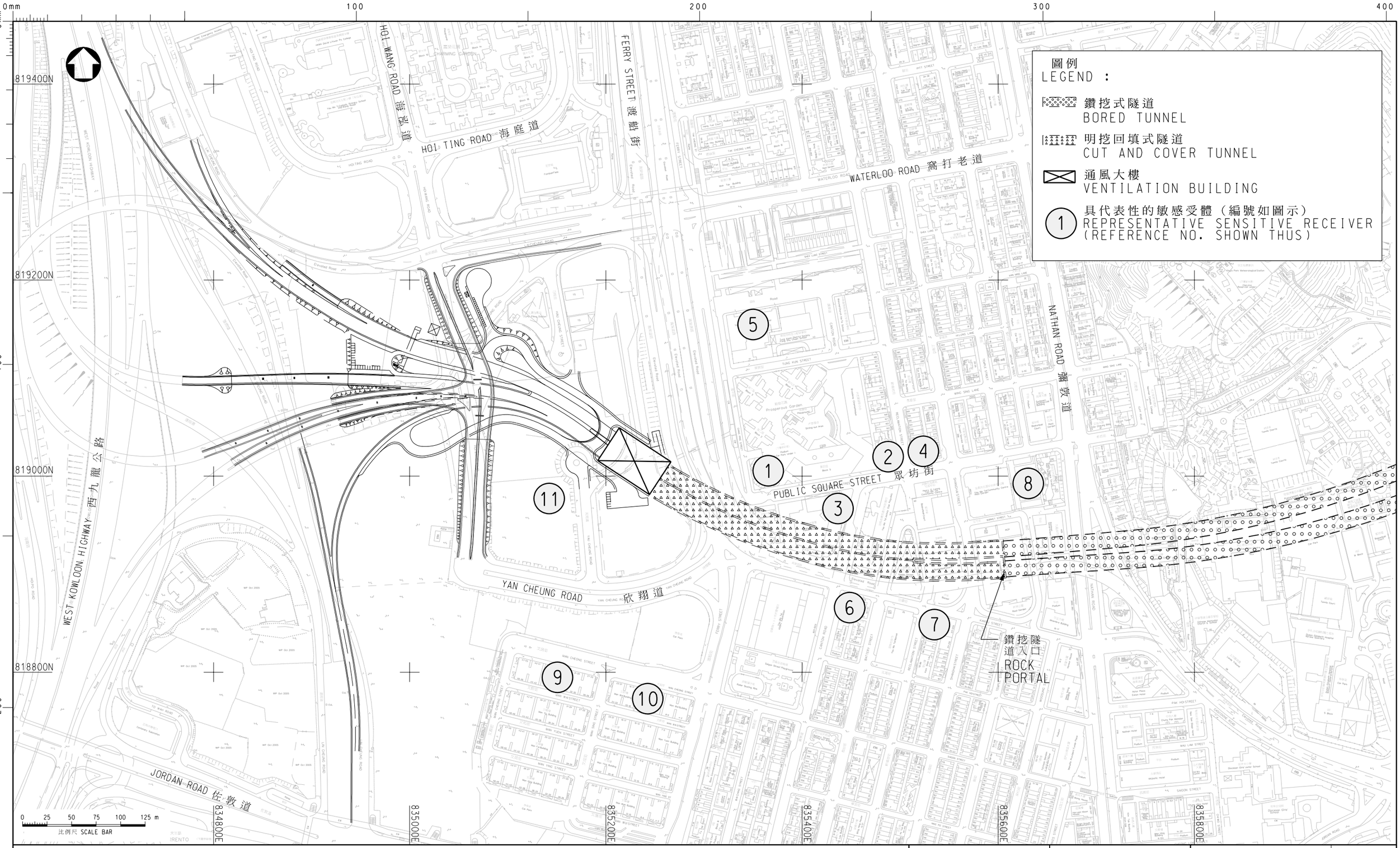

圖則名稱 drawing title

工務計劃項目第6461TH號 - 中九龍幹線
具代表性的敏感受體 - 油麻地區

PWP ITEM No. 6461TH - CENTRAL KOWLOON ROUTE
REPRESENTATIVE SENSITIVE RECEIVERS - YAU MA TEI AREA

設計 designed	SIGNED	繪圖 drawn	SIGNED
C.K.LAM	12/09/06	W.L.LAM	12/09/06
覆核 checked	SIGNED	批准 approved	SIGNED
C.K.LAM	12/09/06	W.C.KWAN	12/09/06

