



HONG KONG GOVERNMENT  
DRAINAGE SERVICES DEPARTMENT

Agreement No. CE 28/93  
CENTRAL, WESTERN &  
WAN CHAI WEST SEWERAGE

EP.D. Library

FINAL ENVIRONMENTAL  
IMPACT ASSESSMENT  
EXECUTIVE SUMMARY

November 1996

EIA 113-1/BC

EIA/009.1/97



MAUNSELL CONSULTANTS ASIA LTD  
in association with  
ATKINS HASWELL


HONG KONG GOVERNMENT  
DRAINAGE SERVICES DEPARTMENT

AGREEMENT NO. CE 28/93  
CENTRAL, WESTERN &  
WAN CHAI WEST SEWERAGE

**E.P.D. Library**  
FINAL ENVIRONMENTAL  
IMPACT ASSESSMENT  
EXECUTIVE SUMMARY

November 1996

PREPARED BY :

 **C**ONSULTANTS IN  
**E**NVIRONMENTAL  
**S**CIENCES (ASIA) LTD

FOR :

MAUNSELL CONSULTANTS ASIA LIMITED  
in association with  
ATKINS HASWELL

# TABLE OF CONTENTS

	Page	
1	INTRODUCTION	1
	1.1 Background	1
	1.2 Study Area	1
2	SCOPE OF THE EIA STUDY	1
3	ENVIRONMENTAL IMPACTS DURING CONSTRUCTION AND MITIGATION	2
	3.1 Air Quality	2
	3.2 Noise	2
	3.2.1 Noise Impact on NSRs along the Trunk Sewer Alignment	3
	3.2.2 Noise Impact on NSRs at Screening Plants	3
	3.2.3 Noise Impact on NSRs along the Interceptor/Reticulation Sewers	3
	3.2.4 Mitigation Measures	3
	3.3 Water Quality	3
	3.4 Solid Waste	4
4	ENVIRONMENTAL IMPACTS DURING OPERATION AND MITIGATION	4
	4.1 Air Quality	4
	4.2 Noise	5
	4.3 Water Quality	5
5	ENVIRONMENTAL MONITORING AND AUDIT	5
6	SUMMARY AND CONCLUSIONS	5

## List of Tables

Table 1	Summary of Environmental Impacts	6
---------	----------------------------------	---

## List of Figures

Figure 1	Study Area
Figure 2	Trunk Sewer Alignment From Central to Western
Figure 3	Trunk Sewer Alignment from Central to Wan Chai

## 1 INTRODUCTION

### 1.1 Background

A study for the 'Central, Western, and Wan Chai West Sewerage Master Plan' was completed in 1993. It recommended the construction of a new sewerage system to relieve existing overloaded sewers and to cater for future development of the metropolitan area, including the Central and Wan Chai Reclamation.

In May 1994, Maunsell Consultants Asia Limited were appointed by the Drainage Services Department to undertake a design and construction assignment to implement sewerage improvements in the Central, Western and Wan Chai West area.

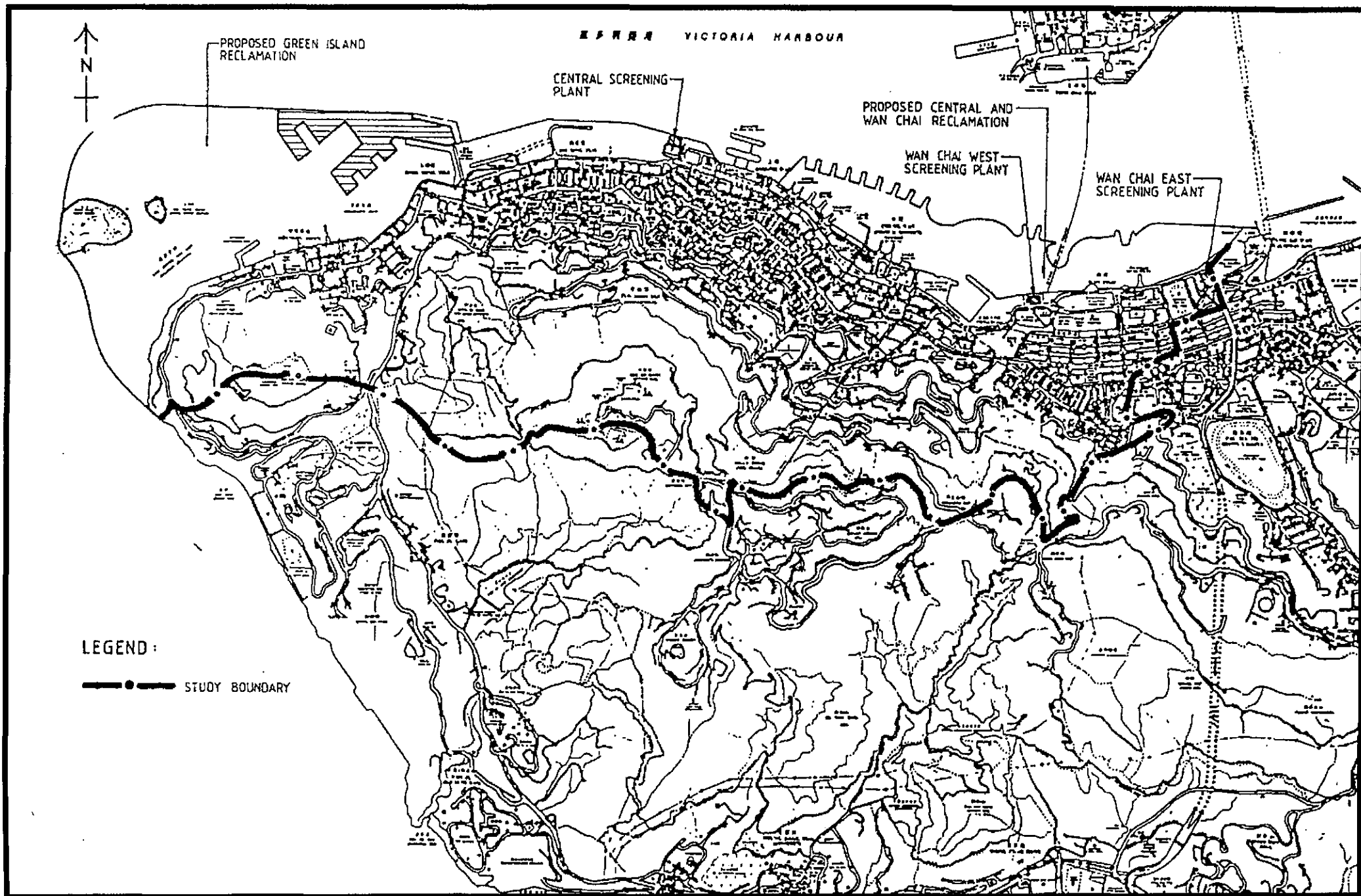
### 1.2 Study Area

The study area [Figure 1] includes the western part of Wan Chai District, together with the urban area to the west including Central District, Sheung Wan, Sai Ying Pun, and Kennedy Town. It also includes Victoria Peak, Mid-Levels, Mount Kellett, Mt Gough and Mount Davis. The major works in the project consist of:

