

合約編號 CE 21/2004(W5)
水管更換及修復工程第 1 階段第 2 期
香港島及離島水管工程
設計及施工

1. 目的

- 1.1 水務署曾在 2002 年就上題所述工程(中西區部分)諮詢中西區區議會，並得到各區議員的寶貴意見及支持，現工程的初步設計亦已完成。現在再次諮詢的目的是尋求中西區區議會對工程發展和設計的進一步意見，並請議員繼續支持是項工程。

2. 背景

- 2.1 近數十年來，水務署的供水網絡發展迅速，而部份建於三十多年前的水管不但呈現嚴重老化跡象，而且部份水管更已臨近使用年限。老化的水管在維修上困難重重，維修費用亦與日俱增。水管爆裂及漏水的情況在近年越見嚴重，為公眾帶來不便，影響交通和浪費食水。
- 2.2 有見及此，水務署計劃在 15 年內有系統地分階段全面更換及修復長約 3000 公里的老化水管以改善供水網絡的狀況，為用戶提供高質素的服務。
- 2.3 為著早日改善現有水管的狀況，第 1 階段第 1 期工程已於 2000 年 12 月展開，並預計於 2008 年 12 月完成。工程包括在本港各區更換及修復長約 350 公里水管。第 1 階段第 2 期工程(本題工程)包括在本港各區更換及修復長約 250 公里水管，而有關的勘察研究已在 2003 年 6 月完成，過程中曾於 2002 年 5 月就中西區內工程諮詢中西區區議會，並得到議會支持。
- 2.4 水務署於 2005 年 3 月委任亞特金斯顧問有限公司進行此第 1 階段第 2 期內香港島及離島工程的設計，現初步設計亦已完成，而詳細設計現正進行中。

3 中西區的工程簡介

- 3.1 這項目包括更換及修復港島區內大約 66 公里直徑由 25 毫米至 1 米的食水及海水管道。其中的 48 公里直徑由 25 毫米至 1 米的水管位於中西區，這些水管大多為鍍鋅鐵管、石棉水泥管和鑄鐵管。有關水管的位置及圖則現詳列於附件甲。
- 3.2 水務署於 2002 年 5 月就第 1 階段第 1 期工程諮詢中西區區議會時曾同意議員的要求，把沿荷李活道的水管工程延後至 5 年後，以免荷李活道的居民不斷受掘路工程的影響。我們現將此段水管工程納入第 1 階段第 2 期的工程項目內，並初步預計於 2007 年中施工。

4 水管更換及修復方法

- 4.1 我們為每條水管選擇適合的更換及修復技術時會優先考慮各種無開坑更換及修復技術，以減少對公眾、交通及環境的影響。當無開坑更換及修復水管技術實際上不適用時，我們才會採用傳統的開掘更換方法。傳統的開掘方法是在原有的舊水管旁，敷設另一新的水管取代原有舊水管。雖然傳統的開掘方法造成的滋擾較大，但其可行性較高，並尤其適用於更換直徑小的水管。
- 4.2 無開坑修復方法是透過開掘進管井(約 3 米長 2 米闊)將原來的舊水管加入新的搪層，這技術不需要開掘整條喉坑，對交通和環境的影響都小很多。無開坑修復技術包括有套喉滑進法、內喉緊貼法、原位內搪喉管法。而無開坑更換方法是利用無開坑技術安裝新水管，例如喉管爆破法、定向鑽挖法、微型隧道開掘法等。
- 4.3 當選擇無開坑修復或更換技術時有多個考慮。除非另有水源供應或可安裝臨時供水裝置，否則會需要暫停供水。由於需要開井以接駁支管、閥門及彎管，這技術不適用於有多支管及閥門的水管。附件甲的水管位置圖顯示了中西區初步擬議採用無開坑技術修復的水管。然而最終施工方法的選擇，將取決於各種因素，包括地理環境、施工限制、物料選擇、交通及環境影響等。
- 4.4 在施工期間，我們將實施以下措施，使工程順利展開：
- 在施工前進行一個詳細的地質勘察，避免在施工期間損害水管及其他公共設施；
 - 安裝臨時供水裝置以盡量減少停水時間；
 - 配合用戶用水模式安排停水，每次停水不超過 8 小時；
 - 在施工期間設立諮詢小組，為停水安排進行協調工作；
 - 開發不同的合約管理控制形式，有效地控制施工進度及時間；及
 - 汲取早期更換及修復水管工程的經驗，改善合約形式和施工方法。

5 協調其他相關工程

- 5.1 施工時間的制定最主要的是與其他有關部門協調以防止重複開掘道路。工程將會經協調後分階段進行，以應付交通情況和實際需要。
- 5.2 我們與其他政府部門及公共設施機構對區內的相關工程已進行了詳盡而全面的複查。根據已搜集的資料顯示，相關工程大部份與渠務及道路工程有關，與本項目施工地點有相同的相關工程主要是渠務署工程合約編號 DC/2002/13。為減少相關工程的影響，我們會考慮分階段進行工程，委託其他政府部門代為施工或在同一時間內和其他地下公用設施一並進行進行水管鋪設或復修。我們會就所有方案繼續與各有關部門進行協調工作，以尋求最有效的施工安排。
- 5.3 為了解決相關工程間的衝突及防止重複開掘路面，我們考慮委託該渠務署工程的承建商代為施工，或分階段進行工程避免相關工程在同一時間進行。施工時間表將於工程實施前派發給各委員會成員。
- 5.4 我們對在其他範圍相連的工程已作出相應協調以免在同一段道路重覆開掘，已協調的工程包括：
- (i) 更換及修復水管工程第 1 階段第 1 期 - 本工程部分在皇后大道中、皇后大道西、德輔道西及東街的水管更換及修復工作已納入該工程內。
 - (ii) 海水供應系統改善計劃 - 該工程部分在本工程範圍內的水管敷設工作將會包括在本工程內。
 - (iii) 消防栓安裝計劃 - 該工程部分在本工程範圍內的安裝工作將會包括在本工程內。
- 5.5 為了增加施工時間的控制和彈性，本工程將採用按量數付款的訂單合約形式，這合約形式比較適用於需要很多協調工作的工程，亦方便在有需要時因工地實際情況更改設計。在工地確定設計後才發出訂單，可減低工程的風險，施工的進度及時間便可更有效率地控制，從而盡量減小工程對公眾和交通的影響。

6 環境檢討

- 6.1 我們已完成了符合環保條例要求的環境檢討評估報告，主要評估範圍包括噪音、塵埃、廢料及污水。報告辨認出的對噪音敏感地點包括列於附件乙的醫院、診所、康復中心、學校、教會、廟宇及安老院等。於施工期間，承建商會實施噪音監察，例如設置隔音屏障、減聲裝置、避免同一時間使用高噪音機器及在考試期間管制學校附近工地的施工時間等。

- 6.2 根據空氣污染管制(建造工程塵埃)規例的要求，承建商需實施塵埃控制措施。承建商將會在工地灑水，從而控制施工期間所產生的塵埃，並會在同一天內運走掘出之泥土和其他的廢物。
- 6.3 我們已完成全面的樹木勘察報告，預計工程將不涉及樹木砍伐和移植。這報告已獲得漁農自然護理署和康樂及文化事務署批核。
- 6.4 我們在設定水管定線時會盡量遠離現有的樹木和具文化古蹟價值的建築物，其中包括中環警署，域多利監獄，中環亞畢諾道前中央裁判司署，上環堅巷舊病理學院及舊上環街市。若部分工程必需於具文化古蹟價值的建築物附近施工，我們會諮詢康樂及文化事務署古物古蹟辦事處的意見，並實施適當的措施來保護有關的建築物。