主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

圖則編號 drawing no. HMW6461TH-SK0012

比例 scale 1:3500

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

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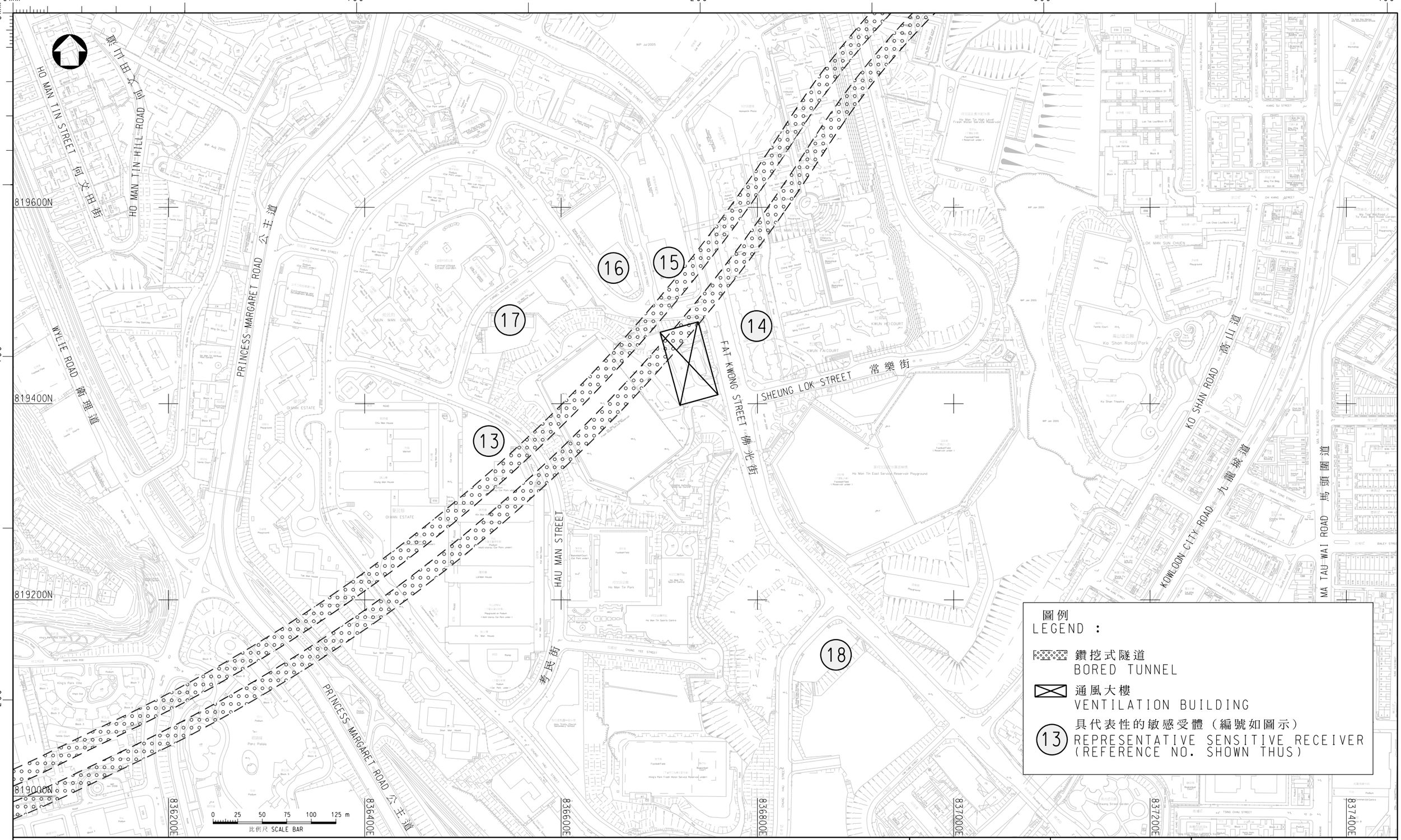

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工務計劃項目第6461TH號 - 中九龍幹線
具代表性的敏感受體 - 何文田區