- Construction of two trunk sewers: Central and Wan Chai West trunk sewers which will involve the construction of:
  - 3.5 km of trunk sewer with hydraulic diameters between 1050 mm to 1800 mm to collect and transfer flow from Western and Central districts to Central Screening Plant, and
  - 2.3 km of trunk sewer with hydraulic diameters between 1200 mm to 1800 mm to collect and transfer of flow to Wan Chai East Screening Plant
- Construction of approximately 31.2 km of interceptor and reticulation sewers and installation of about 1540 manholes in the study area to connect the above trunk sewers. Depending on locations, the diameters of the pipelines will be between 225 mm and 1650 mm;
- Construction of a new pumping station at the existing Central Screening Plant;
- Construction of a new pumping station and an extension to the existing screening plant facilities at Wan Chai East Screening Plant.

## 2 SCOPE OF THE EIA STUDY

An Environmental Impact Assessment (EIA) has been carried out based on the Preliminary Design. The EIA investigated environmental issues including air pollution, noise, water pollution and solid waste during both construction and operation phases. The key areas of study included:



- Construction impacts
  - noise impacts on identified noise sensitive receivers (NSRs) caused by construction equipment
  - dust emission caused by construction activities
  - impact of discharging construction wastewater
  - handling and disposal of excavated spoil, including contaminated soil
- Operational impacts
  - odour emissions from two pumping stations and screening plants
  - noise from two pumping stations and screening plants
  - marine water quality impact due to effluent discharge

Also included in the EIA were the recommendations for mitigation measures and environmental monitoring and audit (EM&A) requirements.

This environmental executive summary therefore provides information on the findings of the impact assessment and the recommendations for mitigation measures and EM&A requirements.

### 3 ENVIRONMENTAL IMPACTS DURING CONSTRUCTION AND MITIGATION

#### 3.1 Air Quality

Dust caused by concrete breaking, bulk excavation and materials handling, would be a major air quality issue. However, it is considered that on the whole, dust impacts would all be within acceptable limits of  $260 \mu\text{gm}^{-3}$  (24-hour) and  $500 \mu\text{gm}^{-3}$  (1-hour) even at the screening plants which represent the largest work sites. This is due to the relatively low intensity and small scale of the construction activities and high water contents of spoil. Dust mitigation described below should ensure the compliance:

- Use of regular watering, with complete coverage to reduce dust emissions from unpaved areas;
- Regular cleaning of pavements and roads in surrounding areas will help minimise the transfer of dust by vehicle movements;
- Use of enclosures around the main activities to contain spreading of dust;
- Establishment and frequent use of vehicle wheel and body washing stations at site exits, where practical;
- Tarpaulins over soil transferred in lorries to and from the work area.

### 3.2 Noise

Noise will be generated during the construction of trunk sewer alignments, pumping stations at Central and Wan Chai East screening plants, and reticulation/ interception sewers. It will be caused by the powered mechanical equipment used for the general construction activities, such as concrete breaking, excavation and material handling, as well as for piling.

#### 3.2.1 Noise Impact on NSRs along the Trunk Sewer Alignment

Construction will be carried out in a linear fashion, using either 'open cut and cover' or 'no dig' techniques [Figures 2 & 3]. A number of NSRs along the trunk sewer alignment therefore will be affected. The results indicate that noise impact on NSRs caused by general construction work would be mitigated to acceptable levels except along the section A to B.

The impact predictions for piling work indicate that restrictions on working hours should be considered along sections A to B, L to M, M to N, and C to E.

#### 3.2.2 Noise Impact on NSRs at Screening Plants

Central Screening Plant: Predicted construction noise at the closest NSR would exceed the day time and evening limits. Thus, mitigation will be required.

Wan Chai East Screening Plant: Predicted noise level at the closest NSRs would be just at the acceptable limit for day time, but exceed the evening limit. Therefore, mitigation measures will be required for the evening work. In addition, if H-piling is used for the foundations of new structures, the operation hours should be restricted.

#### 3.2.3 Noise Impact on NSRs along the Interceptor/Reticulation Sewers

The construction of reticulation interceptor sewers will employ the open cut and cover method. The assessment concluded that in general terms, more stringent noise mitigation measures should be adopted in the areas where NSRs are more sensitive to the construction noise. Night time work is not recommended due to the close proximity to NSRs, resulting in high noise levels. However, it must be recognised that night time work will be required at certain locations due to traffic constraints. Both environmental and traffic constraints will need to be taken into account during the construction stage in developing practical construction proposals for the sewer upgrading works.

#### 3.2.4 Mitigation Measures

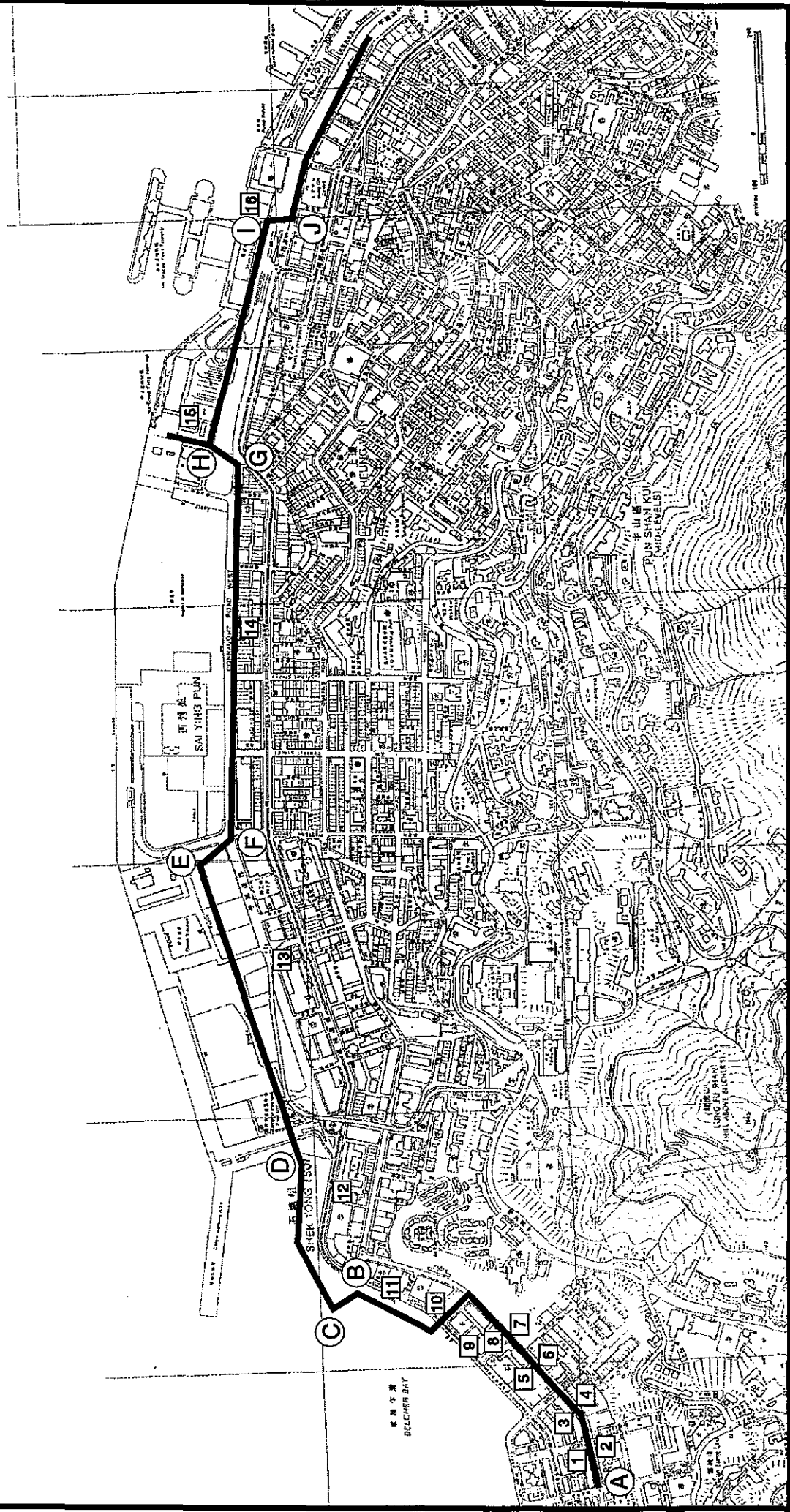
The required degree of noise mitigation will depend upon the acceptable noise levels assigned to each individual site, the construction programme and plant schedules. Recommended mitigation measures are presented in the EIA report.