7 交通影響評估

- 7.1 我們已完成了工程的交通影響評估。根據評估，部分工程乃位於交通敏感的道路，其中包括干諾道中、德輔道中、皇后大道中、堅道、干諾道西、德輔道西和卑路乍街。為了減低工程帶來的交通影響，我們在這些地點將會在情況許可下採用無開坑技術。有些地點因地理和交通等不同因素的限制，不能使用無開坑技術，而需採用傳統的開掘更換方法。在這些地點，承建商在施工期間將實施臨時交通管制措施，令工程對交通的影響維持在可接受水平以下。附件丙(附圖紙編號: 3848/PC/C/0011~13)的交通改道圖顯示了經常採用的臨時交通管制安排。
- 7.2 為減少對公眾引致的不便，工程將會分階段進行。而在每一階段施工之前，承建商將會就施工細節及臨時交通措施安排，提交建議予包括各有關政府部門代表的交通管理聯絡小組，進行討論及議定。

8 公眾聯絡

- 8.1 為加強與公眾的溝通和確保工程順利進行，我們將會推行公眾聯絡活動。這些活動將提供是項工程及其影響地區的詳細資料，了解及回應公眾關注的事項，並聆聽公眾的意見和處理有關投訴，以便及時作出改善。

9. 土地事宜

- 9.1 建議之工程將不需要徵收私人土地，水管的更換工程將會在私人土地範圍外停止。然而有小部分政府水管會經過私人土地範圍，在一般情況下，我們會根據有關土地契約的條款或在取得土地業主的同意後，進行更換及修復該段水管工程。

10. 施工時間表

- 10.1 此工程項目將於 2006 年初呈交立法會財務委員會批核，若獲得財務委員會撥款，我們便會展開招標程序，預計於 2006 年中至 2010 年期間施工。在工程開展後，水務署將與承建商共同制訂詳細施工時間表，並提交中西區區議會參考。在施工期間，水務署將會向中西區區議會定期匯報工程進度和最新的施工時間表。

附件

水務署

2005 年 11 月

附件甲

工程覆蓋範圍

街道名稱	擬更換及修復水管長度 (米)	擬更換及修復水管直徑(毫 米)
西區		
北街	546	80 ~ 150
吉席街	808	80 ~ 100
堅尼地城新海旁	187	150
朝光街	318	80 ~ 150
高陞街	761	40 ~ 150
威利麻街	324	80 ~ 150
文咸東街	340	100
山市街	360	150 ~ 1000
堅尼地城海旁	203	80 ~ 150
城西道	494	1000
山道	150	100
薄扶林道	300	80 ~ 450
第三街	260	150 ~ 300
第二街	220	100 ~ 150
高街	220	450
皇后大道西	1,260	20 ~ 150
德輔道西	1,772	50 ~ 300
干諾道西	3,565	80 ~ 1000
卑路乍街	1,646	80 ~ 200
士美菲路	375	80 ~ 150
荷蘭街	140	150
西祥街	140	150
屈地街	305	25 ~ 200
正街	337	50 ~ 150
西邊街	94	80 ~ 100
東邊街	351	80 ~ 150
修打蘭街	450	80 ~ 200
皇后街	131	40 ~ 100
新街市街	2,808	80 ~ 100
摩利神街	177	40 ~ 250

街道名稱	擬更換及修復水管長度 (米)	擬更換及修復水管直徑(毫 米)
永樂街	1,675	80 ~ 200
西安里	150	80
荔安里	50	80
水街	112	150
西區後巷	4,235	40 ~ 150
中區		
必列者士街	1,148	40 ~ 150
干諾道中	1,840	25 ~ 1000
德輔道中	2,369	40 ~ 200
域多利皇后街	449	80 ~ 150
堅道	2,866	40 ~ 300
卑利街	1,102	80 ~ 200
荷李活道	1,819	40 ~ 300
城皇街	347	80 ~ 150
士丹頓街	627	80 ~ 150
嘉咸街	130	50 ~ 100
昭隆街	105	100
伊利近街	457	50 ~ 300
西摩道	50	100
衛城道	95	100
擺花街	71	250
禧利街	149	80 ~ 400
孖沙街	100	200
威靈頓街	720	80 ~ 300
砵典乍街	20	25
皇后大道中	331	75 ~ 300
機利文街	224	150
畢打街	30	200 ~ 250
雲咸街	468	80 ~ 200
鴨巴甸街	393	40 ~ 80
安泰街	150	40 ~ 100
統一碼頭路	228	50 ~ 100
租庇利街	94	100 ~ 150
些利街	448	80 ~ 100
奧卑利街	337	50 ~ 150
亞畢諾道	110	80 ~ 100
己連拿利	100	80

街道名稱	擬更換及修復水管長度 (米)	擬更換及修復水管直徑(毫 米)
下亞厘畢道	75	150
民光街	720	1000
民耀街	210	1000
康樂廣場	370	1000
中區後巷	5,415	25 ~ 150

圖列

圖紙編號	名稱
3848/PC/C/0030	擬更換及修復水管概覽 - 中西區
3848/PC/C/0031	擬更換及修復水管位置圖 - 中西區
3848/PC/C/0032	擬更換及修復水管位置圖 - 中西區
3848/PC/C/0033	擬更換及修復水管位置圖 - 中西區
3848/PC/C/0034	擬更換及修復水管位置圖 - 中西區
3848/PC/C/0035	擬更換及修復水管位置圖 - 中西區
3848/PC/C/0036	擬更換及修復水管位置圖 - 中西區
3848/PC/C/0037	擬更換及修復水管位置圖 - 中西區

附件乙

在中西區『對噪音敏感』的地點

街道名稱	『對噪音敏感』的類別
堅尼地城	
士美菲路	住宅 / 安老院
吉席街	住宅 / 安老院
卑路乍街	住宅 / 安老院
北街	住宅 / 安老院
山市街	住宅 / 安老院
堅尼地城新海旁	住宅 / 安老院
皇后大道西	住宅 / 安老院
西區	
皇后大道西	住宅
屈地街	住宅
薄扶林道	住宅
西營盤	
德輔道西	住宅
皇后大道西	住宅 / 學校 / 醫院
薄扶林道	住宅 / 學校
第一街	住宅 / 學校
第二街	住宅 / 學校
第三街	住宅 / 學校
高街	住宅 / 學校
般咸道	住宅 / 學校
醫院道	住宅 / 學校 / 醫院
上環	
永樂街	住宅
孖沙街	住宅 / 學校
威靈頓街	住宅 / 學校
卑利街	住宅 / 教堂 / 診所 / 學校
士丹頓街	住宅 / 教堂 / 診所 / 學校
堅道	住宅 / 教堂 / 診所 / 學校
荷里活道	住宅 / 教堂 / 診所 / 學校
半山	
樓梯街	住宅 / 教堂 / 學校 / 廟宇
堅道	住宅 / 教堂 / 學校 / 廟宇

衛城道	住宅 / 教堂 / 學校
西摩道	住宅 / 教堂 / 學校
中區	
德輔道中	住宅
威靈頓街	住宅
擺花街	住宅
亞畢諾道	住宅 / 教堂 / 學校
己連拿利	住宅 / 教堂 / 學校
堅道	住宅 / 教堂 / 學校
皇后大道西	法院 / 教堂
愛丁堡廣場	住宅 / 圖書館

附件丙

臨時交通管制措施的例子

(附圖紙編號：3848/PC/C/0011 - 0013)

Agreement No. CE21/2004(Ws)
Replacement and Rehabilitation of Water Mains, Stage 1 Phase 2,
Mains on Hong Kong and Islands – Design and Construction

1 PURPOSE

- 1.1 In 2002, Water Supplies Department (WSD) consulted Central and Western District Council regarding the captioned project (on Central and Western District areas) and had obtained Members' valuable comment and support. The preliminary design of the Project has been completed, the purpose of this consultation is to seek the Central and Western District Council Members' further advice for subsequent detailed design and seek Members' continual support for the proposed works.

