

Project Profile

for

Harbour Area Treatment Scheme (HATS) Stage 2A



Drainage Services Department
The Government of the Hong Kong Special Administrative Region

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PP-010	Harbour Area Treatment Scheme Stage 2A : Land Requirement Plan for Upgrading of Stonecutters Island Sewage Treatment Works

1.1 **Project Title**

The title of this Project is:

“Harbour Area Treatment Scheme (HATS) Stage 2A”.

1.2 **Purpose and Nature of the Project**

The Harbour Area Treatment Scheme (HATS, formerly known as Strategic Sewage Disposal Scheme) comprises two stages. The Stage 1 of HATS involved the construction of a chemically enhanced primary treatment works at Stonecutters Island, the building of a deep tunnel system to convey sewage from the Kowloon Peninsula, Tseung Kwan O, Kwai Tsing and Hong Kong Island East to the new treatment plant, and the construction of a tunnel outfall in the western harbour. The Stage 1 was fully completed and successfully commissioned in December 2001. It is currently treating 75% of the sewage collected from the urban areas around the Victoria Harbour and has brought about noticeable improvements to the water quality of Victoria Harbour. The Stonecutters Island Sewage Treatment Works (SCISTW) can remove 70% of the organic pollutants in terms of Biochemical Oxygen Demand (BOD); 80% of the suspended solids; and 50% of sewage pathogens in terms of E.coli. By treating flows from the Stage 1 catchment, the HATS Stage 1 prevents about 600 tonnes of sewage sludge and the pollutants that it carries from entering the harbour everyday.

Government is now planning to implement HATS Stage 2. The Stage 2 aims at intercepting and treating the sewage generated from the populated areas in the northern and southwestern parts of Hong Kong Island (which is currently only subject to preliminary screening before being discharged into the harbour), increasing the treatment capacity to cope with the anticipated population and economic activity growth in the harbour area, and providing a higher level of treatment for all HATS flows to fully meet the water quality objectives set for the Victoria Harbour in the long run. It is Government’s current plan to implement HATS Stage 2 in two phases, Stage 2A and Stage 2B. The scope of HATS Stage 2A, the “Project” of this project profile submitted under the Environmental Impact Assessment Ordinance (EIAO), shall include:

- i. the upgrading of existing preliminary treatment works (PTW) at North Point, Wan Chai East, Central, Sandy Bay, Cyberport, Wah Fu, Aberdeen, and Ap Lei Chau on Hong Kong Island;
- ii. the extension of the deep tunnel network to collect and transfer sewage from the above preliminary treatment works to Stonecutters Island for treatment and disposal;
- iii. the expansion of the existing chemical treatment capacity at Stonecutters Island from the present design level of 1.7 million cubic metres daily to ultimately 2.8 million cubic metres; and
- iv. the provision of disinfection to all HATS effluent before discharge into the harbour.

The scope of HATS Stage 2B shall include the provision of biological treatment for all HATS flows.

In June 2004, Government launched a five-month public consultation exercise to seek the views of the community on the way forward for HATS Stage 2 in the light of the findings of a series of HATS related trials and studies. The public consultation exercise ended in November 2004. Majority of the comments received support the centralized option and the two-phase

implementation strategy recommended by the Government for HATS Stage 2 to clean up the harbour in a step-wise but timely manner.

This Project involves several types of Designated Projects under the EIAO as described in Section 1.5 below and an Environmental Permit is required for its construction and operation. Environmental impacts arising from the Project will be assessed in the Environmental Impact Assessment study to be carried out in accordance with the Ordinance.

1.3 Name of Project Proponent

Chief Engineer, Harbour Area Treatment Scheme Division, Drainage Services Department.

1.4 Location and Scale of Project

Figure PP-001 illustrates the location and the overall layout of the HATS Stage 2 system. Besides the “New Biological Treatment Works” shown cross-hatched in the Figure, all the other elements are to be constructed under the HATS Stage 2A.

Table 1 describes the key components of the HATS Stage 2A, and **Figures PP-002 to PP-010** illustrate the sites required for the construction and operation of the HATS Stage 2A.

1.5 Numbers and Types of Designated Projects

Table 2 lists out the elements of the Project which are classified as Designated Projects in accordance with EIAO.

The proposed pumping stations at Cyberport and Sandy Bay are Designated Projects as specified under Part I, Category F3 (b) of Schedule 2 of the EIAO –‘SEWAGE COLLECTION, TREATMENT, DISPOSAL and REUSE’ since the installed capacities of these pumping stations are between 2,000 to 300,000m³/day and the pumping stations are constructed with a boundary of less than 150m from the nearest affected area.

As the proposed installed capacities of the PTWs at North Point, Wan Chai East, Central, Sandy Bay Cyberport, Aberdeen, Wah Fu and Ap Lei Chau in Stage 2A exceed 15,000m³/day, the upgrading of these PTWs are Designated Projects as specified under Part I, Category F1, of Schedule 2 of the EIAO. Similarly, the upgrading of the SCISTW is also a Designated Project as specified under Part I, Category F1, of Schedule 2 of the EIAO.

Table 1
Key Components of HATS Stage 2A

Component	Description
<p>Sewage Conveyance System</p> <ul style="list-style-type: none"> • Northern System <ul style="list-style-type: none"> North Point => Wan Chai East Wan Chai East => Central Central => Stonecutters Island • Western System <ul style="list-style-type: none"> Ap Lei Chau ==> Aberdeen Wah Fu => Aberdeen Aberdeen => Cyberport Cyberport => Sandy Bay Sandy Bay => Central • Drop shafts at various PTWs 	<ul style="list-style-type: none"> • a deep tunnel of about 3km in length • a deep tunnel of about 3.5km in length • a deep tunnel of about 4km in length • a horizontal directional drilled (HDD) pipeline of about 1.2km in length • a sub-surface pipeline of about 1km in length • a pipeline within a drill and blast (D&B) tunnel and sub-surface trench of about 2.2km in length • a deep tunnel of about 1.2km in length • a deep tunnel of about 4.2km in length • locations as shown in Figure PP-001
<p>Pumping Stations</p> <ul style="list-style-type: none"> • Ap Lei Chau • Aberdeen • Cyberport • Sandy Bay 	<ul style="list-style-type: none"> • 0.75 m³/sec capacity for ultimate development scenario • 2.57 m³/sec capacity for ultimate development scenario • 0.3 m³/sec capacity for ultimate development scenario • 0.5 m³/sec capacity for ultimate development scenario
<p>Preliminary Treatment Works (PTWs) Upgrading</p> <ul style="list-style-type: none"> North Point Wan Chai East Central Sandy Bay Cyberport Aberdeen Wah Fu Ap Lei Chau 	<ul style="list-style-type: none"> • 3.49 m³/sec capacity for ultimate development scenario • 5.14 m³/sec capacity for ultimate development scenario • 4.74 m³/sec capacity for ultimate development scenario • 0.40 m³/sec capacity for ultimate development scenario • 0.56 m³/sec capacity for ultimate development scenario • 2.22 m³/sec capacity for ultimate development scenario • 0.57 m³/sec capacity for ultimate development scenario • 1.21 m³/sec capacity for ultimate development scenario
<p>SCISTW Expansion</p> <ul style="list-style-type: none"> • Main Pumping Station • Expansion of CEPT Facilities • Disinfection Facilities¹ • Expansion of Sludge Dewatering and Disposal Facilities 	<ul style="list-style-type: none"> • 25.2 m³/sec capacity for ultimate development scenario • additional rapid mixing tanks, flocculation tanks and stacked primary clarifiers to treat an ultimate flow of 2.8 million m³/day • provision of chlorination/dechlorination facility, or installation of other disinfection technology to treat an ultimate flow of 2.8 million m³/day • additional sludge storage tanks, centrifuges and sludge cake silos to treat an ultimate flow of 2.8 million m³/day

¹ The final choice of the disinfection technology is subject to the findings of a separate EIA study for the advance part of the disinfection facilities, under EIAO Application No. ESB-120/2004.

Table 2
Designated Projects covered by Project Profile

Designated Project	Proposed Capacity (Ultimate Development Scenario, m ³ /day)	Schedule of the EIAO (Schedule 2, Part 1)	
		Category of Project	Applicable Item
Pumping Stations			
• Cyberport	• 0.3 m ³ /sec capacity for ultimate development scenario (26,000 m ³ /day)	F3	(b) i
• Sandy Bay	• 0.5 m ³ /sec capacity for ultimate development scenario (43,200 m ³ /day)	F3	(b) iii & iv
Preliminary Treatment Works Upgrading			
North Point	• 3.49 m ³ /sec (301,540 m ³ /day)	F1	-
Wan Chai East	• 5.14 m ³ /sec (444,100 m ³ /day)	F1	-
Central	• 4.74 m ³ /sec (410,000 m ³ /day)	F1	-
Sandy Bay	• 0.40 m ³ /sec (34,560 m ³ /day)	F1	-
Cyberport	• 0.56 m ³ /sec (48,460 m ³ /day)	F1	-
Aberdeen	• 2.22 m ³ /sec (191,800 m ³ /day)	F1	-
Wah Fu	• 0.57 m ³ /sec (49,240 m ³ /day)	F1	-
Ap Lei Chau	• 1.21 m ³ /sec (104,500 m ³ /day)	F1	-
SCISTW Expansion	• upgrading the capacity to ultimately treat 2.8 million m ³ /day	F1	-

1.6 Name(s) and Telephone Number(s) of Contact Person(s)

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2.1 Planning & Implementation

The Project is to be implemented by Drainage Service Department with the assistance of consultants. The construction works will be packaged into a number of works contracts to be carried out by contractors.

2.2 Project Programme

In the 2005 Policy Address, the Chief Executive has committed to implementing HATS Stage 2 in phases with a view to treating all the sewage from both sides of Victoria Harbour in 2013.

It is planned to start the site investigations and design of the Project in early 2006 to allow the major construction works to commence in 2009. This would enable us to complete and commission the Stage 2A scheme by end 2013. Moreover, we shall expedite part of the disinfection facilities² of Stage 2A for completion by 2009 to bring early improvement to the harbour water quality and to enable re-opening of the Tsuen Wan beaches.

The above programme is subject to the support of the community that the operation costs of the sewage services should be met through sewage charges.

2.3 Other Projects in the Vicinity of the Study Area

Major projects identified which may occur concurrently with the proposed HATS Stage 2A works in the vicinity of the proposed sites are:

- Wan Chai Development Phase II;
- Central Reclamation Phase III;
- Cyberport Development;
- Route 4 (formerly known as Route 7);
- Route 8 (formerly known as Route 9);
- Central-Wanchai Bypass & Island Eastern Corridor Link;
- Shatin Central Link;
- MTRC North Island Line Extension;
- MTRC South Island Line Extension;
- MTRC West Island Line Extension;
- Drainage Improvement on Northern Hong Kong Island, including the Hong Kong West Drainage Tunnel and the Sheung Wan Stormwater Pumping Station;
- Planning Study on the Harbour and its Waterfront Areas;
- Sun Yat Sen Memorial Park Phase II;
- Harbour-front Enhancement Review – Wan Chai, Causeway and Adjoining Area (HER); and
- Laying of Western Cross Harbour Mains and associated land main from West Kowloon to Sai Ying Pun.

² The advance part of the disinfection facilities is the subject of a separate EIA study under EIAO Application No. ESB-120/2004.