### 3.3 Water Quality

Construction wastewaters containing high levels of suspended solids and /or silt will be generated as a result of rainwater runoff, processing water such as for dust suppression, and pumping of groundwater/water from tunnel and excavated trenches. Potential impacts would be associated with the discharge of these waters into storm drains, which can cause

LEGEND

- 1 - 16** Sensitive Receivers
- A - J** Trunk Sewer Alignment

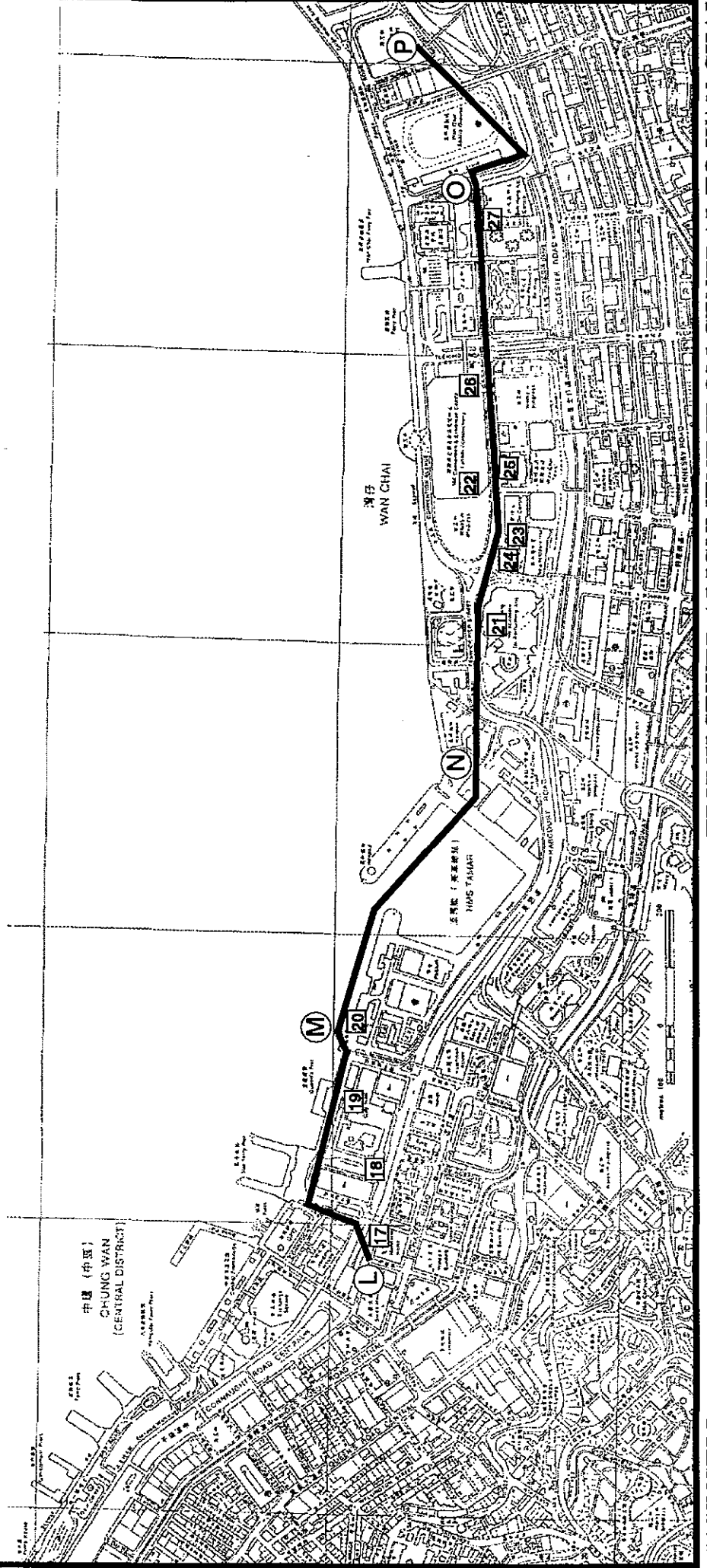


MAUNSELL  
TRUNK SEWER ALIGNMENT FROM CENTRAL TO WESTERN  
FIGURE 2



LEGEND

- 17-27 Sensitive Receivers
- Ⓛ - Ⓟ Trunk Sewer Alignment



blockage/silting of drains. Thus suitable control such as silt traps and sedimentation tanks should be installed to mitigate the impact. Excavation of open-cut trenches should be avoided during monsoon or rainy seasons if possible.

A small quantity of groundwater encountered during the excavation may be contaminated by leaked sewage at some locations. This should be pumped/discharged to the foul sewer system to be treated.

A small quantity of sewage will be generated from the construction sites, thus collection and/or treatment options will be required.

If bentonite is used for the support of the tunnel face, it should be handled with care. Earth bunds should be installed to contain and prevent the bentonite from being released into a water body which can cause a turbidity problem.