2 BACKGROUND

- 2.1 In recent decades, WSD's water supplies network develops rapidly. Many water mains were laid some 30 years ago. They are approaching the end of the service life and have become increasingly difficult and costly to maintain. Frequency of water bursts and leaks have been increasing, resulting in inconvenience to public, disruption to traffic and wastage of water.
- 2.2 To resolve this problem, WSD has planned a 15 year comprehensive programme to systemically replace and rehabilitate about 3,000 km of aged water mains to prevent their further deterioration, to improve the condition of the water supply network, and to maintain quality of services to consumers.
- 2.3 In order to expeditiously improve the condition of water mains, the first stage - Stage 1 Phase 1 project commenced in December 2000 and will be completed in December 2008. This project covers approximate 350km of water mains in Hong Kong. Stage 1 Phase 2 project (subject project) includes the replacement and rehabilitation of about 250km of water mains in various locations of Hong Kong. The related investigation study was completed on June 2003. In the course of the study, we consulted Central & Western District Council in May 2002 on the part in Central and Western District and received the Council's support.
- 2.4 In March 2005, WSD commissioned Atkins China Limited to undertake the design and construction assignment of the works on Hong Kong and outlying islands under this Stage 1 Phase 2 project. The preliminary design has been completed and the detailed design is currently in progress.

3 SCOPE OF WORKS IN CENTRAL & WESTERN DISTRICT

- 3.1 The scope of works of the subject project is to replace or rehabilitate about 66 km of fresh and saltwater water mains ranging from 25 mm to 1000 mm in diameter. Of these water mains, approximately 48 km are in Central & Western District. These water mains are mainly made of galvanized iron, asbestos cement, or cast iron. A location summary and location plans of the water mains are given in **Appendix A**.

4 METHODOLOGY OF REPLACEMENT AND REHABILITATION

- 4.1 In selecting the best replacement or rehabilitation methods for each situation, we would first explore the suitability of the various trenchless techniques to minimize disruption to the public, traffic and environment. Open cut method will be adopted only when trenchless techniques are shown to be not practicable. The traditional open cut replacement method is to replace an existing water main by open trench excavation and laying a new water main alongside the existing mains. Although it will cause more disturbance, the open cut method is nevertheless often more practicable particularly for small diameter water mains.
- 4.2 Trenchless rehabilitation method is to insert a new liner into an existing water main via a launching pit and a receiving pit (pit size being about 3m long by 2m wide). As it involves limited excavation, there is less impact to traffic and environment. The typical trenchless techniques are slip-lining, close fit lining, and cured-in-place pipe. Trenchless replacement technique is to install a new pipe without open trench excavation. Some examples are pipe bursting, pipe jacking, horizontal directional drilling or micro-tunneling.
- 4.3 There are, however, some considerations before choosing trenchless rehabilitation or replacement methods. Suspension of water supply is required unless there is an alternative supply source or when supply can be maintained by a temporary by-pass main. Trenchless techniques will also be not suitable for water mains with many tee branches, valves and bends. The location plan in Appendix A shows the locations of the water mains preliminarily proposed to adopt the trenchless rehabilitation/ replacement method. However, the determination of the method of construction depends on many factors such as site condition, construction constraints, choice of material, traffic and environmental impact, etc.
- 4.4 We will adopt the following measures to ensure smooth implementation of the works:
- conduct a detailed pre-construction survey to investigate underground condition to avoid damaging water mains and other utilities during construction;
 - provide temporary by-pass main to minimize the time of water suspension;
 - arrange water supply suspensions by matching with the user consumption patterns and limiting the supply suspensions to 8 hours;
 - set up a liaison team during construction to liaise with the public to coordinate supply suspension activities;
 - evaluate different forms of contract management to control the programme and duration of works effectively; and
 - improve construction method and contract management based on the experiences gained in previous similar projects.

5 PROGRAMME AND PROJECT INTERFACE

- 5.1 The major concern in term of the programme is the coordination with various parties to avoid repetitive road openings. Road opening will be carried out section by section in a coordinated manner to suit the traffic conditions and actual needs.
- 5.2 We have conducted detailed and comprehensive reviews on project interface with other government departments and utilities undertakers. From the information gathered, the majority of the interfacing projects are related to drainage, sewerage and highways works. The main project of interface is DSD Contract No. DC/2002/13. To avoid impacts arising from these projects, we will consider carrying out the works in sections, entrusting part of the works to other departments for implementation and carrying out the works concurrently with other underground utilities in common trench. We will continue to further discussed these options with the relevant parties with a view to arriving at the most effective construction arrangement.
- 5.3 To resolve the conflicts due to project interfaces and to avoid repeated road opening, the options of entrusting the concerned water mains to others, or carrying out the works in phases to avoid crashing of programmes have been considered. Detailed project programmes will be submitted to the Council Members before the commencement of the project works.
- 5.4 In order to avoid repeated road opening, we have coordinated the following interface works:
- (i) Replacement and Rehabilitation of Water Mains, Stage 1 Phase 1 – we have incorporated into this project the water mains replacement/rehabilitation works along Queen's Road Central, Queen's Road West, Des Voeux Road West and East Street originally intended for the subject project;
 - (ii) Upgrading of Salt Water Supply System – Some saltwater mains upgrading works within the project area will be incorporated into the subject project.
 - (iii) Installation of Fire Hydrant Project – Some installation works within the project area will be incorporated into the subject project.
- 5.5 To allow flexibility for programming of works, term contract type re-measurement contracts will be adopted in this project. This form of contract is particularly suitable for works which require considerable coordination with others. It also facilitates amendments where necessary to suit actual site conditions. By issuing Works Orders after the design is confirmed on site, risks can be minimized. The programme and duration of the works can also be controlled effectively for minimising disruption to the public and traffic.

6 ENVIRONMENTAL REVIEW

- 6.1 We have conducted an environmental review in line with the criteria of the Environmental Protection Ordinance. The major aspects of review include the effect on noise, air, waste, and water. The review has identified the noise sensitive receivers (NSRs) as listed in **Appendix B** which include hospitals, schools, and residential blocks in the proximity of the proposed construction activities. Mitigation measures such as use of noise barrier and

silencer, avoidance of using noisy plants concurrently, and restriction of working hours in the vicinity of school during examination periods will be adopted to minimize the construction noise impact.

- 6.2 The contractor will implement dust control measures in accordance with the requirements of the Air Pollution Control (Construction Dust) Regulation. Dust generated from excavation could be controlled by water spraying or enclosure. Excavated materials will be disposed of within the same working day.
- 6.3 A comprehensive tree survey has been conducted. The assessment concluded that no tree felling or tree transplanting is envisaged in this project. Endorsement from Agriculture, Fisheries and Conservation Department and Leisure and Cultural Services Department had also been obtained.
- 6.4 The water mains will be aligned away from the existing trees and buildings of cultural heritage interests, such as Central District Police Station, Victoria Prison, Former Central Magistracy at Arbuthnot Road, the Catholic Cathedral of Immaculate Conception Roman Catholic Cathedral at Caine Road, and Western Market at Des Voeux Road Central as far as possible. If part of the works must be carried out near buildings of cultural heritage interest, we will consult the Antiquities and Monuments Office (AMO) of Leisure and Cultural Services Department and will implement appropriate measures to protect these historical buildings.

7 TRAFFIC IMPACT ASSESSMENT

- 7.1 We have conducted a Traffic Impact Assessment for this project. The findings indicate that some of the works are located in the traffic sensitive routes, such as Connaught Road Central, Des Voeux Road, Queens Road Central, Caine Road, Connaught Road West, Des Voeux West and Belcher's Street. To minimize traffic disruption during construction, trenchless techniques will be adopted in these locations as far as practicable. If this is not practicable due to site and traffic constraints, the Contractor will adopt open trench method and implement temporary traffic management measures to keep the disruption to traffic to acceptable levels. Examples of temporary traffic management schemes at the critical junctions are given in drawing nos. 3848/PC/C/0011~013 in **Appendix C**.
- 7.2 The works will be carried out in sections to reduce disruption to the public. Before the commencement of each section of works, the Contractor will submit the construction details and the temporary traffic management measures to the Traffic Management Liaison Group, which comprises representatives from the various relevant government departments, for assessment and agreement.