3.1 Outline of Process Involved

As noted in 1.2 above, HATS Stage 2A would involve upgrading the existing PTWs, expanding the treatment facilities at SCISTW, and building a sewage conveyance system. Other ancillary processes including sludge dewatering and disposal, odour control, and chemical storage and dosing facilities at SCISTW would also be expanded to cope with the increased flow. This would require construction works to be carried out at or near the existing PTW sites on Hong Kong Island and at the existing sewage treatment works on Stonecutters Island. Major construction activities would include site formation; driving of piles; deep pumping station construction; shaft excavation; deep tunneling using tunnel boring machines, drill and blast, pipe jacking and directional drilling techniques; pipe/culvert laying, spoil disposal; building construction; and installation of E&M plant and equipment.

The operation philosophy of HATS Stage 2A is basically same as Stage 1. Sewage collected at the PTWs will be discharged into the sewage conveyance system via drop shafts and transferred by gravity to the SCISTW where it will be lifted by pumping to the surface for treatment and disposal. The sewage will undergo chemically enhanced primary treatment (CEPT), followed by disinfection using the disinfection technology that has been adopted in the advance disinfection facility³, before it is discharged into the western waters through the existing outfall. Sludge drawn from the sedimentation process will be dewatered and disposed of following the established practice for HATS Stage 1 for landfill disposal as an interim measure before the Government has decided on the long term strategy for treating solid waste.

There will be potential environmental impacts arising from the construction and operation of HATS Stage 2A. They are addressed in the following sections. Preliminary assessments at this stage and the Stage 1 experience indicate that these environmental impacts can be minimized through appropriate mitigation measures.

3.2 Possible Environmental Impacts

3.2.1 *Construction Phase*

Air Quality

The ASRs in the vicinity of the works sites in HATS Stage 2A would be impacted by dust emission. Construction activities that have the potential to generate dust include the process of stockpiling of tunnel spoil, excavation works, spoil and waste transfer/transport, construction traffic, and general construction works. Dust emission would vary substantially from day to day depending on the level of activities, the specific construction operation and the prevailing climate conditions. Most of the ASRs in the vicinity of the works sites are expected to be minimally impacted by dust due to the relatively high background condition caused by existing traffic.

Noise

It has been predicted that unmitigated construction noise impacts associated with the proposed site locations would be high at many nearby NSRs because of the construction activities.

³ Disinfection technology using chlorination/dechlorination is being proposed for the advance disinfection facility which will form part of the Stage 2A works. A separate EIA study is being carried out under EIAO Application No. ESB-120/2004 to review the choice of disinfection technology and its environmental acceptability.

Particularly noisy activities will include excavation by drill and blasting, piling and foundation works, and waste/material and equipment transfer/transport. Noise impacts at some sites would be less obvious because they are already impacted by the traffic noise at the nearby expressway and cargo handling facilities.

Night-Time Construction

Tunnelling and shafting are the construction activities which would likely be carried out 24 hours a day at the tunnel production shaft sites, giving rise to potential noise sources at night-time from these tunnel construction sites.

Water Quality

Uncontrolled site runoff and temporary by-pass of raw sewage at the PTWs discharging into the drainage/sewerage systems and the harbour are the main potential sources of water pollution during the construction of Stage 2A. Site runoff may consist of washout water from concrete batching, vehicle wheel and body washing facilities, and water contaminated by oil, grease, bentonite slurry, sediments or chemicals used in the finishing processes for buildings.

Waste

The wastes that are likely to be generated from the Project during construction include the following:

- construction waste from site clearance, site preparation, tunnel excavation and earthworks;
- chemical wastes generated from maintenance of plant and equipment;
- general construction material; and
- general refuse comprising food waste, newspaper and packaging, etc.

The construction of the Project would generate about 400,000 m³ of spoil. It is anticipated that the majority of the excavated materials are inert, meaning that it could be reused as public fill rather than disposed of as construction waste in landfills. However, suitable outlets for public fill are increasingly difficult to secure. The disposal of the relatively significant amount of excavated materials from the Project is a key issue which is to be examined in the EIA study.

Ecology

Potential terrestrial ecological impacts, if any, will most likely occur during site clearance works at Sandy Bay, Cyberport and Aberdeen. However, in the absence of valuable terrestrial ecology on these works sites, the impacts are considered negligible. Marine ecological impacts may arise if contaminated runoff from the works site or temporary bypass of raw sewage are discharged into the harbour during construction.

Landscape and Visual

Except Sandy Bay site, the landscape and visual impacts for all Project sites are anticipated to be moderate to low during construction stage. The landscape and visual impacts at Sandy Bay site is evaluated as high to moderate due to the high sensitivity of nearby receivers.

Cultural Heritage

No existing archaeological sites or declared monuments are found at the proposed Project site or within the 200m buffer zone, except some nine graded historic buildings are within the buffer zone of the SCISTW site. No impact on these buildings is expected during construction.

Traffic Generation

Additional traffic loading will be generated from delivery of construction materials and equipment to and disposal of excavated spoil and wastes from the sites.

Hazards

Explosives, which are classified as dangerous goods, will be used if it is proposed to use drill and blast method for the excavation of the shafts and some of the tunnels.

3.2.2 Operational Phase

Air Quality

Once the Project is commissioned, air quality issues will be confined primarily to odour at treatment works, and pumping stations and the PTWs. The major odour sources are the sewage, grit, screenings and sludge at all PTWs, the wet wells of the pumping stations, as well as the inlet works, influent channels of the CEPT basins and sludge handling tanks at the SCISTW. Hydrogen sulphide is the main pollutant.

Noise

Noise impacts during operation of the sewage conveyance system are considered minimal as most of the associated facilities would be located underground or enclosed. There would not be any significant increase in noise level during operation of the SCISTW and the PTWs because the modes of operation of these plants basically remain unchanged.

Water Quality

The full HATS flow will be discharged via the existing outfall at Stonecutters Island. A preliminary assessment of the water quality implications of HATS Stage 2A indicates that upon commissioning of the Project, a number of key water quality criteria set for the Victoria Harbour Water Control Zone could be met except at some localized areas under the worst scenario. The dissolved oxygen level (vital for marine life) in the harbour waters would be further increased and 99.9% of the bacteria from the sewage would be removed.

Waste

Waste sources during operation include general refuse associated with office, rest and catering activities, chemical wastes generated from maintenance of all aspects of PTWs, pumping stations and the SCISTW. Also large amounts of screening and sludge will be collected in the preliminary treatment process and the CEPT treatment process. Disposal of sludge and screenings will follow the established practices for HATS Stage 1 for landfill disposal.

Ecology

No terrestrial ecological impacts are anticipated during the operation stage. Regarding the marine ecology, as the purpose of HATS Stage 2A is to improve the water qualities of Victoria Harbour and the East Lamma Channel by collecting and treating the raw sewage before discharging to the harbour, significant marine ecological benefits are predicted in areas where raw sewage is currently being directly discharged. However, some local impacts may be expected in the water at the outfall location.

Landscape and Visual

No significant visual impact is anticipated in the operation phase as the design of all PTWs, pumping stations and STW will be in matching with surrounding environment

Cultural Heritage

During the operation stage, no cultural heritage impacts are anticipated.

Traffic Generation

Additional traffic loading would be generated to and from the SCISTW for removing dewatered sludge, delivery of chemicals and transport of personnel.

Hazards

In the sewage conveyance system, the main risk will be the build up of toxic and/or inflammable gases in confine space. Hydrogen sulphide gas (H₂S), which is a toxic gas, is of primary concern. However, H₂S is unlikely to pose a hazard to the public who do not have ready access to the tunnels or outfall system.

The chemicals to be used at SCISTW include:

- Ferric Chloride (for sedimentation)
- Polymers (for sedimentation and sludge dewatering)
- Hypochlorite solution (if chlorine disinfection is adopted)
- Dechlorination agent (if chlorine disinfection is adopted)
- Hydrochloric acid (if electrochlorinators are adopted)
- Caustic (if electrochlorinators are adopted)

Ferric chloride is used as an aid in settling primary sludge in the sedimentation tanks. It is a corrosive chemical and is delivered in liquid form in bulk by barge or truck tanker. There are six existing ferric chloride storage tanks of about 2900m³ in capacity. The storage volume will be increased to cope with the increased flow.

Polymers are used to make-up polymer solutions for use as aids in settling primary sludge in the sedimentation tanks and in sludge dewatering. They are delivered by truck in dry form in bulk shipping containers or pneumatic unloading trucks and transferred into two storage tanks which are located outside the existing sludge dewatering buildings. Expansion of the storage capacity is needed. However, polymer is not considered as hazardous by its physical/chemical properties.

If chlorination is adopted as the disinfection technology, an electrochlorination plant⁴ is proposed at SCISTW to provide disinfection to the CEPT treated effluent. The hypochlorite solution generated from the electro-chlorination plant, at 0.2% concentration, will be stored in on-site storage tanks for a short period of time before being dosed in the CEPT effluent. Any leakage may pose potential threat to site personnel and environment. Also the delivery and storage of dechlorination agent, which is classified as dangerous goods, may have some hazard concern. Hydrogen gas will also be generated during the electrochlorination process and released to the atmosphere. In addition, hydrochloric acid will be used to clean the surface of electrodes in the electrochlorinators periodically. The wastewater, containing contaminated hydrochloric acid, will be neutralized using caustic before it is discharged. Both hydrochloric acid and caustic are corrosive.

⁴ Being part of the disinfection facilities to be advanced for earlier completion and the subject of a separate EIA study under EIAO Application No. ESB-120/2004.

4.1 Existing and Planned Sensitive Receivers

4.1.1 *Air Sensitive Receivers (ASRs)*

Numerous ASRs have been identified in the vicinity of the proposed works sites in accordance with the Technical Memorandum on Environmental Impact Assessment (TMEIA). The following are the major ASRs in the vicinity of each of the works sites:

- North Point
 - Residential Planned development at the ex-North Point Estate site, residential buildings along Java Road and Marble Road, Healthy Gardens, Island Place, Tanner Garden, Full Wealth Gardens, Belford Garden, residential buildings along Tsat Tsz Mui Road, Model Housing Estate, residential buildings along Hoi Kwong Street, Hoi Wan Street, Hoi Chak Street and Westland Road and Tai Koo Shing
 - Institutional Canossa College and Primary School
 - Open Space Playgrounds to the south and southwest of the site, Quarry Bay Park to the east and west of the Eastern Harbour Tunnel
 - Government Facilities WSD HK Regional Building, North Point Government Offices and North Point Police Station
 - Commercial Kodak House, commercial building at 625 King's Road, commercial and industrial buildings along Java Road and Marble Road, Eastern Harbour Centre, Hong Kong Tobacco Company Ltd, Taikoo Place, and commercial buildings along Hoi Chak Street

- Wan Chai East
 - Residential Residential buildings along Gloucester Road, Jaffe Road, Lockhart Road, Great George Street and Hennessey Road and Causeway Centre;
 - Recreational Wan Chai Sports Ground, indoor stadium and training pool
 - Government Facilities Police Officer's Club
 - Commercial Hong Kong Yacht Club, Great Eagle Centre, Harbour Centre, China Resources Building, Sun Hung Kai Centre, Society for the Prevention of Cruelty to Animals, commercial buildings along Gloucester Road, Jaffe Road, Lockhart Road and Hennessey Road

