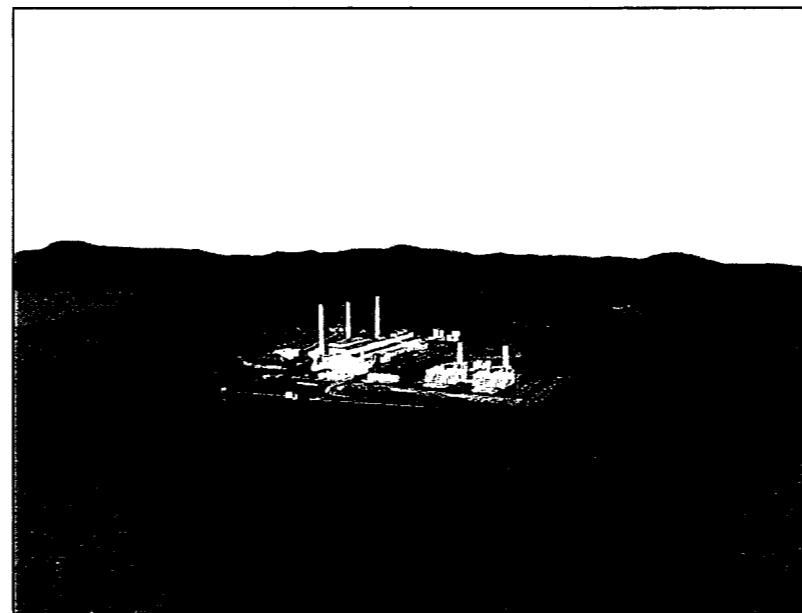




**The Hongkong Electric Co., Ltd.**

香港電燈有限公司

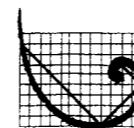
Environmental Impact Assessment of a 1,800MW  
Gas-Fired Power Station at Lamma Extension  
*Third Technical Annex*



8 February 1999

**Environmental Resources Management**

6th Floor, Hecny Tower  
9 Chatham Road, Tsimshatsui  
Kowloon, Hong Kong  
Telephone 2271 3000  
Facsimile 2723 5660



**ERM**

The Hongkong Electric Co., Ltd.

Environmental Impact Assessment  
of a 1,800MW Gas-Fired Power  
Station at Lamma Extension :  
*Third Technical Annex*

8 February 1999

Reference C1830

For and on behalf of  
Environmental Resources Management

Approved by: Freeman Cheung

Signed: 

Position: Deputy Managing Director

Date: 8 February 1999

This report has been prepared by Environmental Resources Management, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and other in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

## EIA REPORT ORGANISATION

THE REPORT OF THE EIA STUDY OF HEC'S 1800MW NEW POWER STATION AT LAMMA EXTENSION IS PRESENTED AS FIVE VOLUMES OF WHICH THIS IS THE *THIRD TECHNICAL ANNEX*.

\*\*\*\*\*

### VOLUME 1:

- PART A OF THE EIA REPORT - INTRODUCTION
- PART B OF THE EIA REPORT - THE NEW POWER STATION

\*\*\*\*\*

### VOLUME 2:

- PART C OF THE EIA REPORT - THE TRANSMISSION SYSTEM
- PART D OF THE EIA REPORT - THE GAS PIPELINE
- PART E OF THE EIA REPORT - ASSESSMENT OF CUMULATIVE IMPACTS
- PART F OF THE EIA REPORT - ENVIRONMENTAL MONITORING AND AUDIT
- PART G OF THE EIA REPORT - IMPLEMENTATION SCHEDULE
- PART H OF THE EIA REPORT - OVERALL SUMMARY & CONCLUSIONS

\*\*\*\*\*

### THE FIRST TECHNICAL ANNEX

\*\*\*\*\*

### THE SECOND TECHNICAL ANNEX

\*\*\*\*\*

### *THE THIRD TECHNICAL ANNEX*

\*\*\*\*\*

## CONTENTS

### *Part B*      *THE NEW POWER STATION*

#### **Annex B7-1      Landscape & Visual Impacts Figures**

### *Part C*      *TRANSMISSION SYSTEM*

#### **Annex C10-1      Landscape & Visual Impacts Figures**

Annex B7-1

# Landscape & Visual Impacts Figures

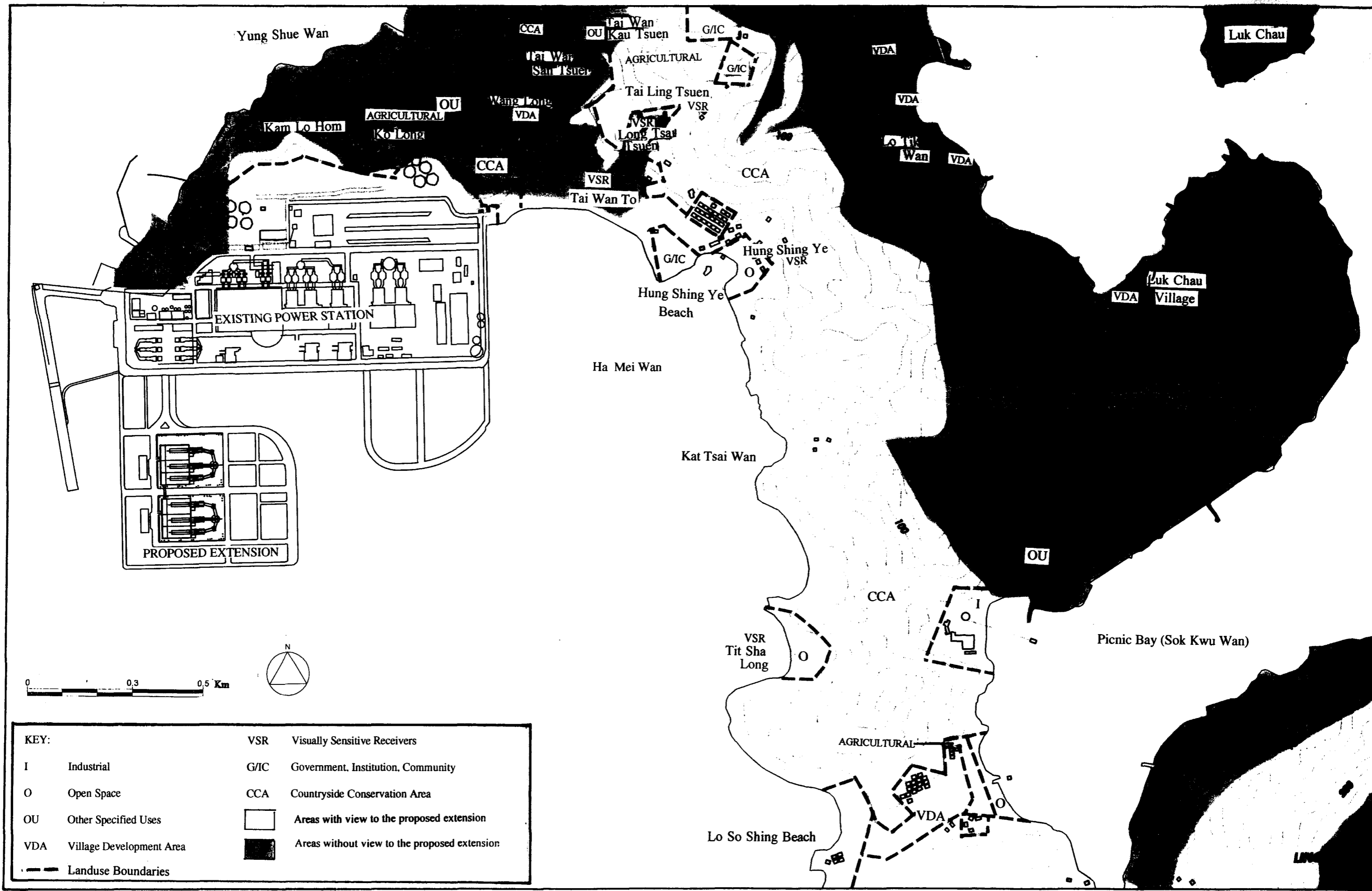
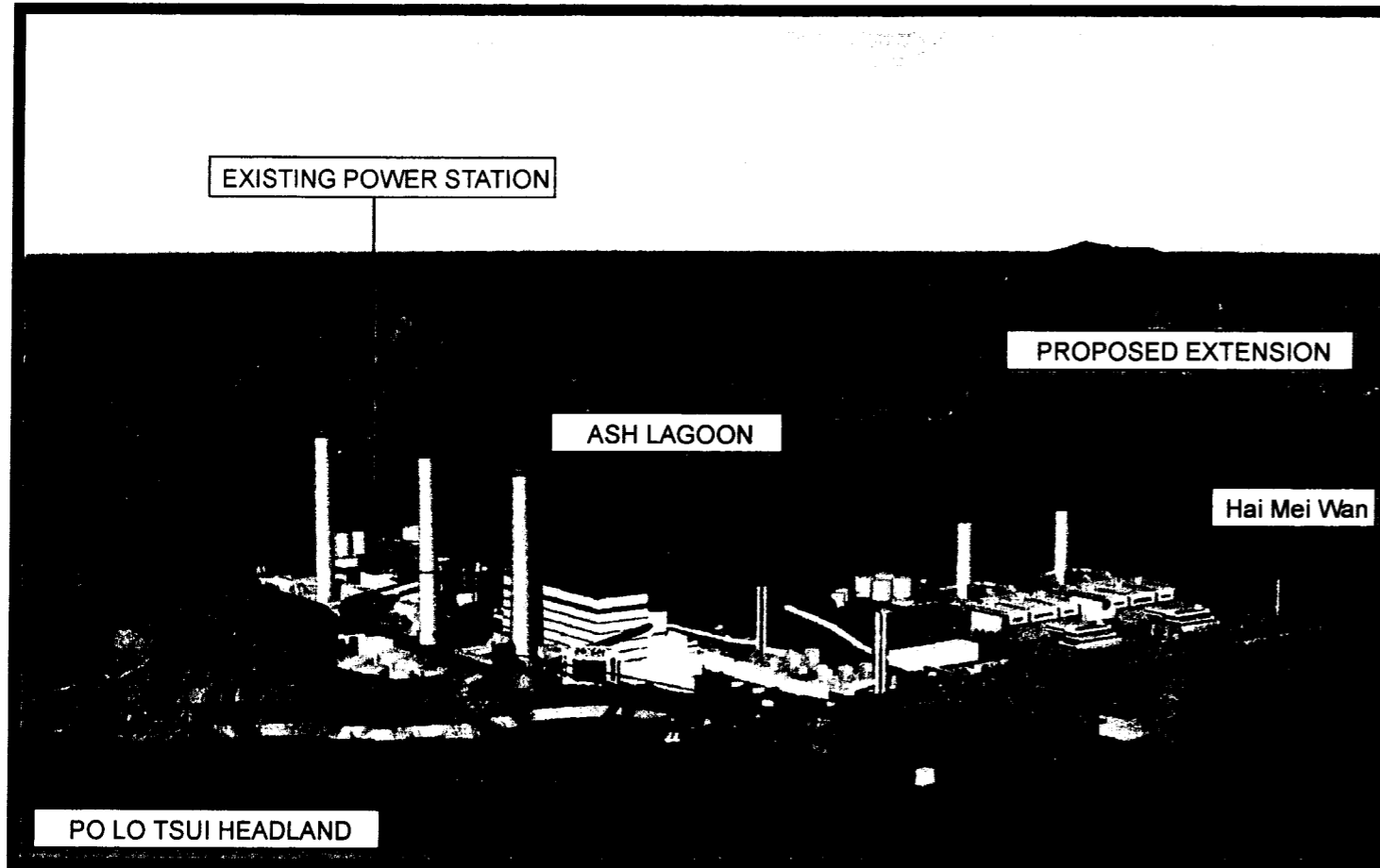
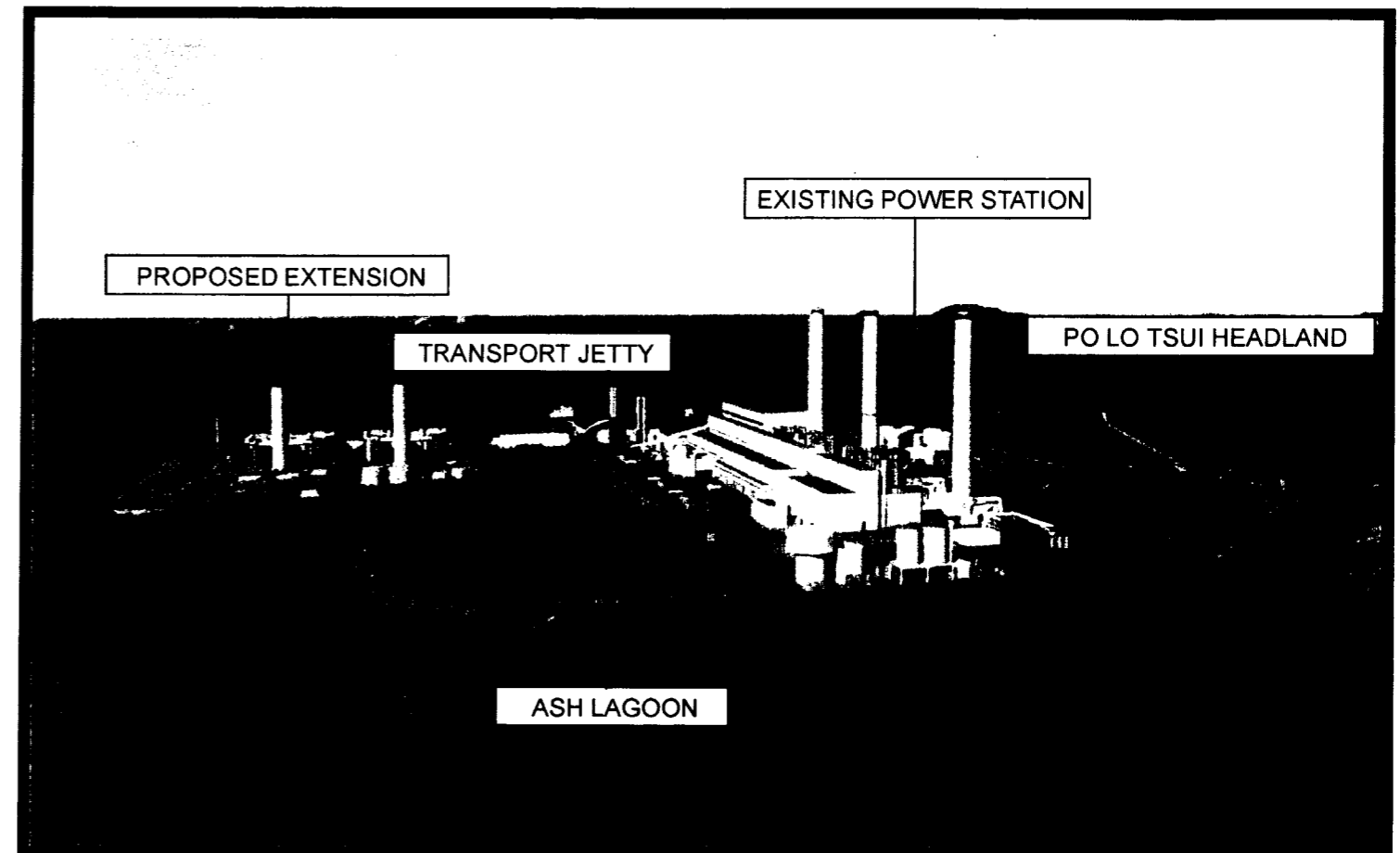