8 PUBLIC CONSULTATION

- 8.1 We will launch various public liaison activities to ensure smooth implementation of the construction works and to enhance communication with the public. These activities include providing details of our works and the areas affected, the appreciation and responding to public concerns, and listening to and addressing public suggestion and

complaints for making timely improvements.

9 LAND MATTER

- 9.1 The extent of the proposed works will not require private land acquisition. The replacement of water mains will be terminated outside private lot boundary. However, some small number of Government mains might be located within private land. Under normal situation, we will carry out the works on these mains in accordance with the relevant land lease conditions or after we have obtained the consent of the land owners.

10 CONSTRUCTION PROGRAMME

- 10.1 This project will submit to the Finance Committee of Legislative Council in early 2006 for approval. Subject to the funding being made available, we will start the tender invitation process. Construction works are anticipated to commence in mid 2006 for completion in 2010. During the construction stage of the project, WSD will report the progress and the latest programme of the works regularly to the Central & Western District Council.

Water Supplies Department
November 2005

Appendix A

Covered Area

Road Name	Proposed length of replace or rehabilitate water mains (m)	Proposed diameter of replace or rehabilitate water mains (mm)
Western District		
North Street	546	80 ~ 150
Catchik Street	808	80 ~ 100
Kennedy Town New Praya	187	150
Chiu Kwong Street	318	80 ~ 150
Ko Shing Street	761	40 ~ 150
Wilmer Street	324	80 ~ 150
Bonham Strand	340	100
Sands Street	360	150 ~ 1000
Kennedy Town Praya	203	80 ~ 150
Shing Sai Road	494	1000
Hill Road	150	100
Pokfulam Road	300	80 ~ 450
Third Road	260	150 ~ 300
Second Street	220	100 ~ 150
High Street	220	450
Queen's Road West	1,260	20 ~ 150
Des Voeux Road West	1,772	50 ~ 300
Connaught Road West	3,565	80 ~ 1000
Belcher's Street	1,646	80 ~ 200
Smithfield Street	375	80 ~ 150
Holland Street	140	150
Sai Cheung Street	140	150
Whitty Street	305	25 ~ 200
Centre Street	337	50 ~ 150
Western Street	94	80 ~ 100
Eastern Street	351	80 ~ 150
Sutherland Street	450	80 ~ 200
Queen Street	131	40 ~ 100

Road Name	Proposed length of replace or rehabilitate water mains (m)	Proposed diameter of replace or rehabilitate water mains (mm)
New Market Street	2,808	80 ~ 100
Morrison Street	177	40 ~ 250
Wing Lok Street	1,675	80 ~ 200
Sai On Lane	150	80
Lai On Lane	50	80
Water Street	112	150
Backlane in Western District	4,235	40 ~ 150
Central District		
Bridges Street	1,148	40 ~ 150
Connaught Road Central	1,840	25 ~ 1000
Des Voeux Road Central	2,369	40 ~ 200
Queen Victoria Street	449	80 ~ 150
Caine Road	2,866	40 ~ 300
Peel Street	1,102	80 ~ 200
Hollywood Road	1,819	40 ~ 300
Shing Wong Street	347	80 ~ 150
Staunton Street	627	80 ~ 150
Graham Street	130	50 ~ 100
Chiu Lung Street	105	100
Elgin Street	457	50 ~ 300
Seymour Road	50	100
Castle Road	95	100
Lyndhurst Terrace	71	250
Hillier Street	149	80 ~ 400
Mercer Street	100	200
Wellington Street	720	80 ~ 300
Pottinger Street	20	25
Queen's Road Central	331	75 ~ 300
Gilman Street	224	150
Pedder Street	30	200 ~ 250
Wyndham Street	468	80 ~ 200
Aberdeen Street	393	40 ~ 80
On Tai Street	150	40 ~ 100

Road Name	Proposed length of replace or rehabilitate water mains (m)	Proposed diameter of replace or rehabilitate water mains (mm)
Pier Road	228	50 ~ 100
Jubilee Street	94	100 ~ 150
Shelley Street	448	80 ~ 100
Old Bailey Street	337	50 ~ 150
Arbuthnot Road	110	80 ~ 100
Gleneady	100	80
Lower Albert Road	75	150
Man Kwong Street	720	1000
Man Yiu Street	210	1000
Connaught Place	370	1000
Backlanes in Central District	5,415	25 ~ 150

List of Figures

Drawing No.	Drawing Title
3848/PC/C/0030	Key Plan - Hong Kong North and West
3848/PC/C/0031	Location Plan Hong Kong North and West
3848/PC/C/0032	Location Plan Hong Kong North and West
3848/PC/C/0033	Location Plan Hong Kong North and West
3848/PC/C/0034	Location Plan Hong Kong North and West
3848/PC/C/0035	Location Plan Hong Kong North and West
3848/PC/C/0036	Location Plan Hong Kong North and West
3848/PC/C/0037	Location Plan Hong Kong North and West

Appendix B

Location of Noise Sensitive Receiver (NSR)

Location (Street /Areas)	Nature of NSR
<u>Kennedy Town</u>	
Smithfield Road	Residential / Home for the aged
Catchick Street	Residential / Home for the aged
Belcher's Street,	Residential / Home for the aged
North Street	Residential / Home for the aged
Sands Street	Residential / Home for the aged
Kennedy Town New Praya	Residential / Home for the aged
Queen's Road West	Residential / Home for the aged
<u>Western</u>	
Queen's Road West	Residential
Whitty Street	Residential
Pok Fu Lam Road	Residential
<u>Sai Ying Pun</u>	
Des Voeux Road West	Residential
Queen's Road West	Residential / school / clinic
Pok Fu Lam Road,	Residential / school
First Street	Residential / school
Second Street	Residential / school
Third Street	Residential / school
High Street	Residential / school
Bonham Road	Residential / school
Hospital Road	Residential / school / clinic
<u>Sheung Wan</u>	
Wing Lok Street	Residential
Mercer Street	Residential / school
Wellington Street	Residential / school
Peel Street	Residential / church / clinic / school
Staunton Street	Residential / church / clinic / school
Caine Road	Residential / church / clinic / school
Hollywood Road	Residential / church / clinic / school
<u>Mid Level</u>	
Ladder Street	Residential / school / temple / church

Location (Street /Areas)	Nature of NSR
Caine Road	Residential / school / temple / church
Castle Road	Residential / school / church
Seymour Road	Residential / school / church
<u>Central</u>	
Des Voeux Road Central	Residential
Wellington Street	Residential
Lyndhurst Terrace	Residential
Arbuthnot Road	Residential / school / church
Glenealy	Residential / school / church
Caine Road	Residential / school / church
Queen's Road Central	Law Court / church
Edinburgh Place	Residential / library

Appendix C

Examples of Traffic Mitigation Measures

(Attachment: Drawing Nos. 3848/PC/C/0011 ~ 0013)

Legend :-

圖例 :-

- Proposed Water Main
Replacement by Open Trench
Method
使用開掘法更換水管
- Proposed Water Main Replacement /
Rehabilitation by Trenchless Method
使用無掘法更換或
修復水管

西營盤
SAI YING PUN

西環
SAI WAN

中環
CENTRAL

半山
MID-LEVELS

山頂
THE PEAK

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PROJECT
REPLACEMENT AND REHABILITATION OF WATER MAIN
STAGE 1 PHASE 2
MAINS ON HONG KONG AND ISLANDS
DESIGN AND CONSTRUCTION

水管更換及修復工程
第1階段第2期
香港島區水管
設計及施工

DRAWING No. CE 21 / 2004 (WS)