### 3.4 Solid Waste

Approximately 124,800 m<sup>3</sup> of spoil will be generated during construction. The principal sources will be spoil from excavation of shafts/manholes, excavation for the trunk sewers, for the pumping stations and trenches for reticulation/interceptor sewers, and replaced pipelines. It is expected that only a small quantity of excavated spoil from the marine deposits or areas near manholes may be contaminated. The contaminated spoil, if any, together with redundant and excavated pipelines, may require disposal at the strategic landfills. The rest of the spoil can be disposed of at a public dump. However, the final disposal routes should be agreed by EPD after the completion of a contamination investigation.

## 4 ENVIRONMENTAL IMPACTS DURING OPERATION AND MITIGATION

### 4.1 Air Quality

The principal potential impact on air quality will be odour from the screening plants, mainly emitted from pumping stations, screens and inlet chambers and other existing and proposed facilities.

The impact assessment concluded that the full enclosure of all new and existing facilities should be adopted in order to comply with the guideline level of less than 5 odour units averaged over 5 seconds at the SRs for odour modelling. Detailed mitigation measures are summarised as follows:

For existing facilities: Full enclosure of all conveyor belts, inlets, drum screens and other exposed odour sources, eg. channels.

For new facilities: The new sewerage treatment work buildings at both screening plants should be effectively isolated from external ambient air and provided with a ventilation system capable of a minimum 5 air changes per hour.

All exhausted air should be routed to a centralised odour treatment unit. The odour removal efficiencies should be at least 98% for the Central and 97% for the Wan Chai screening

blockage/silting of drains. Thus suitable control such as silt traps and sedimentation tanks should be installed to mitigate the impact. Excavation of open-cut trenches should be avoided during monsoon or rainy seasons if possible.

A small quantity of groundwater encountered during the excavation may be contaminated by leaked sewage at some locations. This should be pumped/discharged to the foul sewer system to be treated.

A small quantity of sewage will be generated from the construction sites, thus collection and/or treatment options will be required.

If bentonite is used for the support of the tunnel face, it should be handled with care. Earth bunds should be installed to contain and prevent the bentonite from being released into a water body which can cause a turbidity problem.

### 3.4 Solid Waste

Approximately 124,800 m<sup>3</sup> of spoil will be generated during construction. The principal sources will be spoil from excavation of shafts/manholes, excavation for the trunk sewers, for the pumping stations and trenches for reticulation/interceptor sewers, and replaced pipelines. It is expected that only a small quantity of excavated spoil from the marine deposits or areas near manholes may be contaminated. The contaminated spoil, if any, together with redundant and excavated pipelines, may require disposal at the strategic landfills. The rest of the spoil can be disposed of at a public dump. However, the final disposal routes should be agreed by EPD after the completion of a contamination investigation.

## 4 ENVIRONMENTAL IMPACTS DURING OPERATION AND MITIGATION

### 4.1 Air Quality

The principal potential impact on air quality will be odour from the screening plants, mainly emitted from pumping stations, screens and inlet chambers and other existing and proposed facilities.

The impact assessment concluded that the full enclosure of all new and existing facilities should be adopted in order to comply with the guideline level of not less than 5 odour units averaged over 5 seconds at the SRs for odour modelling. Detailed mitigation measures are summarised as follows:

For existing facilities: Full enclosure of all conveyor belts, inlets, drum screens and other exposed odour sources, eg. channels.

For new facilities: The new sewerage treatment work buildings at both screening plants should be effectively isolated from external ambient air and provided with a ventilation system capable of a minimum 5 air changes per hour.

All exhausted air should be routed to a centralised odour treatment unit. The odour removal efficiencies should be at least 98% for the Central and 97% for the Wan Chai screening

plants. The exhaust stacks should be located as far from SRs as possible and elevated at least 10 m above ground level. The exit velocity should be at least 8 m per second.

In addition, good housekeeping measures should also be implemented, including *inter alia*, floor sweeping, regular hosing down and cleaning. Containers with a sliding top cover to prevent the escape of odours and ingress of rain water should be utilised for both screenings and grits.

#### 4.2 Noise

The most likely noise impact during operation is expected to arise from powered mechanical equipment installed in both Wan Chai East and Central screening plants and pumping stations. Predicted noise levels for both plants would be well within the statutory limits. Impacts on the NSRs would be minimal. Thus no additional mitigation measures are required.

#### 4.3 Water Quality

Near shore water quality will be significantly improved by the implementation of the sewerage works. The Sewerage Master Plan study estimated that 22.9 tonnes/day of BOD (or half of the total pollution load) currently enters the harbour untreated through the storm drainage system. On implementation of the sewerage works, they will be intercepted for screening and dewatering before discharge via the existing submarine outfalls.

### 5 ENVIRONMENTAL MONITORING AND AUDIT

Environmental monitoring, including parameters, locations, time, frequency, and duration, and audit programmes, has been recommended. Baseline monitoring for noise and dust should be conducted prior to construction and for odour prior to the operation, in order to establish background conditions. Routine compliance monitoring should be undertaken. It is recommended that monitoring for dust, noise and water should be carried out during construction, and noise and odour during operation. In addition, if off-site disposal of spoil is required, prior to excavation, soil samples should be taken for analysis of heavy metal contaminations.

Audits during construction phase should be carried out on a monthly basis. Audits during commissioning are recommended to take place at six months and twelve months intervals for the first year, with further audits at frequencies to be determined based on the findings of the first two audits.