FIGURE 1- LAND USE OF SURROUNDING AREA



2.1--VIEW FROM NORTH WEST



2.2--VIEW FROM SOUTH EAST

FIGURE 2--AERIAL VIEW OF PROPOSED EXTENSION WITH EXISTING POWER STATION

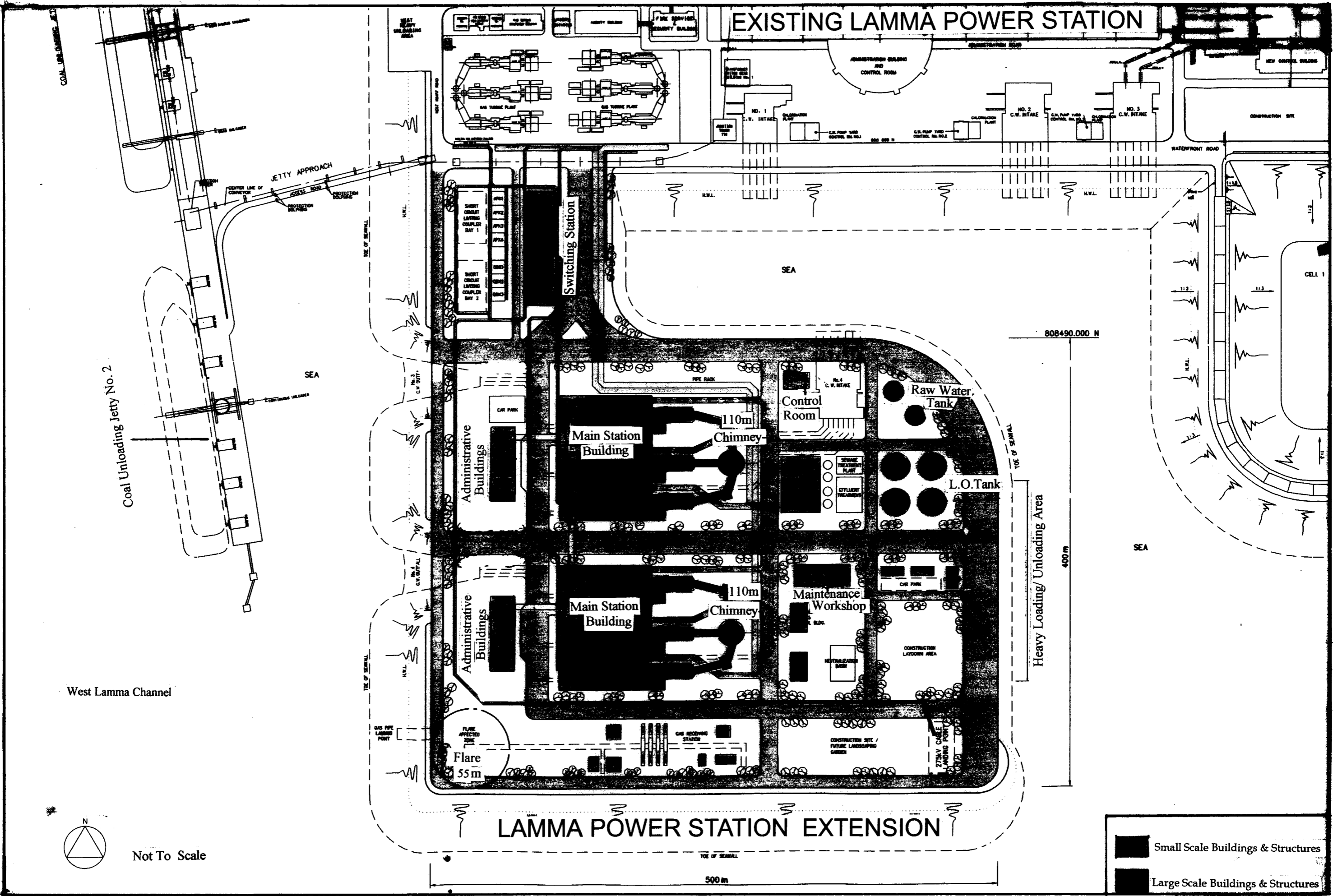


FIGURE 3-- SITE PLAN OF PROPOSED EXTENSION



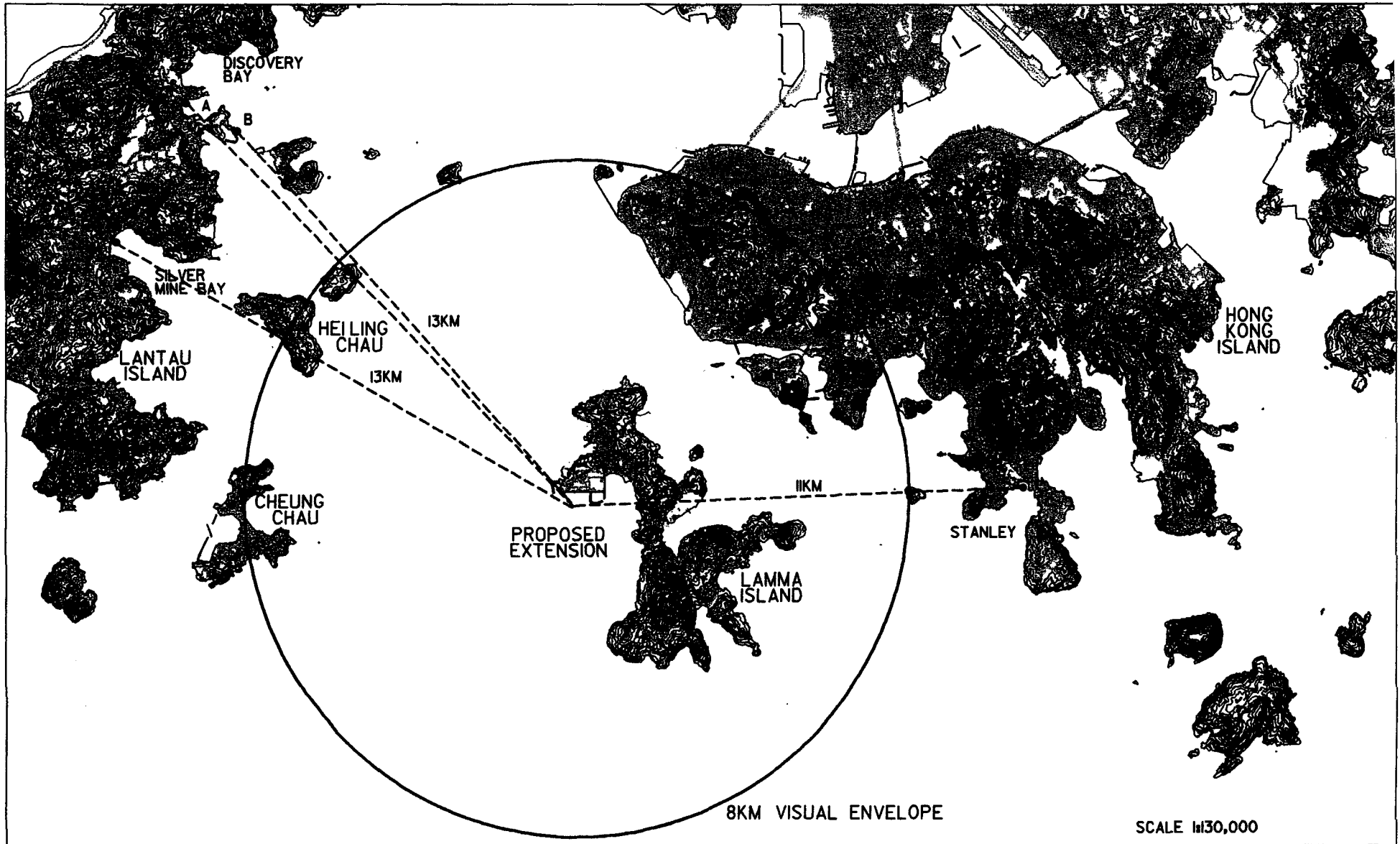


FIGURE 4

VISUAL ENVELOPE

USTH FILE: user2/erwin/c0830/om.dgn  
DATE: 10/98