- Central
 - Residential Residential buildings along Connaught Road Central and West, Des Voeux Road Central and West, Wing Lok Street, Bonham Strand and Bonham Strand West as well as Queen's Road Central and West
 - Recreational Sun Yat Sen Memorial Park and Indoor Games Hall
 - Government Facilities Water Front Divisional Police Station, Western Fire Station, Offices of the Custom and Excise Department and Harbour Building
 - Commercial Shun Tak Centre and Hongkong-Macau Ferry Terminal, China Merchants Tower, commercial buildings along Connaught Road Central and West, Des Voeux Road Central and West, Wing Lok Street, Bonham Strand and Bonham Street West as well as Queen's Road Central and West

- Sandy Bay
 - Residential Tam Villa, Villa Cecil, Scenic Villa, Felix Villa, Crown Terrace, Bayview, Ocean View, Vista Mount Davis, Cape Mansions, Canossian Retreat House, Honeyville, Sandy Bay Village and Greenvale
 - Institutional Duchess of Kent Children Hospital, two elderly homes, MacLehose Medical Rehabilitation Centre, John F Kennedy Centre, Fung Yiu King Hospital and Elderly Home, West Island School and St Claire's Girl School
 - Recreational University of Hong Kong Sports Fields
- Cyberport
 - Residential Residence Bel-Air, Baguio Villa, Pine Court, residential buildings along Sassoon Road, Kong Sin Wan Tsuen, Pok Fu Lam Garden, Pok Fu Lam Village, Chi Fu Fa Yuen and Wah Fu Estate
 - Institutional Vocational Training Council Training Centre Complex
 - Commercial Cyberport commercial developments
- Wah Fu
 - Residential Wah Fu Estate, Ka Lung Court and Wah Kwai Estate
 - Institutional Tung Wah Group of Hospitals Tsui Tsin Tong School, SKH Lui Ming Choi Secondary School, Precious Blood Primary School, Pui Ying Secondary School, Caritas Chong Yuet Ming Secondary School, Institute of Immunology and primary schools to the northeast of Wah Fu estate
 - Recreational Waterfall Bay Park, and sports fields near Ka Lung Court and the proposed Project site
 - Commercial/Industrial Wah Kwai Shopping Centre, Dairy Farm Ice and Cold Storage
- Aberdeen
 - Residential Waterfront South, Wah Kwai Estate, Wah Fu Estate, Ka Lung Court and South Horizons
 - Recreational Shek Pai Wan Playground, sports fields next to the proposed Project site and Ka Lung Court
 - Commercial/Industrial Dairy Farm Ice and Cold Storage, Hing Wai Ice and Cold Storage and Hing Wai Centre and a concrete batching plant
- Ap Lei Chau
 - Residential South Horizons and Lei Tung Estate
 - Commercial/Industrial Horizon Plaza, Tai Chong Hong Building, Electric Tower, Harbour Industrial Centre and Oceanic Industrial Centre
- Stonecutters Island Sewage Treatment Works
 - Residential Mei Foo Sun Chuen, residential development to the northeast of the proposed Project site and dwellings next to the military area
 - Recreational Lai Chi Kok Park
 - Government facilities Government Dockyard, Refuse Transfer Station, Ngong Shuen Chau Barracks and Navy Base
 - Commercial/Industrial Boatyards, bus depot and commercial development to the northeast of the proposed Project site

4.1.2 *Noise Sensitive Receivers (NSRs)*

A large number of NSRs have been identified in the vicinity of all of the proposed works sites under the Technical Memorandum on Environmental Impact Assessment (TMEIA). The following are the major NSRs in the vicinity of each of the works sites:

- North Point
 - Residential Planned development at the ex-North Point Estate site, residential buildings along Java Road and Marble Road, Healthy Gardens, Island Place, Tanner Garden, Full Wealth Gardens, buildings along Tsat Tsz Mui Road, Model Housing Estate and residential buildings along Hoi Chak Street
 - Institutional Canossa College and Primary School
- Wan Chai East
 - Residential Residential buildings along Gloucester Road, Jaffe Road, Lockhart Road, Great George Street and Hennessey Road;
- Central
 - Residential Residential buildings along Connaught Road Central and West, Des Voeux Road Central and West, Wing Lok Street, Bonham Strand and Bonham Strand West
- Sandy Bay
 - Residential Tam Villa, Villa Cecil, Scenic Villa, Crown Terrace, Bayview, Ocean View, Vista Mount Davis, Cape Mansions, Canossian Retreat House and Honeyville
 - Institutional Duchess of Kent Children Hospital, two elderly homes, MacLehose Medical Rehabilitation Centre, John F Kennedy Centre, Fung Yiu King Hospital and Elderly Home, West Island School and St Clare's Girl School
- Cyberport
 - Residential Residence Bel-Air, residential buildings along Sassoon Road and Kong Sin Wan Tsuen
- Wah Fu
 - Residential Wah Fu Estate, Ka Lung Court and Wah Kwai Estate
 - Institutional Tung Wah Group of Hospitals Tsui Tsin Tong School, SKH Lui Ming Choi Secondary School, Precious Blood Primary School, Pui Ying Secondary School and Caritas Chong Yuet Ming Secondary School
- Aberdeen
 - Residential Wah Kwai Estate and Ka Lung Court;
- Ap Lei Chau
 - Residential South Horizons

- Stonecutters Island Sewage Treatment Works (SCISTW)
 - Residential Mei Foo Sun Chuen and residential area of Barrack

4.1.3 *Water Quality Sensitive Receivers*

Water quality sensitive receivers are identified in the following zones:

- Victoria Harbour WCZ;
- Southern WCZ;
- Fish Culture Zones (Ma Wan, Sok Kwu Wan and Luk Chau Wan on Lamma Island); and
- Secondary Recreation Zones (beaches in Tsuen Wan, waters from Deep Water Bay to Shek O, along the southern coastline of Hong Kong Island and the northern coastline of Lamma Island).

4.1.4 *Ecological Sensitive Receivers*

Some minor site clearance works will be required at Sandy Bay, Aberdeen and Cyberport and some local trees and shrubs will be lost.

4.1.5 *Landscape and Visual Sensitive Receivers*

The sensitive receivers are mainly the residents and people working in the vicinity of the proposed Project site areas as well as the travellers to those areas adjacent to the sites.

4.1.6 *Cultural Heritage Sensitive Receivers*

There are no major cultural heritage sensitive receivers in the vicinity of the proposed works sites except the nine graded historic buildings on Stonecutters Island as mentioned in Section 3.2.1.

4.2 Existing Environmental Elements

The most significant environmental issues in the surrounding environments of the proposed works sites are air and noise. It is expected that the existing noise and dust levels around the proposed sites in Central, Wan Chai and North Point would be relatively high due to the presence of trunk roads. The levels around the proposed sites in Aberdeen, Ap Lei Chau, and Stonecutters Island are also expected to be high due to industrial activities in these areas. Other proposed works sites are located near residential areas and their baseline noise and dust levels are expected to be lower.

5.1 Potential Measures to Minimise Environmental Impacts

Various mitigation measures will be implemented to minimise potential environmental impacts. These measures are outlined in the following sections and will be further reviewed under the EIA study to be carried out.

5.1.1 *Construction Phase*

Air Quality

Dust generation will be the biggest potential impact on air quality during the construction phase. Contractors should ensure that all construction works are carried out in accordance with the Air Pollution Control (Construction Dust) Regulations and appropriate dust mitigation and suppression measures are implemented in order to ensure that impacts are within acceptable limits. Such mitigation measures include:

Construction Planning

- Cessation of dust generating construction activities during periods of high wind.

Excavation

- dust emission will be minimised during any surface excavation by limiting the extent of excavation;
- surfaces of excavation works should be compacted;
- temporary fabric covers will be applied during windy conditions; and
- completed earthworks will be promptly revegetated.

Material Handling

- the distance between stockpile and site boundary will be maximized so that off-site dust impacts generated from material handling could be minimised;
- the height from which excavated materials are dropped will be kept as low as practical to minimise fugitive dust; and
- all stockpiles of aggregate or soil will be enclosed or covered and dampened to reduce wind erosion.

Control of Vehicle Dust

- effective water sprays will be used to control potential dust emission sources such as unpaved areas;
- vehicles with loads that have the potential to create dust while in transport will be properly covered, with the cover secured and extended over the edges of the side and tail boards;
- materials will be dampened, if necessary, before transportation;
- travelling speeds will be controlled to reduce traffic-induced dust dispersion and re-suspension within the site from the operation of haul trucks;
- wheel washing facilities will be provided and maintained at the exit of the site to minimize the quantity of material deposited on public roads;
- reduce the on-site speed from 20 km/hr to 10 km/hr; and
- watering road surface twice daily.

Noise

All construction activities require Construction Noise Permit (CNP), and mitigation measures must be taken to comply with the applicable criteria so as to restrain construction noise within acceptable levels. These mitigation measures include:

- selection of appropriate equipment and plant for each construction activity and good equipment maintenance;
- units not in use will be switched off;
- intrusive noisy activities will be scheduled for periods when the number of affected persons is likely to be minimal;
- silencing of noisy equipment, particularly diesel-engine plants;
- efficient management of the construction activities to ensure that periods of noisy activities are minimized, or not grouped together in the same site area; and
- adoption of noise barriers.

Night-Time Construction

The contractors are required to apply for night-time noise permits from EPD and abide by the strict night-time criteria set out in the Noise Control Ordinance.

Water Quality

To meet the standards in “Technical Memorandum on Effluents Discharged into Drainage and Sewerage System, Inland and Coastal Waters”, the following mitigation measures will be taken:

- plan and design all the upgrading and expansion works at SCISTW and PTWs to minimise any sewage bypass as far as possible to the sea;
- proper drainage design and good site management and practices to control construction site runoff and protect the marine environment near the works sites;
- settling lagoons and grease/oil traps will be provided where necessary before discharging the runoff off site;
- settled slurry or mud will be disposed of to the nearest landfill site;
- proper site management to prevent debris and harmful materials from reaching drainage facilities and water bodies; and
- all domestic effluent from Contractor and RSS facilities will be disposed of via foul sewers.

Waste Management

In order to meet the relevant standards as specified in the Waste Disposal Ordinance, the following waste mitigation measures will be undertaken to minimise impacts from construction wastes arising from the Project:

- good waste management plan and practices will be devised and implemented;
- inert materials suitable for fill will, if possible, be re-used;
- materials to be reused or recycled will be handled and stored in an appropriate manner to minimize contamination and loss;
- other construction waste/inert materials unsuitable for reuse or recycle will be disposed of properly;

- chemical wastes will be stored and disposed of in accordance with approved methods; and
- marine transport will be considered if possible for disposal of excavated spoil to reduce impacts.

Ecology

If necessary, tree surveys will be undertaken at the proposed works sites where site clearance works are to be carried out to determine the number and species of trees affected and their potential significance, and to propose compensation measures such as re-provisioning and replanting.

Landscape and Visual

Mitigation measures, such as siting of site equipment/plant away from the sensitive receivers and erection of site screening, will be implemented to minimise visual intrusion during construction stage.

Cultural Heritage

No specific mitigation measures will be required.

Hazards

Transport of explosives may pose potential hazards to persons. The delivery of explosives from Government Explosives Depots to the blasting sites will be in strict compliance with the requirements specified by the Commissioner of Mines and supervised by the qualified and experienced site personnel.

