Rezoning Request :

The Central District (Extension) Outline Zoning Plan No. S/H24/6

Volume 2
Technical Appendices

保護海港協會有限公司
Society For Protection Of The Harbour Ltd

September 2004

Introduction to the Appendices

This volume contains two appendices which address the technical issues supporting the rezoning proposals developed in Volume 1.

The Court of Final Appeal stated that "each area proposed to be reclaimed must be justified" and "cogent and convincing" materials should be placed before the decision makers to enable them to be satisfied that the overriding public need test has been fulfilled. The information provided in these Appendices presents to the Town Planning Board information which has not been considered by the Courts or by any other public body.

Appendix 1 is based on information presented to the High Court, but not considered by it. The information illustrates how the Government Review of CRIII was inadequate in that it did not look at other reasonable alternatives. Appendix 2 on traffic is a new assessment prepared specifically for this submission to the Town Planning Board.

Appendix 1 : Engineering, looks at the design of the reclamation now in progress in Central as presented in TDD's Review. It concludes that the current design and construction approach does not minimize the amount of reclamation now being undertaken. It addresses the issue of Cooling Water Pumping Station provision and concludes that the proposed provision is unnecessary and/or excessive and that other realistic alternatives exist which would have reduced reclamation by about 2.45ha. A different and practical approach to the design and construction of the seawall could have helped this reduction in reclamation. Part of this reduction in reclamation could still be implemented under the current reclamation contract.

Appendix 2 is the Traffic Impact Assessment and addressees the proposed road network based on the assumption that the Central Wan Chai By-pass will be built. When that by-pass is built it is essential that it be utilised to the optimum level and that environmental improvements be provided in the vicinity by minimizing the number of surface roads. The conclusion is that Road P2 is no longer necessary as there will be more than adequate capacity in the alternative roads provided. Major revisions to the road network can therefore be introduced.

Appendix 1

Engineering

A : Cooling Water Pump Houses and Extent of Reclamation
B : Alternative Seawall Design and Construction

Important Note

The information provided in this Appendix is based on Affirmations made to the High Court by qualified engineers in relation to case HCAL 102/2003. These extracts are provided to facilitate the Town Planning Board's understanding of the arguments and have been summarised accordingly. They are provided so as to indicate that there are alternative approaches available that may not have been considered rigorously by Government. For more detailed information, reference should be made to the Affirmations themselves.

A : Cooling Water Pump Houses and Extent of Reclamation

1. Introduction

This paper reviews several methods which could be applied to providing adequate cooling for air conditioning systems in buildings in the Central area which may be affected by the reclamation. The fundamental starting point is that, if alternative means for providing air conditioning to buildings are available that do not require reclamation for sea water pumping stations, then they should be utilized. The Government Review of CRIII did not give adequate attention to these alternatives. It only tried to justify the proposals that were already included in the CRIII contract.

2. Reduction of the Size of Pumping Stations

2.1 The CR III pumping stations are over-designed and have not adopted a minimum design. The standard design of the proposed pumping stations which are 31.5 metres (104 feet) long is used, with the result that the shoreline will have to be advanced 31.5 metres into the harbour to accommodate them.

2.2 In a drawing filed in the Wanchai Judicial Review Application HCAL 19 of 2003 on 31st March 2003 (see Annex I), there is shown the standard design of the same type of pumping stations, also incorporating a wave-absorbing feature, currently designed by Maunsell for the proposed Wanchai Reclamation. This only needs to be 20.4 metres long, being 11.1 metres less than the design for CR III. There is no reason why such a design cannot be used for CR III.

2.3 The pumping station of the Swire Group at the waterfront between Admiralty and Wanchai is the second largest pumping station in Hong Kong and serves the whole of Pacific Place. It is only about 180 square metres (2,000 square feet) in size measuring about 14 metres by 13 metres (46 feet by 40 feet). The size is half of that proposed for the CR III pumping stations. Two photographs of the aforesaid Swire Group pumping station in Annex II show that the dimension of the pumping station is no more than two large garages.

2.4 The conclusion is that the design adopted is not necessarily the minimum required.

3. Reduction of the Number of Pumping Stations

3.1 The former restrictions in the use of fresh water for cooling systems imposed by the Government have been lifted in the past few years and sea water cooling is no longer needed for new buildings. The present number of 29 pump-cells proposed within CRIII, can then be reduced to 17 or even less. This significant reduction in the number of pumping cells means that they can be more easily located elsewhere to achieve lesser reclamation.

3.2 In any event, Sea Water Pumping Stations are now no longer necessary as there has been a fundamental change in approach in that Fresh Water Evaporative Cooling Towers are being used to replace the old system using salt water.

3.3 In a Government Study - Agreement No.CE44/98 - entitled 'Preliminary Phase Consultancy Study on Wider Use of Water-cooled Air Conditioning Systems in Hong Kong' commissioned by the Electrical and Mechanical Services Department (see Annex III), it explains in detail a study and provides insight into the logic of the Sea Water Pumping Stations for CR III. In page 3 thereof, it explains how seawater cooling is no longer the best choice since the original factor, namely, the scarcity of fresh water, is no longer the case in Hong Kong.

3.4 In the future, the modern Centralised Piped Supply System for Cooling Tower (CPSSCT) will be used for new buildings. Existing buildings using the old Seawater Pumping Station System are replacing these systems with the new fresh water system. The CPSSCT is described as efficient and sacrifices only 3% of the fresh water used and should replace the seawater pumping stations and networking which are more expensive to build and maintain and cause severe design obstacles to modern town planning. In other words, no provision for future pump cells nor pumping stations ought to be made on the CR III if only by reason of good engineering.

3.5 Indeed, fresh water tower cooling is now considered such a superior design that the Electrical and Mechanical Services Department has since 2000 promoted their use under the 'Pilot Scheme for Wider Use of Fresh Water in Evaporative Cooling Towers for Energy-efficient Air Conditioning Systems', of which an extract from the Government website of the EMSD is attached at Annex IV.

3.6 Existing buildings presently using the sea water cooling system can change to a fresh water cooling system involving relatively minor modification work. Two buildings in Hong Kong, No. 9, Queen's Road Central and the Times Square Complex in Causeway Bay, are undergoing modifications to change their cooling systems to a fresh water cooling system.

4. Relocation of the Proposed Pumping Stations

4.1 The present location of the 20 pumping cells in the centre of the proposed new waterfront as shown in Annex V unnecessarily creates the need for excessive reclamation. The proposed reclamation can be reduced by relocating the pumping stations to the two sides as shown in Plan A at Annex VI.

4.2 Referring to Conceptual Sketches A and B at Annex VII, having the inlet/outlet pipes crossed over above the CWB can work, which may require the introduction of intermediary pumps. The drawbacks of deeply embedded

pipes if the inlet pipes cross the CWB at the bottom are not entirely irresolvable, since engineering provisions can be made before construction of the CWB. Tunnel-like chambers can be formed in the CWB structure where the pipes penetrate the diaphragm walls to ensure that some access for desilting and maintenance can be achieved. The operational vertical shafts/service tunnel approach used for the HSBC Building could be adopted with some modifications. This involves using centralized vertical shafts connected by bored tunnels in bedrock level so that better locations can be found along the waterfront for a simplified inlet structure such as a culvert or service pipe which would reduce the area of reclamation.

4.3 On Plan A at Annex VI, two banks of pumping stations are identified by references "PS-1" and "PS-2". These two locations are designed to be close to the existing facilities serving the two groups of buildings set out as follows:

PS1		PS2	
HSBC Building	2 cells	Police Headquarters	2 cells
Government Offices	5 cells	Admiralty	1 cells
		Pacific Place	4 cells
Total	7 cells	Total	7 cells

4.4 The above proposal will reduce at least the 31.5 metres of reclamation required for the pumping stations all along the estimated 700 metres of the waterfront as shown on Plan A and thereon coloured yellow. The area of the reclamation will be reduced by 2.2 hectares (237,000 square feet) at the most critical part where the harbour will be the narrowest. The relocation will only cause minor changes to the proposed plans. It will also make engineering sense because the distance from the pumping stations to the buildings served by them will be much reduced.

4.5 By a re-design of the seawall, it may even be possible to reduce the reclamation further.

5. Provision of Lagoons and/or Reservoirs as Source of Water

5.1 On the basis that seawater cooling is to continue, alternative methods without reclamation or keeping reclamation to a minimal should be considered. Instead of placing new pumping stations by the new waterfront, water can be brought to the existing pumping stations by other means.

5.2 Water can be supplied without the proposed new pumping stations. Two lagoons or underground reservoirs can be built, one on the west feeding the pumping stations serving the HSBC, Prince's Building and the Government Offices; another on the east feeding the pumping station serving the Police Headquarters, Pacific Place and Admiralty. Water can then be drawn from the lagoons by the existing pumping stations.

5.3 The lagoons/reservoirs will be fed by seawater channelled in from the Harbour by several methods either with or even without mechanical aid. Since the lagoons and the Harbour can be connected, water levels in the lagoons and the Harbour will remain the same. Due to gravitational force, the lagoons can be replenished by seawater even without mechanical aid by pipe-work or tunnel chamber under the By-pass. The design of the diaphragm wall of the By-pass foundation will have to make suitable provisions for this as illustrated in Conceptual Sketches A and B at Annex VII. Water can also be brought to the lagoons/reservoirs by mechanical means by pumping action over the By-pass. A system similar to the existing tunnelling system constructed to supply seawater to the HSBC Building can also be a solution.

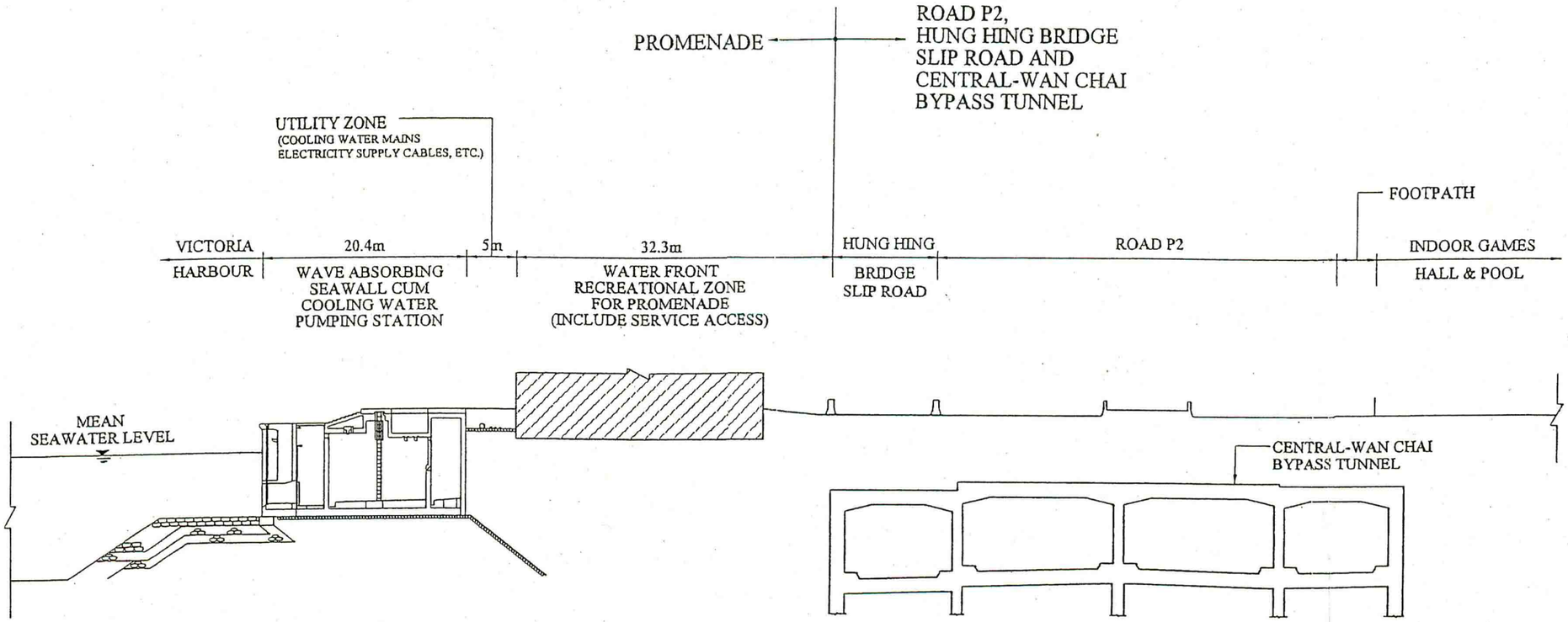
5.4 At present, the seawater supply to the Headquarters of the HSBC at No. 1 Queen's Road Central makes use of two vertical shafts: one located (on the waterfront) at Edinburgh Place and the other at the basement of the Hong Kong Bank. The shafts are connected by a large diameter service tunnel bored through bedrock estimated to be in excess of 300m long, and in fact the seawater pipes are housed in the service tunnel. The advantage of this is the ease of maintenance for both the pipes and the pumps.

5.6 This alternative achieves enormous savings in costs and would avoid putting expensive existing infrastructure to waste. Good landscape design can make the lagoons/reservoirs very attractive. Their exact locations will require careful study and planning. Stagnant water will not be an issue. The water mass in the lagoon will be circulated constantly and thus there will be no problem of the water becoming stagnant. A conceptual plan is attached at Annex VIII to illustrate the workable locations for the lagoons which will be close to the existing pumping stations that can be retained.

6. Conclusion

The Government Review did not give serious consideration to the alternative use of freshwater for cooling purposes. While the use of freshwater is actively being promoted by EMSD and adopted by building owners the Review simply dismissed it as having a "health risk". The reclamation is proceeding on the basis of providing 12 unnecessary pumping cells for new buildings, resulting in unnecessary reclamation from the harbour. Alternative locations for the remaining pumping stations which may be necessary was not considered. The amount of reclamation being carried out for the provision of unnecessary pumping stations is estimated as being a minimum of 2.2 hectares.

ANNEX I



SECTION X-X

Maunsell

AGREEMENT NO. CE 54/2001 (CE)
WAN CHAI DEVELOPMENT PHASE II - DESIGN AND CONSTRUCTION

SECTION AT WAN CHAI AREA

Territory Development Department
Hong Kong Island & Islands

SK66

Plot File by :

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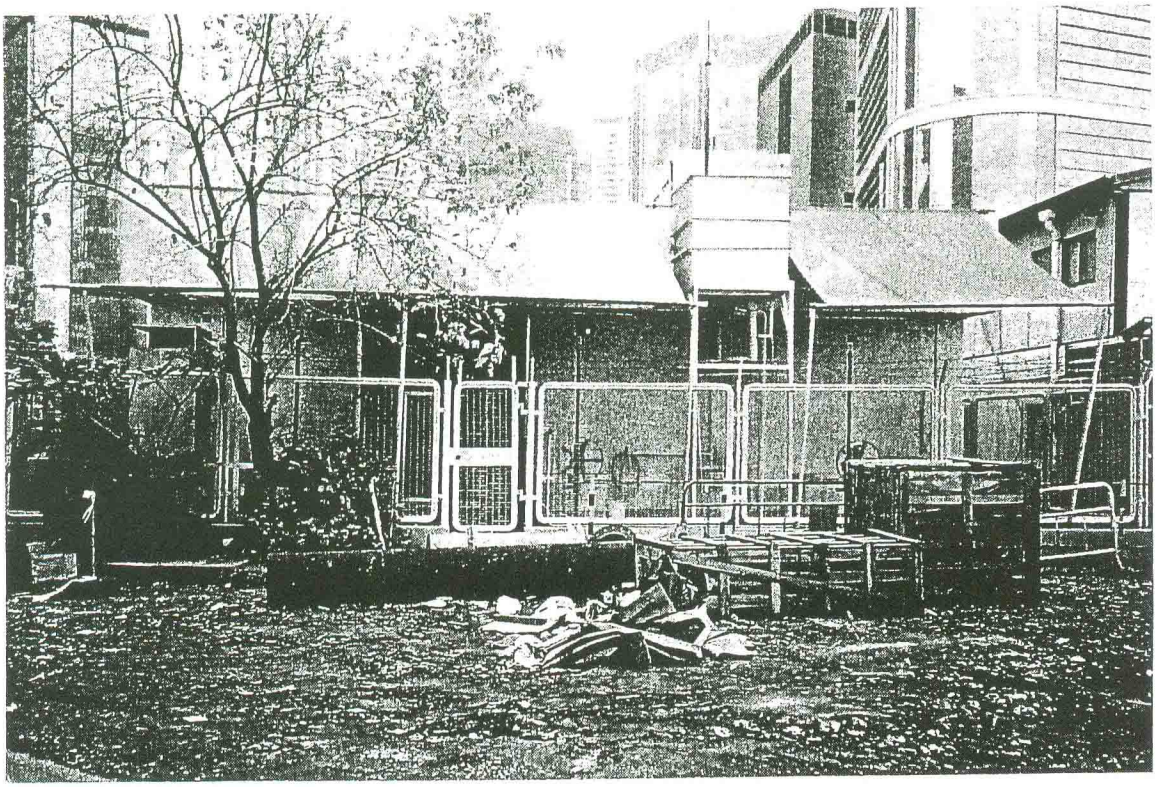
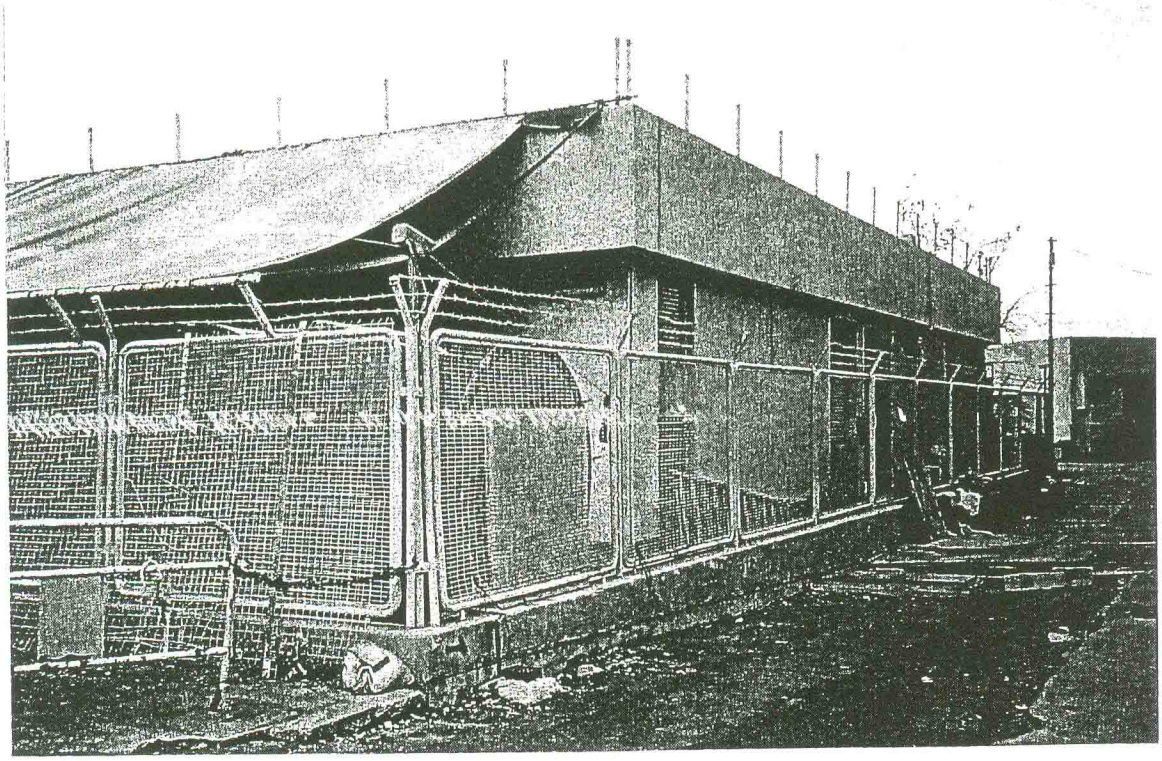
ANNEX II