TITLE
LOCATION PLAN
HONG KONG NORTH AND WEST
擬更換及修復水管位置圖
中西區

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Legend :-

- Proposed Water Main Replacement by Open Trench Method
使用開掘法更換水管
- Proposed Water Main Replacement / Rehabilitation by Trenchless Method
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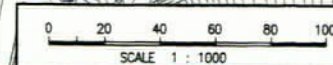
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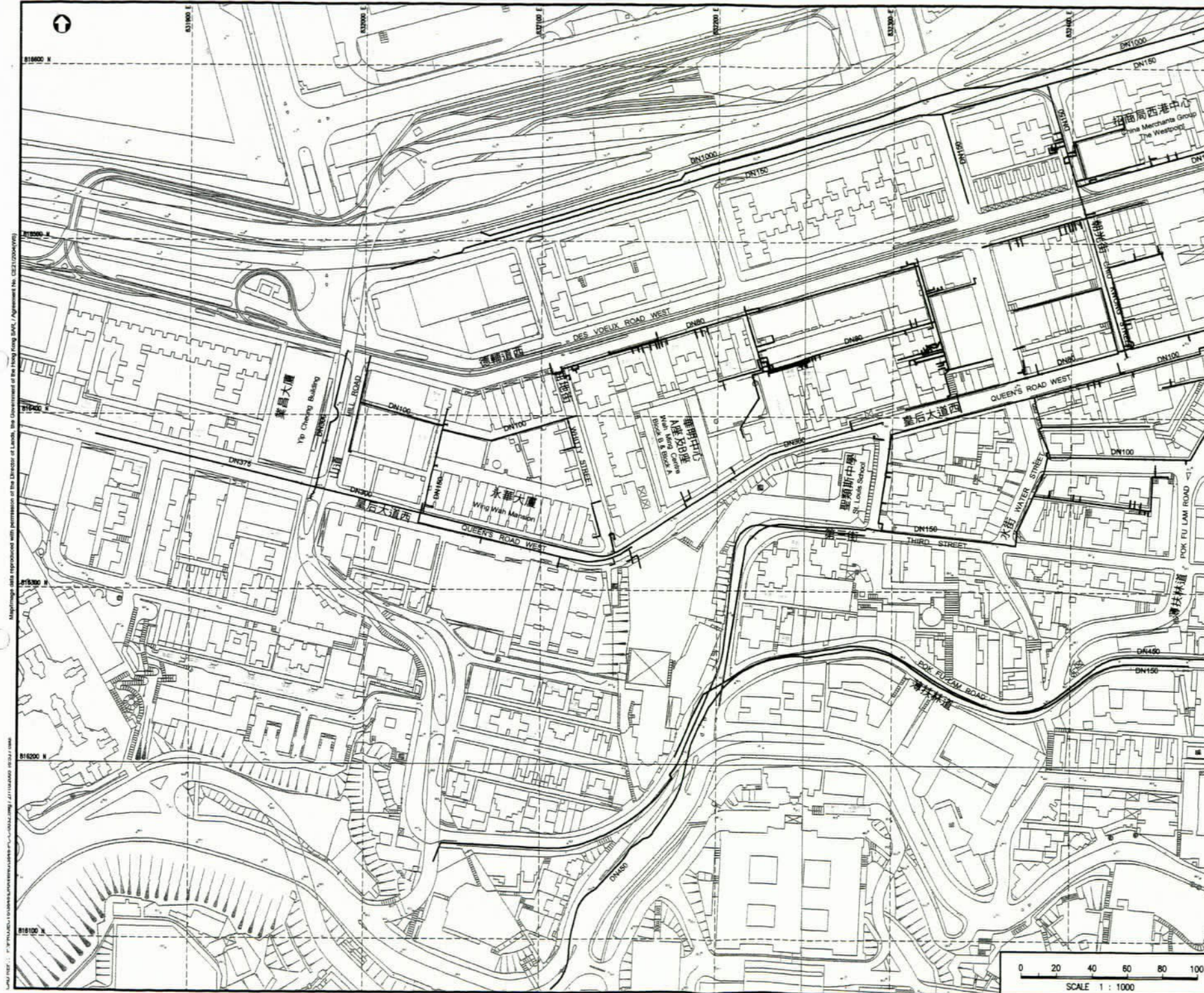
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- Legend :-**
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使用開掘法更換水管
 - Proposed Water Main Replacement / Rehabilitation by Trenchless Method
使用無掘法更換或修復水管

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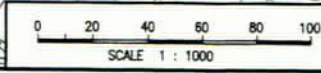
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HONG KONG NORTH AND WEST
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Proposed Water Main Replacement by Open Trench Method
使用開掘法更換水管

Proposed Water Main Replacement / Rehabilitation by Trenchless Method
使用無掘法更換或修復水管

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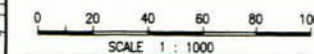
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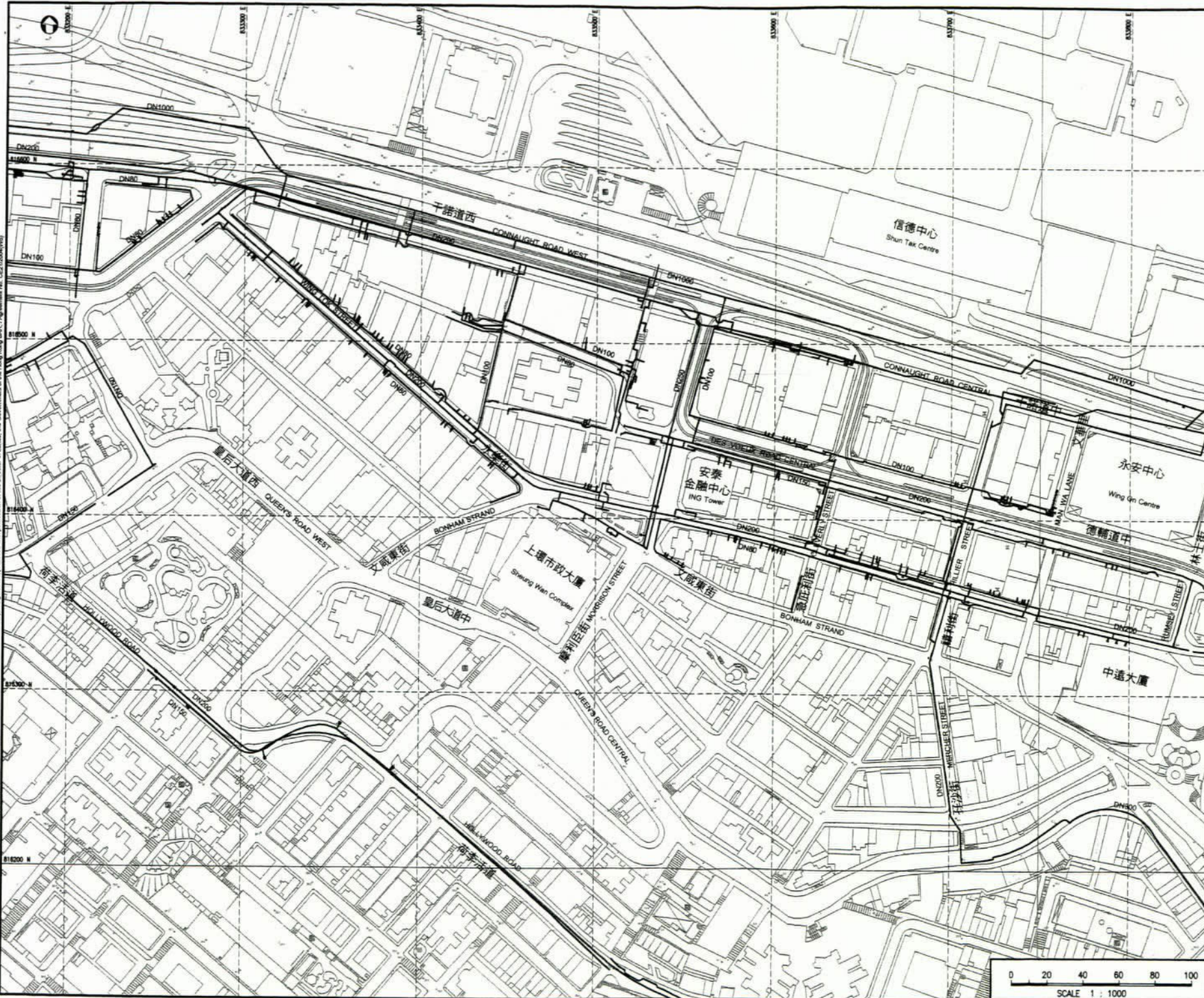
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使用開掘法更換水管
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使用無掘法更換或修復水管