Environmental  
Resources  
Management



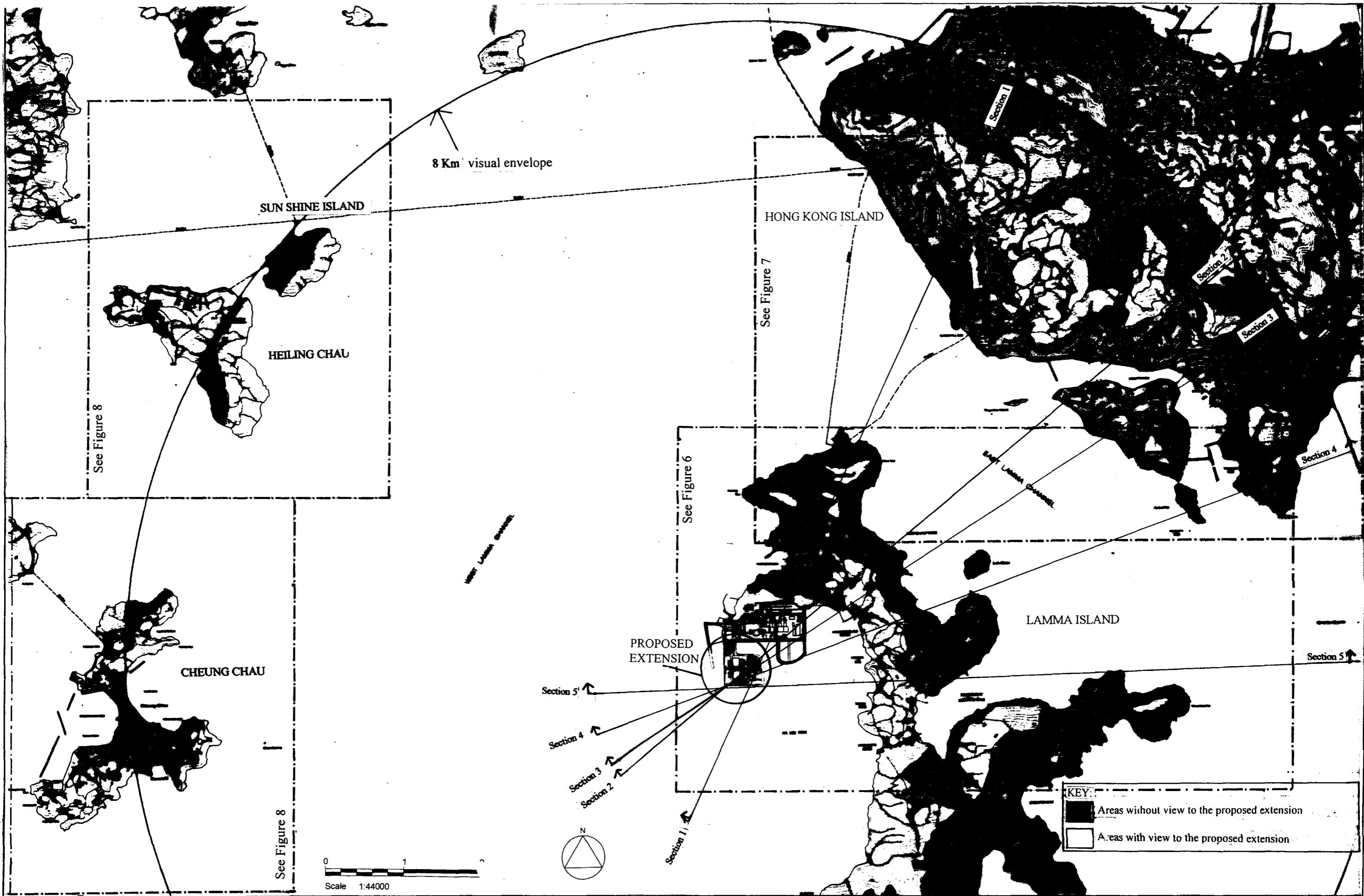
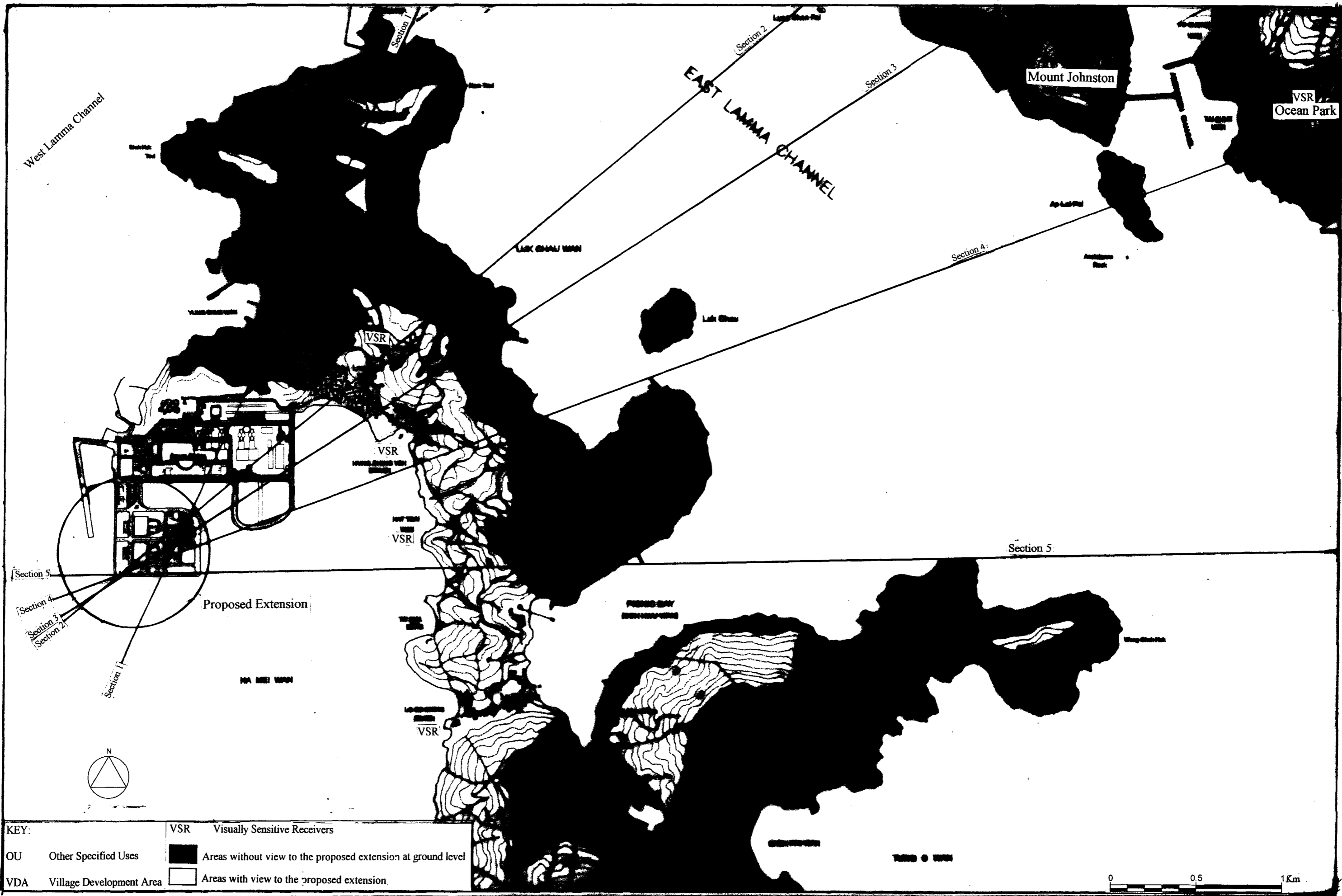


FIGURE 5--GENERAL MAP SHOWING 8 KM VISUAL ENVELOPE



KEY:	VSR	Visually Sensitive Receivers
OU	Other Specified Uses	Areas without view to the proposed extension at ground level
VDA	Village Development Area	Areas with view to the proposed extension.