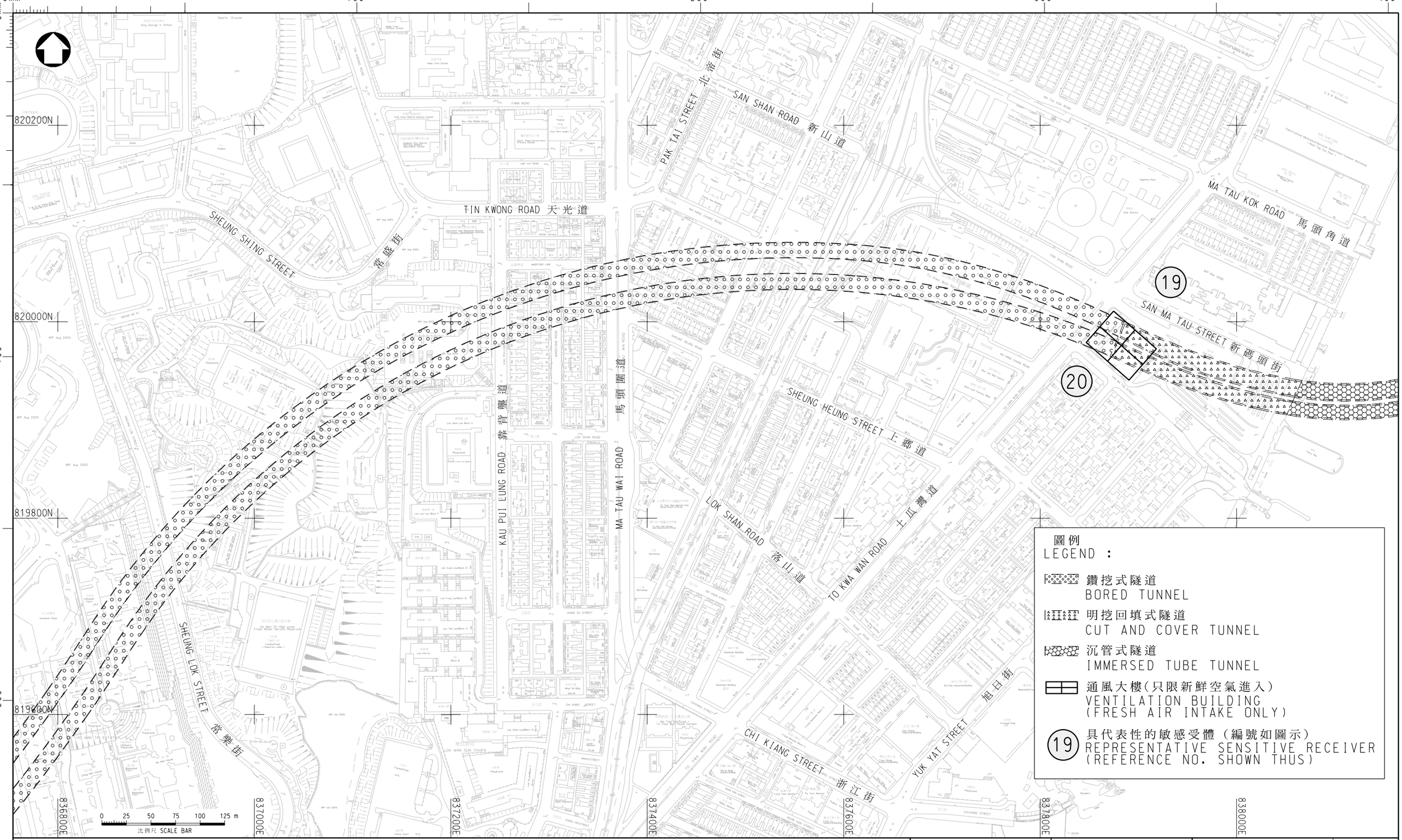
PWP ITEM No. 6461TH - CENTRAL KOWLOON ROUTE
REPRESENTATIVE SENSITIVE RECEIVERS - HO MAN TIN AREA

設計 designed	SIGNED C.K.LAM 12/09/06	繪圖 drawn	SIGNED W.L.LAM 12/09/06
覆核 checked	SIGNED C.K.LAM 12/09/06	批准 approved	SIGNED W.C.KWAN 12/09/06

主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

圖則編號 drawing no.	比例 scale
HMW6461TH-SK0013	1:3500

HIGHWAYS DEPARTMENT HONG KONG
路政署 香港



圖例
LEGEND :

- 鑽挖式隧道 BORED TUNNEL
- 明挖回填式隧道 CUT AND COVER TUNNEL
- 沉管式隧道 IMMERSED TUBE TUNNEL
- 通風大樓(只限新鮮空氣進入) VENTILATION BUILDING (FRESH AIR INTAKE ONLY)
- (19) 具代表性的敏感受體（編號如圖示） REPRESENTATIVE SENSITIVE RECEIVER (REFERENCE NO. SHOWN THUS)

圖則名稱 drawing title

工務計劃項目第6461TH號 - 中九龍幹線
具代表性的敏感受體 - 土瓜灣區
PWP ITEM No. 6461TH - CENTRAL KOWLOON ROUTE
REPRESENTATIVE SENSITIVE RECEIVERS - TO KWA WAN AREA

設計 designed	SIGNED	繪圖 drawn	SIGNED
C.K.LAM	12/09/06	W.L.LAM	12/09/06
覆核 checked	SIGNED	批准 approved	SIGNED
C.K.LAM	12/09/06	W.C.KWAN	12/09/06