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DESIGN AND CONSTRUCTION

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第1階段第2期
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設計及施工

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擬更換及修復水管位置圖
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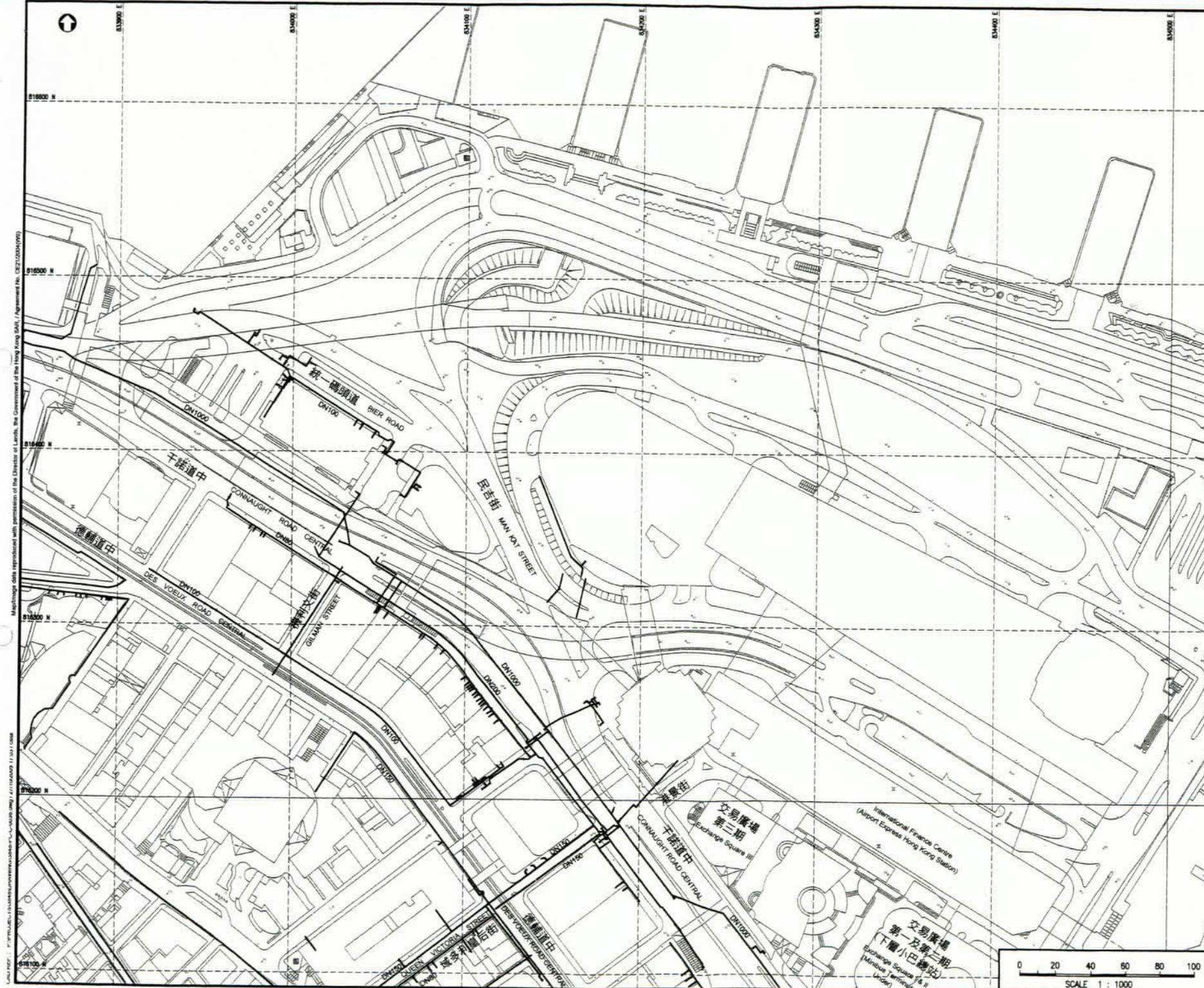
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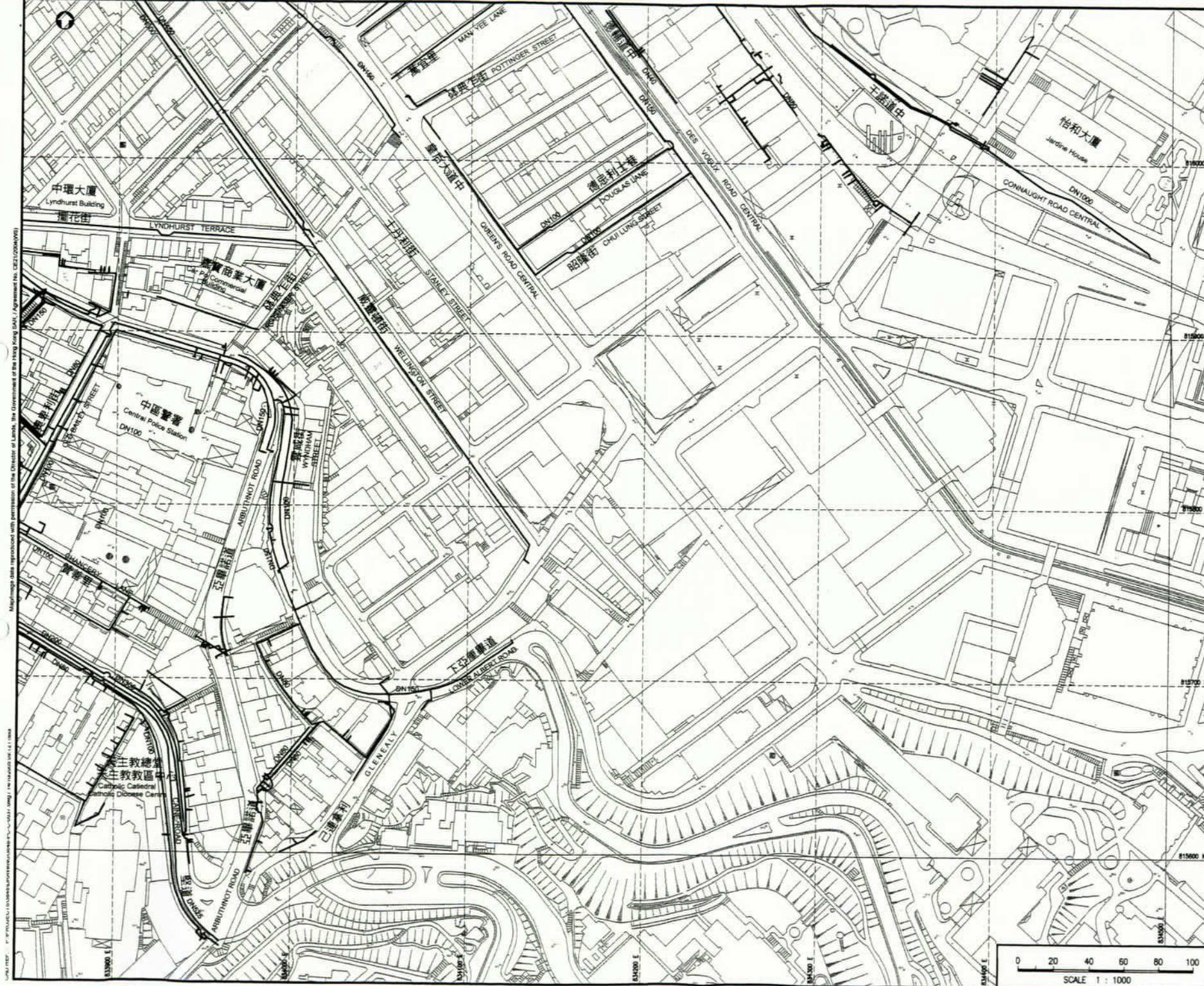
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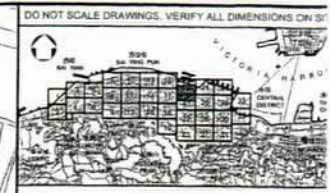
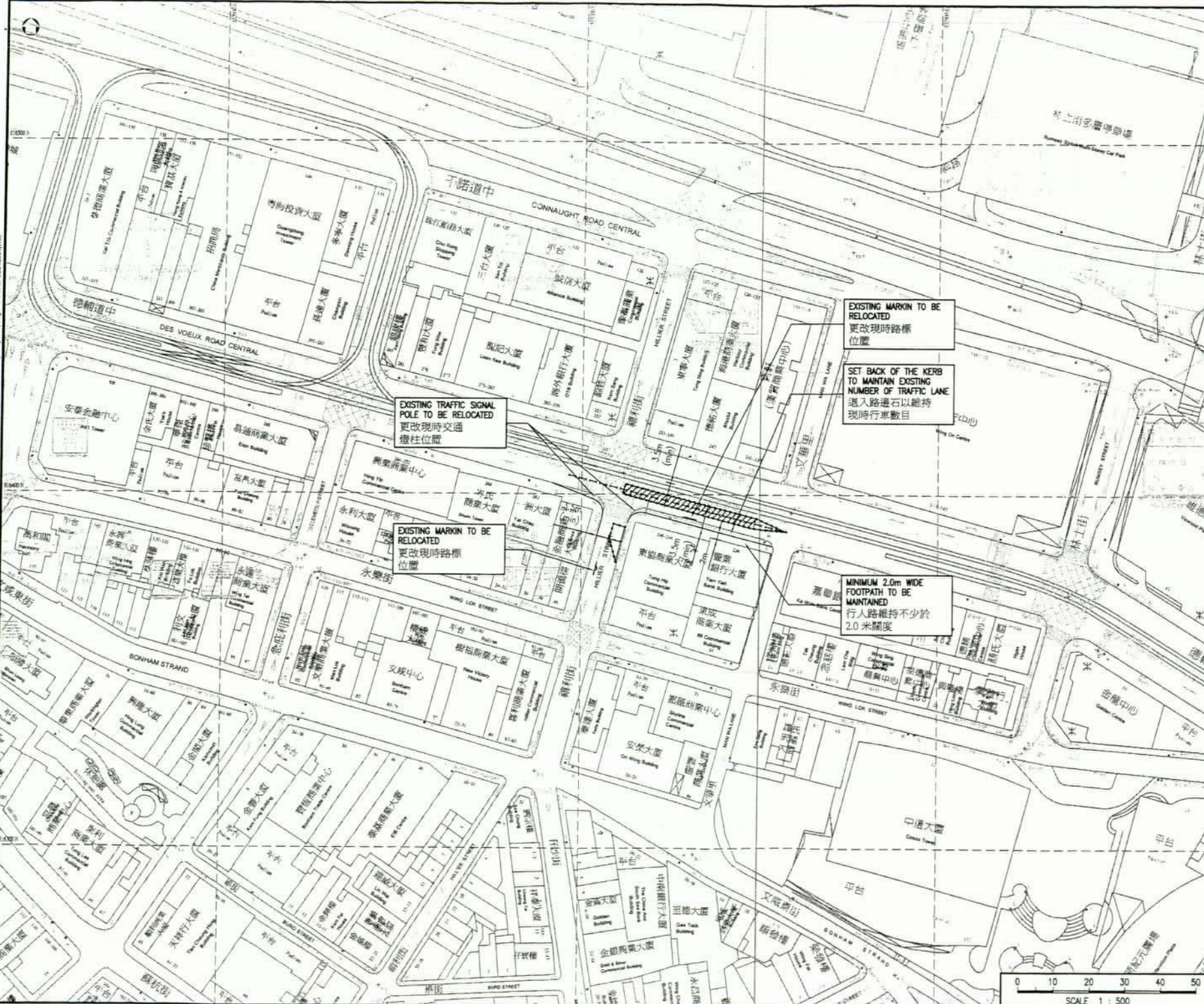
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- KEY PLAN**
概覽圖
- LEGEND**
圖例
- WORK AREA
工地範圍
 - TRAFFIC BARRIER CONES
交通圍錐及護欄
 - PROPOSED ALIGNMENT
擬更換及修復的水管