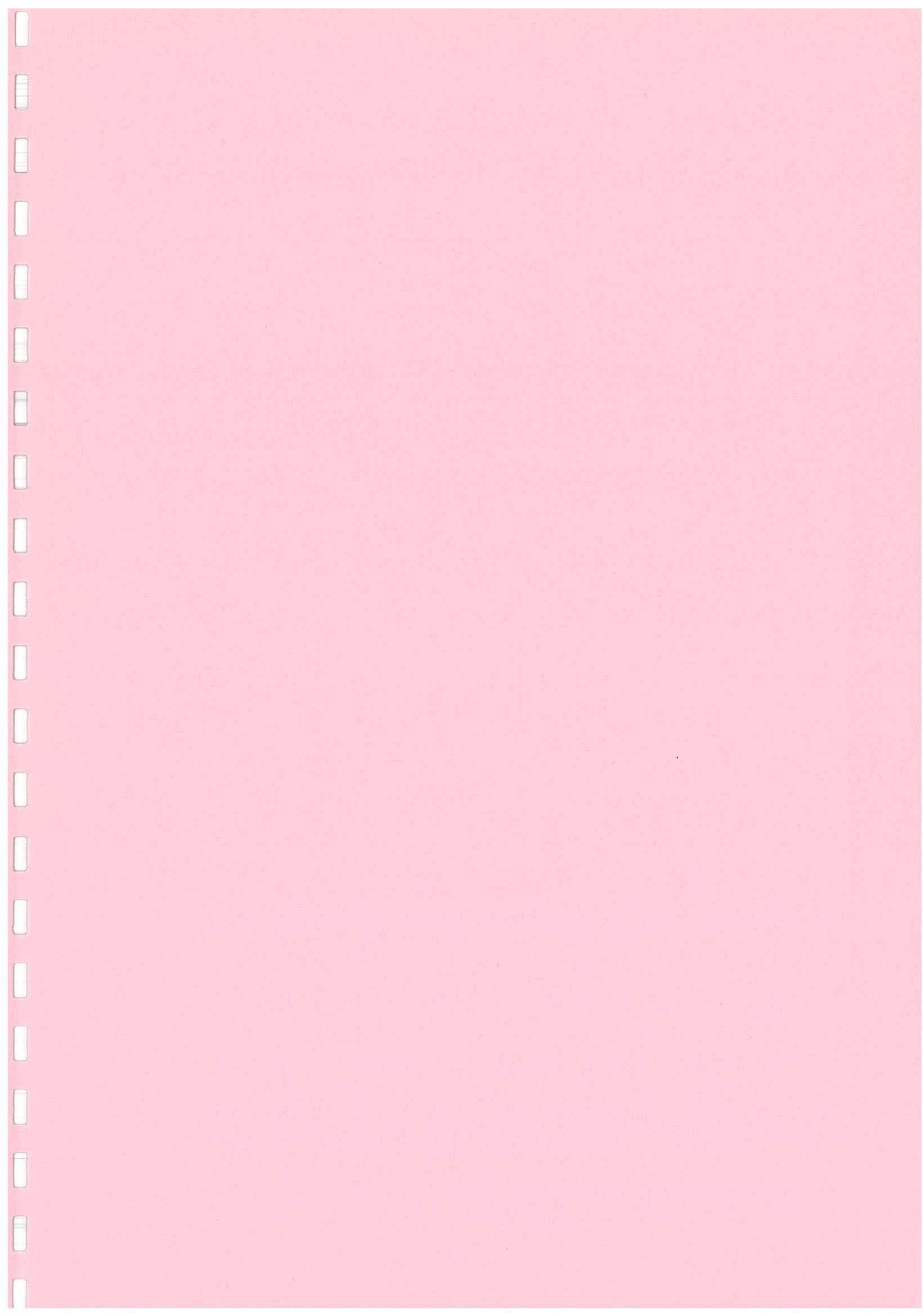
### 6 SUMMARY AND CONCLUSIONS

Overall, environmental impacts can either be considered small or can be mitigated to an extent where the impacts on SRs are acceptable, with the exception of construction noise generated at the 'open cut' alignment along Belcher's Street, due to its very close proximity to the SRs.

Table 1 provides a summary of environmental impacts.

Table 1 Summary of Environmental Impacts

Parameter		Potential Impact	Significant Residual Impacts After Mitigation	Further Work
Construction Phase	Dust	Dust impact from general construction activity, this should be controllable within acceptable levels.	None	None
	Noise	<u>Trunk Sewer Alignment</u> Noise impacts on NSRs can be mitigated to acceptable levels except at Belcher's Street section.	Significant noise impact on NSRs along Belcher's Street. No evening and night-time work should be carried out.	To re-examine/confirm noise impact assessment and consider mitigation measures in detail.
		<u>Screening Plant</u> Noise impacts on NSRs can be mitigated to acceptable levels.	None	
		<u>Reticulation/Interception Sewers</u> No quantitative assessment due to the lack of definite sewer alignment information.		
	Water	No significant impact as construction work will be land based.	None	None
Solid Wastes	Proper spoil handling and disposal procedures should be adopted depending upon the outcome of soil analysis.	None	To determine spoil disposal options based upon results of soil sampling and analysis when information becomes available	
Operational Phase	Noise	None	None	None
	Odour	Odour emission from the proposed new pumping stations can be mitigated to acceptable levels.	Odour can still be emitted from existing facilities (except for the pumping stations).	To verify the prediction and design odour control system for both existing and proposed facilities together.
	Water	Initial step to improve water quality in Victoria Harbour	Interim solution before the implementation of SSDS Stage III/IV	Commission SSDS Stage III/IV (not part of this project)




渠務署

中區、西區及灣仔西  
污水收集整體計劃

環境影響評估摘要

1996年11月

 CONSULTANTS IN  
ENVIRONMENTAL  
SCIENCES (ASIA) LTD

# 目 錄

	頁數
1 引言	1
1.1 研究背景	1
1.2 研究範圍	1
2 本環境評估研究的範圍	1
3 在施工期間的影響及緩減措施	2
3.1 空氣質素	2
3.2 噪音	2
3.2.1 在主要污水渠附近敏感受體的噪音影響	3
3.2.2 在污水隔篩廠附近敏感受體的噪音影響	3
3.2.3 在截流管及污水收集系統附近敏感受體的噪音影響	3
3.2.4 緩減措施	3
3.3 水質	3
3.4 固體廢物	4
4 在運作期間的境影響及緩減措施	4
4.1 空氣質素	4
4.2 噪音	5
4.3 水質	5
5 環境監測及審核	5
6 總結	5
表列	
表一 環境影響概要	6
圖列	
圖一 研究範圍	
圖二 由中區至西區的主要污水渠	
圖三 由中區至灣仔的主要污水渠	



## 1 引言

### 1.1 研究背景

在一九九三年，政府完成了「中區、西區及灣仔西污水收集整體計劃」的研究方案。研究指出，為舒緩現時已超出負荷的排污系統和配合中環及灣仔填海工程等未來都市發展計劃，將須在區內建設一個新的排污系統。