It is anticipated that explosives will only be delivered to sites when needed and there will be no storage on site. If any overnight storage is required, the storage area will be constructed in accordance with the requirements specified in the Dangerous Goods Regulations. Any requirements specified by the Commissioner of Mines and the Director of Fire Services on storage of explosives will be strictly followed.

With regard to the use of explosives, only qualified and experienced personnel will be engaged in the blasting operation on site. Prior to the blasting operation, a blasting assessment report will be produced to detail the protection works needed and taken. In addition, all safety and security procedures will be implemented to safeguard any potential hazards due to the use of explosives on site.

Due to the hazardous nature of explosives, the drill and blast operations will be vigorously controlled to prevent missile risk to the public and to the workforce.

5.1.2 Operational Phase

Air Quality

Odour is the major impact on air quality at all PTWs, pumping stations and SCISTW during the operational phase. An air quality impact assessment will be carried out to evaluate the potential impact to the ASRs. Mitigation measures to be taken may include containment of major odour

sources, and provision of odour removal/scrubbing systems, particularly at the sludge handling facility, if necessary.

Noise

No particular noise mitigation measures are considered necessary during the operational phase. This will be confirmed through detailed noise modelling to be undertaken as part of the EIA study.

Water Quality

Upon commissioning of the Project, most of the water quality criteria set for the Victoria Harbour Water Control Zone could be met except at some localized areas under the worst scenario. Further water quality studies of the discharge of the full HATS flow through the existing outfall at Stonecutters Island, and the emergency overflows from the whole HATS system will be undertaken in the EIA study.

As regards the potential impacts arising from the proposed disinfection process on the water quality, the EIA study to be carried out under EIAO Application No. ESB-120/2004 will be of relevance.

Waste Management

Disposal of sludge and screenings will follow the established practices for Stage 1 for landfill disposal. EPD's requirements for sludge handling such as the moisture content, disposal licencing, etc will be complied with.

Ecology

Similar to the water quality, further ecological study of the discharge of the full HATS flow through the existing outfall at Stonecutters Island will be undertaken in the EIA study.

Landscape and Visual

Landscape considerations will be incorporated in the detailed design of the structures to lessen the visual and landscape impacts of the permanent facilities. These include:

- integrate the design and layout of permanent shafts, pumping stations, treatment process buildings and structures, and subsidiary facilities with surrounding environment; and
- apply appropriate architectural and landscape treatments to the facades of the permanent structures to provide a harmonious design with surrounding environment;

Cultural Heritage

No specific mitigation measures will be required.

Hazardous Materials

Suitable hydrogen sulphide gas monitoring equipment will be provided in enclosed spaces and the pumping stations during the operation of the conveyance system.

Ferric chloride is the main hazardous reagent used for sewage treatment at SCISTW. It will be delivered and stored in tanks which are acid resistant. Therefore, no specific mitigation measures will be required. Hydrochloric acid and caustic are other potential hazardous reagents. Due to their corrosive nature, they will be stored in corrosive resistant tanks and handled in accordance with good industrial hygiene and safety practices.

The potential electrochlorination plant area will be classified as a hazardous area. A hot work permit system will be implemented so as to ensure that hot work will be carried out in a safe manner.

The hydrogen gas generated during the electrochlorination process will be collected and diluted in a de-gas system and vented into the atmosphere through properly designed vent ducts placed at appropriate height and location for safe and effective dispersion.

Should chlorination/dechlorination be adopted as the disinfection technology, the chlorination and dechlorination agent storage tanks will be properly designed to minimize any risks of leakage. Bund walls will be built around the storage tanks to contain any leakage in case of damage. The dechlorination agent will be delivered to site using licensed D.G. vehicles. Regular inspection and preventive maintenance of the storage tanks will also be carried out to ensure proper functioning of these tanks. Moreover, precautionary measures will be implemented to prevent accidental contact of the chemicals with acids, which would otherwise generate toxic gases.

In addition, contingency plans will be developed to deal with these hazards in the event that they did occur.

5.2 Possible Severity, Distribution and Duration of Environmental Effects

The severity and distribution of impacts on air, noise, water quality, waste, ecology, landscape, visual, cultural heritage and hazard are briefly outlined in Section 3.

During the construction phase from 2009 to 2013, noise and dust would likely be the main concerns. When the Project is put in full operation in end 2013, the main environmental concerns would likely be odour at the PTWs and SCISTW, as well as the water quality in the waters where the treated effluent is discharged.

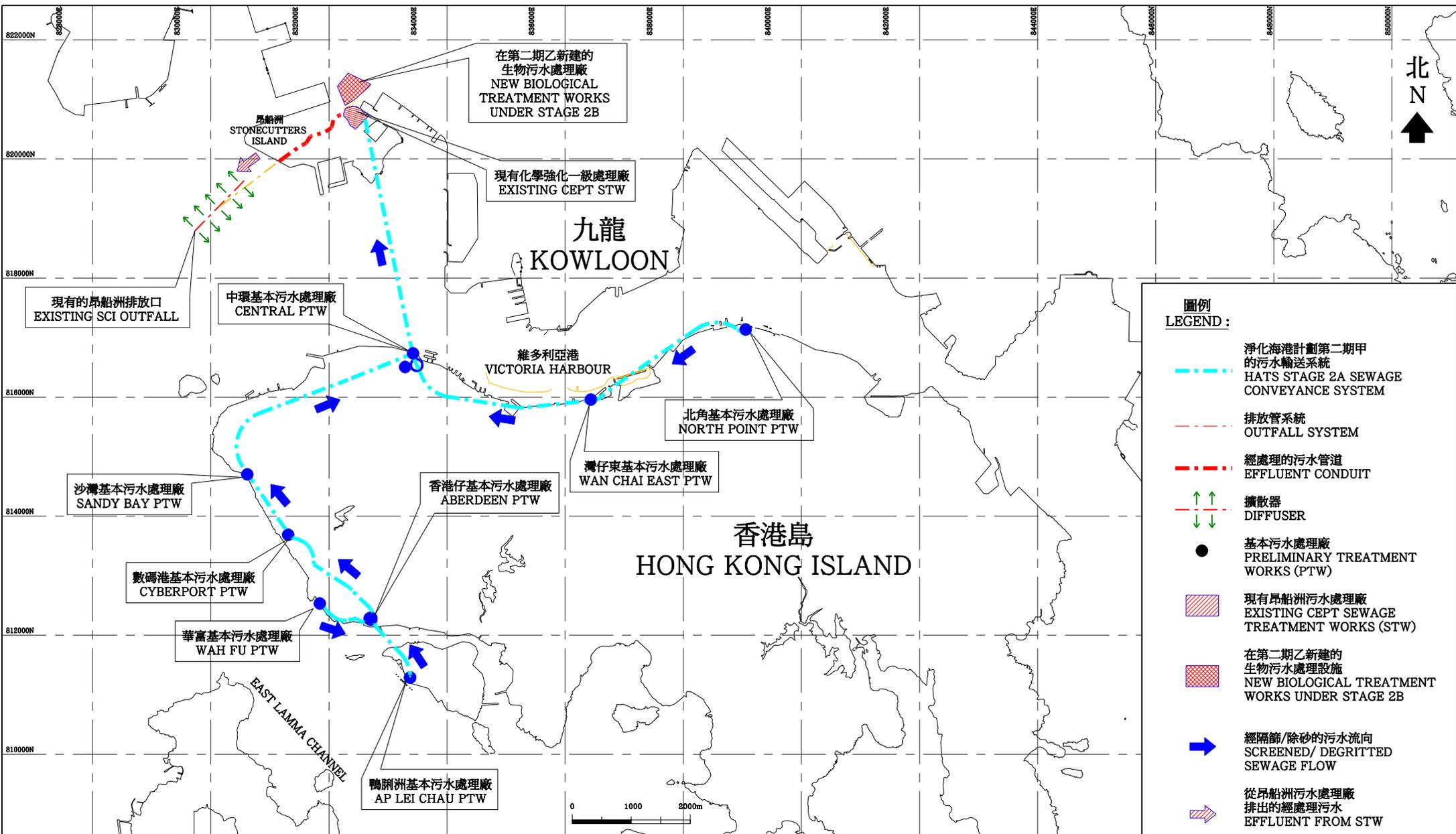
5.3 Further Implications

The construction and operation of the Project may raise some public concerns in local communities as many of the tunnel works sites and PTWs are located in the vicinity of residential/commercial developments. However, the implementation of the Project will bring about further significant improvements to the water quality in Victoria Harbour, a valuable heritage of Hong Kong.

6.1 Use of Previously Approved EIA Reports

The following HATS-related EIA studies may also be relevant to the EIA study for this Project:

- Strategic Sewage Disposal Scheme : Environmental Impact Assessment Study completed in 2000;
- Environmental and Engineering Feasibility Assessment Studies in relation to the Way Forward of the Harbour Area Treatment Scheme completed in 2004;
- Assessment of the Water Quality Implications of Phased Implementation of HATS Stage 2; and
- The EIA study being planned for the proposed advance disinfection facilities at SCISTW under EIAO Application No. ESB-120/2004.



圖例
LEGEND:

- 淨化海港計劃第二期甲的污水輸送系統
HATS STAGE 2A SEWAGE CONVEYANCE SYSTEM
- 排放管系統
OUTFALL SYSTEM
- 經處理的污水管道
EFFLUENT CONDUIT
- 擴散器
DIFFUSER
- 基本污水處理廠
PRELIMINARY TREATMENT WORKS (PTW)
- 現有昂船洲污水處理廠
EXISTING CEPT SEWAGE TREATMENT WORKS (STW)
- 在第二期乙新建的生物污水處理設施
NEW BIOLOGICAL TREATMENT WORKS UNDER STAGE 2B
- 經隔篩/除砂的污水流向
SCREENED/ DEGRITTED SEWAGE FLOW
- 從昂船洲污水處理廠排出的經處理污水
EFFLUENT FROM STW

圖則名稱 drawing title

**淨化海港計劃第二期
整體規劃圖**
HARBOUR AREA TREATMENT SCHEME STAGE 2
OVERALL LAYOUT PLAN

繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	23-06-2005
核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005
批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005
部門 office	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION			