ANNEX III

What's New

Welcome
About Us
What's New
Protecting Public Safety
Our Engineering Services
Promoting Energy Efficiency
Supporting Government Initiatives
Works Tenders, Consultancies and Works Projects
Electronic Submissions

☐ News ☐ Press Releases ☐ Conference Papers

機電工程署

Electrical & Mechanical Services Department

Agreement No. CE44/98

Preliminary Phase Consultancy Study

on Wider Use of Water-cooled

Air Conditioning Systems in Hong Kong

Executive Summary

July 1999

合約編號 CE44/98	Agreement No. CE 44/98
在香港推廣水冷式空調系統的初步顧問研究	Preliminary Phase Consultancy Study on Wider Use of Water-cooled Air Conditioning Systems in Hong Kong
執行摘要	Executive Summary
介紹	INTRODUCTION
目標與目的	Aims & Objectives
進行研究的目的如下：	The objective of the study is as follows:
本研究旨在考察在香港推廣水冷式空調系統（WACS），使之用於非住宅項目的可行性。研究將	To examine the feasibility of promoting water-cooled air conditioning systems (WACS) for

於非住宅項目的可行性。研究將提供充分的獨立調查結果和推薦意見，使香港特別行政區政府能夠看到整個地區使用水冷式空調系統在工程、環境和經濟方面的可行性，能夠體現經過驗証的世界技術和創新設計的可用節能工程方案，及研究和項目實施的主體階段所採用的中長期策略。

conditioning systems (WACS) for non-domestic development in Hong Kong. Provide independent findings and recommendations sufficient to enable the HKSAR Government to have insights into the engineering, environmental and economic viability of territory-wide WACS, the available energy efficient engineering solutions demonstrating the proven world-wide technologies and innovative designs, and the medium and long term strategy to be adopted for the main phases of the study and implementation of the project.

研究結果摘要

Summary of Findings

研究表明水冷式空調系統是技術上可行的，並且有一些水冷式空調系統方案無論在經濟上和財務皆是可行的。

The study has shown that WACS are technically feasible and that there are a number of types of WACS schemes that are economically and financially viable.

研究顯示，採用水冷式空調系統有益於節約能源，可使本土地區範圍內減少溫室氣體排放（GHG），減少發電站所用的進口礦物燃料，減緩發電站的建設和降低對環境的影響。

The study has demonstrated that there are benefits in adopting WACS in terms of energy savings which territory-wide can lead to a reduction in greenhouse gas emissions (GHG), a reduction in imported fossil fuels for power generation, deferred power station provision and reduced environmental impacts.

然而，要實施更廣泛的採用水冷式空調系統也有一些限制的條件，儘管這不是不能克服的，因此建議特區政府在計劃進一步時需配合另外一些行動。

However, there are a number of constraints to the implementation of the wider adoption of WACS and although not insurmountable, further actions on the part of the HKSAR Government are recommended in order to proceed.

水冷式空調系統的背景

Background to WACS

在香港目前的總用電量中，有超過 60%是消耗在商業建築物上，

More than 60% of the total electricity currently used in Hong Kong is

過 60%是消耗在商業建築物上，而其中又有約 40%消耗在空調系統上（即是總用電量的 25%左右）。

currently used in Hong Kong is consumed in commercial buildings, of this some 40% is taken up by the air conditioning system (i.e. around 25% of the total electricity use).

目前，大部分在港裝有空調的建築物皆配備了將熱量從建築內部傳送出來，再散發到大氣中的空調系統。這些系統通常被稱作氣冷式空調系統（AACS）。

The present situation is that the majority of the air-conditioned buildings in Hong Kong are constructed with air-conditioning systems that transfer the heat from the inside of the building and dissipate it to the atmosphere. These systems are commonly referred to as air-cooled air-conditioning systems (AACS).

氣冷式空調系統在香港佔主導的地位，很大程度上歸因於目前水務署對使用政府喉管供水用於空間舒適調節設備的蒸發式冷卻用途所實施的限制。這些用水限制從六十年代開始在港實施，是由於香港地區水源匱乏，而從廣東省提供可靠和持續的食水供應之前，這些限制已生效了。

The pre-dominance of AACS in Hong Kong may be largely attributed to the current restrictions imposed by the Water Supplies Department (WSD) on the use of the mains water supplies in evaporative cooling processes for comfort air-conditioning. These water use restrictions were imposed during the 1960's as a consequence of the limited availability of water resources within Hong Kong and prior to the implementation of a reliable and continuous piped supply system of raw water from Guangdong Province.

此外，在近幾年中，通過“非循環”海水供應去消散建築物空調系統產生的熱量，已被接受爲一個節能的建築物冷卻系統方案，特別是採用於那些靠近海岸線的建築物上。這就促進了一定數量的公共和私人海水引入泵房和水管系統的發展，並遍佈整個地區，直接爲大型建築物空調冷卻的散熱裝置供應海水。現在有大

Notwithstanding this, over recent years the use of "once-through" seawater supply for the dissipation of heat from building air-conditioning systems has been accepted as an energy-efficient solution to the cooling of some buildings in Hong Kong, particularly those close to the seafront. This has developed into a number of public and private sector

的散熱裝置供應海水。現在有大約一百個這樣的系統爲政府建築物，醫院，綜合性開發項目和大型交通項目的空調系統散熱提供海水。

number of public and private sector seawater intakes pumphouses and pipeline systems, being constructed throughout the Territory for the direct supply of seawater for the air-conditioning nf_chiller installations of large buildings. Today there are approx. one hundred once-through systems serving government buildings, hospitals, mixed-use developments and mass transportation developments _ providing seawater supplies for air-conditioning system heat rejection.

水冷式空調系統的優點和缺點

BENEFITS AND DISBENEFITS OF WACS

水冷式空調系統方案的類型

Types of WACS Schemes

作爲研究的一部分，本研究對三種不同類型的水冷式空調系統方案進行了評估，這三個是所有方案中比較具吸引力，且有潛力在香港被廣泛採用的。集中式管道供應冷凝器冷卻水系統。

Three different types of WACS schemes have been evaluated as part of the study and found to be attractive and having the potential for wider adoption in Hong Kong. These are:

集中式管道供應冷凝器冷卻水系統（CPSSCC）

Centralised Piped Supply System for Condenser Cooling (CPSSCC)

此類型系統是由一個海水引入裝置和泵水站組成，通過管網或配送環路（見圖 0201）向幾個建築提供大量的海水。海水被泵入每個建築物機房的水冷式冷凍水機中，用於消散從冷凍水機組排出的熱量。變熱後的水通過另一個包含增壓管網和海洋排水口的獨立系統排放到海洋中。排出的熱水也可再被作爲建築物沖洗水途。

This type of system consists of a seawater intake and pumping station supplying a large quantity of seawater to a number of buildings via a pipe network or distribution loop (ref. Figure 0201). The seawater is pumped to the water-cooled nf_chillers located within each building plant room and is used to dissipate heat rejected from the nf_chiller plant. The discharge of warmed water is returned to the sea via a separate discharge system with pressurised pipe network and sea outfall. The discharged warmed water also has the potential to be reused for building flushing water

reused for building flushing water purposes.

研究表明，與 AACS 方案相比，使用 CPSSCC 方案可以節約 12% 到 24%的能量。

The study has evaluated that energy savings of between 12% to 24% can be anf_chieved for CPSSCC schemes when compared to AACS systems.

集中式管道供應冷卻塔用水系途 (CPSSCT）

Centralised Piped Supply System for Cooling Towers (CPSSCT)

此系統與 CPSSCC 系統有類似的基本構造裝置，然而，這種系統是通過管道網絡或分配送環路，向幾個建築供應相對較少量的海水或淡水（見圖 0701 或 0801）。海水或淡水被用做冷卻塔的補給水送往那些通常位於每一座建築屋頂的冷卻塔。這種冷卻水代替了會因蒸發、流失和飄走而失去的循環水流。從冷卻塔產生的流失或廢水是斷斷續續排放出來的，可即場進行處理後，排入附近的雨水管道。另外，如果公共污水管有足夠的富餘量，也可將其排入公共污水管道。爲了驗證此等排放之可行性，將需進行一個排污或排水影響評估。

The CPSSCT system is a similar infrastructure arrangement to the CPSSCC system, however, this type of system involves the supply of a much lower quantity of either seawater or freshwater to a number of buildings via a pipe network or distribution loop (ref. Figures 0701 and 0801). The seawater or freshwater is supplied to each building for use as “make-up” water for cooling towers normally located on the roof of each building. This “make-up” water replaces the circulating water flow that is lost due to evaporation, ‘bleed-off’ and drift. The bleed-off or waste water from the cooling towers is intermittently discharged and can be treated on-site and discharged to the nearby stormwater drainage system. Alternatively, it may be discharged into public sewers if there is adequate spare capacity. A Sewerage or Drainage Impact Assessment is needed in order to examine its feasibility.

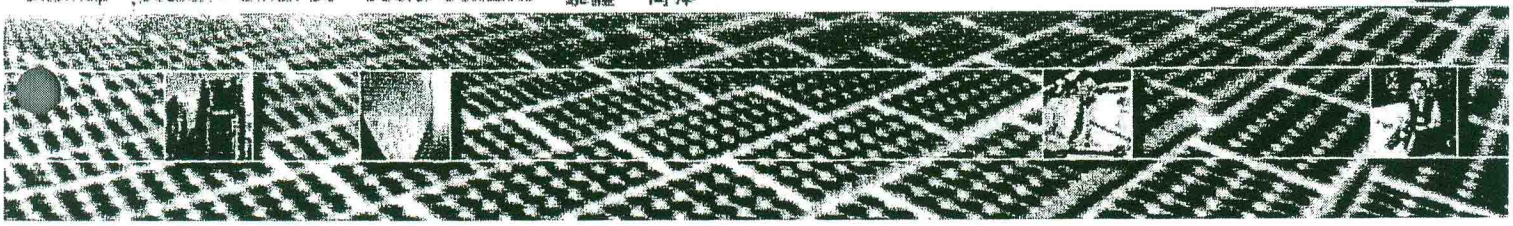
研究表明，與 AACS 方案相比，使用 CPSSCT 方案可以節約 7% 到 17%的能量。

The study has evaluated that energy savings of between 7% to 17% can be anf_chieved for CPSSCT schemes when compared to AACS systems.

區域性冷卻方案（DCS）

District Cooling Scheme (DCS)

ANNEX IV



Water-cooled Air Conditioning Systems

Welcome
About Us
What's New
Protecting Public Safety
Our Engineering Services
Promoting Energy Efficiency
Supporting Government Initiatives
Works Tenders, Consultancies and Works Projects
Electronic Submissions

: How to Apply

Pilot Scheme for Wider Use of Fresh Water in Evaporative Cooling Towers for Energy-efficient Air Conditioning Systems

The scheme was first launched on 1 June , 2000. Tentatively, the application timeframe would last for four years to 31 May 2004.

Under the scheme, owners of existing or new non-domestic buildings in the designated areas may apply to the Water Supplies Department (WSD) for approval of using fresh water supplies for evaporative cooling in their air conditioning systems, and send a copy of the application with Form CT1 and associated drawings and documents to the Electrical and Mechanical Services Department (EMSD) for vetting of design and registration of the cooling towers. After completing the approved installation and before applying to WSD for inspection, the owners shall send the original certificate for the evaporative cooling tower installation(s) and an undertaking for the provision of operational information under the pilot scheme with Form CT2 to EMSD for registration of the completion of cooling towers installation. After commissioning the approved installation, the owners shall send the system operation information and any updated installation changes with Form CT3 to EMSD on a monthly basis for continued approval of water supplies and registration of the cooling towers.

Applicants are also required to submit plans on the construction of supporting framework for approval by Buildings Department if a framework is required in the installation of cooling towers.

Upon completion of registration by EMSD and satisfactory inspection by WSD, the owners shall be approved to use metered water supply for the cooling towers.

With effect from May 31, 2003, the applicants have a choice to lodge either printed copy or electronic copy of submission for Form CT1, Form CT2, and Form CT3 to EMSD for vetting and registration.

Submission by post, or electronic submission in floppy diskette or CD-ROM formats, should be addressed to the Energy Efficiency Office of EMSD at:

Energy Efficiency Office
Electrical and Mechanical Services Department
11/F, 111 Leighton Road, Causeway Bay, Hong Kong

Electronic submission may also be e-mailed to a designated e-mail address pilot@emsd.gov.hk. Applicants may also email preliminarily completed forms for preview before lodging a formal application.

Section 11(2) of the Electronic Transactions Ordinance specifies the manner and format for the submission of electronic information under law. Please also visit Explanatory Note for Layman for further details.

Any enquiries on the scheme should be made to EMSD during office hours on 2891

Any enquiries on the scheme should be made to EMSD during office hours on 2881 1562.Application processes and registration forms of the scheme may be downloaded by clicking the charts and forms below:

- How to Apply Process Charts I & II for Pilot Scheme for Wider Use of Fresh Water in Evaporative Cooling Towers for Energy-efficient Air Conditioning Systems [Adobe Acrobat Reader 5.0 (64KB)]
- Application for Participation of Pilot Scheme for Wider Use of Fresh Water in Evaporative Cooling Towers for Energy-efficient Air Conditioning Systems - Form CT1 [Adobe Acrobat Reader 5.0 (79KB)]
- Certification for Evaporative Cooling Tower Installation(s) and Undertaking for Provision of Operational Information under Pilot Scheme - Form CT2 [Adobe Acrobat Reader 5.0 (69KB)]
- Provision of Monthly Operational Information for Water-cooled Air Conditioning System with Evaporative Cooling Tower Installation(s) under Pilot Scheme - Form CT3 [Adobe Acrobat Reader 5.0 (97KB)]

Voluntary Registration Scheme for Cooling Towers

The scheme was first launched on 1 September 2000.

Under the scheme, owners of existing buildings may send an original copy of the application with Form CT-VR1 and associated drawings and documents to the Electrical and Mechanical Services Department (EMSD) for registration of the cooling towers. After acceptance of the registration of the cooling towers, the owners shall send the system operation information and any updated installation changes with Form CT-VR2 to EMSD on a monthly basis for continued registration of the cooling towers.

Please be reminded that supporting frames of cooling towers erected without approval and consent from the Building Authority are unauthorised and are subject to removal actions under the Buildings Ordinance Section 24(1). Registration of the cooling towers under the Voluntary Registration Scheme would not change their illegal status and would not preclude the Building Authority from carrying out enforcement actions under the Buildings Ordinance.

Upon registration by EMSD, we shall provide the owners with advice and assistance on the prevention of Legionnaires' Disease (LD), aiming to minimise any potential risk in the spreading of LD from the operation of existing cooling towers.

With effect from May 31, 2003, applicants have a choice to lodge either printed copy or electronic copy of submission for Form CT-VR1, and Form CT-VR2 to EMSD for registration.

Submission by post, or electronic submission in floppy diskette or CD-ROM formats, should be addressed to the Energy Efficiency Office of EMSD at:

Energy Efficiency Office
Electrical & Mechanical Services Department
11/F, 111 Leighton Road, Causeway Bay, Hong Kong

Electronic submission should be e-mailed to a designated e-mail address vrs@emsd.gov.hk. Applicants may also email preliminarily completed forms for preview before lodging a formal application.

Section 11(2) of the Electronic Transactions Ordinance specifies the manner and format for the submission of electronic information under law. Please also visit Explanatory Note for Layman for further details.

All enquiries on the scheme should be made to EMSD during office hours on 2881

1562.