FIGURE 6-- MAP OF LAMMA ISLAND SHOWING AREAS WITH VIEWS OF EXISTING STATION

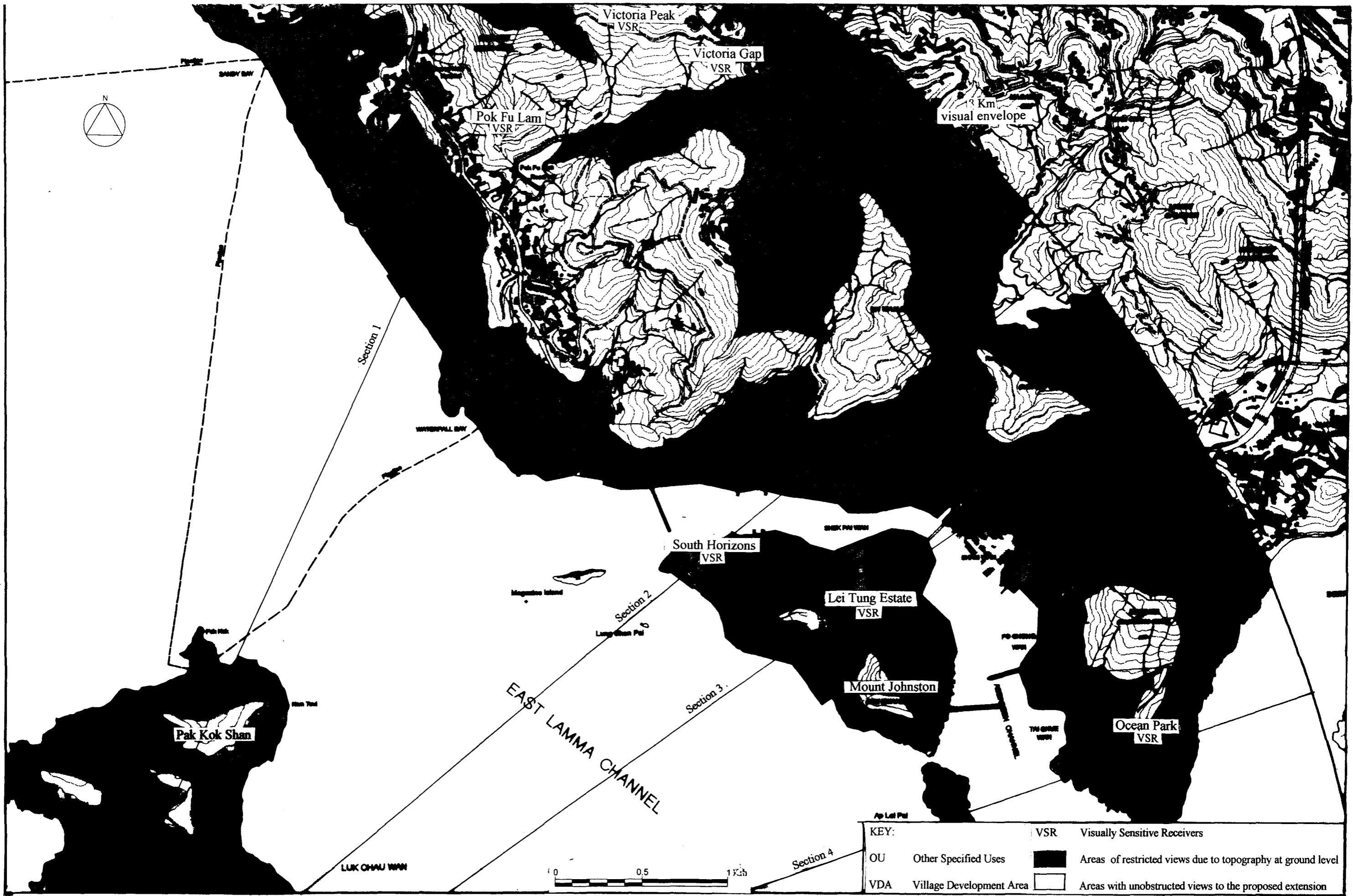


FIGURE 7—MAP OF HONG KONG ISLAND SHOWING 8KM VISUAL ENVELOPE

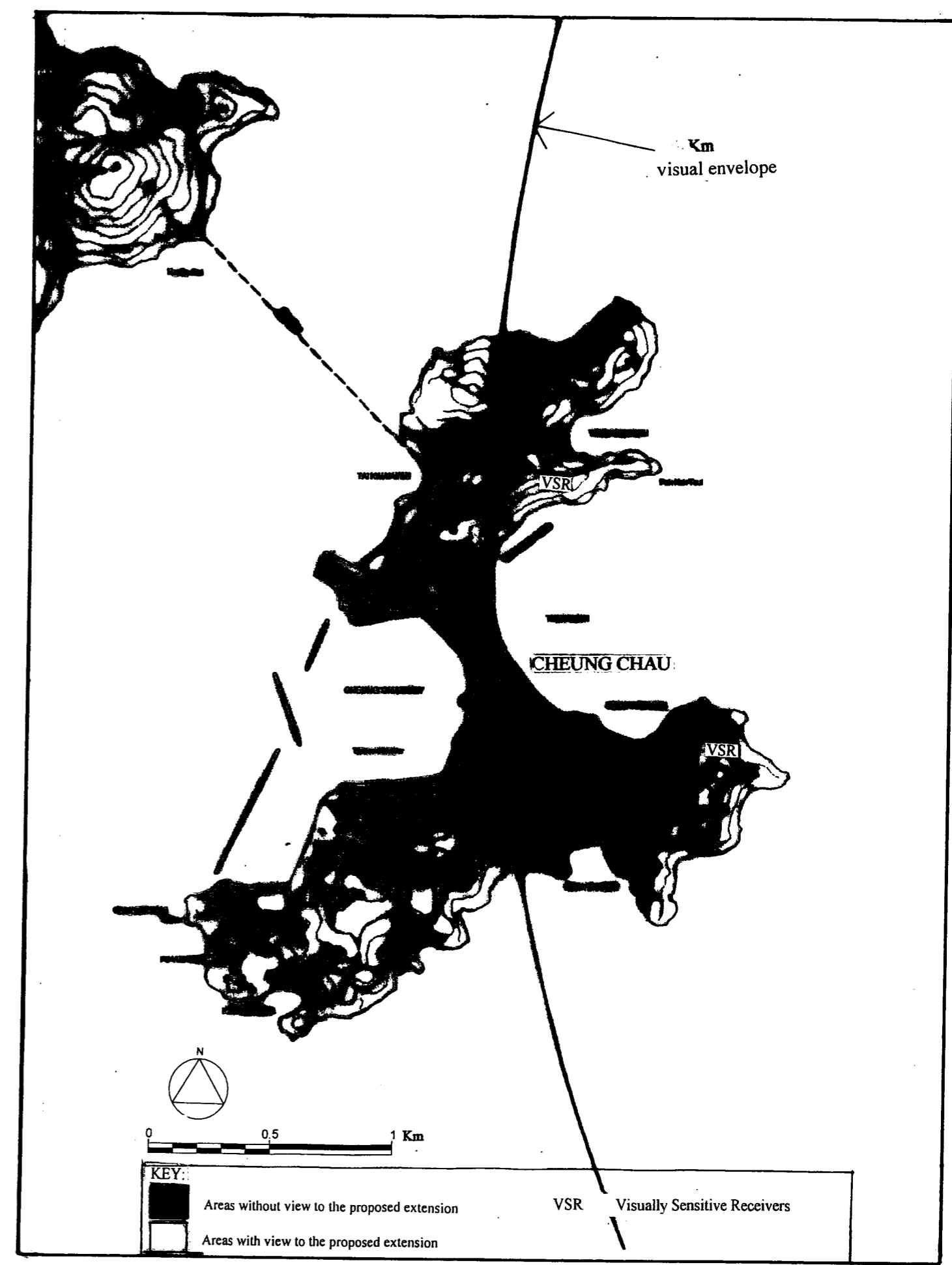