在一九九四年五月，渠務署委托茂盛工程顧問有限公司，就中區、西區及灣仔區內的改善排污情況進行設計及工程建設的研究。

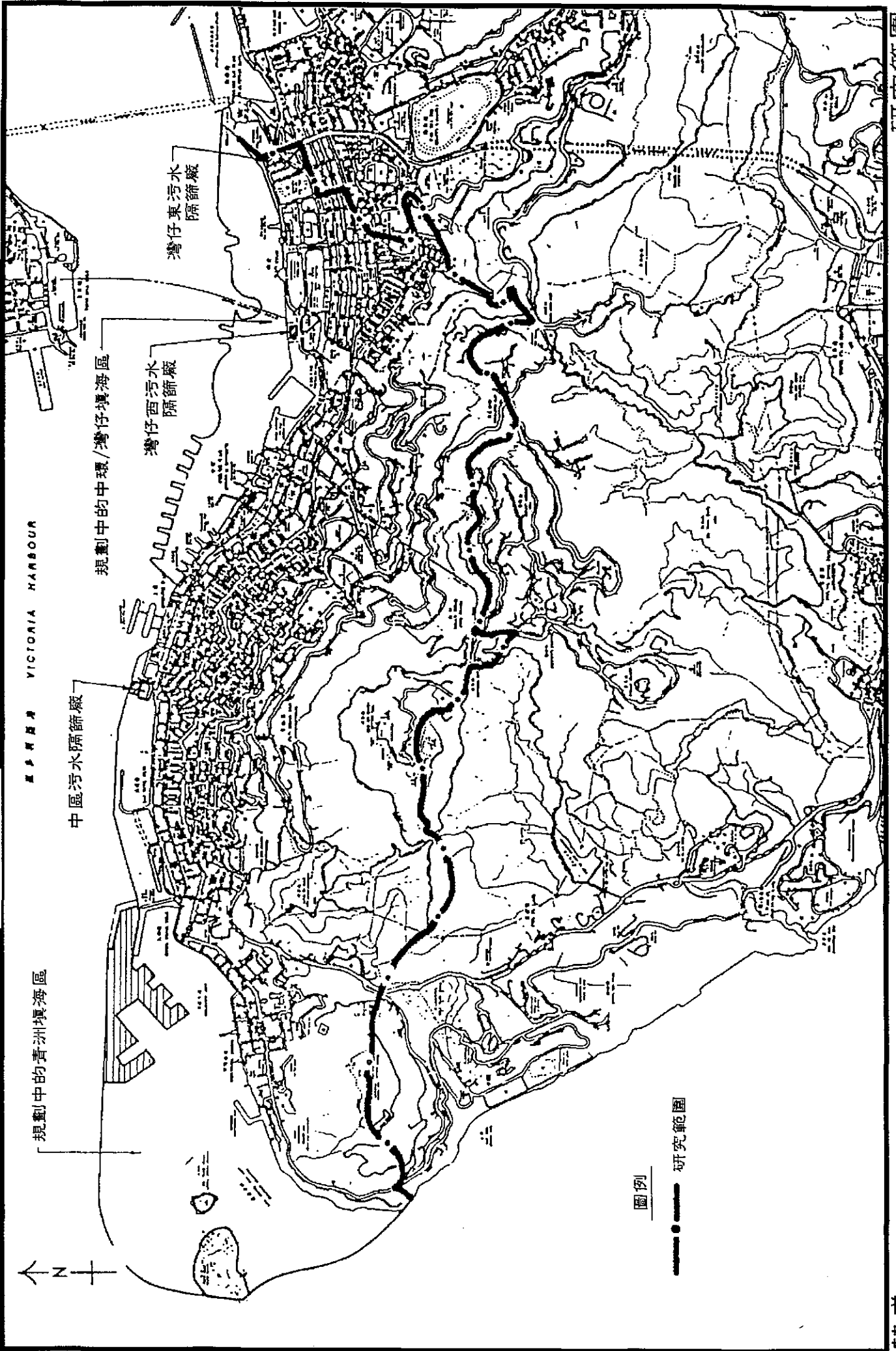
### 1.2 研究範圍

本研究的範圍〔如圖一所示〕包括灣仔區西部、中區、上環、西營盤及堅尼地城等，並包括了太平山、半山區、奇力山、歌賦山及摩星嶺等地區。工程的主要項目包括：

- 建造兩條主要污水渠：中區及灣仔東主要污水渠，其中包括以下工程項目：
  - 建造直徑為1.05米至1.8米，長約3.5公里的主要污水渠，將由中西區內所收集的污水輸往中區污水隔篩廠
  - 建造直徑為.2米至1.8米的污水渠，長約2.3公里主要污水渠，將區內所收集的污水輸往灣仔東污水隔篩廠
- 築建約31.2公里截流管和污水收集系統，以及建造約1540個沙井以接連上述主要污水渠。截流管的直徑將介於0.225米至1.65米之間。
- 在現有中區污水隔篩廠內新建一座污水泵房。
- 在現有灣仔東污水隔篩廠內新建一座污水泵房，並擴建現有的設施。

## 2 本環境影響評估研究範圍

顧問公司根據初步設計進行了一項環境評估研究（環評研究）。在環評研究中探討了在工程施工階段及運作階段對環境的影響，其中包括了空氣污染、噪音、水質污染及固體廢物等方面。研究的主要內容包括：



- 施工期間的影響
  - 由建築機械引起的噪音對敏感受體的影響
  - 建築工程所引起的塵埃
  - 工地廢水所引起的影響
  - 挖掘工程所產生的固體廢物的處理及棄置，其中包括已被污染廢物。
  
- 運作期間的影響
  - 從新建泵房及現有污水隔篩廠發出的氣味
  - 從新建泵房及現有污水隔篩廠產生的噪音，及
  - 污水排放對海港水質的影響。

在環評研究中，也提出建議應採取的緩減措施和有關環境監測及審核的要求。

此環評研究摘要總結了顧問公司環評研究的結果，並提出了緩減措施、環境監測及審核的建議。

### 3 在施工期間的影響及緩減措施

#### 3.1 空氣質素

挖土、開鑿混凝土及物料處理所產生的塵埃是主要的污染來源。但研究指出由於工程的規模不大，而且土質的含水量高，所以即使在最多建築活動的污水隔篩廠內，因工程產生的塵埃將低於每立方米260毫克〔24小時平均值〕和500毫克〔1小時平均值〕的空氣質素標準。如採取以下緩減措施可確保空氣質素將合符標準：

- 經常在工地上灑水，以減少從未有遮蓋的地面所引起的塵埃
- 經常保持工地上路面清潔，以避免工程車輛揚起塵埃
- 在產生大量塵埃的工程活動附近加建圍板
- 在可能情況下，在工地出口設置清洗車輛的設備
- 運載泥土的車輛，需用帆布將車上的泥土遮蓋。

#### 3.2 噪音

在建造主要污水渠、中區及灣仔東污水隔篩廠內的泵房及截流管工程期間所使用的機動設備(如挖土機、鑽土機及打樁機等)，均會產生噪音。

### 3.2.1 在主要污水渠附近敏感受體的噪音影響

鋪設污水渠將會採用「地表挖土-鋪渠填土」或「地下鋪渠」的技術進行（如圖二及圖三所示）。為此，在污水渠附近的敏感受體將會受到影響。研究結果顯示，除了在A至B段以外，其他地區可採取緩減措施將影響減至可接受水平。在A至B段、L至M段、M至N段及C至E段所進行的打樁工程將須限制施工時間。

### 3.2.2 在污水隔篩廠附近敏感受體的噪音影響

**中區污水隔篩廠：**預期工程噪音在最接近工地的敏感受體將會超過日間和傍晚的噪音限制標準，因此將需採取緩減措施。

**灣仔東污水隔篩廠：**預期工程噪音在最接近工地的敏感受體將不會超過日間的噪音標準，但仍會超過傍晚的噪音限制水平，因此將需採取緩減措施。另外，如要進行撞擊式打樁工程，其操作的時間將受限制。

### 3.2.3 在截流管及污水收集系統附近敏感受體的噪音影響

建造污水收集系統用以「地表挖土-鋪渠-填土」方式進行。研究指出一般來說，在對噪音影響特別敏感的地區將需採取更嚴謹的緩減措施。因工地鄰近敏感受體會造成高度噪音影響，所以建議不要在晚間施工，但在某些地段由於受到日間交通的限制，必須在晚間進行部份工程。鑑於上述限制，所以在施工期間需要顧及到對環境和交通的影響，發展一套可行的施工計劃，以完成本渠務改善工程。