Detailed explanation and registration forms of the scheme can be downloaded by clicking the leaflet and forms below:

- How to apply: Voluntary Registration Scheme for Cooling Towers [Adobe Acrobat Reader 5.0 (57KB)]
- Application for Participation of Voluntary Registration Scheme for Cooling Towers - Form CT-VR1[Adobe Acrobat Reader 5.0 (68KB)]
- Provision of Monthly Operational Information for Evaporative Cooling Tower Installation(s) under Voluntary Registration Scheme for Cooling Towers - Form CT-VR2 [Adobe Acrobat Reader 5.0 (70KB)]

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Last updated date 2 Aug 2003

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ANNEX V

TABLE 4040/1 - DETAILS OF PROPOSED ELECTRICITY SUPPLY BUILDINGS

ELECTRICITY SUPPLY BUILDING REFERENCE	RATING KVA	PUMPING STATION / FACILITY SERVED	REMARKS
S 4.1	1500	PUBLIC PIERS	SUB-STATION
S 5.1	3000	PRINCE'S BUILDING GROUP	SUB-STATION
S 8.1	3000	HSBC MAIN BUILDING	SUB-STATION AND STANDBY GENERATOR
S 9.1	4500	CENTRALISED GOVERNMENT	SUB-STATION
S 11.1	3000	PACIFIC PLACE	SUB-STATION AND STANDBY GENERATOR
S 11.2	1500	ADMIRALTY CENTRE	SUB-STATION

TABLE 4040/2 - DETAILS OF PROPOSED PUMPING STATIONS

PUMPING STATION REFERENCE	PUMPING CELL REFERENCE	SUPPLY PIPELINE DIAMETER mm	NAME/DESTINATION	REMARKS	COOLING WATER DISCHARGE ARRANGEMENT
P 5.1	P 5.1.1	-	PRINCE'S BUILDING GROUP	3 NO. 5800mm WIDE CELLS	EXISTING CONNECTION TO DSD DRAIN
	P 5.1.2	800	PRINCE'S BUILDING GROUP		
	P 5.1.3	-	PRINCE'S BUILDING GROUP		
P 6.1	P 6.1.1	-	NEW CDA	3 NO. 5800mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-
	P 6.1.2	-	NEW CDA		
	P 6.1.3	-	NEW CDA		
P 7.1	P 7.1.1	-	FESTIVAL MARKET	1 NO. 5800mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-
P 8.1	P 8.1.1	800	HSBC MAIN BUILDING	2 NO. 5800mm WIDE CELLS	PROPOSED 2 NO. 700mm DIA. PIPE DISCHARGE TO SEA
	P 8.1.2	800	HSBC MAIN BUILDING		
P 9.1	-	-	CENTRALISED GOVERNMENT	7 NO. 5000mm WIDE CELLS	
	P 9.1.1	450	MURRAY BUILDING		PROPOSED 1 NO. 450mm DIA. PIPE DISCHARGE TO SEA (SHARED WITH MURRAY ROAD CAR PARK GROUP)
	P 9.1.2	450	CENTRAL GOVERNMENT OFFICES GROUP		EXISTING CONNECTION TO DSD DRAIN
	P 9.1.3	800	QUEENSWAY GOVERNMENT OFFICES AND HIGH COURT		PROPOSED 1 NO. 700mm DIA. PIPE DISCHARGE TO SEA
	P 9.1.4	500	CITY HALL AND LEGO BUILDING		EXISTING CONNECTION TO DSD DRAIN
	P 9.1.5	300	MURRAY ROAD CARPARK GROUP		PROPOSED 1 NO. 450mm DIA. PIPE DISCHARGE TO SEA (SHARED WITH MURRAY BUILDING)
	P 9.1.6	900	POLICE HEADQUARTERS PHASES I, II & III		PROPOSED 1 NO. 900mm DIA. PIPE DISCHARGE TO SEA
	P 9.1.7	900	POLICE HEADQUARTERS PHASES I, II & III		
P 10.1	-	-	NEW CENTRAL GOVERMENT COMPLEX / LEGCO	7 NO. 5000mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-
	P 10.1.1	-	NEW CENTRAL GOVERMENT COMPLEX		
	P 10.1.2	-	NEW CENTRAL GOVERMENT COMPLEX		
	P 10.1.3	-	NEW CENTRAL GOVERMENT COMPLEX		
	P 10.1.4	-	NEW CENTRAL GOVERMENT COMPLEX		
	P 10.1.5	-	NEW LEGCO BUILDING		
	P 10.1.6	-	NEW LEGCO BUILDING		
	P 10.1.7	-	NEW LEGCO BUILDING		
P 11.1	P 11.1.1	1200	PACIFIC PLACE	4 NO. 5000mm WIDE CELLS	PROPOSED 1 NO. 1200mm DIA. PIPE DISCHARGE TO SEA
	P 11.1.2	-	PACIFIC PLACE		
	P 11.1.3	-	PACIFIC PLACE		
	P 11.1.4	-	PACIFIC PLACE		
P 11.2	P 11.2.1	250	ADMIRALTY CENTRE	1 NO. 5800mm WIDE CELLS	EXISTING CONNECTION TO DSD DRAIN
P 12.1	P 12.1.1	-	PROMENADE DEVELOPMENT	1 NO. 5800mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-

NOTES:

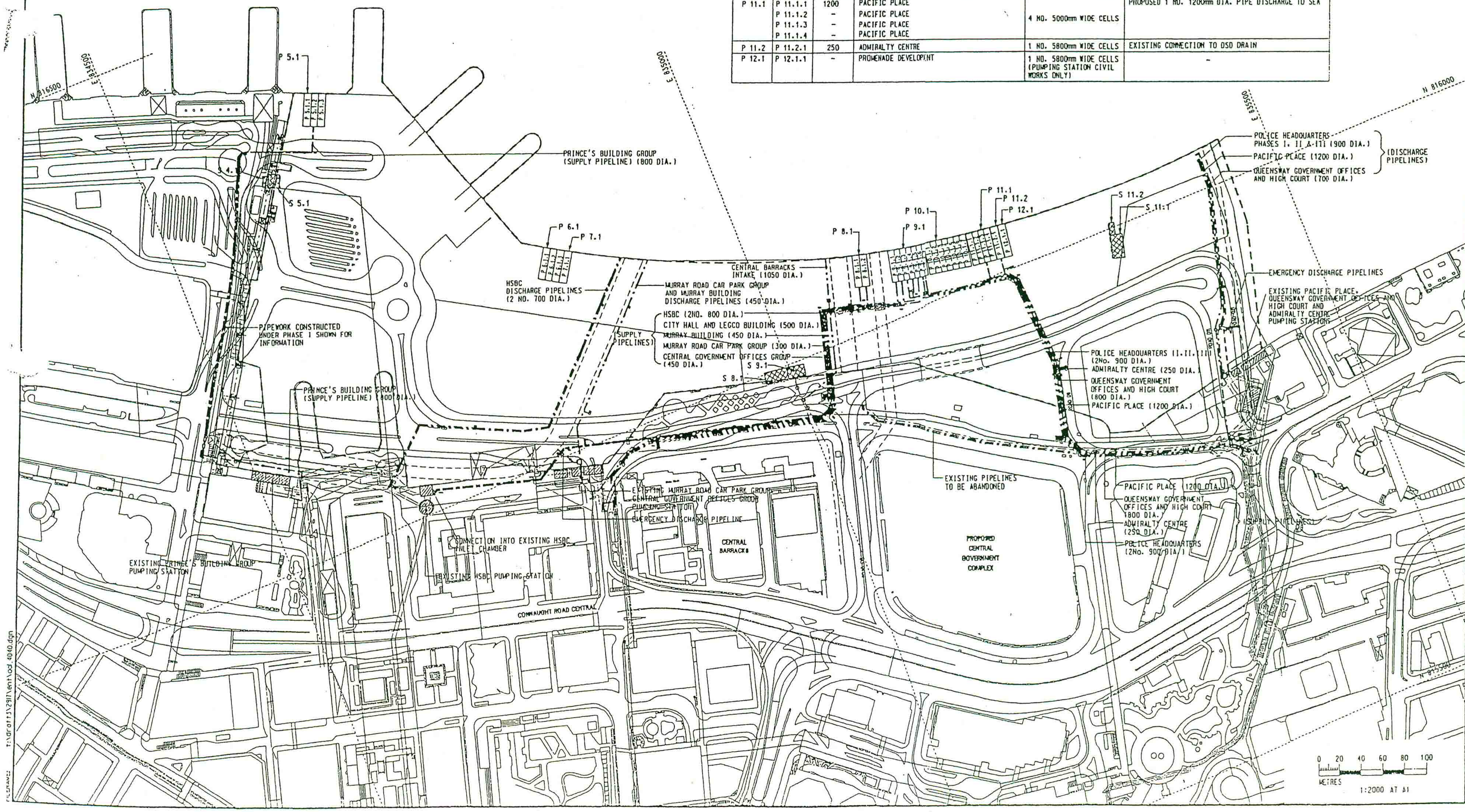
1. PUMPING STATIONS AND CELL REFERENCES ARE DEFINED AS FOLLOWS:

   P6 DENOTES PUMPING STATION CAISSON GROUP LOCATION (P5,P6,P7)
   P6.1 DENOTES THE FIRST CAISSON FROM THE WEST IN GROUP 6
   P6.1.1 DENOTES THE FIRST CELL FROM WEST IN THAT CAISSON

2. TEMPORARY ESB AND ASSOCIATED CABLING NOT SHOWN. CONTRACTOR TO PROVIDE TEMPORARY POWER SUPPLY (WITH STANDBY GENERATION FOR P8.1 AND P11.1) TO SUIT CONSTRUCTION PHASING AND COMMISSIONING DATES.

LEGEND/ABBREVIATIONS:

- (hatched) EXISTING COOLING WATER PUMPING STATION
- (line) PROPOSED PERMANENT LV CABLING ROUTE
- ESB ELECTRICITY SUPPLY BUILDING



REV	DESCRIPTION	BY	DATE	CHK'D	AUTH
-	TENDER ISSUE	RS	JUL.02	YX	JCN

拓展署 Territory Development Department

港島及離島拓展處 HONG KONG ISLAND AND ISLANDS DEVELOPMENT OFFICE

ATKINS 安科顧問有限公司 Atkins China Ltd

CONTRACT

CONTRACT NO. HK 12/02
Central Reclamation Phase III Engineering Works

DRAWING TITLE

COOLING WATER SYSTEM / ESB GENERAL LAYOUT

STATUS: TENDER

SCALE AT A1	DESIGNED	DRAWN	CHECKED	AUTHORISED
1:2000	RS	LXS	YX	JCN
	DATE JUL2001	DATE JUL2001	DATE JUL2001	DATE JUL2001

DRAWING NUMBER: 3128/ACL/4040 REVISION: -

TABLE 4040/2 - DETAILS OF PROPOSED PUMPING STATIONS

PUMPING STATION REFERENCE	PUMPING CELL REFERENCE	SUPPLY PIPELINE DIAMETER mm	NAME/DESTINATION	REMARKS	COOLING WATER DISCHARGE ARRANGEMENT
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	P 5.1.2	800	PRINCE'S BUILDING GROUP		
	P 5.1.3	-	PRINCE'S BUILDING GROUP		
P 6.1	P 6.1.1	-	NEW CDA	3 NO. 5800mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-
	P 6.1.2	-	NEW CDA		
	P 6.1.3	-	NEW CDA		
P 7.1	P 7.1.1	-	FESTIVAL MARKET	1 NO. 5800mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-
P 8.1	P 8.1.1	800	HSBC MAIN BUILDING	2 NO. 5800mm WIDE CELLS	PROPOSED 2 NO. 700mm DIA. PIPE DISCHARGE TO SEA
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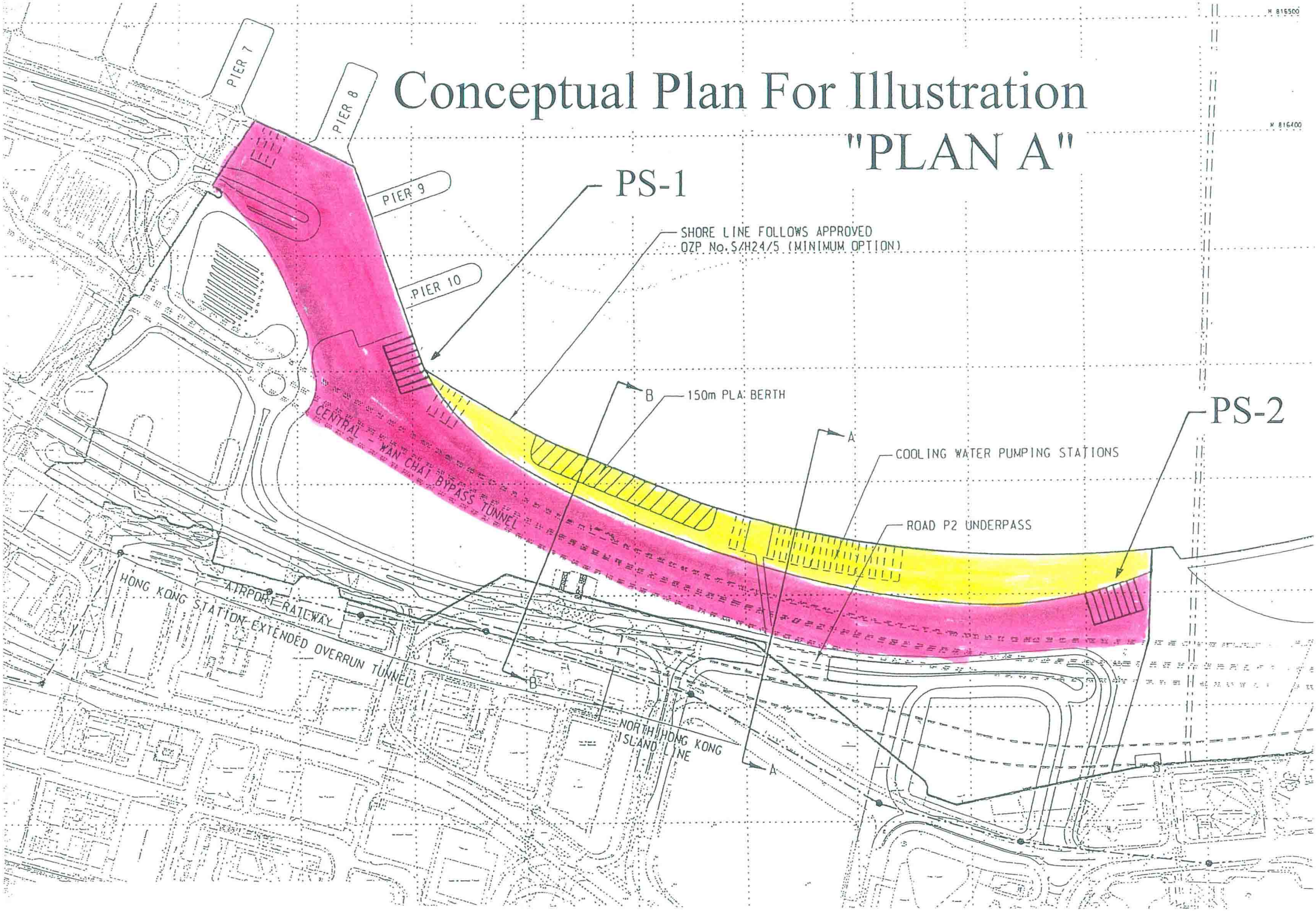
P 9.1	-	-	CENTRALISED GOVERNMENT	7 NO. 5000mm WIDE CELLS	
	P 9.1.1	450	MURRAY BUILDING		PROPOSED 1 NO. 450mm DIA. PIPE DISCHARGE TO SEA (SHARED WITH MURRAY ROAD CAR PARK GROUP)
	P 9.1.2	450	CENTRAL GOVERNMENT OFFICES GROUP		EXISTING CONNECTION TO OSD DRAIN
	P 9.1.3	800	QUEENSWAY GOVERNMENT OFFICES AND HIGH COURT		PROPOSED 1 NO. 700mm DIA. PIPE DISCHARGE TO SEA
	P 9.1.4	500	CITY HALL AND LEGCO BUILDING		EXISTING CONNECTION TO OSD DRAIN
	P 9.1.5	300	MURRAY ROAD CARPARK GROUP		PROPOSED 1 NO. 450mm DIA. PIPE DISCHARGE TO SEA (SHARED WITH MURRAY BUILDING)
	P 9.1.6	900	POLICE HEADQUARTERS PHASES I, II & III		PROPOSED 1 NO. 900mm DIA. PIPE DISCHARGE TO SEA
	P 9.1.7	900	POLICE HEADQUARTERS PHASES I, II & III		
P 10.1	-	-	NEW CENTRAL GOVERNMENT COMPLEX / LEGCO	7 NO. 5000mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-
	P 10.1.1	-	NEW CENTRAL GOVERNMENT COMPLEX		
	P 10.1.2	-	NEW CENTRAL GOVERNMENT COMPLEX		
	P 10.1.3	-	NEW CENTRAL GOVERNMENT COMPLEX		
	P 10.1.4	-	NEW CENTRAL GOVERNMENT COMPLEX		
	P 10.1.5	-	NEW LEGCO BUILDING		
	P 10.1.6	-	NEW LEGCO BUILDING		
	P 10.1.7	-	NEW LEGCO BUILDING		
P 11.1	P 11.1.1	1200	PACIFIC PLACE	4 NO. 5000mm WIDE CELLS	PROPOSED 1 NO. 1200mm DIA. PIPE DISCHARGE TO SEA
	P 11.1.2	-	PACIFIC PLACE		
	P 11.1.3	-	PACIFIC PLACE		
	P 11.1.4	-	PACIFIC PLACE		
P 11.2	P 11.2.1	250	ADMIRALTY CENTRE	1 NO. 5800mm WIDE CELLS	EXISTING CONNECTION TO OSD DRAIN
P 12.1	P 12.1.1	-	PROMENADE DEVELOPMENT	1 NO. 5800mm WIDE CELLS (PUMPING STATION CIVIL WORKS ONLY)	-

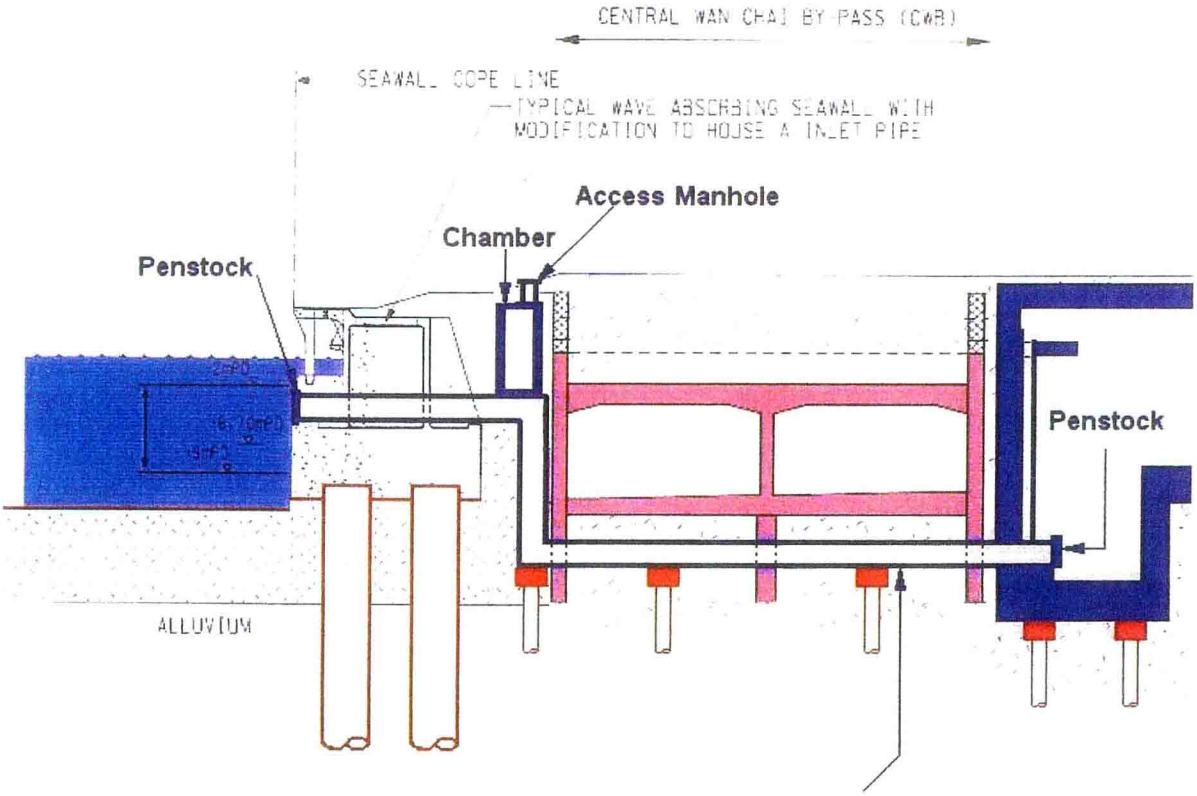
ANNEX VI


Conceptual Plan For Illustration
"PLAN A"
PS-1
PS-2
PIER 7
PIER 8
PIER 9
PIER 10
SHORE LINE FOLLOWS APPROVED
OZP No.S/H24/5 (MINIMUM OPTION)
B
150m PLA BERTH
A
COOLING WATER PUMPING STATIONS
ROAD P2 UNDERPASS
CENTRAL - WAN CHAI BYPASS TUNNEL
AIRPORT RAILWAY
HONG KONG STATION EXTENDED OVERRUN TUNNEL
NORTH HONG KONG ISLAND LINE
B
A
N 816500
N 816400