圖則編號 drawing no. **FIGURE PP-001** 比例 scale AS SHOWN

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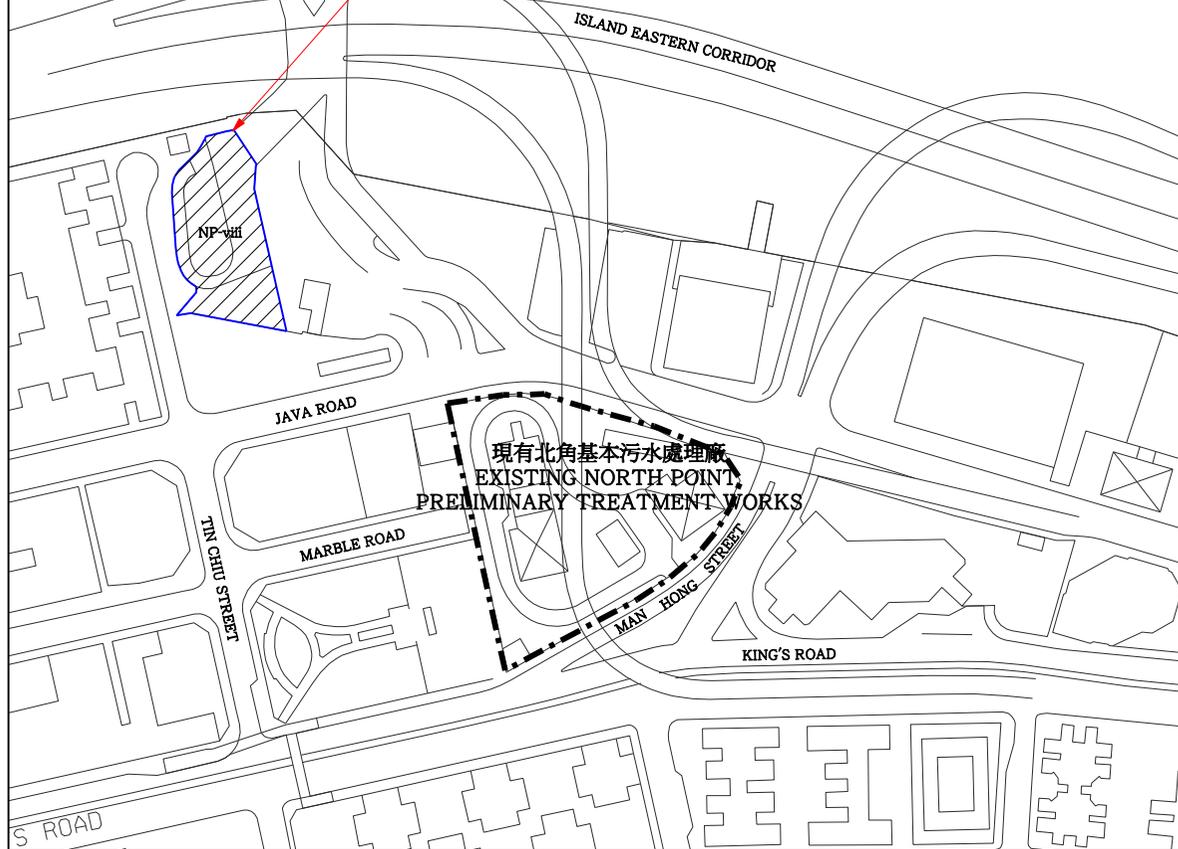
香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

北
N



NP - viii
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR DEEP TUNNEL CONSTRUCTION
- 面積 ≈ 2010平方米
- AREA ≈ 2010m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013

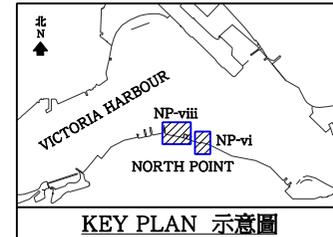
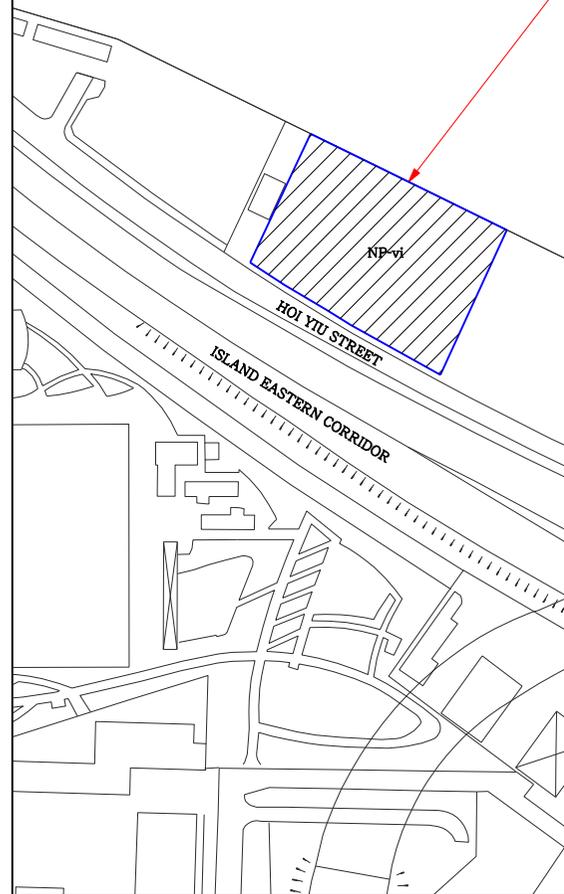


北
N



NP - vi
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用作貯存物料
- FOR STORAGE IN DEEP TUNNEL CONSTRUCTION WORKS
- 面積 ≈ 4400平方米
- AREA ≈ 4400m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013



圖例
LEGEND:

臨時用地
TEMPORARY REQUIREMENT

基本污水處理廠改善工程和建造傾卸井會在現有污水廠內進行
PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE

0 10 20 30 40 50 Metre

圖則名稱 drawing title

淨化海港計劃第二期甲
在北角的所需工程用地
HARBOUR AREA TREATMENT SCHEME STAGE 2A
LAND REQUIREMENT PLAN AT NORTH POINT

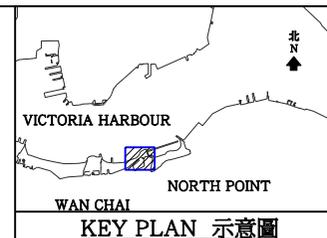
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核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005
批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005
部門 office	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION			

圖則編號 drawing no.	比例 scale
FIGURE PP-002	AS SHOWN
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WCE - i
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR DEEP TUNNEL CONSTRUCTION
- 面積 ≈ 2200平方米
- AREA ≈ 2200m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013



圖例
LEGEND:

 臨時用地
TEMPORARY REQUIREMENT

 基本污水處理廠改善工程和
建造橫切壁並會在現有污水廠內進行
PTW UPGRADING WORKS AND
DROP SHAFT CONSTRUCTION
WILL BE CARRIED OUT WITHIN
THE EXISTING PTW SITE

0 10 20 30 40 50 Metre

現有灣仔東基本污水處理廠
EXISTING WAN CHAI
EAST PRELIMINARY
TREATMENT WORKS

WCE-i

圖則名稱 drawing title

淨化海港計劃第二期甲
在灣仔東的所需工程用地
HARBOUR AREA TREATMENT SCHEME STAGE 2A
LAND REQUIREMENT PLAN AT WAN CHAI EAST

繪畫 drawn	ORIGINAL SIGNED C.W. CHAN	日期 date 23-06-2005
核對 checked	ORIGINAL SIGNED W.Y. CHAN	日期 date 23-06-2005
批核 approved	ORIGINAL SIGNED K.M. HO	日期 date 23-06-2005

部門 office
淨化海港計劃部
HARBOUR AREA TREATMENT SCHEME DIVISION

圖則編號 drawing no. **FIGURE PP-003** 比例 scale
AS SHOWN

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GOVERNMENT OF THE
HONG KONG
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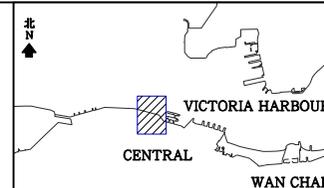


Ctl - SCC
(與中山紀念公園共同發展)
(CO-DEVELOPMENT WITH SYSMP)

- 用於興建永久豎井的接駁設施
- FOR PERMANENT SHAFT CONNECTION CHAMBER
- 面積 ≈ 850平方米
- AREA ≈ 850m²
- 會有250平方米高於地面的建築物用作通風和通道
- ABOUT 250m² ABOVE GROUND STRUCTURE FOR ACCESS AND VENTILATION
- 由2008年起使用
- REQUIRED FROM 2008

Ctl - i
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR TUNNEL PRODUCTION
- 面積 ≈ 4650平方米
- AREA ≈ 4650m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013



KEY PLAN 示意圖

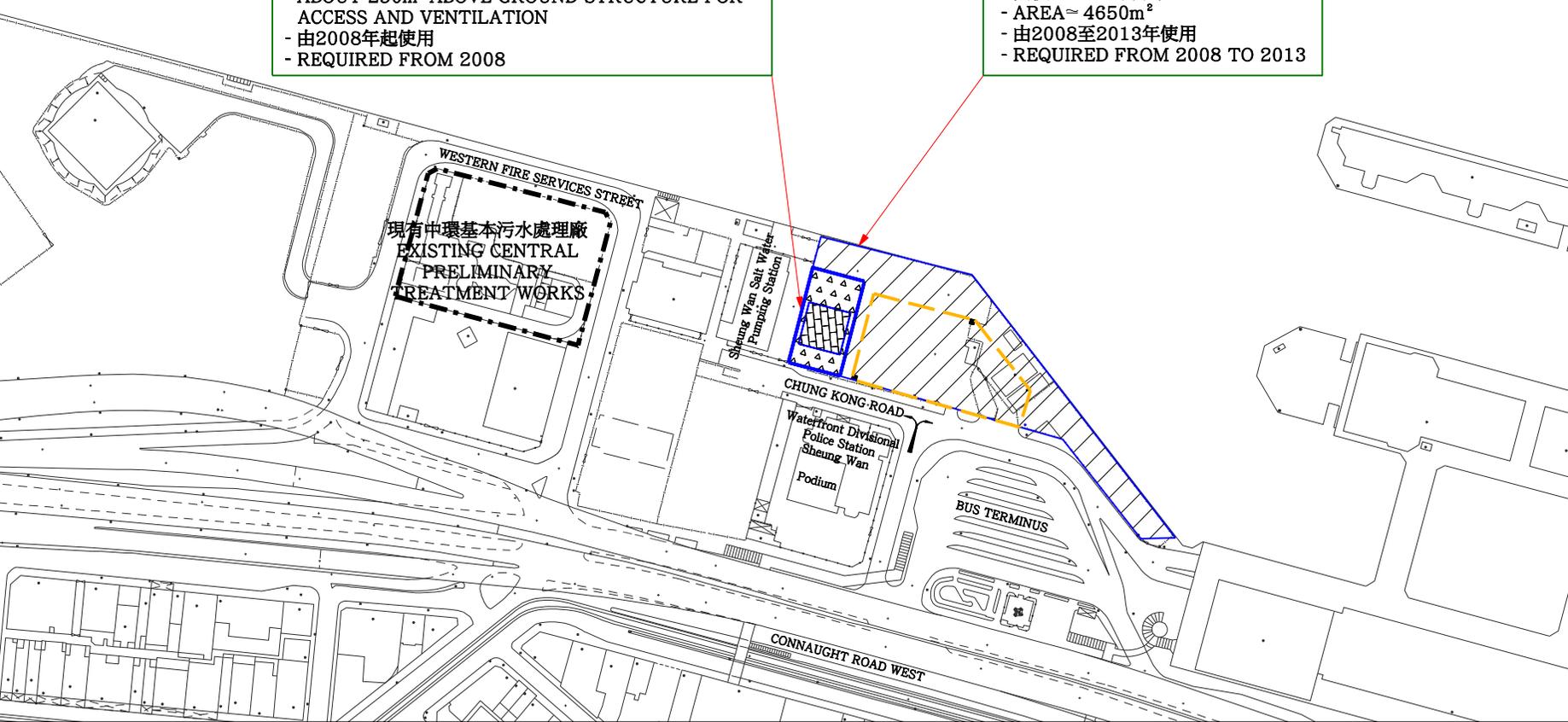
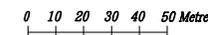
圖例

LEGEND :