### 3.2.4 緩減措施

根據各工地所產生的噪音影響、施工時間表和所採用的機械種類，決定噪音緩減措施。各工地應採用的緩減措施均已詳細列明在環評研究報告之內。

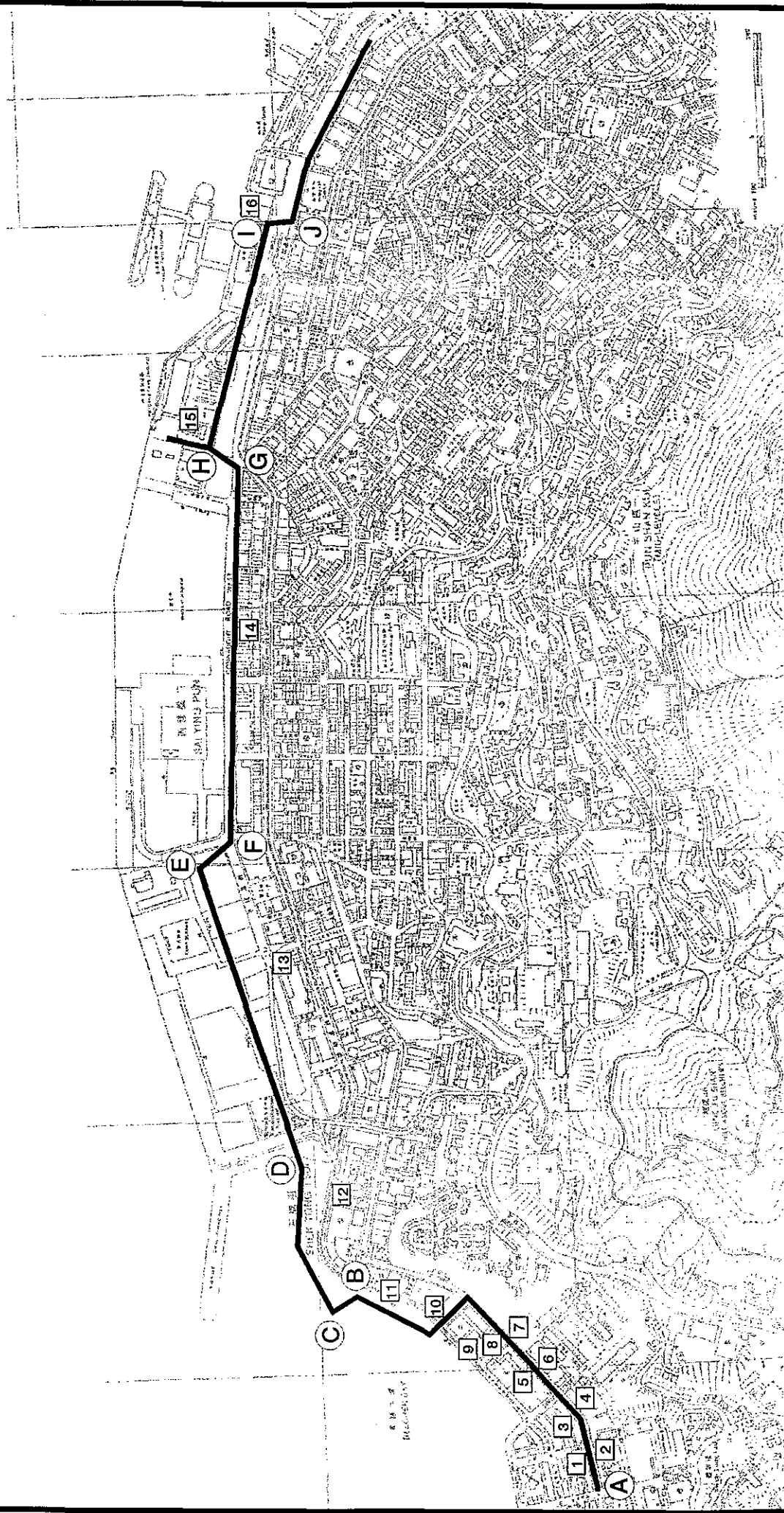
## 3.3 水質

工地上的徑流、抑壓塵埃的用水及從渠坑中抽出的地下水等，均會含有高懸浮固體。如將這些污水排進雨水渠中，則可以導致雨水渠淤塞。因此應設置如隔砂器及沉澱池等合適的設施，以減少對雨水渠的影響。如可行的話，應儘量避免在雨季內進行渠坑開挖工序。