ANNEX VII

CONCEPTUAL SKETCH "A"

Sketch No. 2 - Typical Cross-section of a Pumping Station

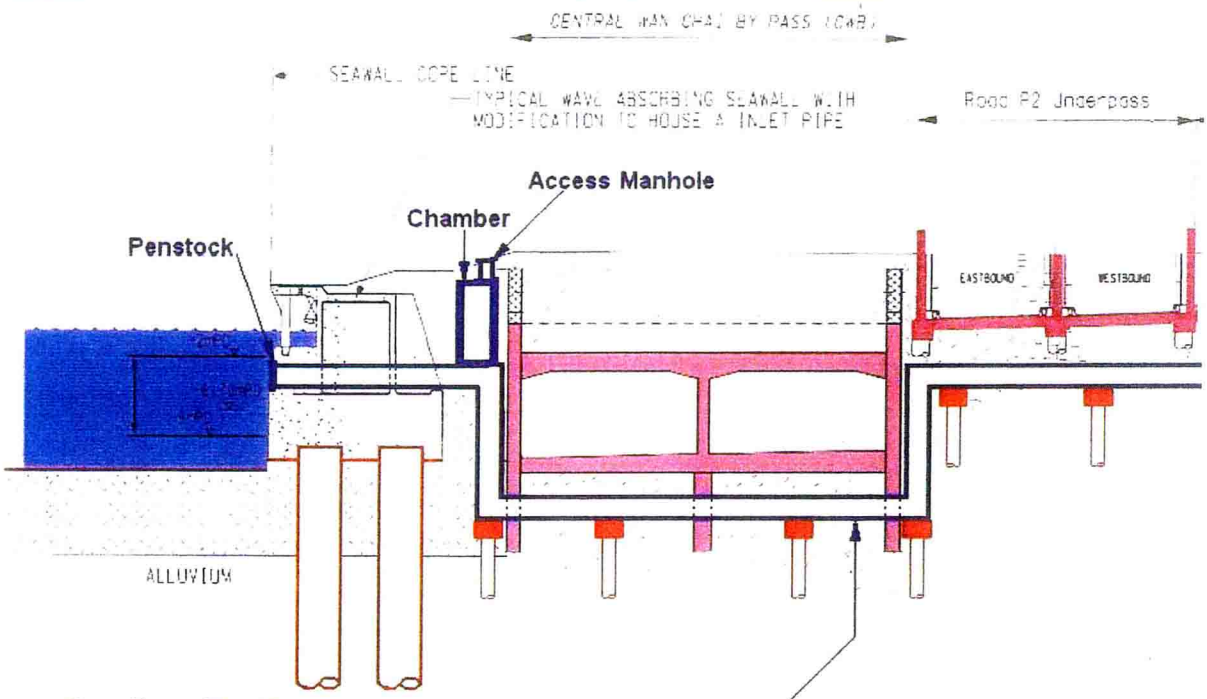


Multi-compartment Supply Culvert designed to achieve self-cleansing water velocity. Access will be provided for periodic inspection and repair work; without having to interrupt pumping operation.

Section C - C of Sketch No. 1

CONCEPTUAL SKETCH "B"

Sketch No. 3 - Cross-section of Return Culvert No. 2

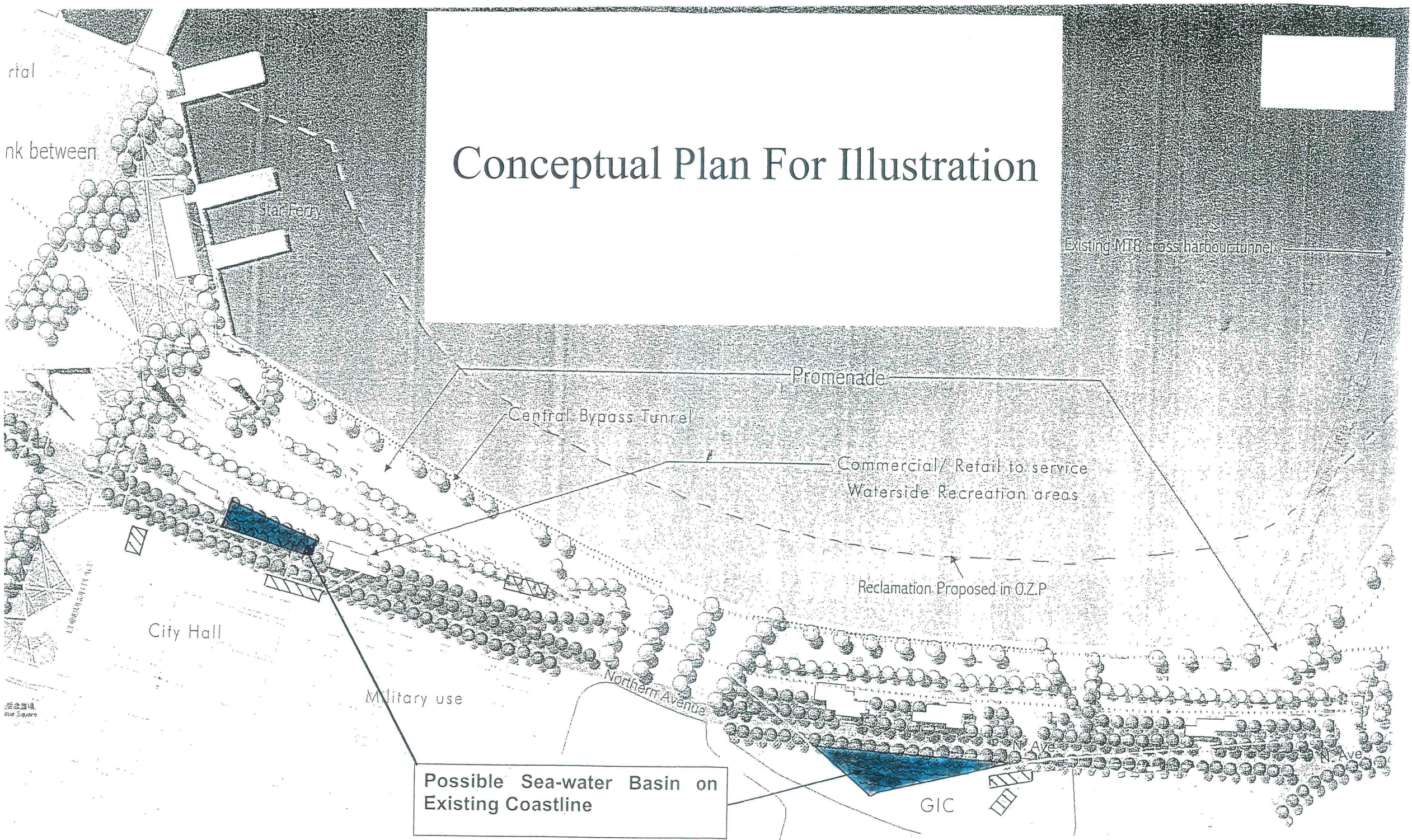


Section D - D of Sketch No. 1

Multi-compartment Return Culvert designed to achieve self-cleansing water velocity. Access will be provided for periodic inspection and repair work; without having to interrupt pumping operation.

ANNEX VIII

Conceptual Plan For Illustration



tual Alternative One
/ Wan Chai Waterfront
antral - Wan Chai Bypass)

Figure 2

Location of Existing Pumping Stations and Possible Location of Sea-water Basin. Imposed on Alternative One Plan

B : Alternative Seawall Design and Construction

1. Introduction

1.1 TDD stated that cooling water pumping stations or CWPS built into the promenade area of CR1 had adversely affected the use of the promenade by the public. Because with CWPS in the foreshore, frequent access is needed to enable maintenance of the cooling water filter and pump equipment. This had led to public complaints. Therefore, we plan to eliminate these CWPSs (refer to section A before).

1.2 The current TDD design and sequence of construction consists of providing two initial reclaimed areas supported by temporary seawalls, namely, 'initial reclaimed area west' and 'initial reclaimed area east'. The purpose of these two initial reclamations is for the construction of CWPS. By eliminating these CWPSs, this construction step, especially the construction of the associated seawalls, will no longer be required, thus reducing the construction cost and time.

1.3 The seawall structure required for CRIII including the wave absorbing feature can be designed and constructed on a foundation with a width of much less than the current design of 60 metres, thus reducing the extent of reclamation.

1.4 There are different types of seawall construction. Some seawalls take up a lesser land area as will be demonstrated in the following sections.

2. Alternative Seawall Design for CRIII

2.1 Option 1 - Piled Seawall

A piled seawall is a type of seawall which is supported by a system of piling foundation. The type of foundation adopted can be large diameter cast-in-place bored piles or precast reinforced concrete piles. Resting on the piles will be a reinforced concrete cap which can be used as an area for the provision of a promenade. A wave absorption system can be provided at the seaward side of the seawall structure. The filling materials will be marine sand instead of rock fill as in the current design. The land take for this option will be in the order of 25 metres which is significantly less than the current design of over 60 metres. The reduction in width by approximately 35 metres thus reduces the amount of reclamation by approximately 2.4 ha over a seawall length of 700 metres. The proposed CWB tunnel can be constructed behind the seawall in a conventional way, with a clearance of approximately, say 10 metres.

2.2 Option 2 - Incorporating a sheet-pile barrier in the current design

In the current design, a large mass of rock-fill materials is used to form a major part of the seawall. This mass will create difficulty for the installation of diaphragm walls which form part of the proposed CWB tunnel. To overcome this difficulty and to allow the tunnel to be constructed closer to the seawall, say with a 10 metres clearance, a sheet-pile barrier will be provided. This barrier will be installed 10 metres behind the seawall prior to the placement of the rock-fill on the seaward side. It will confine the rock-fill materials inside the sheet-pile barrier. The other side of the barrier will be filled with marine sand up to the formation level, thus allowing the diaphragm walls to be constructed in the conventional way. The CWB tunnels can then be constructed. The land take for this option is again significantly reduced, thus minimizing the amount of reclamation.

3. Conclusion

The limit of reclamation has been redefined with the removal of the CWPS systems and with the practical design of a narrower seawall structure as shown in Figure 1, resulting in a significant saving of approximately 2.4 ha for the harbour.

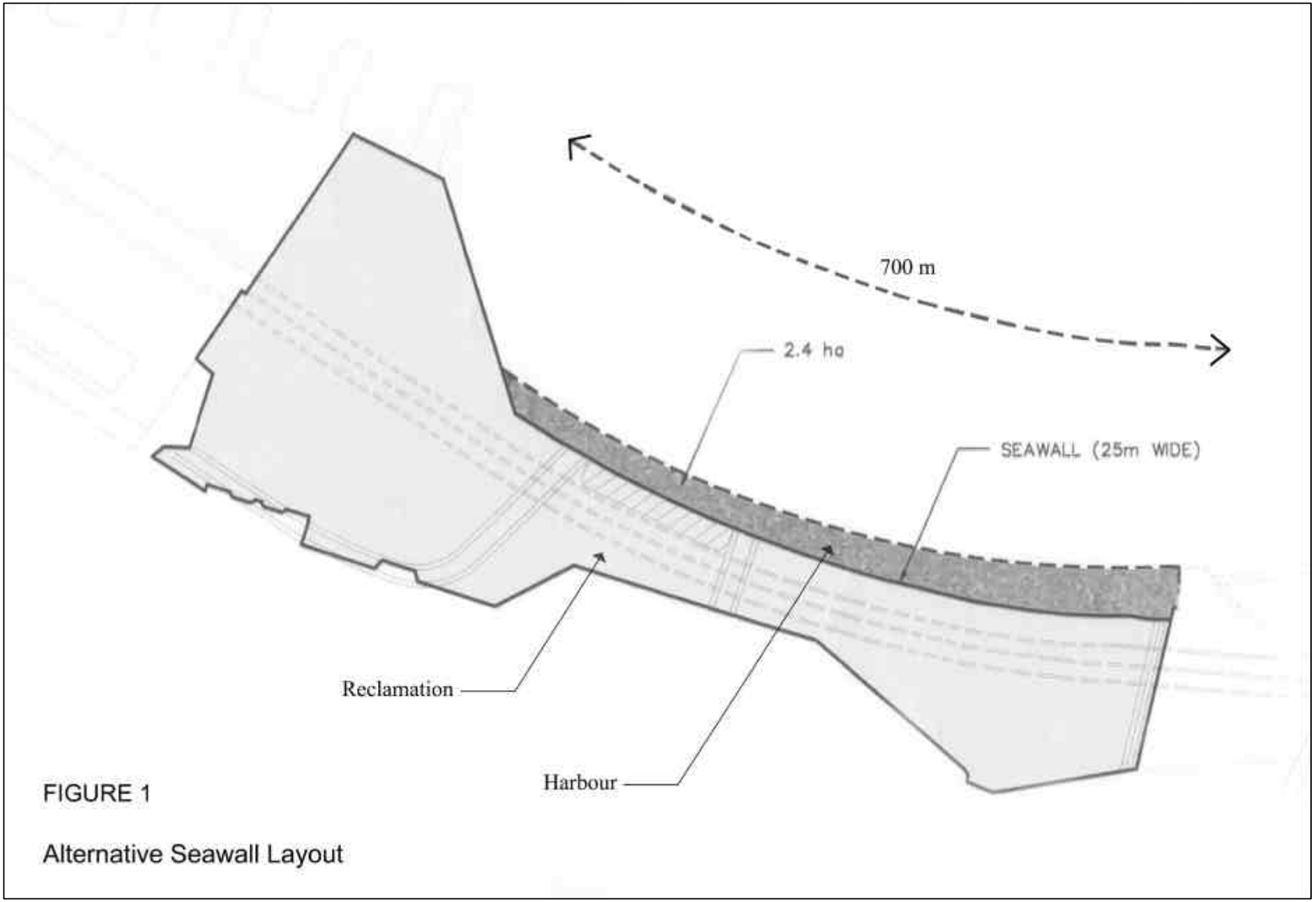


FIGURE 1

Alternative Seawall Layout

Appendix 2

Traffic Impact Assessment

MVA (HK) LTD.

1. INTRODUCTION

1.1 Background

1.1.1 MVA Hong Kong Limited was commissioned by the Society for Protection of the Harbour to carry out a Traffic Impact Assessment for the proposed rezoning request of the Central District (Extension) Outline Zoning Plan No. S/H24/6.

1.1.2 The purpose of the subject rezoning request is based largely on public interest and the spirit of the Protection of the Harbour Ordinance with a goal to reduce the amount of reclamation, reduce the amount of commercial development along the water front, and to reduce the extent of roads.

1.1.3 The key assumption of this study is that Central Wanchai Bypass (CWB) is essential to relieve the east-west through traffic from the congested Connaught Road / Harcourt Road / Gloucester Road Corridor. Any surface roads built on the future CR III should therefore target only to provide the necessary traffic circulation and access for the waterfront. These surface roads could also be used to alleviate bottlenecks at the existing roads as far as practical and provide the essential traffic connections to ensure good utilisation of the CWB.

1.1.4 As part of this rezoning request a set of reduced development assumptions were made. All assumptions are tabled in this report whilst justifications of these assumptions are explained elsewhere in the main text of the planning statement.

1.2 Objectives

1.2.1 The purpose of this TIA is to assess the traffic feasibility of a reduced road network in conjunction with reduced development intensity on the Central Reclamation Phase 3. The primary interest was the scale and alignment of the original Road P2. The results of this Traffic Impact Assessment have justified an alternative layout for Road P2. To achieve the objective the following tasks were undertaken:

- To identify all assumptions, the reduced development proposal for the area of Central Reclamation Phase III and those in Wanchai;
- Rerun the traffic model for year 2016 firstly based on the original OZP road network and development intensity;
- Review the road network in the original OZP and develop an alternative reduced surface road network to accommodate the essential traffic needs;
- Re-run the 2016 traffic model using the revised road network and development intensity;
- Based on the results of the traffic forecast, refine the proposed road network and junction configurations;

- Carry out Traffic Impact Assessment to demonstrate the feasibility of the proposed network and junction arrangements.

- Carry out a sensitivity test to test the feasibility of the proposed road network with the development intensity in the OZP.

2. STUDY ASSUMPTIONS

2.1 Road Network Assumptions

2.1.1 An initial starting point of this study is the road network as proposed in the original OZP. It consists of the dual-3 Central Wanchai Bypass (CWB) connecting Rumsey Street flyover to the west and Island Eastern Corridor (IEC) to the east in the form of a tunnel within the boundary of CR III. Interchanges of this Bypass are provided in Central to the west of the International Finance Centre, Wanchai North near the Hong Kong Convention and Exhibition Centre, and lastly near Causeway Bay Typhoon Shelter where it joins IEC.

2.1.2 The provision of CWB and its interchanges are retained in this study with only slight modifications proposed at the Wan Chai North Interchange. It is agreed that the underground bypass is necessary to provide traffic relief to the Connaught Road / Harcourt Road / Gloucester Road Corridor, and to provide the opportunity to modify the role of the roads to the south in the interest of improving the physical and building environment.

2.1.3 Road P2 forms the east-west surface road in the original OZP. It is primarily a dual-two carriageway with widening at junctions. It is a through route connecting between Pedder Street to the west and all the way to Marsh Road to the east. It was intended to be the primary distributor route for all the new developments along the CR III and Wanchai reclamation areas. The original width and alignment of Road P2 was mostly dictated by the scale of the reclamation developments. With the proposed reduction in development intensity and ensuring CWB being the primary relief route to the existing roads, it is expected that the role of Road P2 could be reviewed.