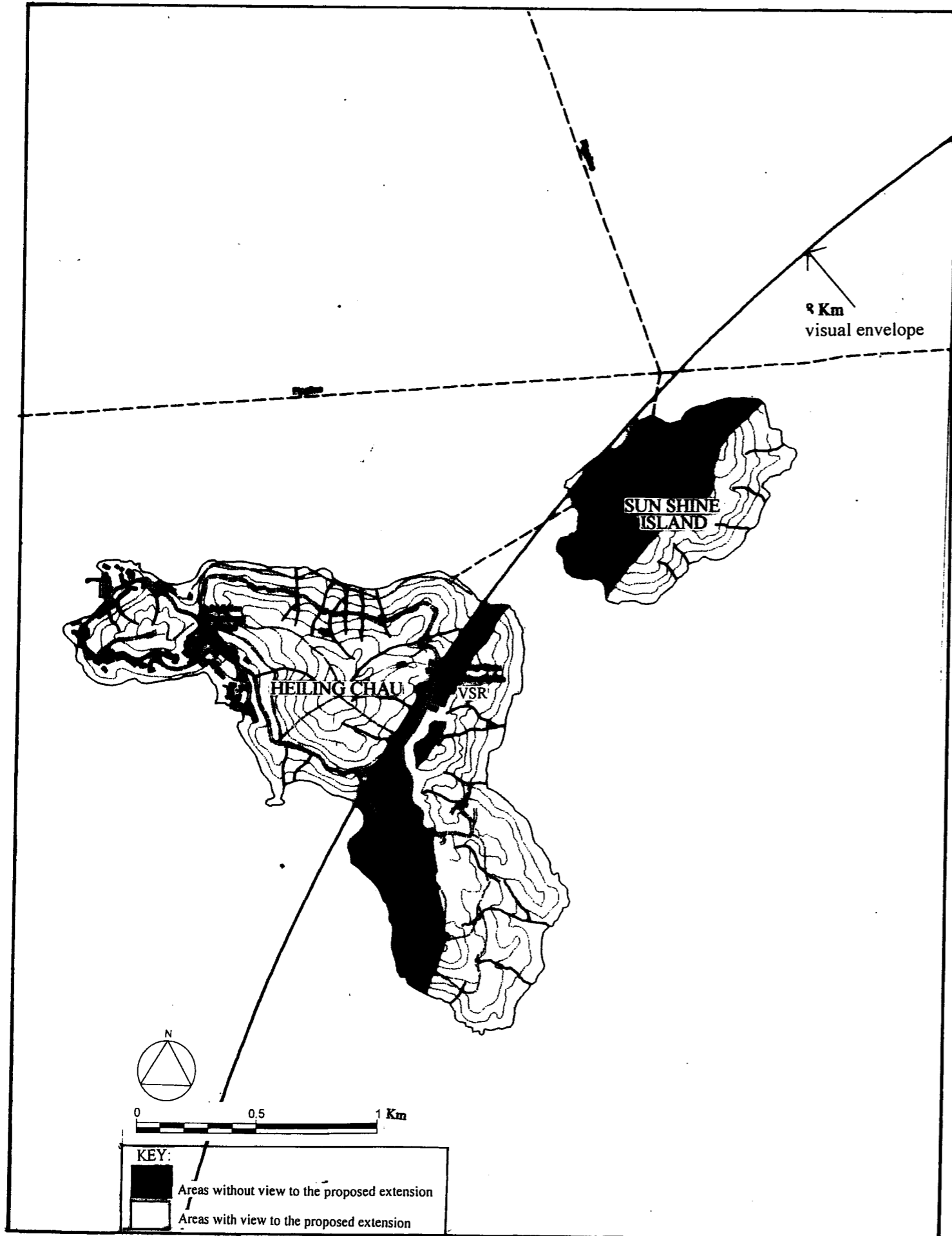
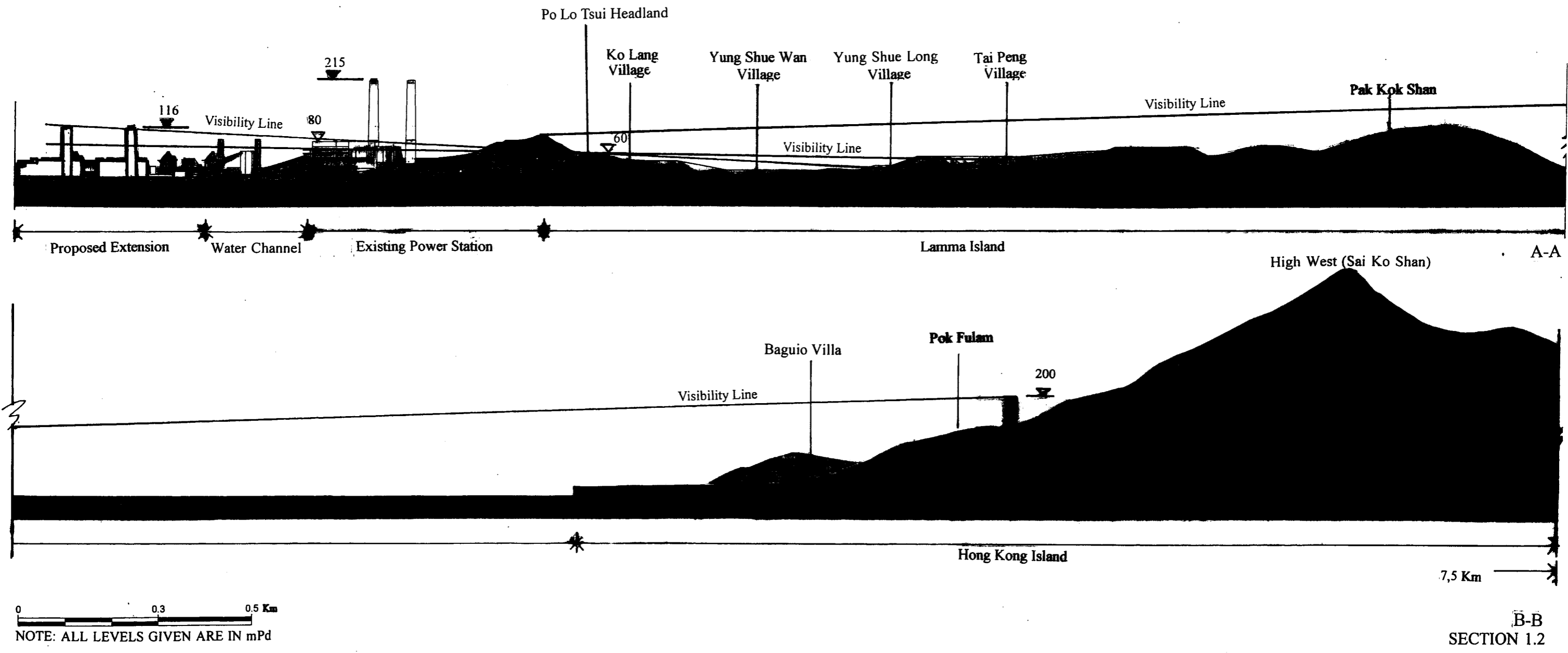
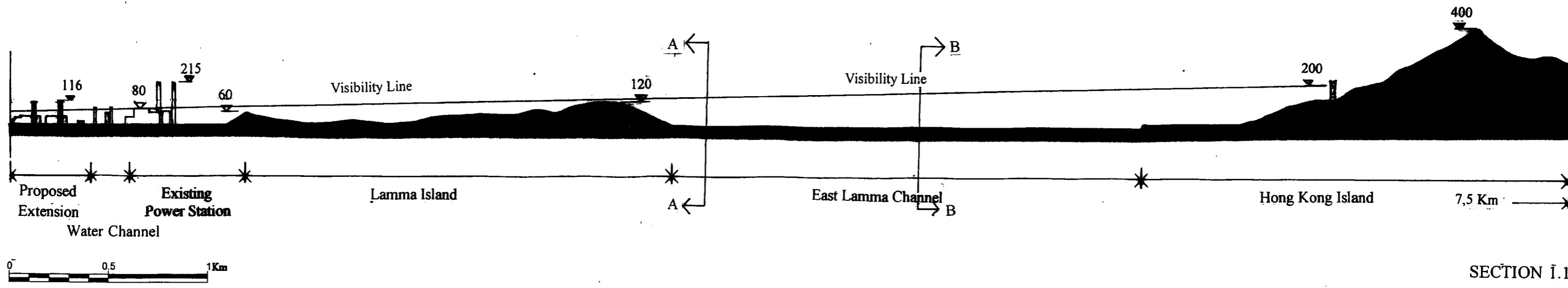
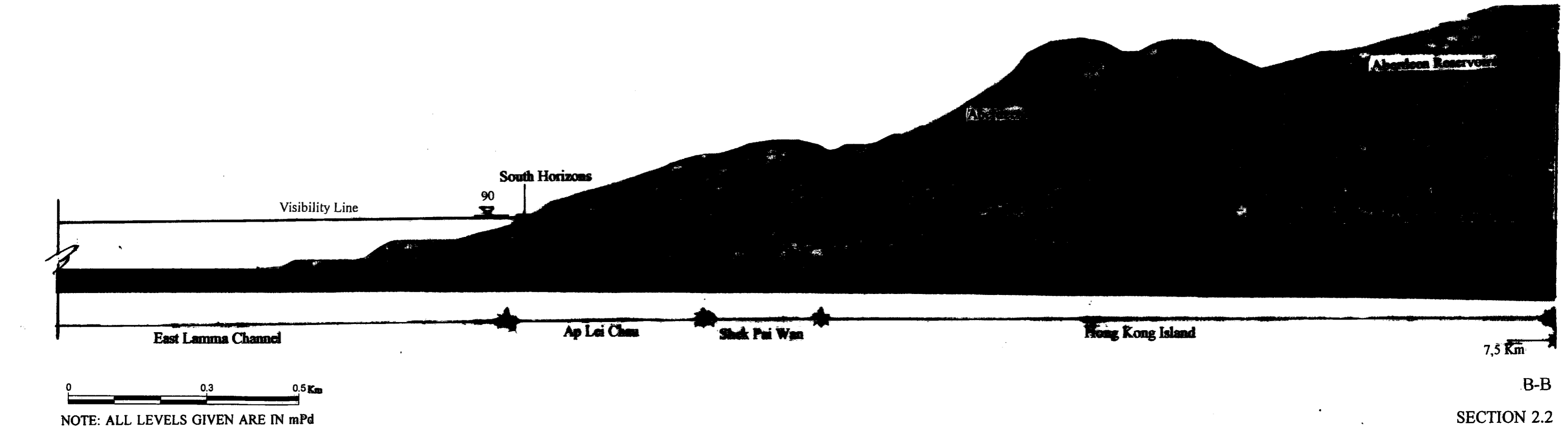
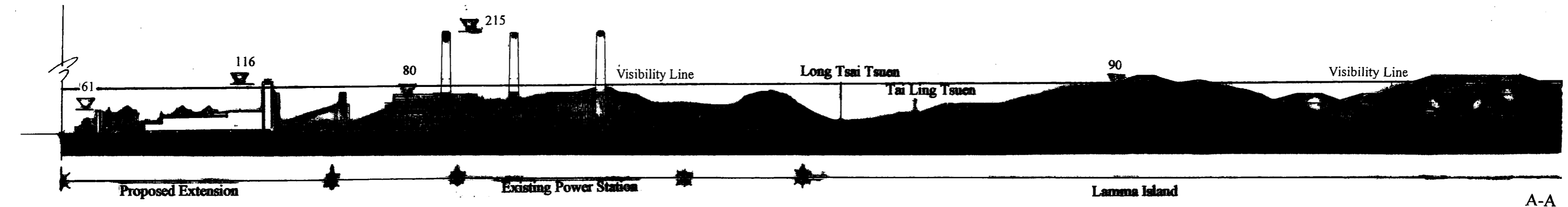
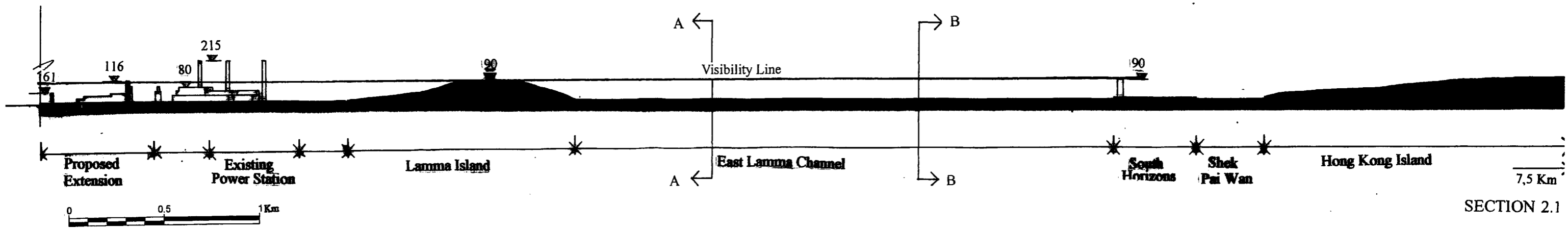