少量在渠坑內收集的地下水，亦可能因為附近污水渠洩漏而受到污染，所以應收集這些地下水，並排放至污水渠系統。

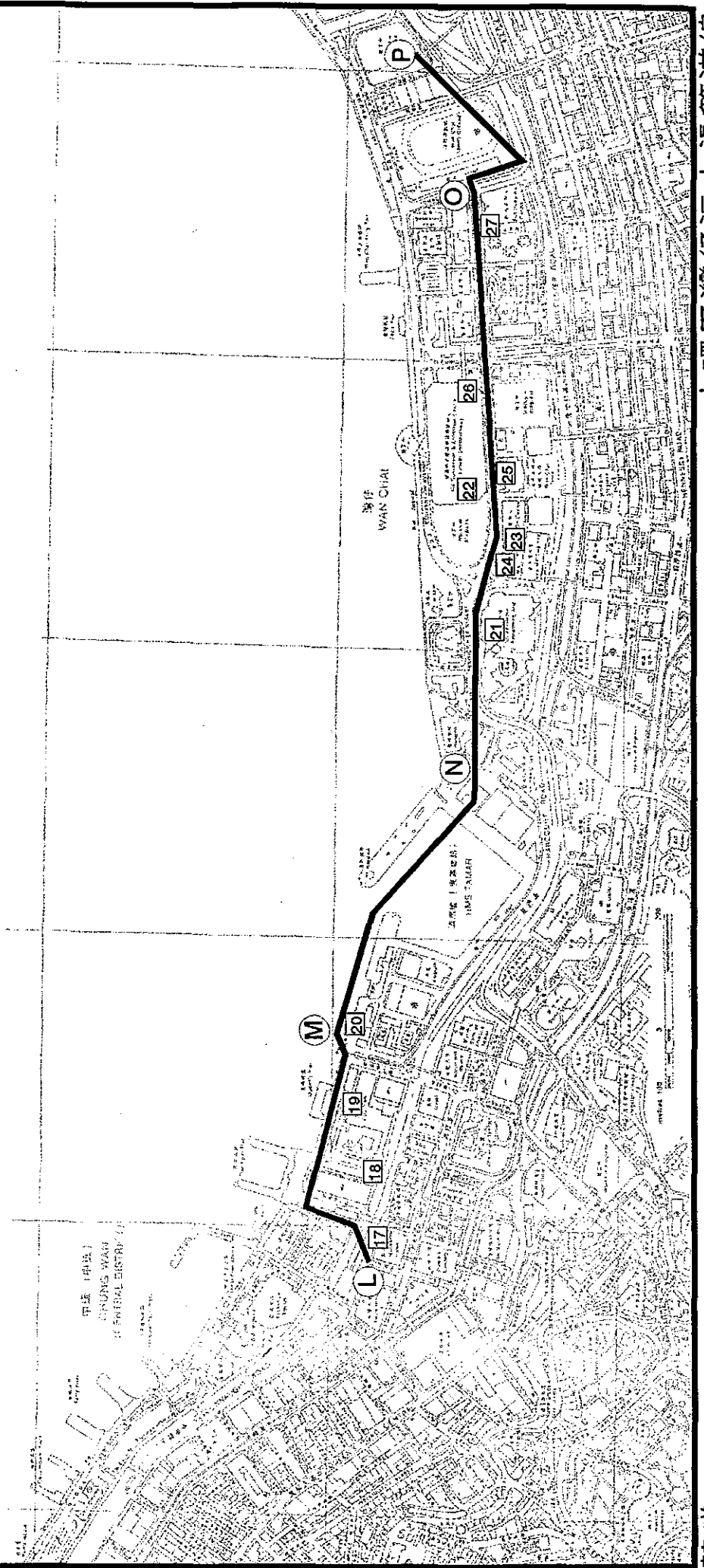
圖例

- 1-16 敏感受體
- A-J 污水渠管道線



圖例

- 17-27 敏感受體
- L-P 污水渠管道線



中環至灣仔污水渠管道線

在工地中亦可能產生小量的污水，因此亦須制訂收集及處置這些污水的方案。

如在開挖渠坑工程時，使用膨潤土來支撐渠坑，將須特別小心。應在工地上築建圍堰，以防膨潤土溢漏而污染附近水體。

### 3.4 固體廢物

工程中將約產生124,800立方米的固體廢物，主要來自開挖渠坑、沙井、泵房、截流渠/污水收集系統等工序。預計其中只有小部份在海邊或沙井附近挖掘的泥土被污染，這些受污染的淤泥和一些被換下的水渠管子，可以運往各策略性堆填區棄置。而其他未受污染的物料，則可運往各公眾卸泥區作填海用途。但各物料的最終棄置方法將在進行探查污染物研究及得環境保護署同意之後方可決定。

## 4 在運作期間的環境影響及緩減措施

### 4.1 空氣質素

在運作期間主要的空氣影響將來自污水隔篩廠及現有設施的氣味排放。

環評研究顯示如要合符現有的氣味標準(即在敏感受體的氣味水平在5秒內的平均值不超過5個氣味單位)，須要將所有新建的設施完全密封。詳細的緩減措施總結如下：

現有設施：將所有運輸帶、入渠口、隔濾器及其他露天的氣味來源密封。

新建設施：在現有污水隔篩廠加建的處理設施均需有效地與廠外空氣隔離，並須設置可每小時將室內空氣抽換不少於五次的通風系統。

所有的排氣口須經過一個中央氣味處理系統。中區污水隔篩廠的氣味處理系統應可消除百份之九十八的氣味，而灣仔東的則應可消除百份之九十七的氣味。排氣口的煙囪應儘力遠離敏感受體，並離地不少於10米。氣體排放的速度最少要達至每秒8米。

此外，污水廠內亦應有良好的廠房管理，包括掃地、定期清洗地面及機器。在隔濾器及隔砂器所使用的容器應加上蓋掩，以防止氣味外洩及雨水的滲入。

## 4.2 噪音

在運作階段最可能產生的噪音將會來自在中區和灣仔東污水隔篩廠內的機械裝置。預計其發出的噪音水平將遠遠低於法定的標準，而對敏感受體的影響亦屬輕微。所以不須要採用任何緩減措施。

## 4.3 水質

近岸的水質將會因為擬建的污水渠工程而得到改善。污水收集整體計劃研究中指出，現時估計每日約有22.9噸未經處理的生化需氧量（佔總污染量的一半）經由雨水渠排入海港。在完成上述工程後，污水將會先被隔濾和降解，然後經由現有的海底管道排放。

## 5 環境監測及審核

研究中建議了一套環境監測及審核計劃，其中包括監測參數、地點、時間、頻率、期間及審核要求等。在工程展開前，須測量噪音及空氣質素的基線水平，而在設施運作前，則須測量氣味的基線水平。此外，亦應定期監測工地附近的環境質素。顧問公司建議在施工期間監測塵埃、噪音及水質情況，而在運作期間則進行噪音及氣味的監測。另外，如須在工地以外棄置泥土，在挖泥前應抽取泥土樣本，分析樣本中重金屬污染物的含量。

施工期間將會每月審核工地的環保情況。顧問公司亦建議在運作階段的首年，每半年進行一次審核，而繼後的審核頻率則在考慮首兩次審核結果後再作決定。

## 6 總結

整體而論，工程在施工及運作階段所造成的環境污染，在實施緩減措施後大致上可合符既定的環保標準，但是在卑路乍街的敏感受體，因太接近挖掘渠坑工地而受到超標的建築噪音的影響。

表一概括地列明因工程而產生的各種環境影響。



表一：環境影響概要

參數		潛在影響	在實施緩減措施後的影響	跟進工作
施工階段	塵埃	一般工序中所產生的塵埃，應可控制至可以接受水平	沒有	沒有
	噪音	<u>主要污水渠</u> 除卑路乍街外，其他敏感受體的噪音可緩減至可接受水平	在卑路乍街附近的噪音影響嚴重。在傍晚及晚間不可在該處進行施工活動	重新檢視噪音影響評估，並且詳細考慮緩減措施
		<u>污水隔篩廠</u> 在敏感受體的噪音可減至可以接受的水平	沒有	
		<u>截流管/污水收集系統</u> 因缺乏污水渠的詳細位置料資，並未能進行實質評估		
	水質	因工程在陸上進行，所以不會有嚴重的水質影響	沒有	沒有
固體廢物	視泥土抽樣分析的結果，須採取合適的廢物處理程序	沒有	視泥土抽樣分析的結果，決定固體廢物的處理及棄置方法	
運作階段	噪音	沒有	沒有	沒有
	氣味	在新建泵房發出的氣味可緩減至可接受水平	除泵房外，其他現有設施仍會發出氣味	証實研究中對氣味影響的預測，並為現有及新建的設施設計氣味控制系統
	水質	改善維多利亞港水質的第一步	在進行策略性排污計劃第三及第四期前的臨時改善方案	實施策略性排污計劃第三及第四期〔不在本研究範圍之內〕