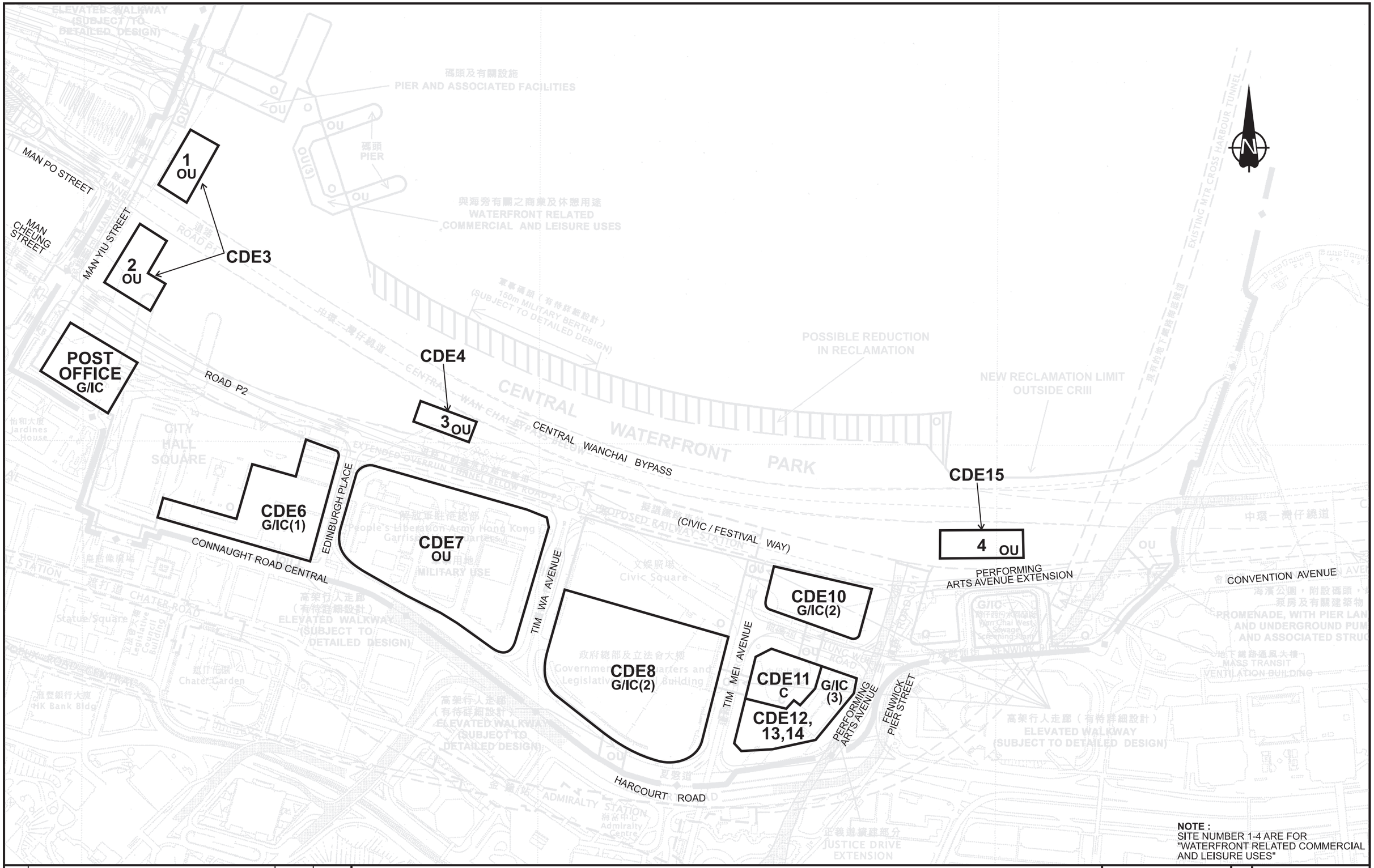
2.1.4 In accordance with the latest intention, the existing City Hall will be retained. Hence this will serve as a constraint in the refinement of the road network.

2.2 Reduction in Development Intensity

2.2.1 The purpose of reclamation is to provide the essential space for the construction of road infrastructure to relieve the traffic congestion anticipated in the central business area. The extent and sizing of roads on the reclamation are then dictated by the scale of the development and essential need for circulation and accessibility.

2.2.2 Therefore the alternative development proposal are of a reduced scale compared to the original OZP and will mainly consist of government/ Institution/ Community (GIC) uses and low density waterfront related commercial and leisure uses.

2.2.3 A key plan of the development proposals is shown in **Figure 2.1**.



NOTE :
SITE NUMBER 1-4 ARE FOR "WATERFRONT RELATED COMMERCIAL AND LEISURE USES"

Rev.	Description	Approved	Date

REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 - SOCIETY FOR PROTECTION OF THE HARBOUR

DEVELOPMENT PROPOSALS

Figure No. 2.1			Rev.
Designed By KSC		Scale N T S	
Checked By FST		Date AUG 2004	
CAD Ref. : 25736/TIA/F21.CDR/LLH/26-8-04			

MVA HONG KONG LTD.

2.2.4 CDE 10 site is retained as a GIC zone for "Culture/recreation" uses. However, the size is significantly reduced to 72,600m^2 in GFA.

2.2.5 The CDA zone in Government proposals (CDE 3) is now rezoned to three smaller retail facilities. The three zones comprise of two "Waterfront Related Commercial and Leisure Uses" zones with plot ratio of 2 and a GIC zone of plot ratio 5.

2.2.6 In general, the proposal has reduced the significant commercial and retail development in the original plan.

2.2.7 The details of the proposed land use and proposals are summarised in **Table 2.1**.

Table 2.1 Proposed land uses for Central Reclamation Phase III area

Site		Land Use	Site Area (m^2)	Intend Use	GFA (m^2)	
					Gov. Proposal	Subject Proposal
CDE3	Site No. 1	OU	2,100	Retail	190,000	4,200
	Site No. 2	OU	2,950	Retail		5,900
	Post Office	GIC	6,000	GIC		30,000
CDE4 (Site No. 3)		OU	17,182	Retail	40,879	3,500
CDE6		GIC	11,040	City Hall	13,000	13,000
CDE7		OU(Military)	28,227	Military	50,887	50,887
CDE8		GIC)	25,086	Gov. Complex	313,411	313,411
CDE9		OU	5,147	Retail	20,701	0
CDE10		GIC	11,507	Cultural/ Recreation	146,087	72,600
CDE12,13,14		GIC	6,063	Red Cross Office	17,002	17,002
CDE15 (Site No. 4)		OU	9,400	Retail	11,176	7,000
Total					803,143	517,500

2.2.8 In summary, the total GFA for the CR III reclamation area is reduced from 803,143m^2 to 517,500m^2, which is a reduction of 36% in GFA.

3. PROPOSED ROAD NETWORK

3.1 Proposed Road Layout Concept

3.1.1 Central Wanchai Bypass (CWB) will serve as a bypass for through traffic thereby relieving the existing congested Connaught Road / Harcourt Road / Gloucester Road Corridor.

3.1.2 In order to minimize the extent of reclamation, Road P2 is proposed to be realigned to connect with the existing Convention Avenue to the east utilising some of the existing Lung Wui Road alignment.

3.1.3 In general Road P2 is proposed to adopt an arrangement to discourage through traffic.

3.2 Proposed Road Layout Detail

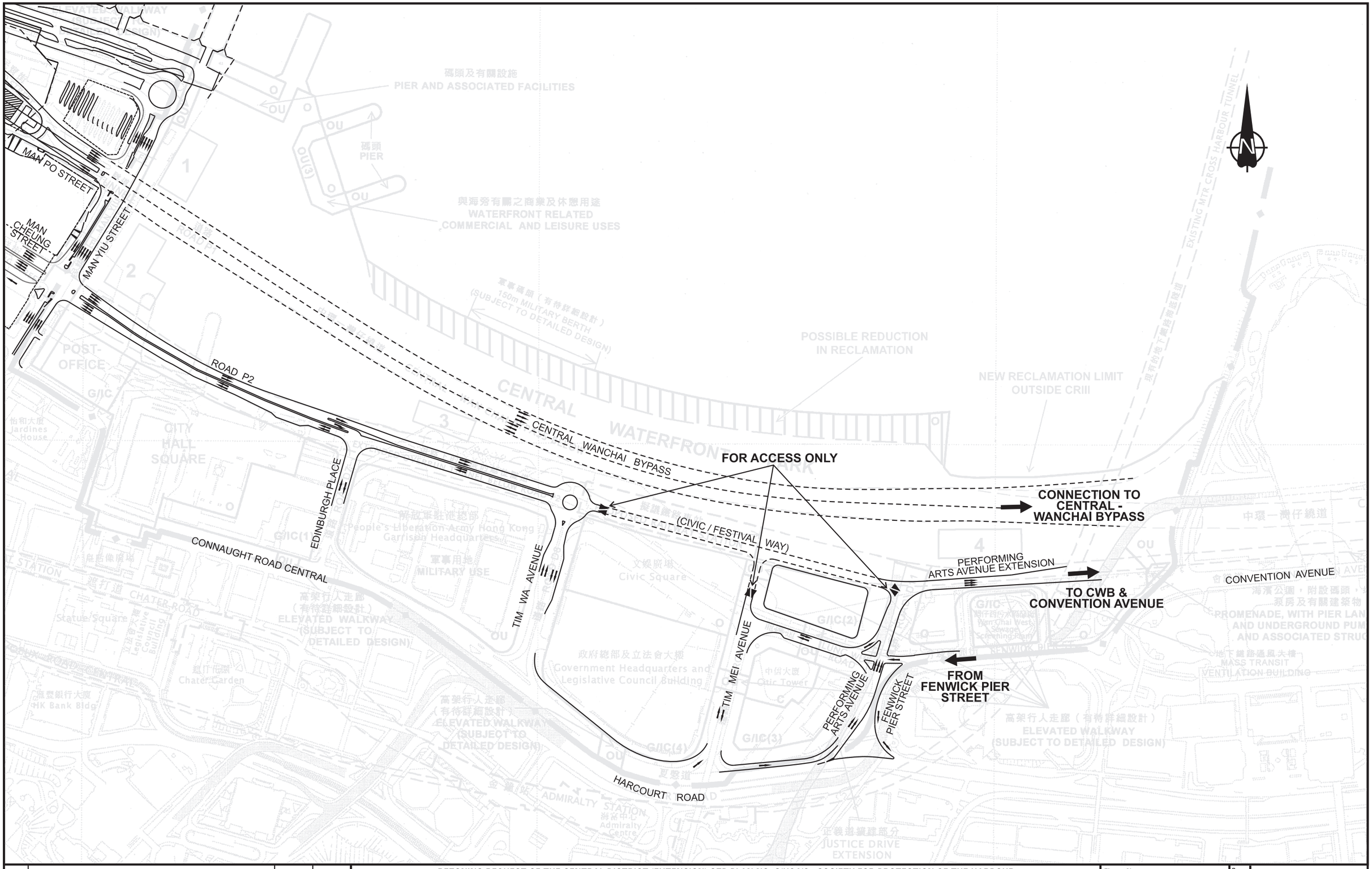
3.2.1 The alternative road network proposal is shown in **Figure 3.1**.

3.2.2 Road P2 begins from the west as an extension of the existing Man Cheung Street at Man Yiu Street. A signal controlled junction will be provided at the Man Cheung Street / Man Yiu Street / Road P2 junction. A dual-2 carriageway will be provided on Road P2 between Man Yiu Street and Edinburgh Place. This section of Road P2 is essential to relief the existing congested section of Gloucester Road between Pedder Street and Edinburgh Place in the eastbound direction. Traffic destined towards Cotton Tree Drive could use this section of Road P2 and Edinburgh Place as an alternative to Connaught Road Central.

3.2.3 To the east of Edinburgh Place Road P2 continues as a dual-2 carriageway upto Tim Wa Avenue . To the east of Tim Wa Avenue Road P2 is discontinued. This section of Road P2 and Tim Wa Avenue provides alternative eastbound exit routes from Central North for traffic which would otherwise have travelled on the congested and unsuitable Connaught Place and Connaught Road Central.

3.2.4 To the east of Tim Wa Avenue Road P2 discontinued and a restricted waterfront access could be provided for festival or access purposes if necessary.

3.2.5 Tim Mei Avenue is retained and so does a section of existing Lung Wui Road adjacent to Citic Tower. Tim Mei Avenue and Lung Wui Road are proposed to be maintained as local roads for the adjacent Civic Square, GIC sites, and the existing Citic Tower.



Rev.	Description	Approved	Date

REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 - SOCIETY FOR PROTECTION OF THE HARBOUR

PROPOSED ROAD LAYOUT

Figure No. 3.1			Rev.
Designed By KSC		Scale N T S	
Checked By FST		Date AUG 2004	
CAD Ref. : 25736/TIA/F31.CDR/LLH/26-8-04			

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3.2.6 Further east Performing Arts Avenue is proposed to be extended to the existing waterfront and connects with Convention Avenue to the east as an one-way eastbound carriageway, while Fenwick Pier Street would be converted to one-way westbound forming an one-way gyratory with the Performing Arts Avenue Extension. Performing Arts Avenue Extension will provide a direct connection to the Central Wanchai Bypass in the eastbound direction. Fenwick Pier Street, similarly, will be maintained as a through route providing connection between the westbound off ramp of the CWB to Harcourt Road via the existing Fenwick Pier Street flyover. Although it is beyond the scope of this study the proposed modification of the road network has inevitably involved the modification of the Central Wanchai Bypass interchange at Wan Chai North. The proposed changes for the road network to the east of the study area boundary in Wan Chai North is shown in **Appendix A**.

3.2.7 The junction of Performing Arts Avenue / Lung Wui Road / Fenwick Pier Street will be signal controlled. At-grade crossings will be provided to ensure convenient pedestrian access to the waterfront.

3.2.8 In summary, the proposed Road P2 has been reduced from a though route between Central and Wanchai to a local distributor road only to provide essential access and relief for the congested CRC section. It has been discontinued to the east of Tim Wa Avenue. Further east the road network on Tim Mei Avenue and Lung Wui Street have been maintained to ensure adequate access to the Civic Square and GIC sites.

3.2.9 Performing Arts Avenue and Fenwick Pier Street is modified to an one-way gyratory system to provide strategic connection between CRC and the future Central Wanchai Bypass. This diverts through traffic from Tim Mei Avenue (in the government scheme), leaving it to be an access road for the civic square and GIC developments.

3.2.10 The alignment of the Central Wanchai Bypass (CWB) will be the same as Government proposal except an additional on-ramp from Expo Drive to CWB westbound link is proposed. This will provide an underground link between Wanchai North and Central North, and diverts Wanchai North traffic towards Route 4 to bypass the congested Harcourt/Connaught Road Central Corridor. The eastbound on-ramp and eastbound off-ramp of CWB at Wanchai North is proposed to connect to Expo Drive. These are illustrated in **Appendix A**.

3.2.11 With most of the through traffic is rerouted to CWB, it is expected that the congestion along the section of Connaught Road Central and Harcourt Road between Pedder Street and Fenwick Street can be relieved.

3.2.12 In the original government proposal, there is an extension of Man Po Street connecting to Road P2 east of Man Yiu Street namely Road P1 and Road D6. This short road section is removed in this proposal to ensure the continuity of pedestrian open space avoiding unnecessary road crossings. Access to the waterfront related facilities could be provided on Road P2.

3.2.13 The necessary traffic assessment in support of the road layout is presented in Chapter 5.

3.3 Pedestrian Facilities

3.3.1 The pedestrian facilities are shown in **Figure 3.2**.

3.3.2 For the Road P2 section between Man Yiu Street and Edinburgh Place, at grade signal controlled crossings are provided at the junction Man Yiu Street / Man Cheung Street and Road P2 / Edinburgh Place. The existing Pedder Street footbridge would be extended up to the north of Road P2 to provide convenient pedestrian access to the waterfront park. A mid-block signal controlled crossing could also be provided on Road P2 to ensure convenient pedestrian crossing between the waterfront open space and the City Hall Square. Investigation to provide a pedestrian underpass at this location has been carried out. However, due to the presence of a shallow underground MTR overrun tunnel it is not feasible to construct either a pedestrian nor vehicular underpass.

3.3.3 Further east near Tim Wa Avenue a cautionary crossing point across Road P2 could be provided. To the east of Tim Wa Avenue up to Performing Arts Avenue Extension effectively it is a continuous open space with a festival boulevard which is expected to be closed for traffic in the normal situation but is available for pedestrians or traffic for special events.

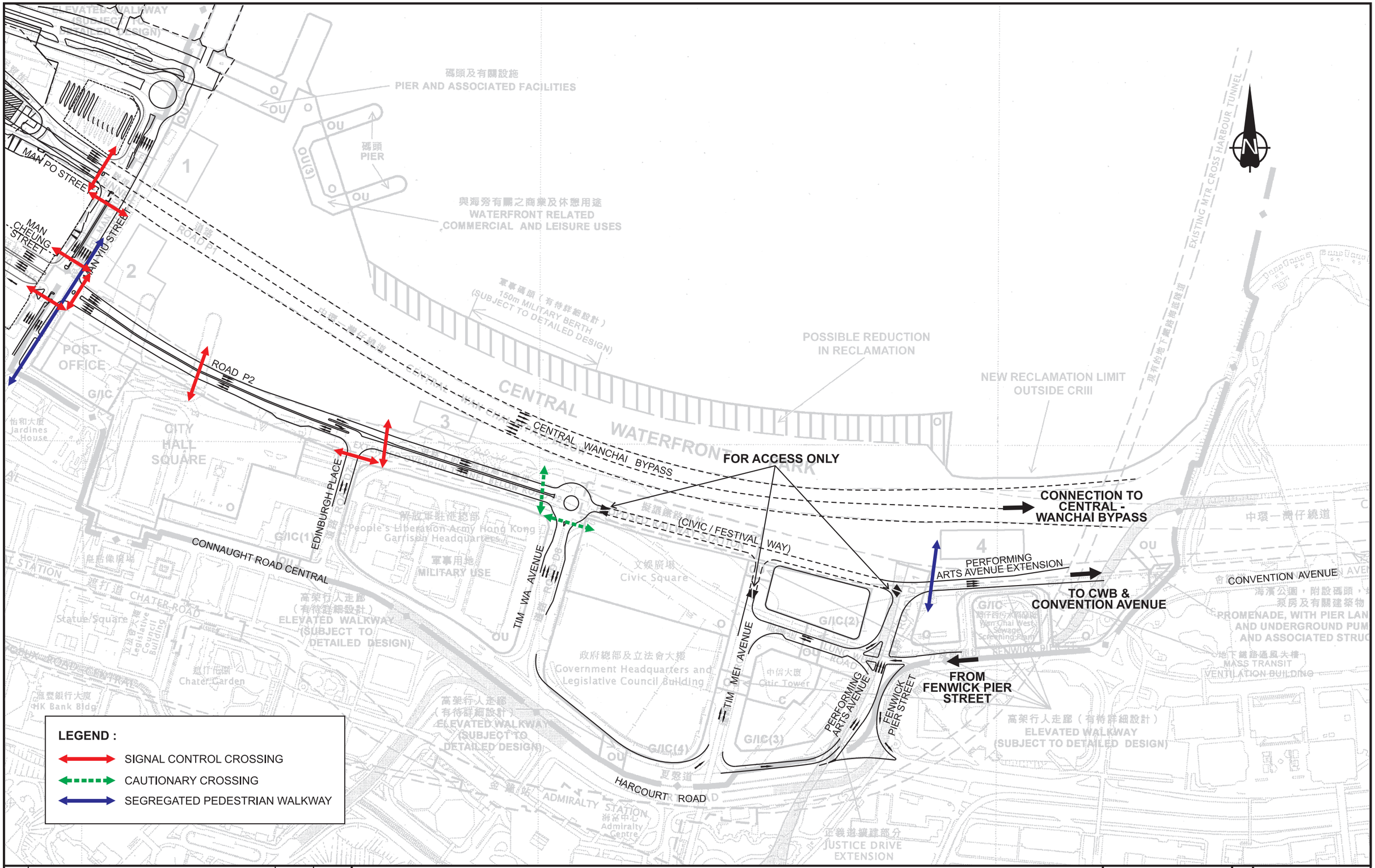
3.3.4 To the east of Performing Arts Avenue access to the waterfront may be provided via segregated crossing facility across the eastbound carriageway of the Performing Arts Avenue Extension. Since this section of Performing Arts Avenue is expected to be quite heavily trafficked at-grade crossing is not preferred.