FIGURE 8-- MAP OF CHEUNG CHAU, HEI LING CHAU & SUNSHINE ISLAND



NOTE: ALL LEVELS GIVEN ARE IN mPd

FIGURE 9-- SECTION 1.1 & 1.2--THROUGH POK FU LAM, HONG KONG ISLAND



NOTE: ALL LEVELS GIVEN ARE IN mPd

SECTION 2.2

FIGURE 10-- SECTION 2.1 & 2.2-- THROUGH LAMMA ISLAND AND SOUTH HORIZONS, AP LEI CHAU

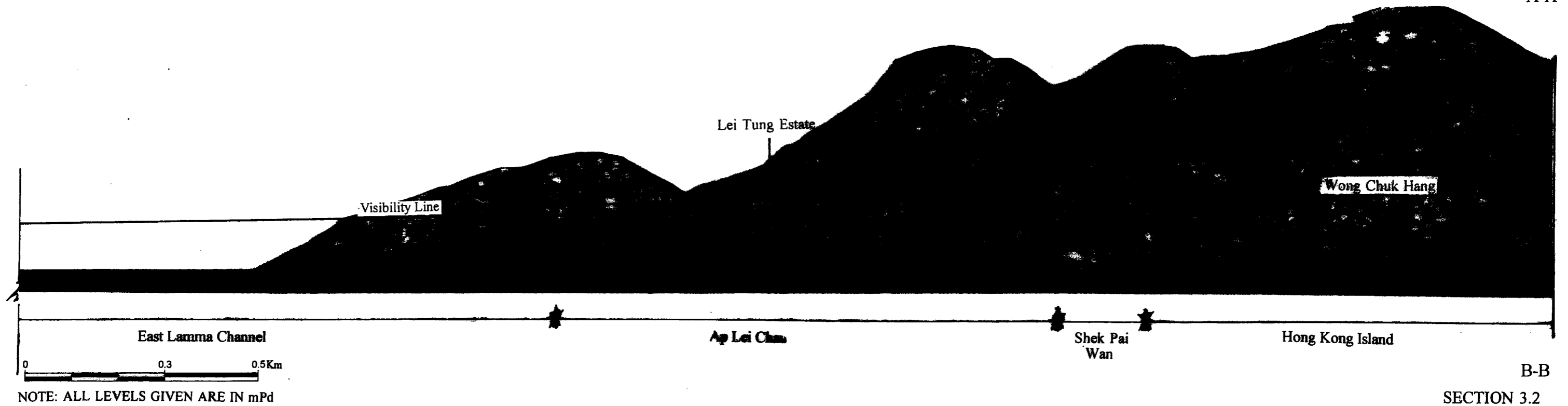
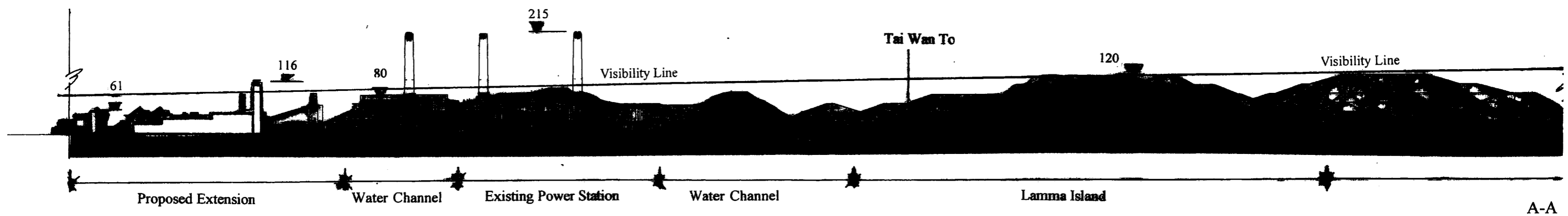
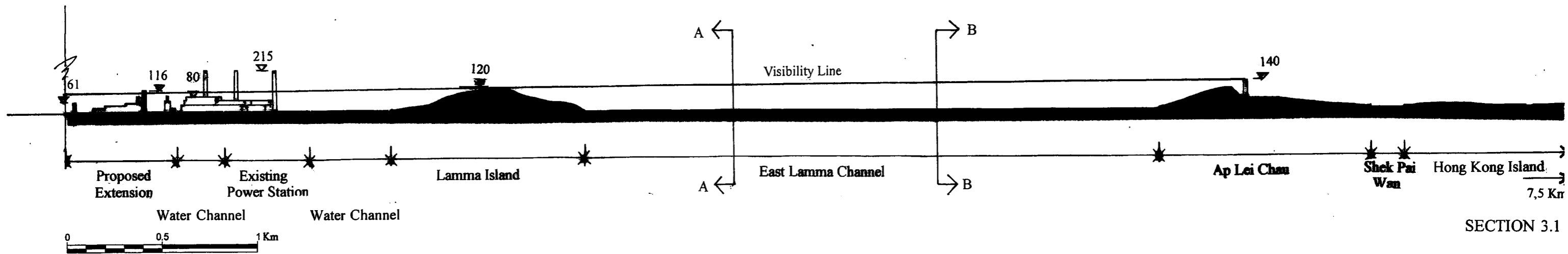
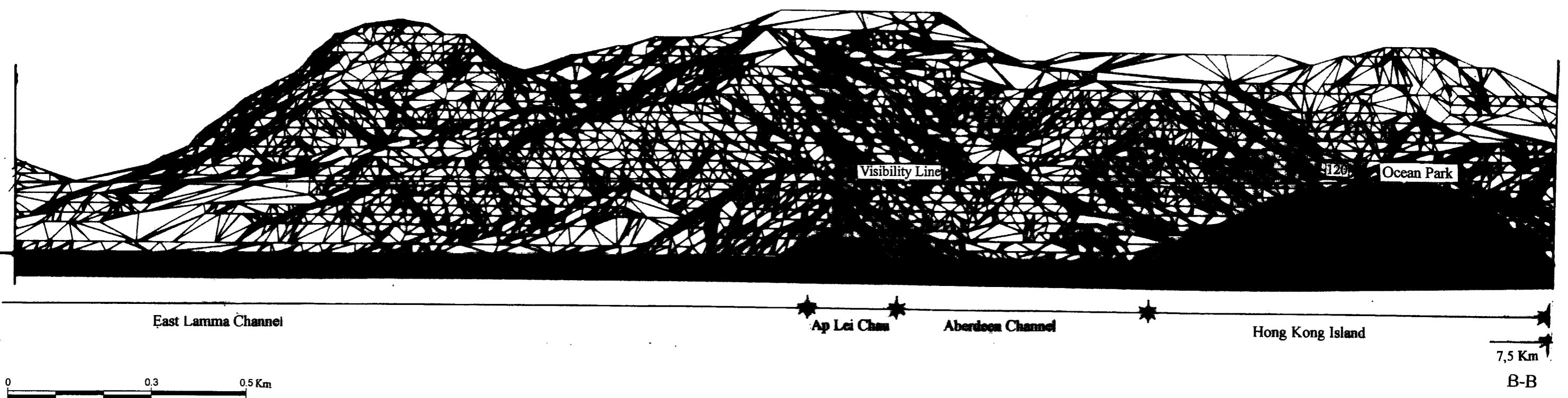
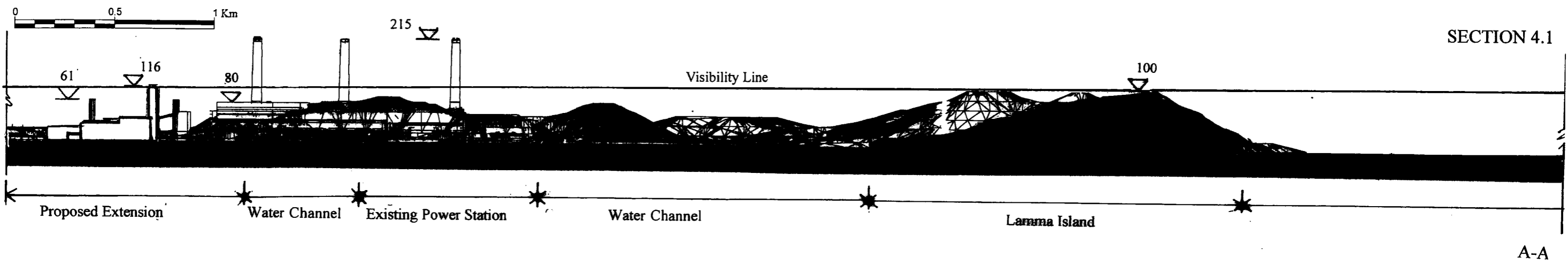
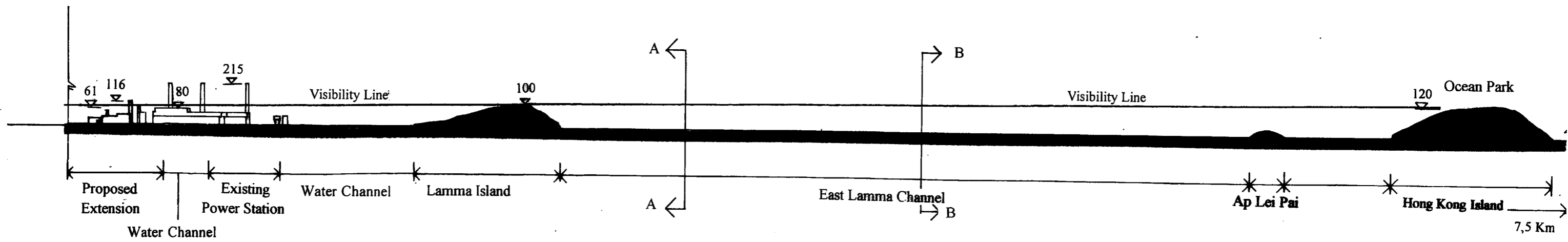


FIGURE 11-- SECTION 3.1 & 3.2-- THROUGH LAMMA ISLAND AND LEI TUNG ESTATE, AP LEI CHAU



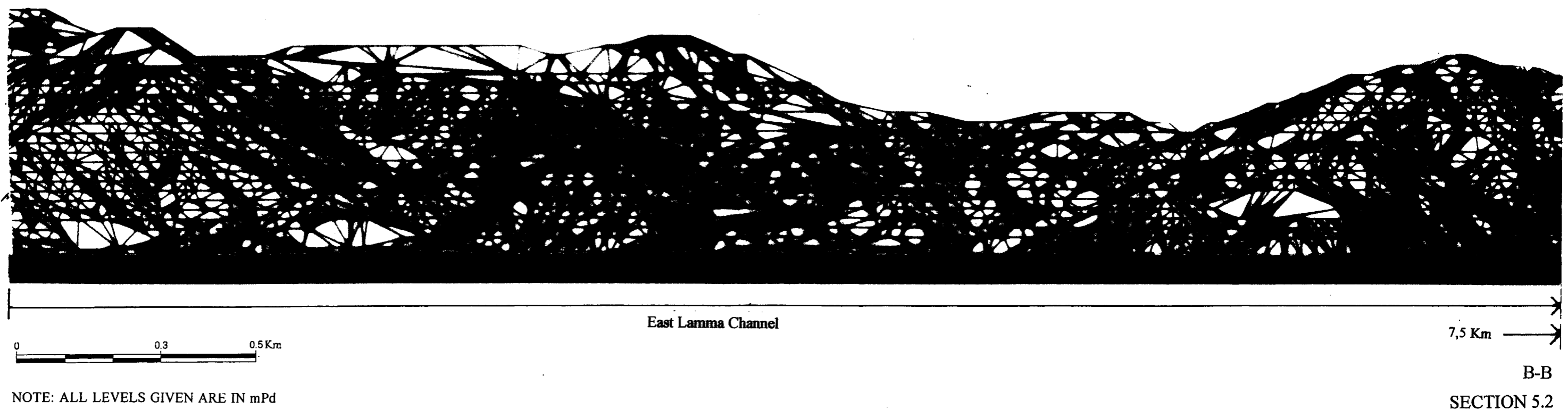
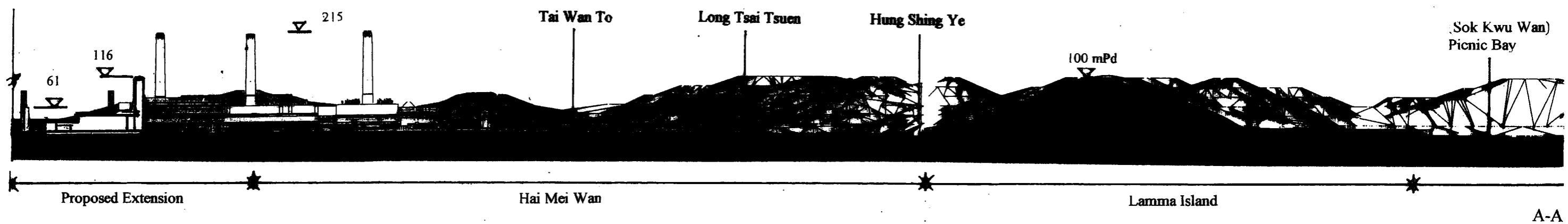
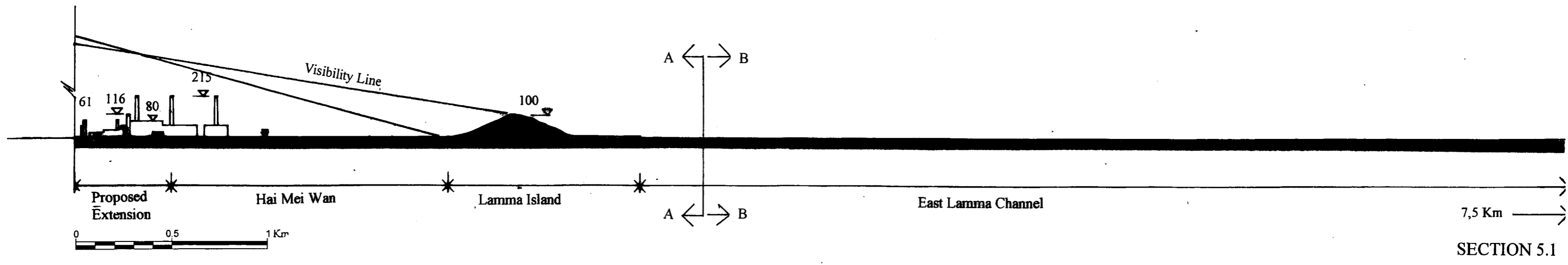