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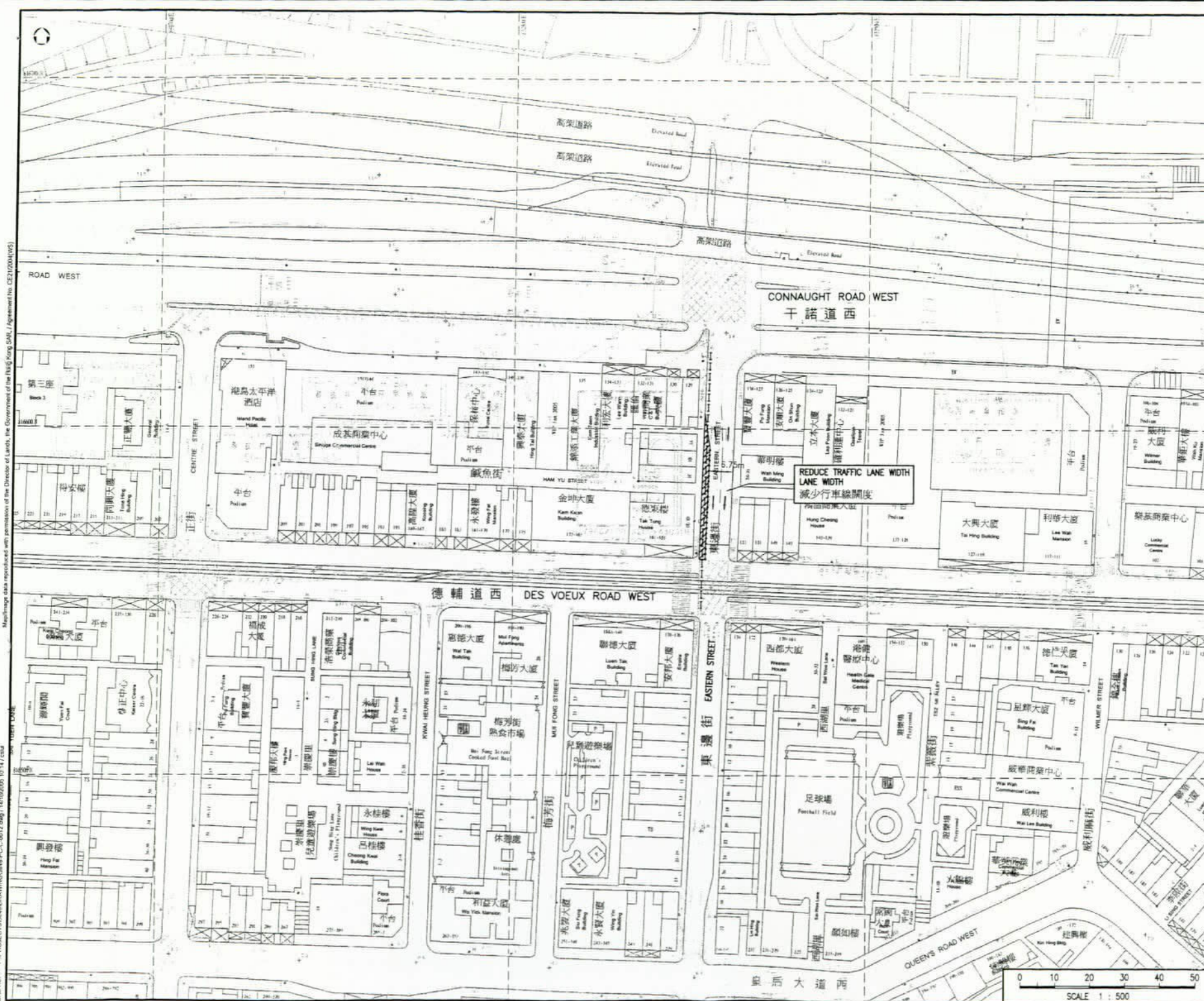
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PROPOSED TRAFFIC ARRANGEMENT AT
DES VOEUX ROAD CENTRAL/HILLIER STREET
德輔道中/禧利街交界
建議的交通改道措施