3.4 Public Transport Facility

3.4.1 The proposed public transport arrangement for the CR III area is shown in **Figure 3.3**.

3.4.2 The area is well covered in terms of railway accessibility with the MTR Tsuen Wan Line, Tung Chung Line, Airport Express Line, future Shatin Central Link, and North Island Line all within accessible distance. Franchised bus services are expected to be mainly remained on Connaught Road Central. Since Road P2 is no longer a through route, it is more desirable to keep Road P2 free of buses to reflect more closely its intention of being a waterfront boulevard.

3.4.3 It is proposed to provide a tram service along the waterfront for leisure / tourist use. The tram service could run as a branch off the existing tram services commencing on the west near Rumsey Street. It should then run along the Central and Wanchai reclamation along the waterfront and re-join the existing tram line at Victoria Park. On CR III the proposed tram line will provide an environmental-friendly transport mode for short commuting purpose, or it could provide an alternative experience for leisure / tourist purpose along the anticipated future waterfront.



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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 - SOCIETY FOR PROTECTION OF THE HARBOUR

PROPOSED PEDESTRIAN FACILITIES

Figure No.	3.2	Rev.	
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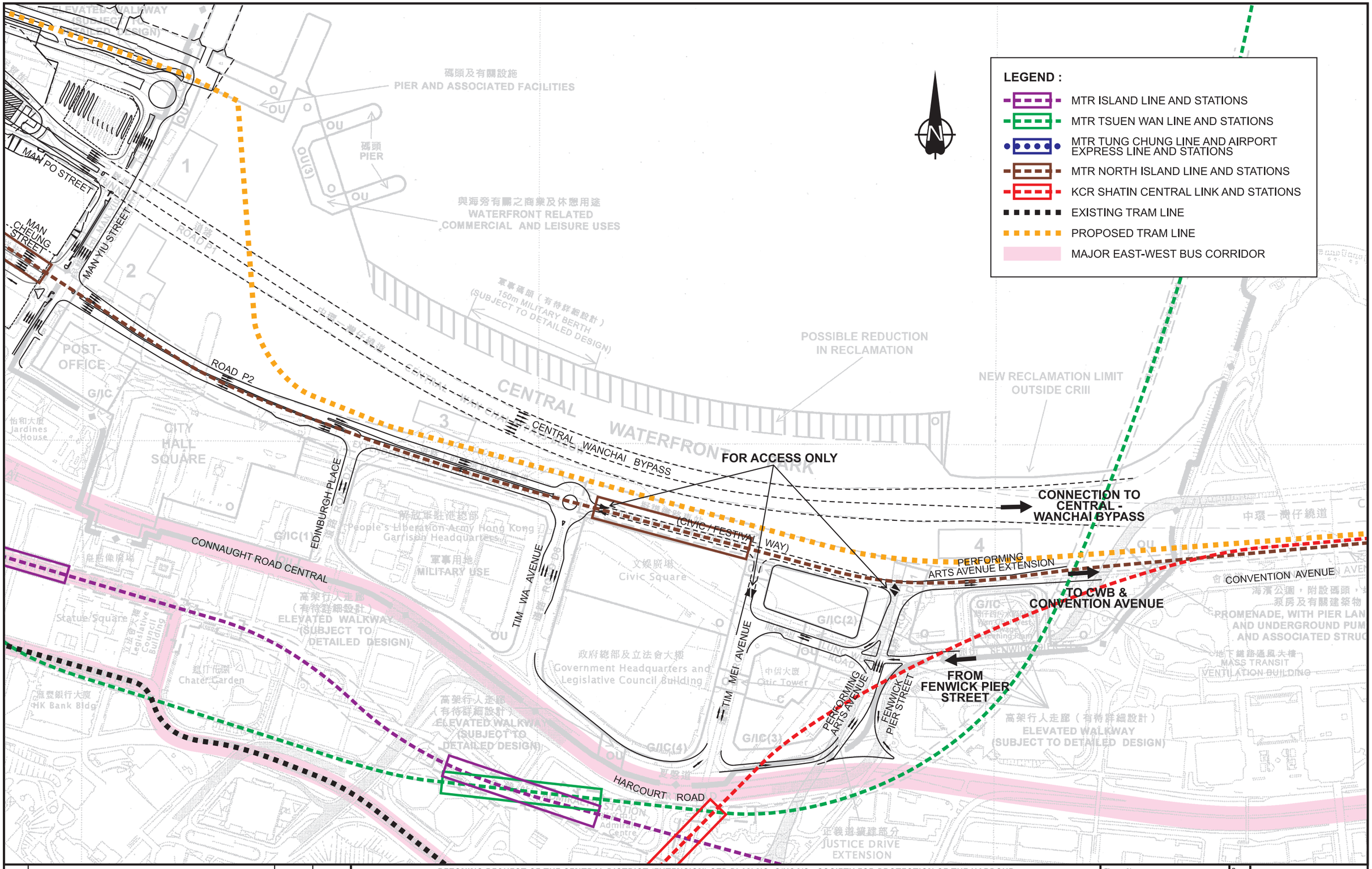

Rev.	Description	Approved	Date

REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 - SOCIETY FOR PROTECTION OF THE HARBOUR

PROPOSED PUBLIC TRANSPORT ARRANGEMENT

Figure No.	3.3	Rev.	
Designed By	KSC	Scale	N T S
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3.4.4 Along the Central Reclamation Phase 3 study area the tram line would essentially run along and within the waterfront park. To the west near Man Kwong Street it crosses Man Yiu Street at-grade near the future Star Ferry. To the east near the Hong Kong Convention of Exhibition Centre the tram line could cross the existing Expo Drive and Expo Drive East underneath along the existing water channel. In the future the construction of Central-Wanchai Bypass necessitates the filling of the water channel and a partially submerged tram line section could be provided through the Exhibition Centre to avoid at-grade tram crossings.

4. TRAFFIC FORECAST

4.1 Traffic Model Development

4.1.1 A year 2016 traffic model was developed based on an in-house traffic model for the same study area. Latest available planning data (TPEDM-2001) and road network assumptions consistent with latest government studies carried out for this area were adopted in the model.

4.1.2 A reference case scenario following the development intensity and road network configurations as in the OZP was firstly developed.

4.1.3 The traffic model was then updated based on the proposed rezoning proposal including road network changes and the reduction in development intensity

4.2 Development Trip Ends

4.2.1 The trip ends of the proposed developments in the CR III area are re-calculated based on the same trip rates used in the Government's proposal. As the development scale is reduced, the total trip ends were reduced to a similar scale. The trip rates adopted are summarized in **Table 4.1** and the resulted trip ends are summarised in **Table 4.2**.

Table 4.1 Morning Peak Hour Trip Rates for the Proposed CR III Developments Sites

Land Use	Vehicle Type	Trip rate (pcu/hr/100m^2)	
		In	Out
Office	PV	0.300	0.200
	GV	0.020	0.030
Retail	PV	0.220	0.130
	GV	0.050	0.050
Community facilities	PV + GV	0.235	0.235
Government Offices	PV + GV	0.252	0.164
Carpark (pcu/hr/parking space)	PV + GV	0.210	0.030

Source : Government's Record DR439 and CRIII TIA report.

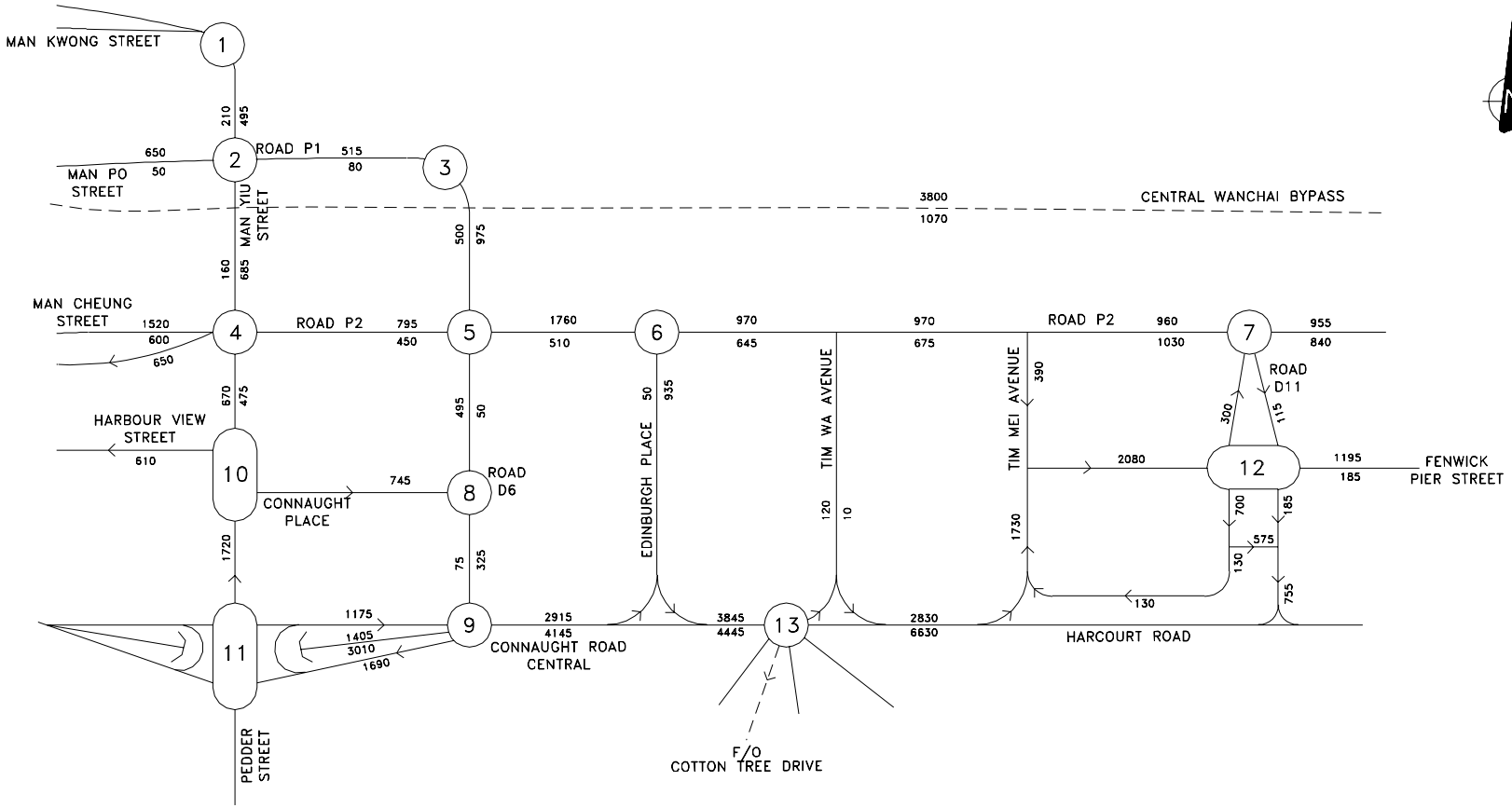
Table 4.2 Summary of Trip Ends for the Proposed Developments in the Morning Peak

Site		Intend Use	Proposed GFA (m^2)	Proposed Development Trip Ends (pcu/hr)		Original OZP Development Trip Ends (pcu/hr)	
				Gen	Att	Gen	Att
CDE3	Site No. 1	Retail	4,200	8	11	355	547
	Site No. 2	Retail	5,900	11	16		
	Post Office	GIC	30,000	57	88		
CDE4 (Site No. 3)		Retail	3,500	6	9	74	110
CDE6		City Hall	13,000	31	31	31	31
CDE7		Military	50,887	120	120	120	120
CDE8		Gov. Complex	313,411	514	790	514	790
CDE9		Retail	0	0	0	37	56
CDE10		Cultural/ Recreation	72,600	171	171	343	343
CDE12,13,14		Red Cross Office	17,002	40	40	40	40
CDE15 (Site No. 4)		Retail	7,000	13	19	20	30
Total			**517500**	**969**	**1294**	**1533**	**2067**

4.2.2 As shown in **Table 4.2**, the total traffic generation in the morning peak hour has been reduced from 1,533 pcu/h to 969 pcu/hr. The total traffic attraction has been reduced from 2,067 pcu/hr to 1,294 pcu/hr.

4.3 Forecasted Traffic Flow

4.3.1 The 2016 forecasted traffic flow for the Government's proposal and subject proposal are shown in **Figure 4.1** and **Figure 4.2** respectively. Morning peak hour traffic forecast was adopted for the analysis.



LEGEND:

575 AM PEAK HOUR TRAFFIC FLOW IN PCU/HR

NO.	KEY JUNCTION
1.	MAN KWONG STREET / MAN YIU STREET
2.	MAN PO STREET / MAN YIU STREET / ROAD P1
3.	ROAD P1 / ROAD D6
4.	MAN CHEUNG STREET / MAN YIU STREET / ROAD P2
5.	ROAD P2 / ROAD D6
6.	ROAD P2 / EDINBURGH PLACE
7.	ROAD P2 / ROAD D11
8.	CONNAUGHT PLACE / ROAD D6
9.	CONNAUGHT ROAD CENTRAL / ROAD D6
10.	HARBOUR VIEW STREET / MAN YIU STREET / CONNAUGHT PLACE
11	CONNAUGHT ROAD CENTRAL / PEDDER STREET
12.	LUNG WUI ROAD / ROAD D11 / FENWICK PIER STREET
13.	CONNAUGHT ROAD CENTRAL / COTTON TREE DRIVE / HARCOURT ROAD

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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 SOCIETY FOR PROTECTION OF THE HARBOUR

2016 FORECASTED TRAFFIC FLOW WITH GOVERNMENT PROPOSAL

Figure No. 4.1 Rev. -

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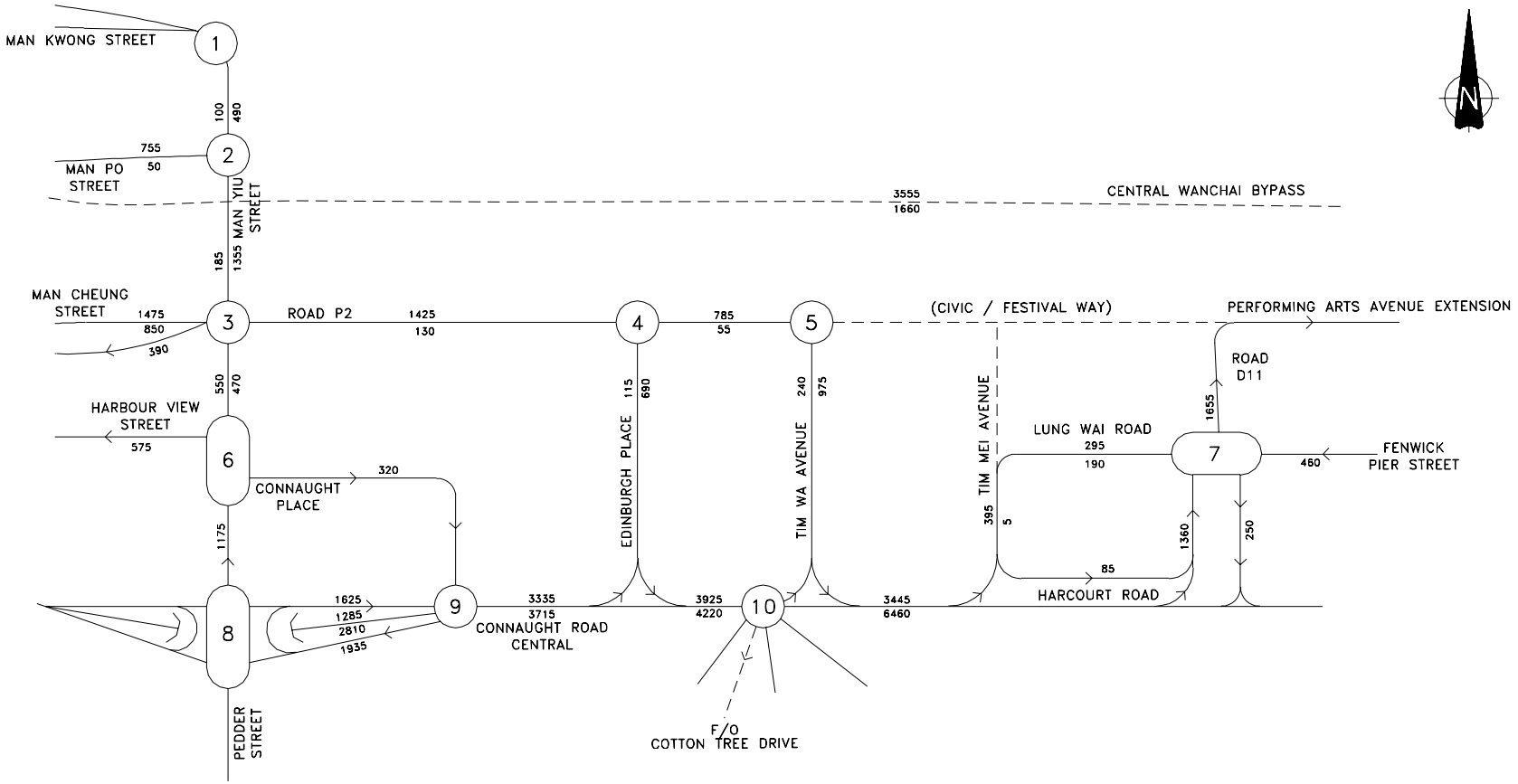

LEGEND:

575 AM PEAK HOUR TRAFFIC FLOW IN PCU/HR

NO.	KEY JUNCTION
1.	MAN KWONG STREET / MAN YIU STREET
2.	MAN PO STREET / MAN YIU STREET
3.	MAN CHEUNG STREET / MAN YIU STREET / ROAD P2
4.	ROAD P2 / EDINBURGH PLACE
5.	ROAD P2 / TIM WA AVENUE
6	HARBOUR VIEW STREET / MAN YIU STREET / CONNAUGHT PLACE
7.	LUNG WUI ROAD / PERFORMING ARTS AVENUE / FENWICK PIER STREET
8	CONNAUGHT ROAD CENTRAL / PEDDER STREET
9.	CONNAUGHT ROAD CENTRAL / CONNAUGHT PLACE
10.	CONNAUGHT ROAD CENTRAL / COTTON TREE DRIVE / HARCOURT ROAD

Rev.	Description	Approved	Date
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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 SOCIETY FOR PROTECTION OF THE HARBOUR

2016 FORECASTED TRAFFIC FLOW WITH DEVELOPMENT PROPOSAL

Figure No. 4.2 Rev. -

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5. TRAFFIC IMPACT ASSESSMENT

5.1 Overview

5.1.1 The traffic impact assessment was based upon the traffic model developed for year 2016. The reference case scenario was fully developed using the existing OZP road network and development intensity. The proposed road network and reduced development scenario was then used to re-run the traffic model to identify the impact of the subject proposal.