NOTE: ALL LEVELS GIVEN ARE IN mPd

SECTION 4.2

FIGURE 12-- SECTION 4.1 & 4.2—THROUGH LAMMA ISLAND AND OCEAN PARK, HONG KONG ISLAND



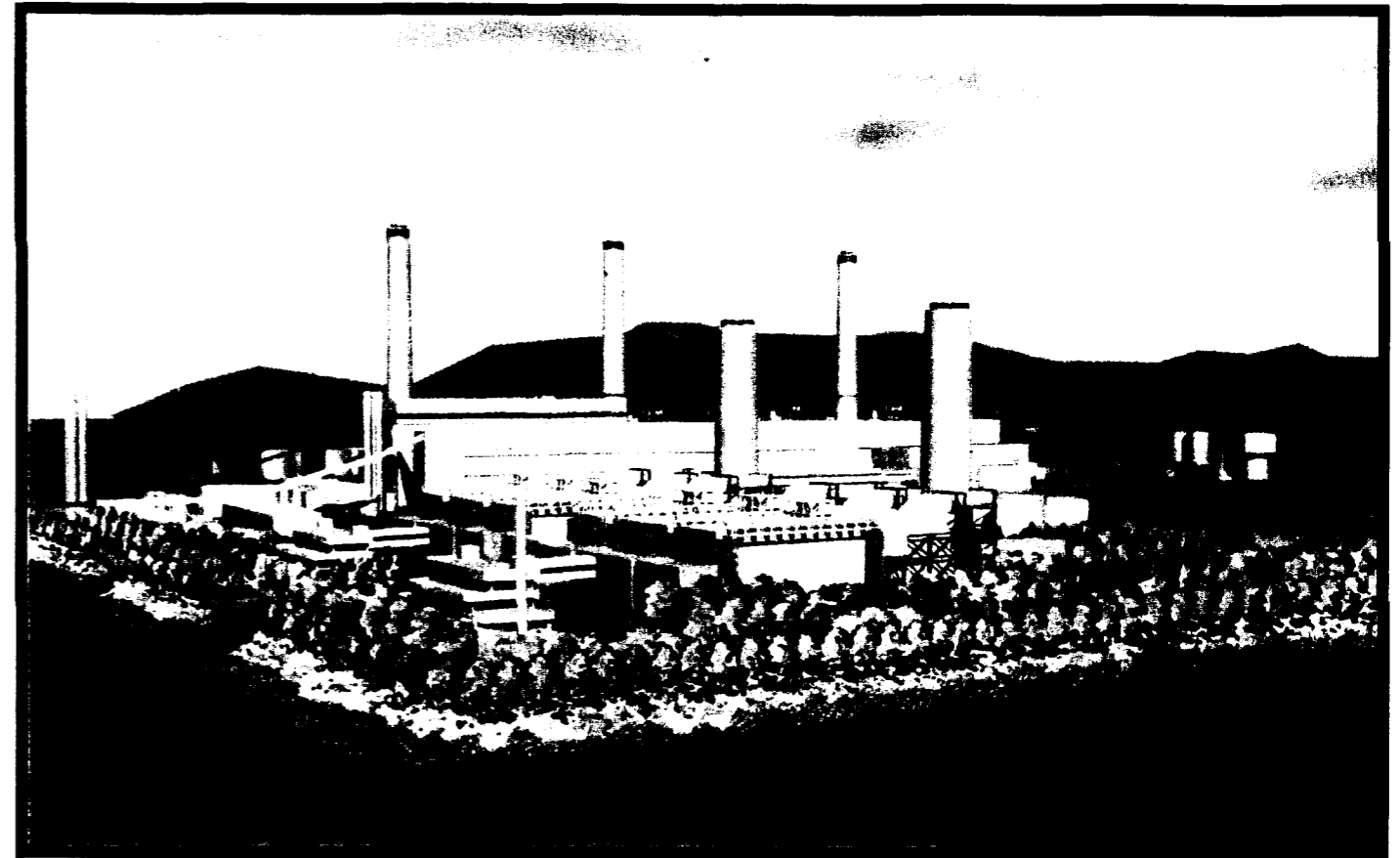


NOTE: ALL LEVELS GIVEN ARE IN mPd

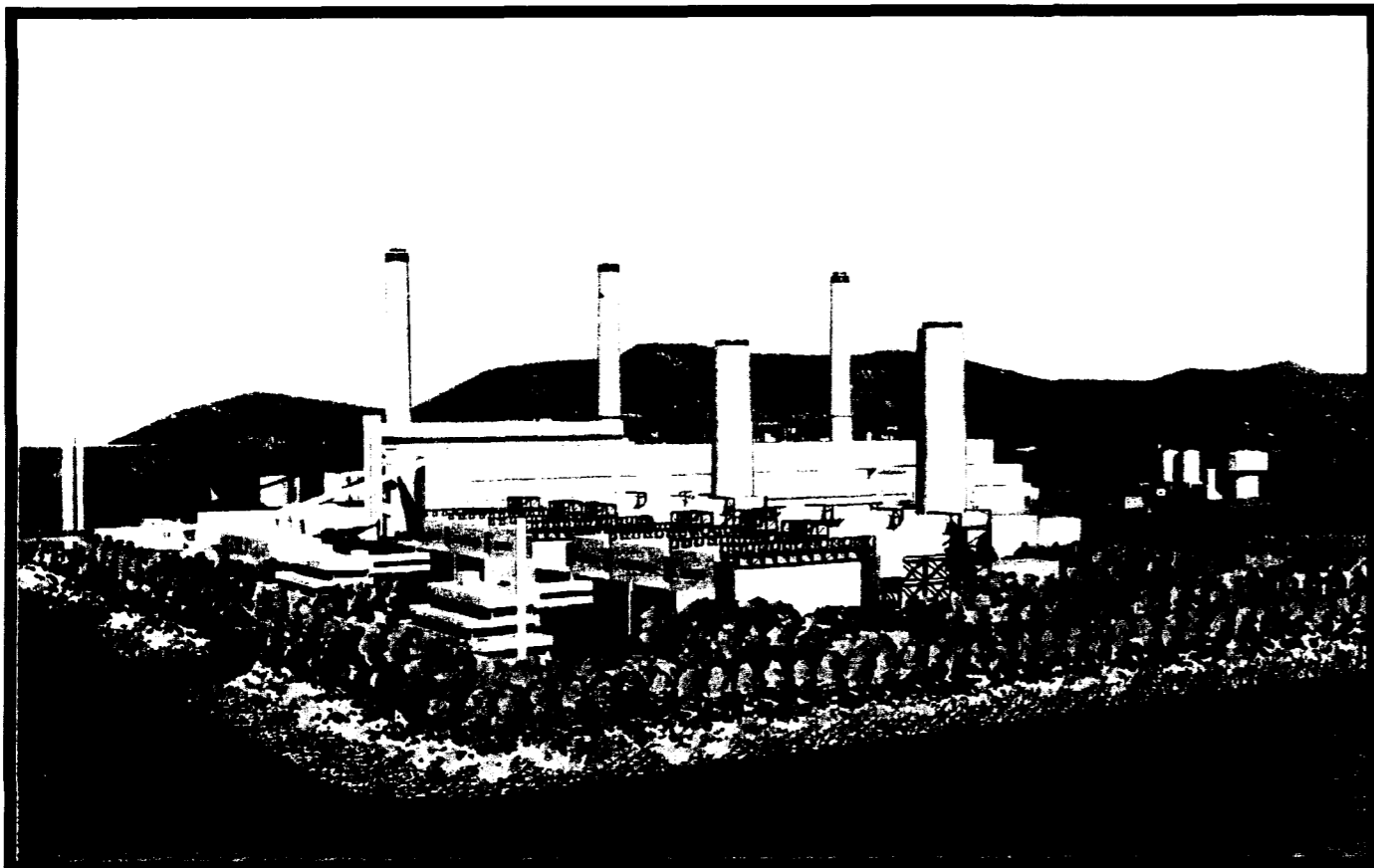
FIGURE 13-- SECTION 5.1 & 5.2—THROUGH LAMMA ISLAND AND EAST LAMMA CHANNEL



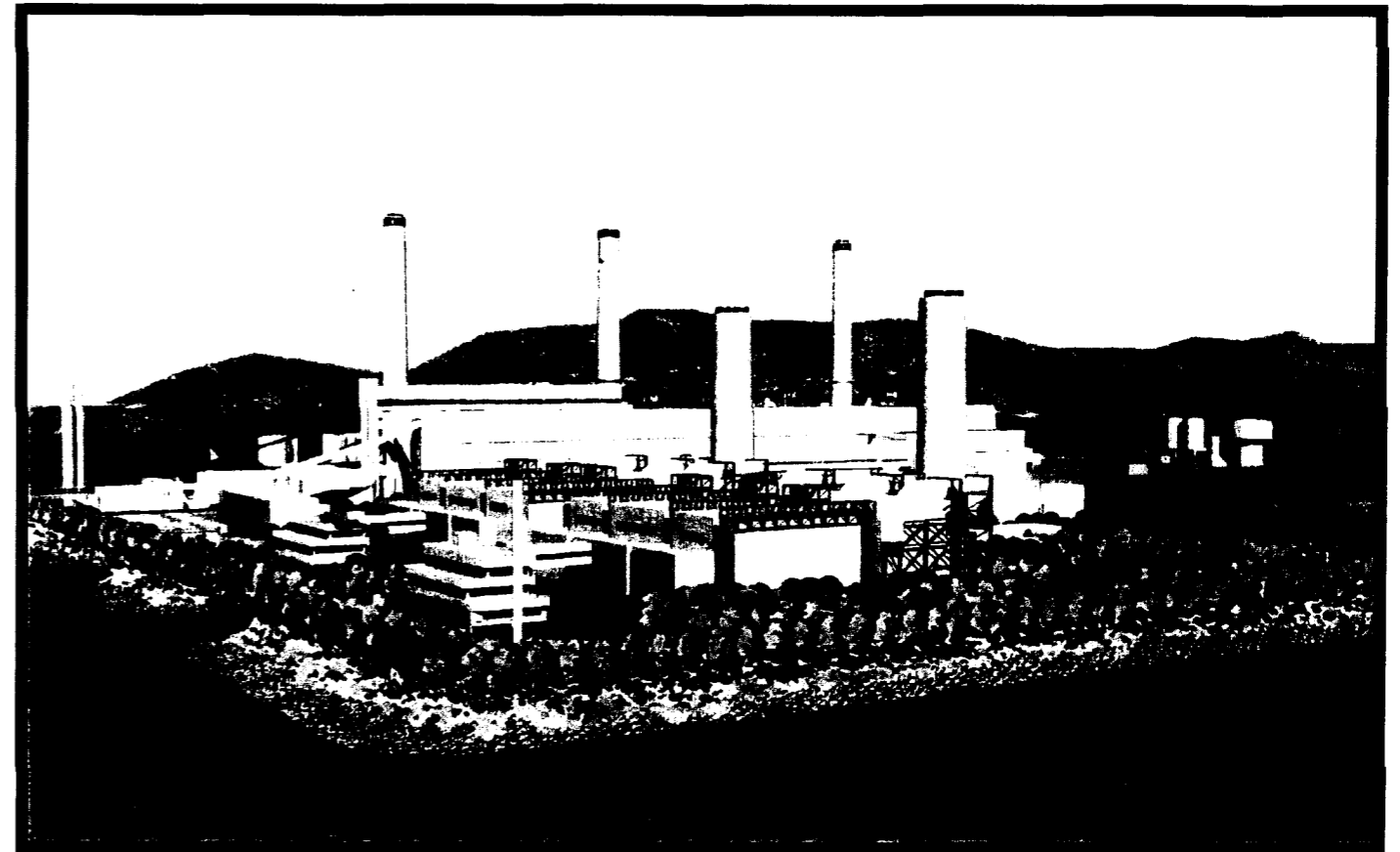
Standard scheme



Alternative scheme 2

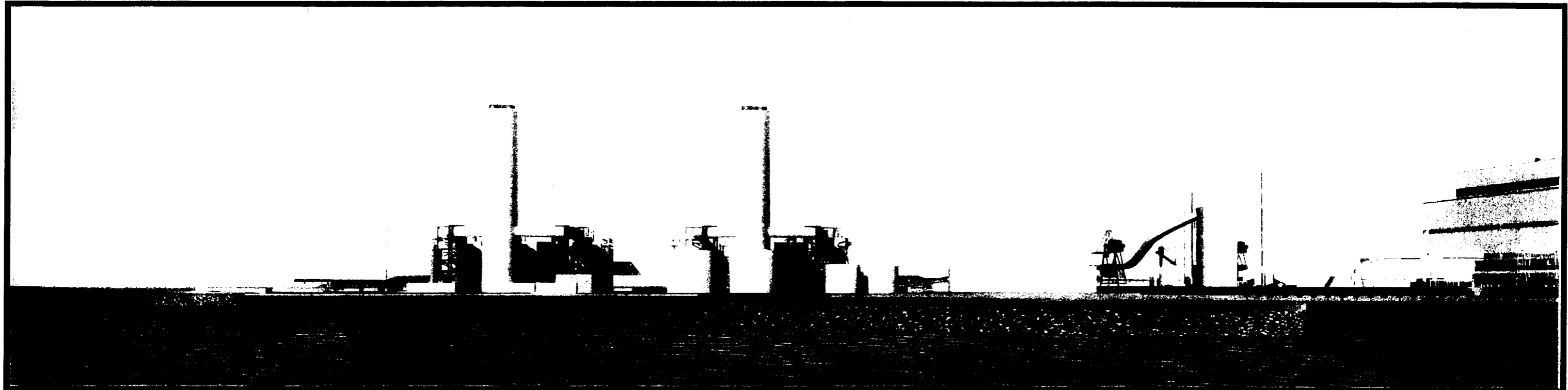


Alternative scheme 1

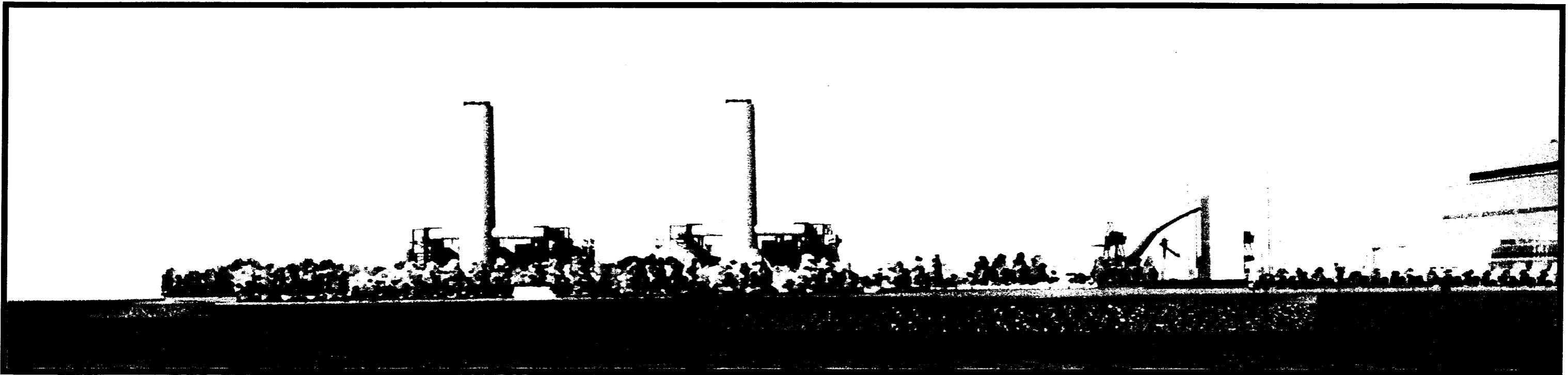


Alternative scheme 3

FIGURE 14 - CONCEPTS FOR MITIGATION MEASURES-MASSING OF BUILDINGS AND USE OF COLOUR-VIEW FROM SOUTH WEST

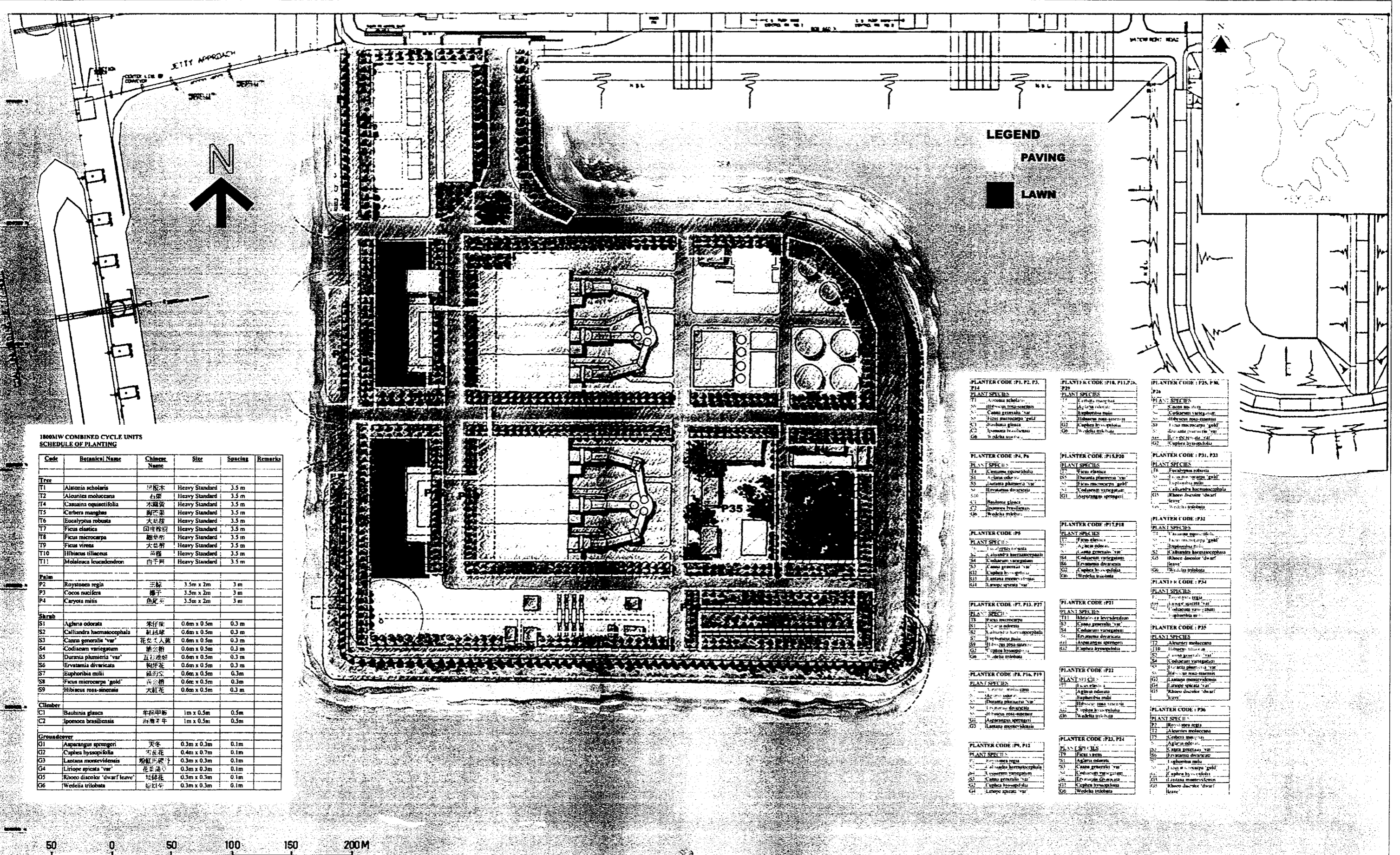


15.1 EXISTING VIEW



15.2 FUTURE VIEW

FIGURE 15 - CONCEPTS FOR MITIGATION MEASURES-LANDSCAPING-VIEW FROM EAST



1800MW COMBINED CYCLE UNITS  
SCHEDULE OF PLANTING

Code	Botanical Name	Chinese Name	Size	Species	Remarks
<b>Tree</b>					
T1	<i>Alstonia scholaris</i>	豆腐木	Heavy Standard	3.5 m	
T2	<i>Alcurites moluccana</i>	石栗	Heavy Standard	3.5 m	
T4	<i>Casuarina equisetifolia</i>	木麻黄	Heavy Standard	3.5 m	
T5	<i>Cerbera manghas</i>	海芒果	Heavy Standard	3.5 m	
T6	<i>Eucalyptus robusta</i>	大桉树	Heavy Standard	3.5 m	
T7	<i>Ficus elastica</i>	印度榕	Heavy Standard	3.5 m	
T8	<i>Ficus microcarpa</i>	细叶榕	Heavy Standard	3.5 m	
T9	<i>Ficus virens</i>	大叶榕	Heavy Standard	3.5 m	