- 建議的淨化海港計劃在地下豎井接駁設施
PROPOSED UNDERGROUND HATS SHAFT CONNECTION CHAMBER
- 臨時用地
TEMPORARY REQUIREMENT
- 建議的上環雨水泵房地下建築物的範圍
EXTENT OF PROPOSED SWSPS UNDERGROUND STRUCTURE
- 建議高於地面的建築物
PROPOSED ABOVE-GROUND STRUCTURE
- 基本污水處理廠改善工程和建造傾卸豎井會在現有污水廠內進行
PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE

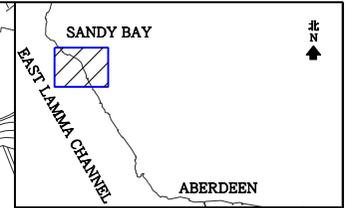
告示
NOTE :

- SWSPS : 上環雨水泵房
SHEUNG WAN STORMWATER PUMPING STATION
- SYSMP : 中山紀念公園
SUN YAT SEN MEMORIAL PARK



豎井接駁設施所需的永久用地及建造隧道所需的臨時用地
PERMANENT LAND REQUIREMENT FOR SHAFT CONNECTION CHAMBER AND
TEMPORARY LAND REQUIREMENT FOR PRODUCTION SHAFT TO TUNNEL DRIVE TO SCISTW

圖則名稱 drawing title 淨化海港計劃第二期甲 在中環的所需工程用地 HARBOUR AREA TREATMENT SCHEME STAGE 2A LAND REQUIREMENT PLAN AT CENTRAL	繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	23-06-2005	圖則編號 drawing no.	FIGURE PP-004 保留版權 COPYRIGHT RESERVED	比例 scale AS SHOWN
	核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005			
	批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005	香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION		
	部門 office	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION						



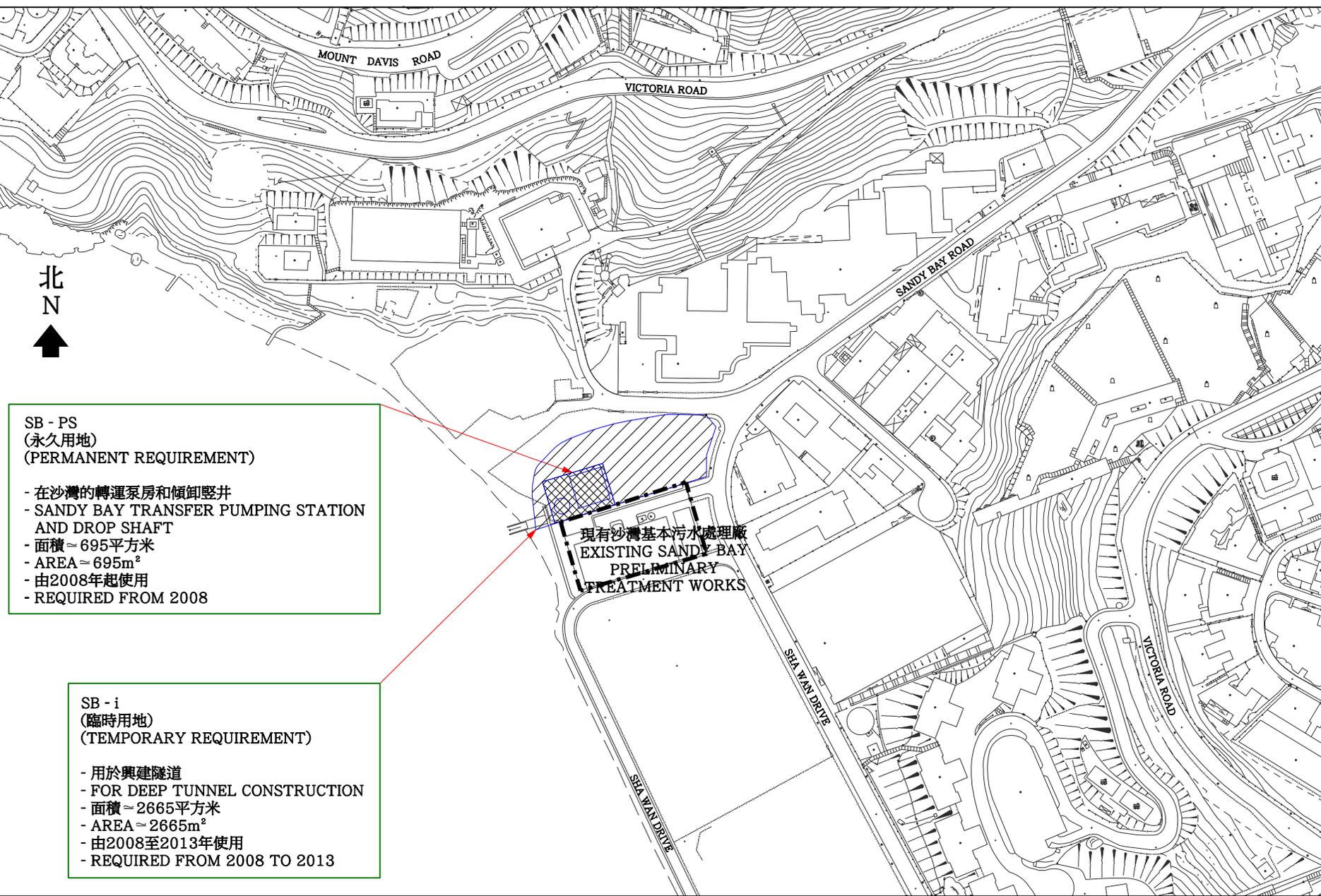
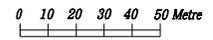
KEY PLAN 示意圖

圖例
LEGEND:

臨時用地
TEMPORARY REQUIREMENT

永久用地
PERMANENT REQUIREMENT

基本污水處理廠改善工程和建造傾卸井會在現有污水廠內進行
PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE



SB - PS
(永久用地)
(PERMANENT REQUIREMENT)

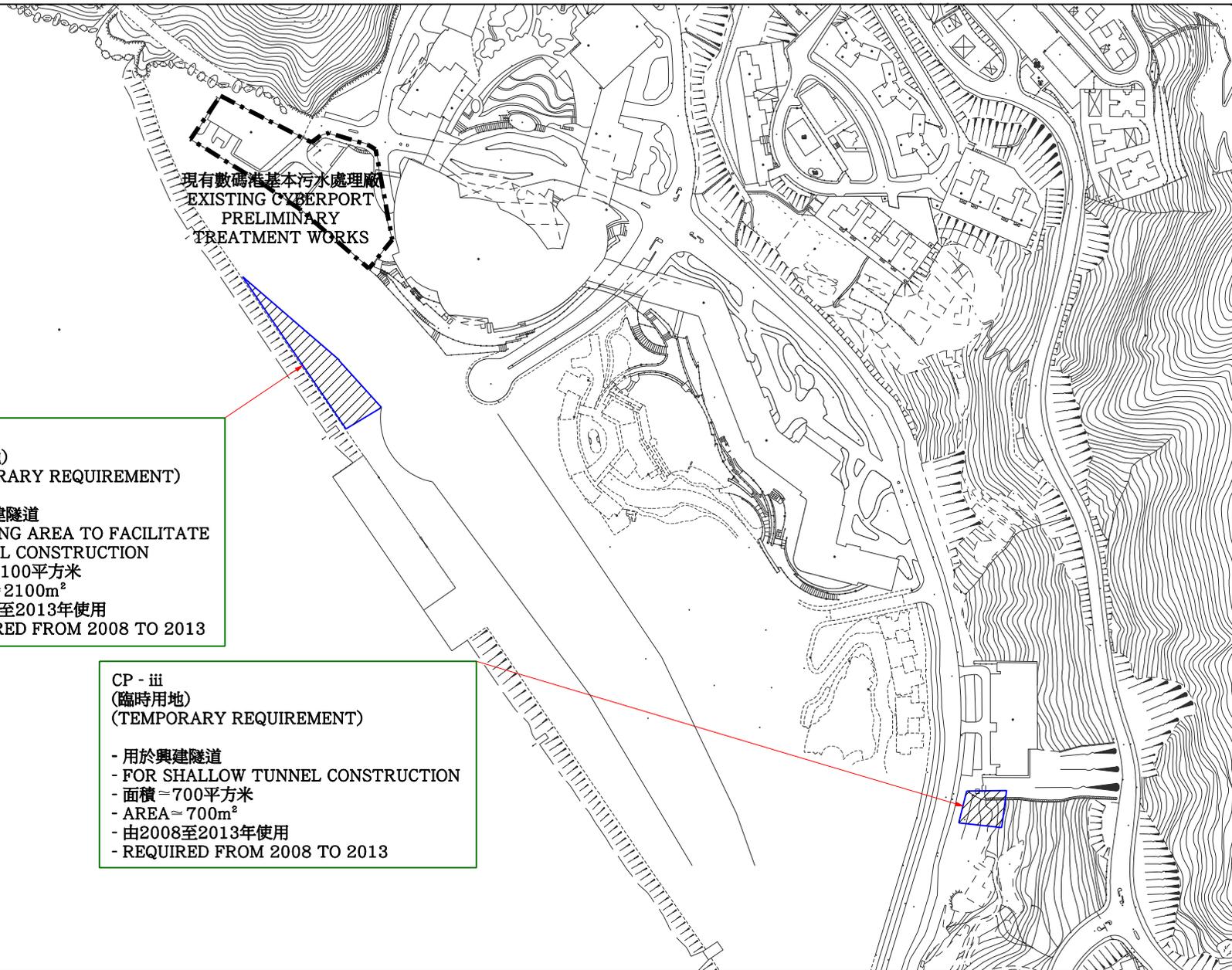
- 在沙灣的轉運泵房和傾卸豎井
- SANDY BAY TRANSFER PUMPING STATION AND DROP SHAFT
- 面積 ≈ 695平方米
- AREA ≈ 695m²
- 由2008年起使用
- REQUIRED FROM 2008

SB - i
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR DEEP TUNNEL CONSTRUCTION
- 面積 ≈ 2665平方米
- AREA ≈ 2665m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013

現有沙灣基本污水處理廠
EXISTING SANDY BAY
PRELIMINARY
TREATMENT WORKS

<p>圖則名稱 drawing title</p> <p>淨化海港計劃第二期甲 在沙灣的所需工程用地</p> <p>HARBOUR AREA TREATMENT SCHEME STAGE 2A LAND REQUIREMENT PLAN AT SANDY BAY</p>	繪畫 drawn	ORIGINAL SIGNED C.W. CHAN	日期 date 23-06-2005	圖則編號 drawing no. FIGURE PP-005	比例 scale AS SHOWN	
	核對 checked	ORIGINAL SIGNED W.Y. CHAN	日期 date 23-06-2005			
	批核 approved	ORIGINAL SIGNED K.M. HO	日期 date 23-06-2005	保留版權 COPYRIGHT RESERVED		
	部門 office	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION			<p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>	
	<p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>					



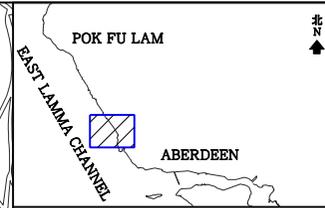
現有數碼港基本污水處理廠
EXISTING CYBERPORT
PRELIMINARY
TREATMENT WORKS

CP - ii
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- WORKING AREA TO FACILITATE TUNNEL CONSTRUCTION
- 面積 ≈ 2100平方米
- AREA ≈ 2100m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013

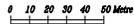
CP - iii
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR SHALLOW TUNNEL CONSTRUCTION
- 面積 ≈ 700平方米
- AREA ≈ 700m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013