5.2 Screenline Analysis

5.2.1 In order to assess how the proposed changes of road network and development intensity of the reclamation developments would impact upon the traffic performance, a screenline analysis was carried out. The screenline location is shown in **Figure 5.1**.

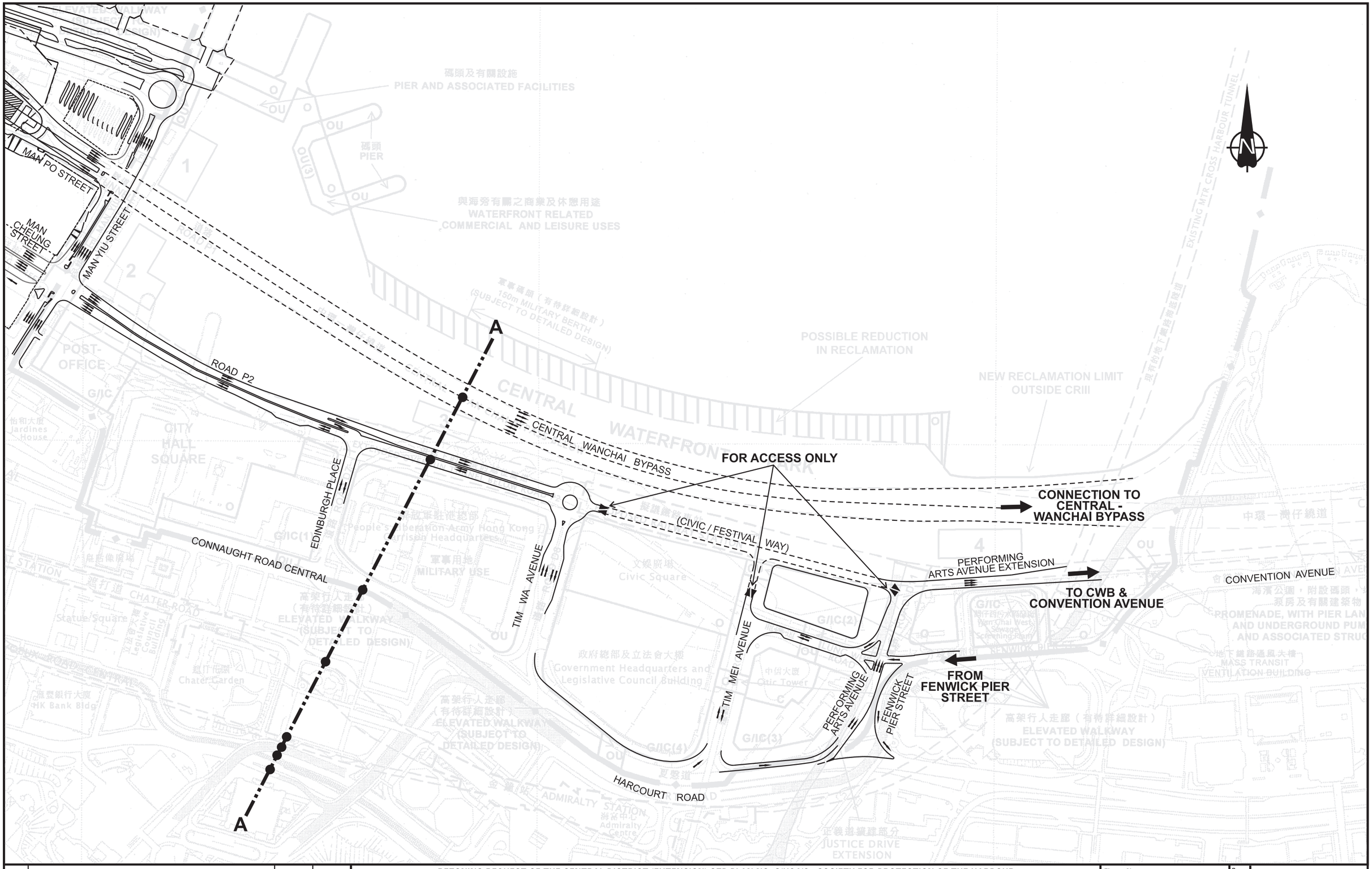
5.2.2 The results of the screenline traffic flow analysis are shown in **Table 5.1**. The corresponding volume to capacity ratios for each road links are shown in **Table 5.2**.

5.2.3 The screenline analysis enables the assessment of the total, and the distribution of traffic on the east-west parallel routes at the core of the study area. In the eastbound direction, by year 2016 the total eastbound traffic demand at the study area is expected to increase from some 11,550 pcu/hr to some 13,950 pcu/hr, representing an increase of some 21%. In the westbound direction, the total demand is expected to increase from 7,900 pcu/hr to 9,750 pcu/hr, representing some 23% increase.

Table 5.1 Summary of Morning Peak Traffic Flow across Screenline A - A

Road Section	Traffic Flow (pcu/hr)		
	Observed (Based on Observed Flow Recorded in 2002)	Gov. Proposal (Year 2016)	Subject Proposal (Year 2016)
Central Wanchai Bypass EB	-	3,800	3,550
Road P2 EB/ Lung Wui Rd EB	200	950	800
Connaught Road C EB	6,450	3,850	3,900
Murray Rd	850	500	500
Queensway EB	1,350	1,900	1,900
Garden RD FO	2,700	2,950	2,900
Eastbound Total	11,550	13,950	13,550
Central Wanchai Bypass WB	-	1,050	1,650
Road P2 WB/Lung Wui Rd WB	150	650	50
Connaught Road C WB	4,400	4,450	4,200
Lambeth Walk WB	600	900	1,000
Queensway WB	2,750	2,700	2,650
Westbound Total	7,900	9,750	9,550
Total	19,450	23,700	23,100

Note : All the figures are rounded to nearest 50pcu/hr.



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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 - SOCIETY FOR PROTECTION OF THE HARBOUR

SCREENLINE A - A

Figure No. 5.1			Rev.
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Table 5.2 Summary of Morning Peak volume to capacity ratios across Screenline A - A

Road Section	No of lanes	Volume to Capacity Ratios		
		Observed (Based on Observed Flow Recorded in 2002)	Gov. Proposal (Year 2016)	Subject Proposal (Year 2016)
Central Wanchai Bypass EB	3	-	0.70	0.66
Road P2 EB/ Lung Wui Rd EB	2	0.06	0.26	0.22
Connaught Road C EB	4	0.90	0.53	0.54
Murray Rd	1	0.47	0.28	0.28
Queensway EB	2	0.38	0.53	0.53
Garden RD FO	2	0.75	0.82	0.81
Central Wanchai Bypass WB	3	-	0.19	0.31
Road P2 WB/Lung Wui Rd WB	2	0.04	0.18	0.01
Connaught Road C WB	3	0.81	0.82	0.78
Lambeth Walk WB	2	0.17	0.25	0.28
Queensway WB	3	0.51	0.50	0.49

5.2.4 The total traffic flow for year 2016 will increase by over 20% for both Government's proposal and the subject proposal, while the total flow for the subject proposal is slightly less due to reduced development scale proposed for the CR III area.

5.2.5 Despite the increase in total traffic flow, the flows along Connaught Road Central have shown a significant reduction for the eastbound direction since through traffic is diverted to CWB. In the westbound direction traffic flow remain relatively constant on Connaught Road Central.

5.2.6 Despite the discontinuity of Road P2, in the eastbound direction Road P2 still exhibits a traffic flow of 800pcu/hr as compared with the 950pcu/hr in the original OZP scenario. This is attributed to traffic using this section of Road P2 as an alternative eastbound exit for Central North avoiding the congested Connaught Place and Connaught Road Central section adjacent to City Hall.

5.2.7 In the westbound direction, Road P2 is much less utilised with some 50pcu/hr since this section of Road P2 with the proposed configuration would only function as an access route.

5.2.8 Unlike the original scheme in which Road P2 is a through route, the proposed road network has suggested to replace the through route by an access only road. To the east of CR III Road P2 is effectively no longer exist.

5.2.9 Traffic on Connaught Road Central is forecast to be reduced substantially in the eastbound direction. As shown in **Table 5.2**, although Road P2 is no longer a through route, volume to capacity ratios in all other parallel routes indicate an acceptable level of performance. In particular it should be emphasised that Connaught Road Central has improved significantly over 2002 condition, and is no worse than 2002 condition in the westbound direction. This has led to the conclusion that the proposed re-alignment and re-positioning the role of Road P2 would not overload the parallel routes as far as strategic traffic movement is concerned.

5.3 Junction Design and Assessment

5.3.1 The proposed junction layouts are shown in **Figure 5.2 to Figure 5.6.**

5.3.2 The results of junction assessment are shown in **Table 5.3**.

Table 5.3 Summary of Junction Performance

Junctions	Types of Control	Cycle Time (s)	RC / RFC
Man Cheung Street / Man Yiu Street / Road P2	Signal	75	35%
Man Po Street / Man Yiu Street	Signal	75	100%
Road P2 / Road D7	Signal	75	61%
Road P2 / Road D8	Roundabout	-	0.634
Fenwick Pier Street / Lung Wui Road / Performing Arts Avenue	Signal	75	105%

5.3.3 The junctions have been designed to incorporate all traffic and pedestrian requirements. All have been designed to provide sufficient space capacity fully up to the requirements of new junctions.

5.3.4 The junction Man Po Street/Man Yiu Street is proposed to be signalised. In the originally planned OZP scenario this is a four armed junction with Road P1 being the east arm. It is proposed to remove this small section of Road P1 from the road network. The traffic assessment has indicated satisfactory performance of the remaining junctions and hence confirm that this small road section connecting to Road P2 is not necessary. The proposed junction arrangement is shown in **Figure 5.2**.

5.3.5 The junction Man Cheung Street/Man Yiu Street/Road P2 is proposed to be signal controlled. At-grade signal controlled pedestrian crossings are provided on the north, east, and south arms of the junction. The northbound, westbound, and eastbound right-turns are not allowed. Alternative routes are available to provide adequate accessibility for access traffic. The proposed junction layout is shown in **Figure 5.3**.

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PROPOSED JUNCTION LAYOUT AT MAN PO STREET / MAN YIU STREET

Rev.	Description	Approved	Date
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Figure No.	5.2		Rev. -
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PROPOSED JUNCTION LAYOUT AT MAN CHEUNG STREET / MAN YIU STREET / ROAD P2

Rev.	Description	Approved	Date
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Figure No. 5.3 Rev. -

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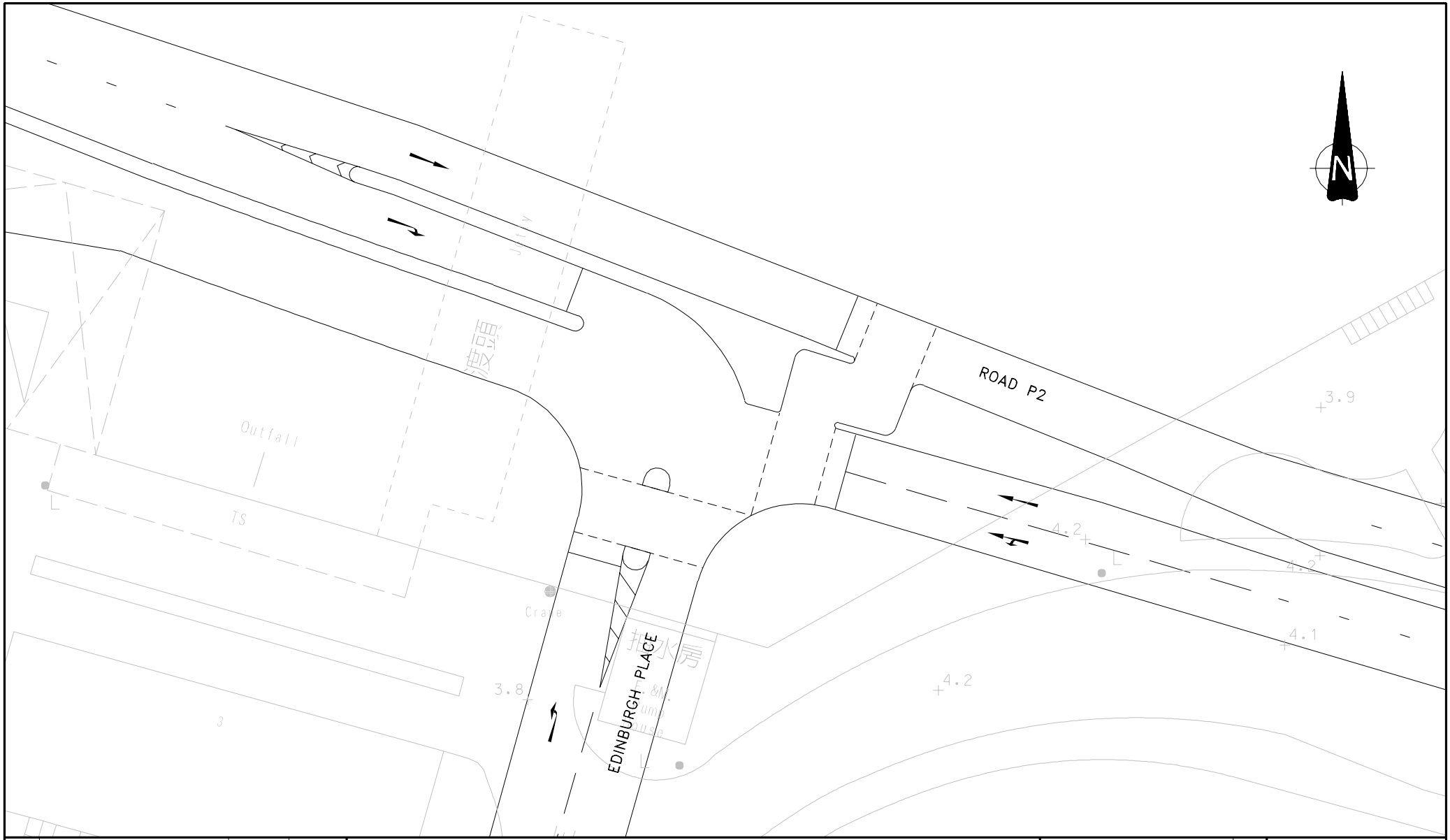

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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6
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PROPOSED JUNCTION LAYOUT AT ROAD P2 / EDINBURGH PLACE

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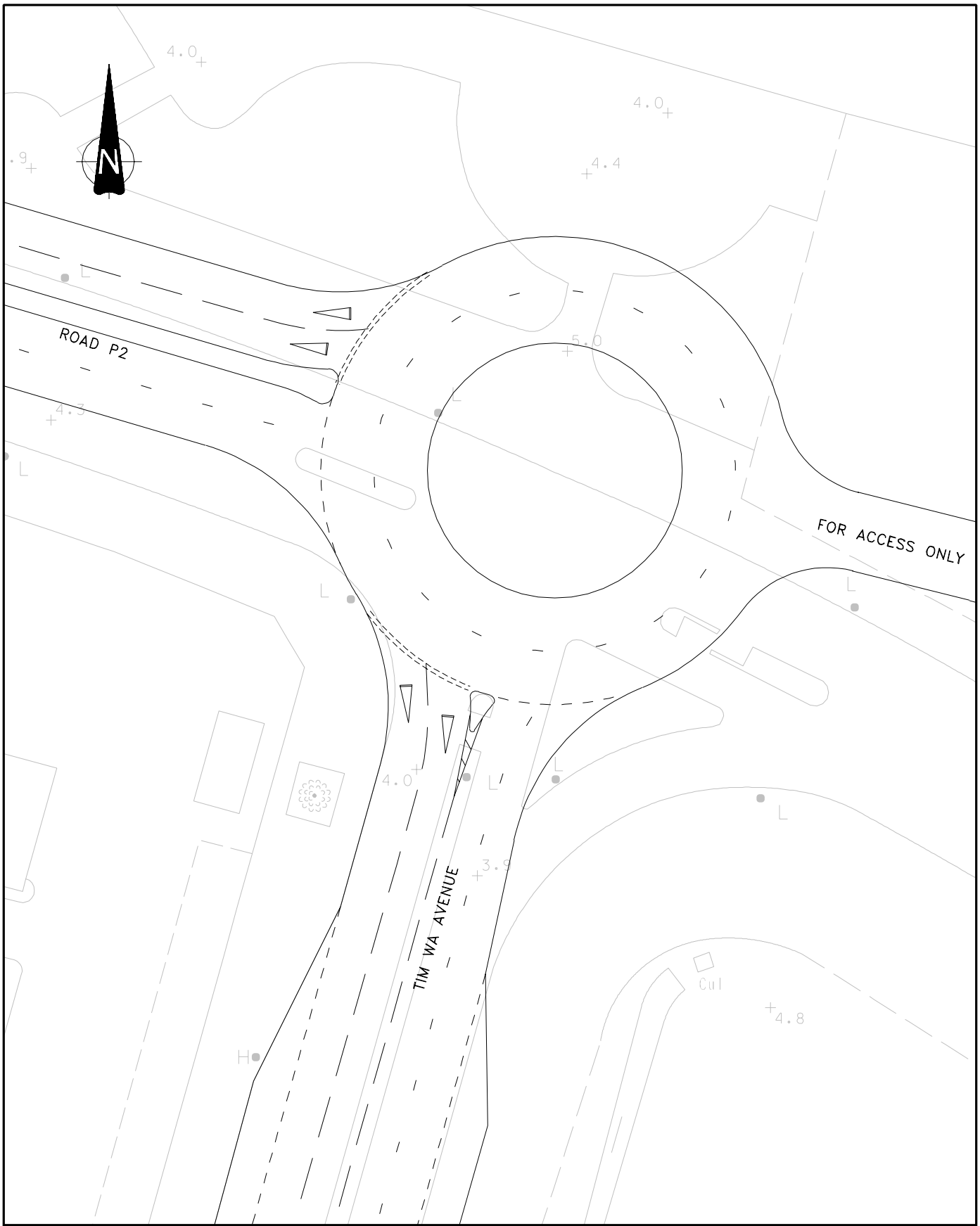

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PROPOSED JUNCTION LAYOUT AT ROAD P2 / TIM WA AVENUE

Rev.	Description	Approved	Date
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Figure No. 5.5 Rev. -