主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

圖則編號 drawing no. HMW6461TH-SK0014

比例 scale 1:3500

HIGHWAYS DEPARTMENT HONG KONG 香港政府路政署

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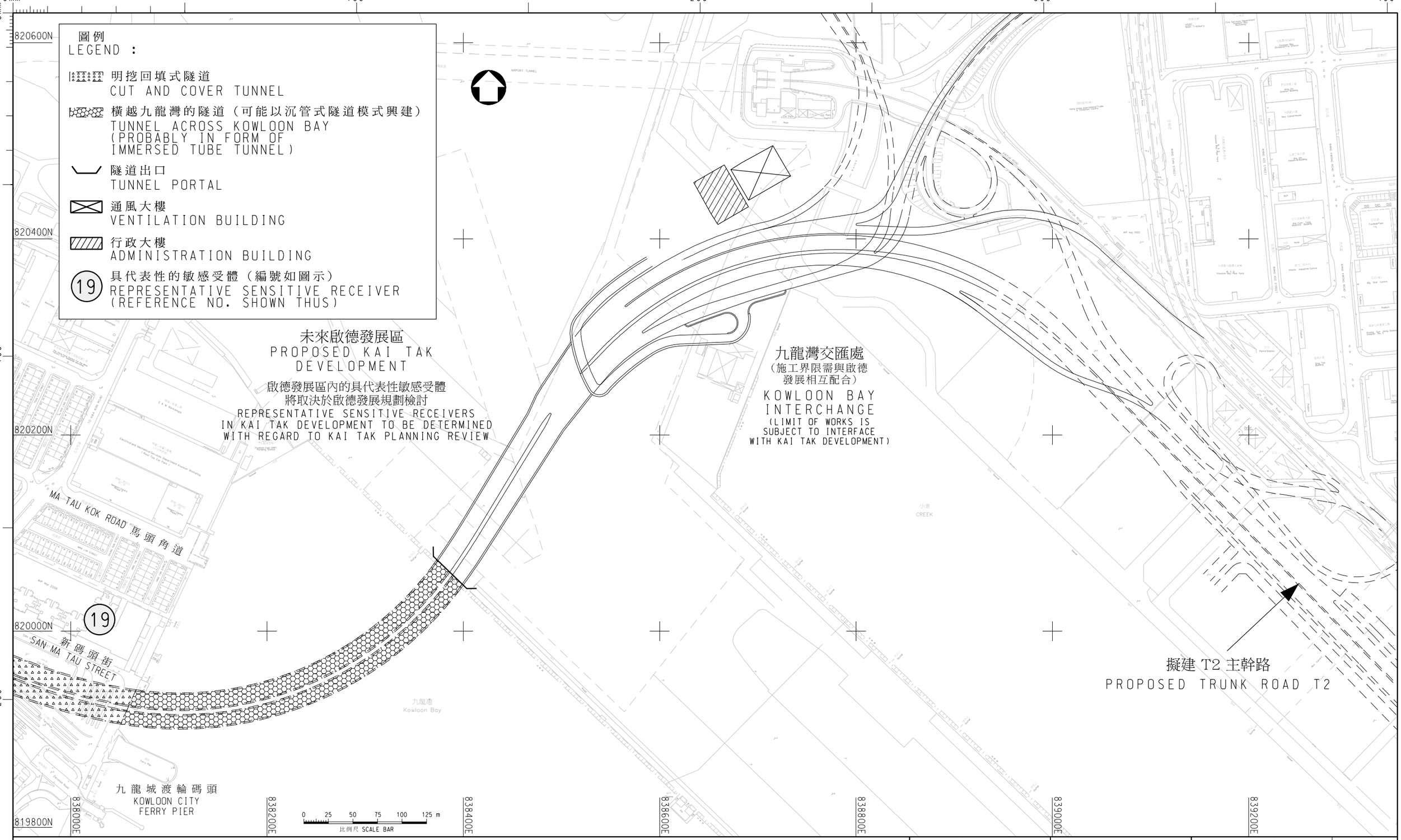

圖則名稱 drawing title

工務計劃項目第6461TH號 - 中九龍幹線
具代表性的敏感受體 - 啟德發展區
PWP ITEM No. 6461TH - CENTRAL KOWLOON ROUTE
REPRESENTATIVE SENSITIVE RECEIVERS - KAI TAK DEVELOPMENT

設計 designed	SIGNED	繪圖 drawn	SIGNED
C.K.LAM	12/09/06	W.L.LAM	12/09/06
覆核 checked	SIGNED	批准 approved	SIGNED
C.K.LAM	12/09/06	W.C.KWAN	12/09/06

主要工程管理處
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圖則編號 drawing no. HMW6461TH-SK0015

比例 scale 1:3500

HIGHWAYS DEPARTMENT HONG KONG 香港政府路政署

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