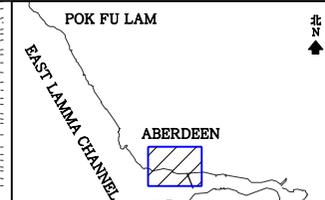


圖例
LEGEND :

-  臨時用地
TEMPORARY REQUIREMENT
-  基本污水處理廠改善工程和建造傾卸器並會在現有污水廠內進行PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE

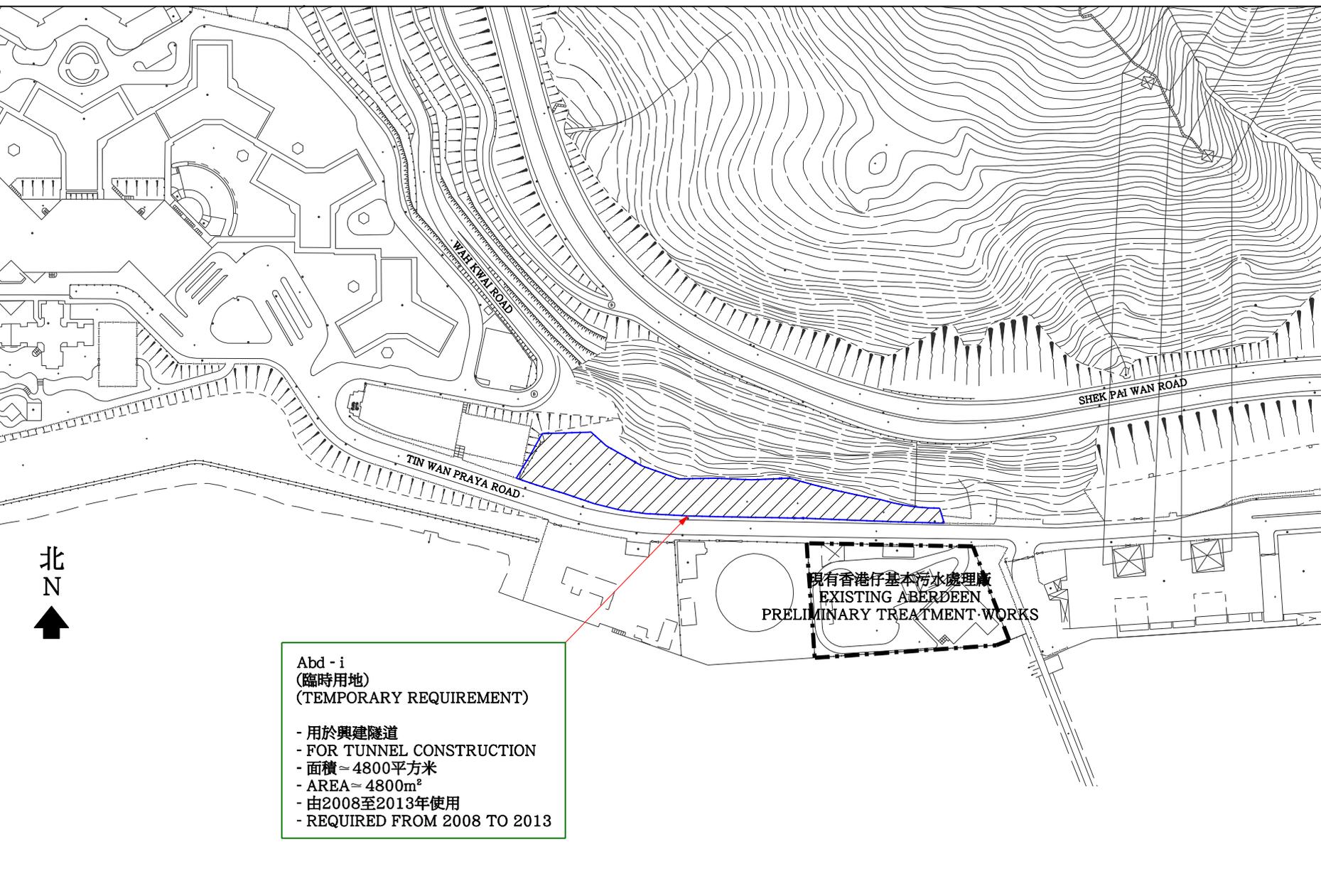
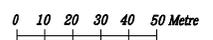


<p>圖則名稱 drawing title</p> <p>淨化海港計劃第二期甲 在數碼港的所需工程用地</p> <p>HARBOUR AREA TREATMENT SCHEME STAGE 2A LAND REQUIREMENT PLAN AT CYBER PORT</p>	繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	23-06-2005	<p>圖則編號 drawing no.</p> <p>FIGURE PP-006</p>	比例 scale	AS SHOWN
	核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005		<p>保留版權 COPYRIGHT RESERVED</p> <p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p> 	
	批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005			
	部門 office	<p>淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION</p>						



KEY PLAN 示意圖

- 圖例
LEGEND:
-  臨時用地
TEMPORARY REQUIREMENT
 -  基本污水處理廠改善工程和建造抽卸器並會在現有污水廠內進行PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE



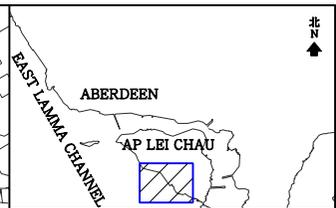
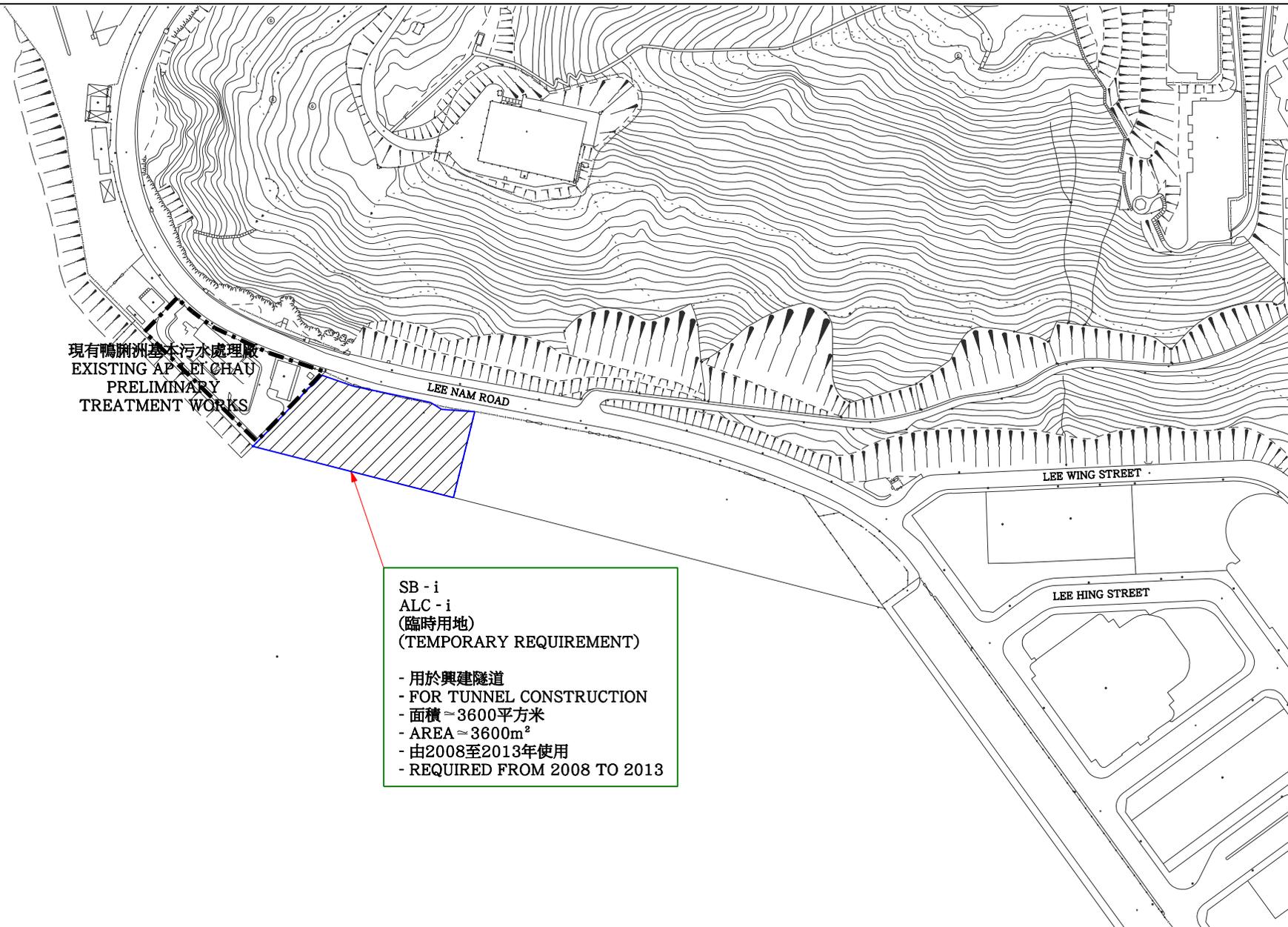
Abd - i
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR TUNNEL CONSTRUCTION
- 面積 ≈ 4800平方米
- AREA ≈ 4800m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013

現有香港仔基本污水處理廠
EXISTING ABERDEEN
PRELIMINARY TREATMENT WORKS



<p>圖則名稱 drawing title</p> <p>淨化海港計劃第二期甲 在香港仔的所需工程用地</p> <p>HARBOUR AREA TREATMENT SCHEME STAGE 2A LAND REQUIREMENT PLAN AT ABERDEEN</p>	繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	23-06-2005	<p>圖則編號 drawing no.</p> <p>FIGURE PP-007</p>	<p>比例 scale</p> <p>AS SHOWN</p>
	核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005		
	批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005	<p>保留版權 COPYRIGHT RESERVED</p>	
	部門 office	<p>淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION</p>					 <p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>



KEY PLAN 示意圖

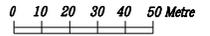
圖例
LEGEND:

-  臨時用地
TEMPORARY REQUIREMENT
-  基本污水處理廠改善工程和建造傾卸器並會在現有污水廠內進行
PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE

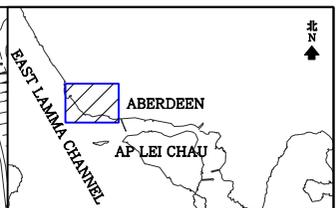
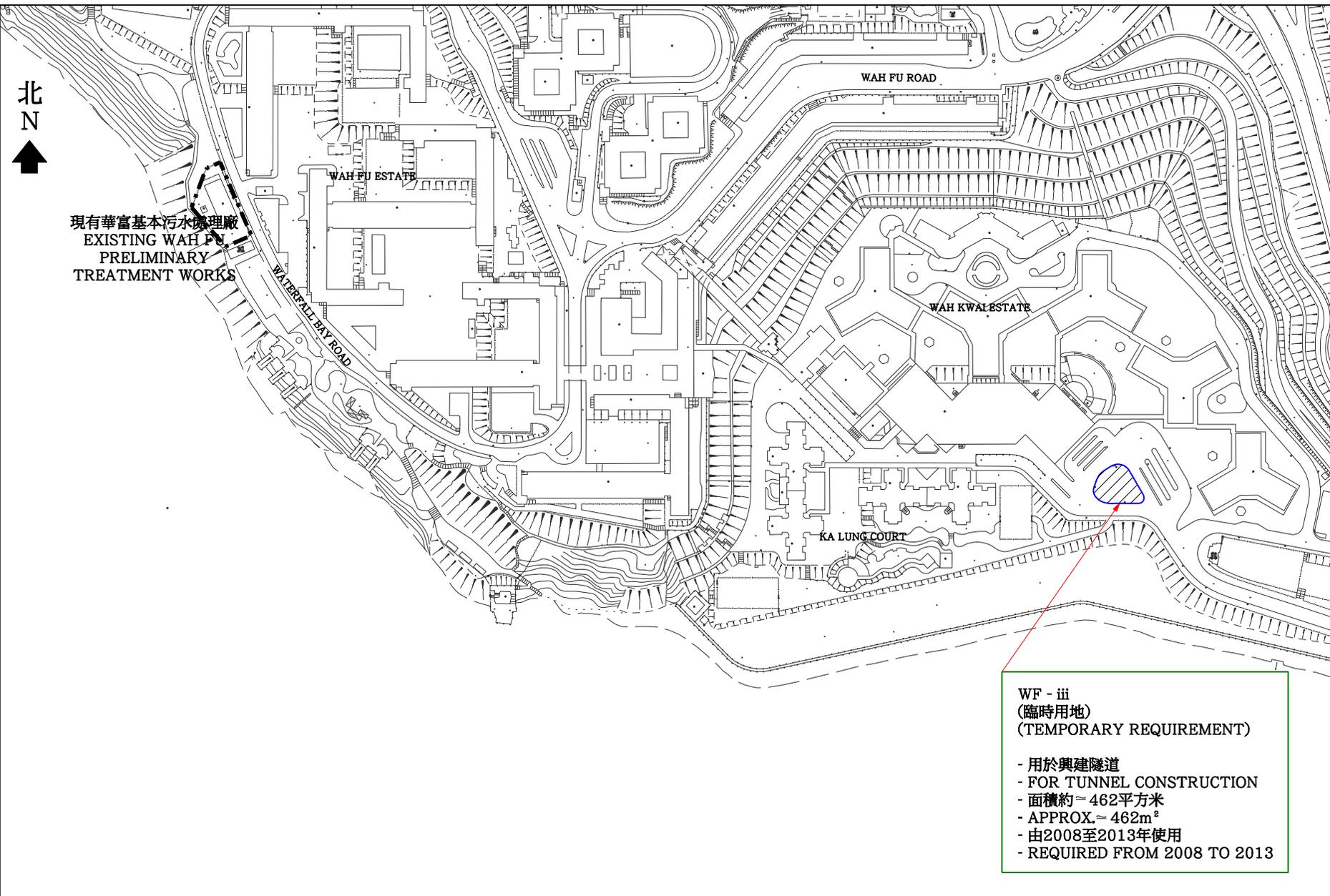
現有鴨洲基本污水處理廠
EXISTING AP LEI CHAU
PRELIMINARY
TREATMENT WORKS

SB - i
ALC - i
(臨時用地)
(TEMPORARY REQUIREMENT)

- 用於興建隧道
- FOR TUNNEL CONSTRUCTION
- 面積 ≈ 3600平方米
- AREA ≈ 3600m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013



<p>圖則名稱 drawing title</p> <p>淨化海港計劃第二期甲 在鴨洲的所需工程用地</p> <p>HARBOUR AREA TREATMENT SCHEME STAGE 2A LAND REQUIREMENT PLAN AT AP LEI CHAU</p>	繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	23-06-2005	圖則編號 drawing no.	比例 scale
	核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005	<p>FIGURE PP-008</p> <p>保留版權 COPYRIGHT RESERVED</p>	<p>AS SHOWN</p>
	批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005		
	部門 office	<p>淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION</p>					 <p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>

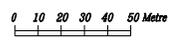


KEY PLAN 示意圖

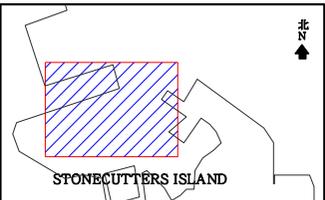
- 圖例
LEGEND:
- 臨時用地
TEMPORARY REQUIREMENT
 - 基本污水處理廠改善工程和建造傾卸堅井會在現有污水廠內進行
PTW UPGRADING WORKS AND DROP SHAFT CONSTRUCTION WILL BE CARRIED OUT WITHIN THE EXISTING PTW SITE

WF - iii
(臨時用地)
(TEMPORARY REQUIREMENT)

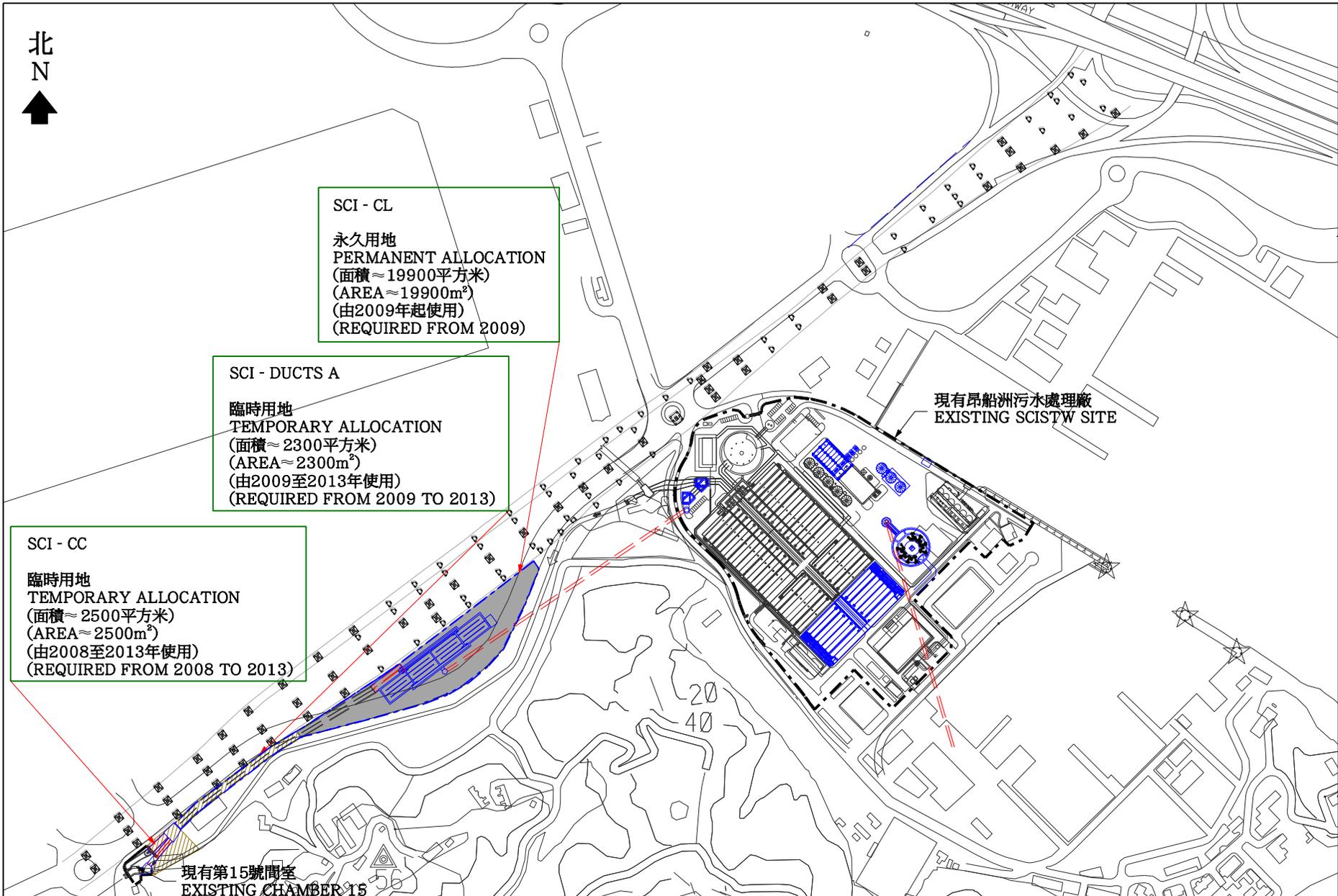
- 用於興建隧道
- FOR TUNNEL CONSTRUCTION
- 面積約 = 462平方米
- APPROX. = 462m²
- 由2008至2013年使用
- REQUIRED FROM 2008 TO 2013



<p>圖則名稱 drawing title</p> <p>淨化海港計劃第二期甲 在華富的所需工程用地</p> <p>HARBOUR AREA TREATMENT SCHEME STAGE 2A LAND REQUIREMENT PLAN AT WAH FU</p>	繪畫 drawn	ORIGINAL SIGNED C.W. CHAN	日期 date	23-06-2005	圖則編號 drawing no.	<p>FIGURE PP-009</p> <p>保留版權 COPYRIGHT RESERVED</p>	比例 scale	AS SHOWN
	核對 checked	ORIGINAL SIGNED C.K. AU	日期 date	23-06-2005				
	批核 approved	ORIGINAL SIGNED K.M. HO	日期 date	23-06-2005	<p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>			
	部門 office	<p>淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION</p>						



KEY PLAN 示意圖



SCI - CL
 永久用地
 PERMANENT ALLOCATION
 (面積 ≈ 19900平方米)
 (AREA ≈ 19900m²)
 (由2009年起使用)
 (REQUIRED FROM 2009)

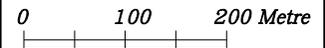
SCI - DUCTS A
 臨時用地
 TEMPORARY ALLOCATION
 (面積 ≈ 2300平方米)
 (AREA ≈ 2300m²)
 (由2009至2013年使用)
 (REQUIRED FROM 2009 TO 2013)

SCI - CC
 臨時用地
 TEMPORARY ALLOCATION
 (面積 ≈ 2500平方米)
 (AREA ≈ 2500m²)
 (由2008至2013年使用)
 (REQUIRED FROM 2008 TO 2013)

現有昂船洲污水處理廠
 EXISTING SCISTW SITE

現有第15號閘室
 EXISTING CHAMBER 15

- 圖例
 LEGEND:
- 現有昂船洲污水處理廠
EXISTING SCISTW SITE
BOUNDARY
 - 第二期甲工程所需的永久用地
STAGE 2A - PERMANENT
LAND REQUIREMENT
 - 第二期甲工程所需的臨時用地
STAGE 2A - TEMPORARY
LAND REQUIREMENT



圖則名稱 drawing title

淨化海港計劃第二期甲
用於昂船洲污水處理廠擴建工程的所需用地
HARBOUR AREA TREATMENT SCHEME STAGE 2A
LAND REQUIREMENT PLAN FOR UPGRADING OF
STONECUTTERS ISLAND SEWAGE TREATMENT WORKS

繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	23-06-2005
核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	23-06-2005
批核 approved	ORIGINAL SIGNED	K.M. HO	日期 date	23-06-2005
部門 office	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION			

圖則編號 drawing no.

FIGURE PP-010

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 DRAINAGE SERVICES DEPARTMENT
 GOVERNMENT OF THE
 HONG KONG
 SPECIAL ADMINISTRATIVE REGION

比例 scale
 AS SHOWN