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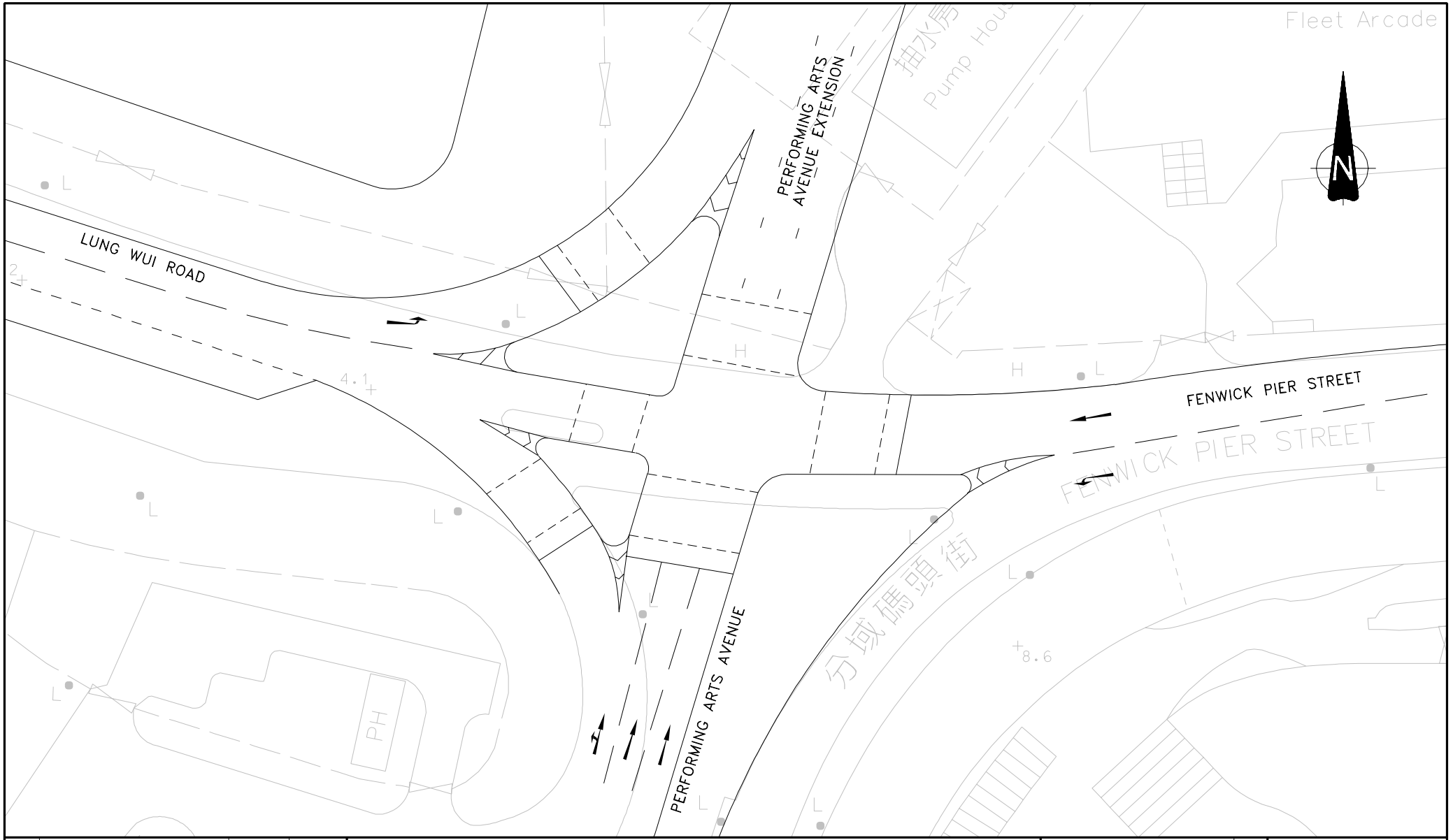

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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6
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PROPOSED JUNCTION LAYOUT AT LUNG WUI ROAD / PERFORMING ARTS AVENUE / FENWICK PIER STREET

Figure No.	5.6		Rev. -
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5.3.6 Under this proposed junction arrangement, traffic from Pedder Street would continue to use Connaught Road Central for destinations to the east. Similarly, traffic for the City Hall Square and up to the Tamar site would mainly use Road P2 as circulation and access route. Since Connaught Road Central is expected to be largely relieved by the presence of the Bypass, maintaining these traffic on Connaught Road Central is not anticipated to cause any concern. On the other hand, the section of Road P2 between Man Yiu Street and Edinburgh Place would be utilised to divert traffic from the International Finance Centre and Airport Railway Station etc. under the proposed junction arrangements.

5.3.7 The junction of Road P2 and Edinburgh Place would also be signalized. An eastbound right-turn lane is provided. The purpose of this right-turn is to allow traffic access to Cotton Tree Drive, thus enabling the westerly section of Road P2 as an alternative route to Connaught Road Central. At-grade signal controlled crossings are provided across the east and south arm of the junction. The junction layout is shown in **Figure 5.4**.

5.3.8 The junctions of Road P2 and Tim Wa Avenue is proposed to be a turnaround. The east arm of the junction would be a civic/festival boulevard which is only a restricted access for special traffic only. As a result day to day traffic would only be allowed on Tim Wa Avenue and the west arm of the junction. The junction layout is shown in **Figure 5.5**.

5.3.9 The junction Lung Wui Road/Performing Arts Avenue/Fenwick Pier Street is proposed to be signal controlled, and is shown in **Figure 5.6**. Major traffic movement is expected to be along the northbound direction of Performing Arts Avenue carrying traffic between Connaught Road Central and the future Central-Wanchai Bypass in the eastbound direction. Lung Wui Road is mainly used for circulation and access purposes. At-grade pedestrian crossings could be provided for all directions.

5.4 Sensitivity Test

5.4.1 In order to assess the robustness of the proposed road network on a "high" development scenario, the proposed road network was assessed against the OZP development scenario. Traffic model was re-run to obtain an assignment of the traffic flow forecast. The results of the screenline analysis is shown in **Table 5.4**. The junction assessment results are summarised in **Table 5.5**.

Table 5.4 Summary of Morning Peak Traffic Characteristics Across Screenline A-A (with Proposed Road Network and OZP Development Intensity)

Road Section	Traffic Flow (pcu/hr)	Volume to Capacity Ratio
Central Wanchai Bypass EB	3,700	0.69
Road P2 EB/ Lung Wui Rd EB	850	0.24
Connaught Road C EB	4,100	0.57
Murray Rd	500	0.28
Queensway EB	1,900	0.53
Garden RD FO	2,900	0.81
Eastbound Total	**13,950**	**-**

Table 5.4 Summary of Morning Peak Traffic Characteristics Across Screenline A-A (with Proposed Road Network and OZP Development Intensity) (Cont'd)

Road Section	Traffic Flow (pcu/hr)	Volume to Capacity Ratio
Central Wanchai Bypass WB	1,700	0.31
Road P2 WB/Lung Wui Rd WB	50	0.01
Connaught Road C WB	4,400	0.81
Lambeth Walk WB	1,050	0.29
Queensway WB	2,700	0.50
Westbound Total	**9,900**	**-**
Total	**23,850**	**-**

Table 5.5 Summary of Junction Performance (with Proposed Road Network and OZP Development Intensity)

Junctions	Types of Control	Cycle Time (s)	RC / RFC
Man Cheung Street / Man Yiu Street / Road P2	Signal	75	24%
Man Po Street / Man Yiu Street	Signal	75	69%
Road P2 / Edinburgh Place	Signal	75	59%
Road P2 / Tim Wa Avenue	Roundabout	-	0.662
Fenwick Pier Street / Lung Wui Road / Performing Arts Avenue	Signal	75	69%

5.4.2 The results of the assessment indicated that more traffic is expected on the east-west routes for the "high" development intensity scenario. However, all road links and junctions are still expected to operate within adequate performance. It can therefore be concluded that the proposed alternative road network would also function satisfactorily with the OZP development intensity.

6. SUMMARY AND CONCLUSION

6.1 Summary

6.1.1 MVA Hong Kong Limited was commissioned by the Society for Protection of the Harbour to carry out a Traffic Impact Assessment for the proposed rezoning request of the Central District (Extension) Outline Zoning Plan No. S/H24/6.

6.1.2 The purpose of the subject rezoning request is based largely on public interest and the spirit of the Protection of the Harbour Ordinance with a goal to reduce the amount of reclamation, reduce the amount of commercial development along the waterfront, and to reduce the extent of roads.

6.1.3 The original OZP planned to provide a Central-Wanchai Bypass (CWB) and a continuous east-west surface road, Road P2, along the reclamation area together with the other access and circulation roads. The society for Protection of the Harbour has put forward a proposal both to reduce the intensity of the developments and the scale of the surface road network.

6.1.4 Accordingly two traffic forecast scenarios were assessed :

1. OZP road network & OZP development intensity to establish the baseline situation;

2. Reduced road network and reduced development intensity to assess the adequacy of the proposal.

Moreover, a sensitivity test was carried out to test the performance of the reduced road network using the OZP development intensity.

6.1.5 All assessments assumed the Central-Wanchai Bypass is in place and is necessary to relieve the Connaught Road Central/Harcourt Road/Gloucester Road Corridor.

6.1.6 A year 2016 traffic forecast for the morning peak hour was developed based on latest available planning assumptions, which is in line with latest government studies for this area.

6.1.7 The following summarised the results of the assessments :

- The Central Wanchai Bypass is expected to provide major relief to Gloucester Road. As compared with year 2002 surveyed flow, the year 2016 two-way traffic flow on Gloucester Road would be reduced by some 2,550 pcu/hr during the morning peak hour, representing a reduction of some 24%.

- The proposed alternative road network based on the reduced development intensity would be able to accommodate the development traffic and provides all necessary access routings.

- Additional slip roads and improved access should be provided to maximise the use of the Central Wanchai Bypass.

- It is not essential to maintain Road P2 as a continous through route; the CWB and the much relieved Connaught Road/Harcourt Road/Gloucester Road corridor can accommodate the through traffic.

- The western section of Road P2 must be maintained to provide egress from Central North to the Garden Road/Harcourt Road corridors in order to bypass the bottleneck of Connaught Place and Connaught Road Central.

- The eastern section of Road P2 must be maintained to provide local access and link between Harcourt Road and the CWB.

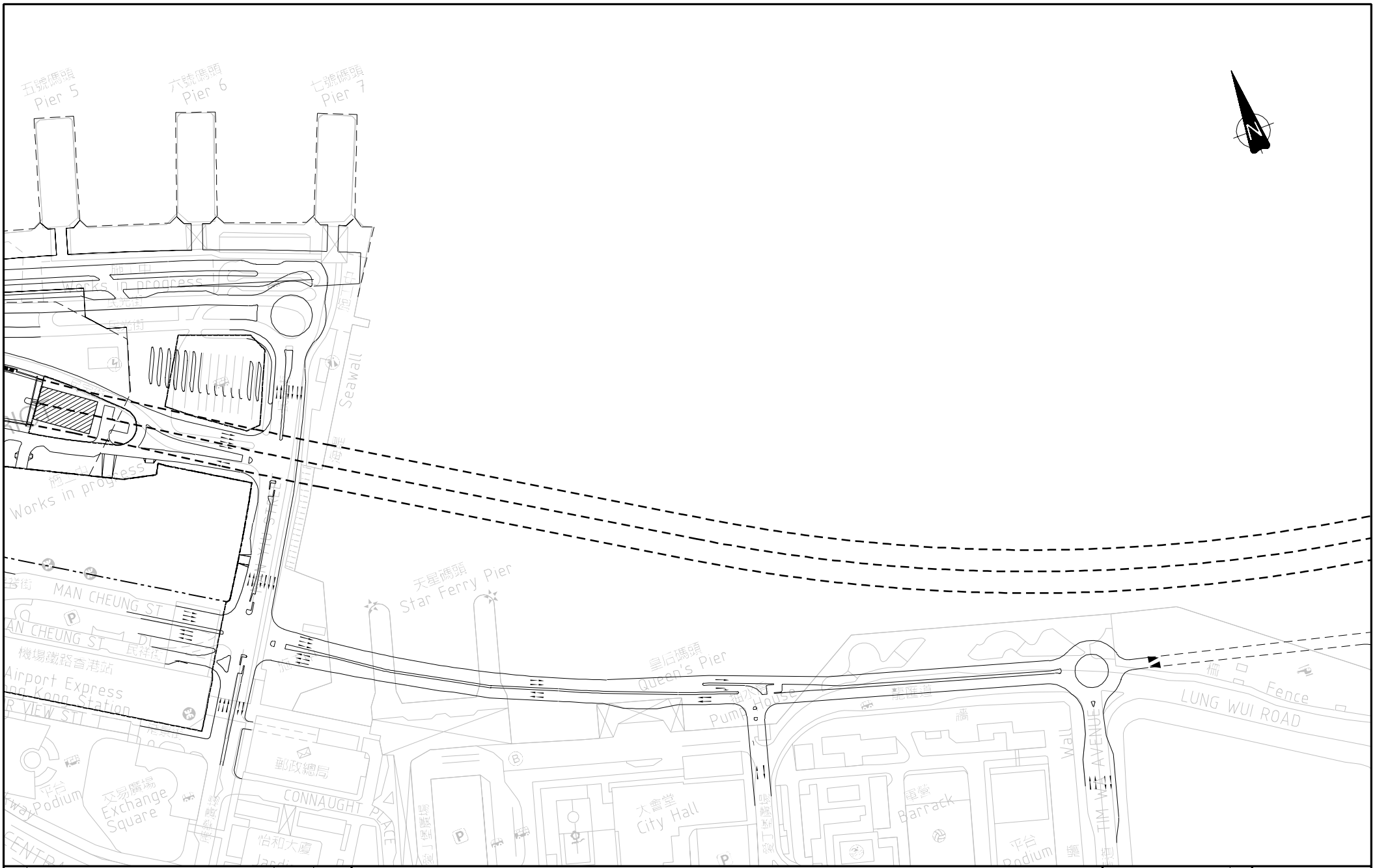
- A sensitivity test indicated that the reduced road network could accommodate the higher levels of development as in the current OZP.

6.1.8 With the proposed road network pedestrian accessibility to the waterfront is much improved in particular at the Civic Square in which a continuous pedestrian movement can now be provided without the need to cross the previously suggested Road P2 in the OZP. Furthermore the reduced traffic volumes make it easier to provide at-grade crossings.

6.1.9 Comprehensive public transport facilities will be within walking distance of the whole of CRIII. Railway stations are located at Central, Admiralty, and in the future Exhibition on the Shatin-Central Link. The much relieved Connaught Road/Harcourt Road/Gloucester Road corridor will form the principal bus corridor. Ferry services are located at Central and Wanchai. In addition an east-west tramway has been proposed to provide access to the waterfront facilities and link up the major railway, ferry, and bus interchange hubs.

6.2 Conclusion

6.2.1 Based on the analysis as shown above, the subject proposal, with significant reduction in both level of development and the road network, is considered to be feasible from a traffic and transport point of view.



Rev.	Description	Approved	Date
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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 SOCIETY FOR PROTECTION OF THE HARBOUR

PROPOSED ROAD LAYOUT (SHEET 1 OF 2)

Figure No. **APPENDIX A1** Rev. -

Designed By : KSC

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Scale : 1 : 2500

Date : AUG. 2004

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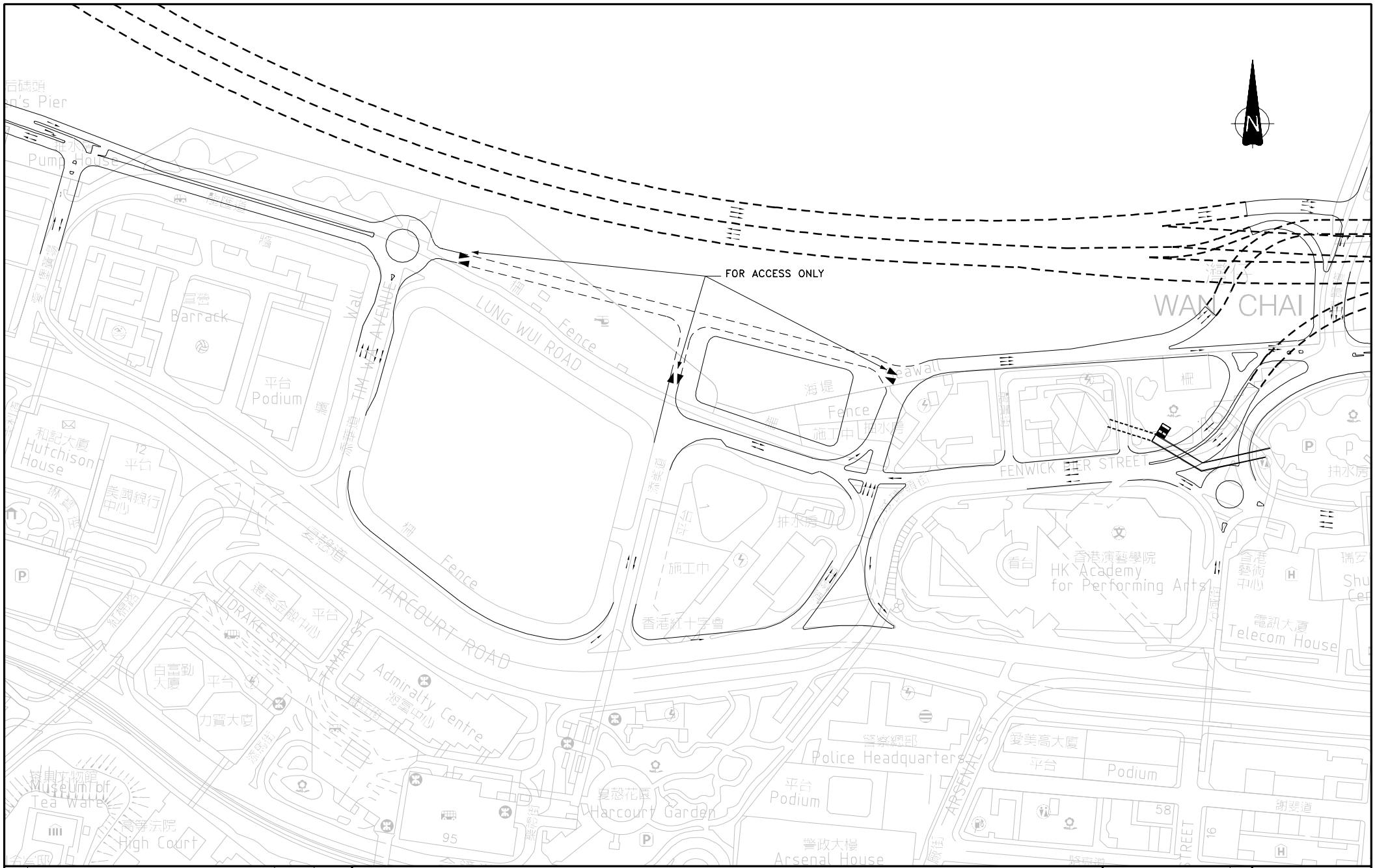

Rev.	Description	Approved	Date
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REZONING REQUEST OF THE CENTRAL DISTRICT (EXTENSION) OZP PLAN NO. S/H24/6 SOCIETY FOR PROTECTION OF THE HARBOUR

PROPOSED ROAD LAYOUT (SHEET 2 OF 2)

Figure No. APPENDIX A2 Rev. -

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