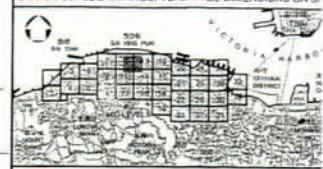
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SCALE	AT	DESIGN	WY	CSL	CHKD	TC	AUTHORIZED	KL
1 : 500	DATE	07-09-05	DATE	07-09-05	DATE	07-09-05	DATE	07-09-05

3848/PC/C/0011





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KEY PLAN
附圖 四

LEGEND :-
 (S) :-

-  WORK AREA
 工地範圍
 TRAFFIC BARRIER CONES
 交通圓錐筒及護欄
 PROPOSED WATER MAINS ALIGNMENT
 擬更換及修復的水管

A	FIRST ISSUE	BY	10/05	TC	KL
REV	DESCRIPTION	BY	DATE	CHKD	AUTH

 **水務署**
WATER SUPPLIES DEPARTMENT

顧問工程管理部
CONSULTANTS MANAGEMENT DIVISION

ATKINS 阿特金斯顧問有限公司
Atkins China Ltd

PROJECT
REPLACEMENT AND REHABILITATION OF WATER MAINS
STAGE 1 PHASE 2
MAINS ON HONG KONG AND ISLANDS
DESIGN AND CONSTRUCTION

水管更換及修復工程
第1階段第2期
香港島區水管
設計及施工

AGREEMENT No. CE 21 / 2004 (WS)

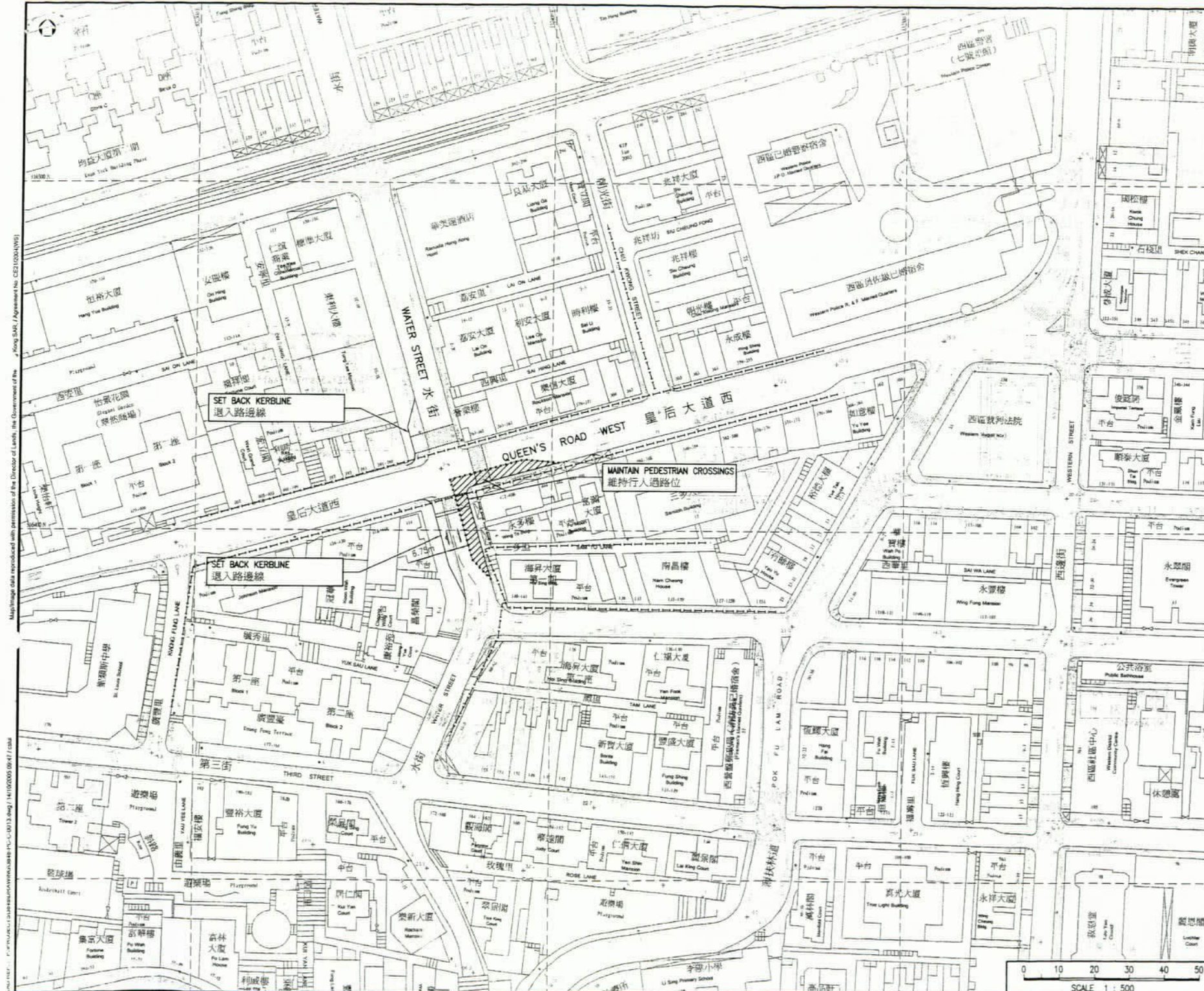
PROPOSED TRAFFIC ARRANGEMENT AT
DES VOEUX ROAD WEST/EASTERN STREET
德輔道西 / 東邊街交界
建議的交通改道措施

STATUS	DESIGN
	設計階段

SCALE AS AT	DESIGN	DRAWN	CHECKED	AUTHORIZED
1 : 500	WY	CSL	TC	KL
	DATE	DATE	DATE	DATE

	07-09-05	07-09-05	07-09-05	07-09-05
(Folien) No.	3848/PC/C/0012			RE WSK A

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KEY PLAN
概覽圖

LEGEND
圖例

- WORK AREA
工地範圍
- TRAFFIC BARRIER CONES
交通錐筒及護欄
- PROPOSED WATER MAINS ALIGNMENT
擬更換及修復的水管

A	FIRST ISSUE	WY	10/05	TC	KL
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水務署
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香港島區水管
設計及施工

ASSESSMENT NO. **CE 21 / 2004 (WS)**

PROPOSED TRAFFIC ARRANGEMENT AT
QUEEN'S ROAD WEST/WATER STREET
皇后大道西/水街交界
建議的交通改道措施

STATUS
DESIGN
設計階段

SCALE 1:500	DESIGN WY DATE 07-09-05	CHKD CSL DATE 07-09-05	CHKD TC DATE 07-09-05	AUTHORIZED KL DATE 07-09-05
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