T10	<i>Hibiscus tiliaceus</i>	芙蓉	Heavy Standard	3.5 m	
T11	<i>Moluccana leucodendron</i>	白千层	Heavy Standard	3.5 m	
<b>Palm</b>					
P2	<i>Roystonea regia</i>	三桠	3.5m x 2m	3 m	
P3	<i>Coccothrinax</i>	椰子	3.5m x 2m	3 m	
P4	<i>Caryota mitis</i>	鱼尾葵	3.5m x 2m	3 m	
<b>Shrub</b>					
S1	<i>Agave odorata</i>	朱仔菜	0.6m x 0.5m	0.3 m	
S2	<i>Calliandra haematocephala</i>	刺桐球	0.6m x 0.5m	0.3 m	
S3	<i>Cassia generalis</i> 'var'	花黄木麻黄	0.6m x 0.5m	0.3 m	
S4	<i>Codiaeum variegatum</i>	锦葵科	0.6m x 0.5m	0.3 m	
S5	<i>Duranta plumieri</i> 'var'	五枝珊瑚	0.6m x 0.5m	0.3 m	
S6	<i>Ervatania divaricata</i>	狗牙花	0.6m x 0.5m	0.3 m	
S7	<i>Euphorbia milii</i>	瓶刷子	0.6m x 0.5m	0.3 m	
S8	<i>Ficus microcarpa</i> 'gold'	黄金榕	0.6m x 0.5m	0.3 m	
S9	<i>Hibiscus rosa-sinensis</i>	大红花	0.6m x 0.5m	0.3 m	
<b>Climber</b>					
C1	<i>Bauhinia glauca</i>	羊蹄甲树	1m x 0.5m	0.5m	
C2	<i>Ipomoea brasiliensis</i>	海桐木	1m x 0.5m	0.5m	
<b>Groundcover</b>					
G1	<i>Asparagus sprengeri</i>	天冬	0.3m x 0.3m	0.1m	
G2	<i>Cupressus lusitanica</i>	石松花	0.4m x 0.7m	0.1m	
G3	<i>Lantana montevidensis</i>	粉红花	0.3m x 0.3m	0.1m	
G4	<i>Liriodendron chinensis</i>	花菜油	0.3m x 0.3m	0.1m	
G5	<i>Rhoeo discolor</i> 'dwarf leaf'	矮花	0.3m x 0.3m	0.1m	
G6	<i>Wedelia trilobata</i>	红草	0.3m x 0.3m	0.1m	



FIGURE 16 - LANDSCAPE MASTER PLAN



FIGURE 17 - PERSPECTIVE OF THE SITE FROM EAST WITH LANDSCAPING

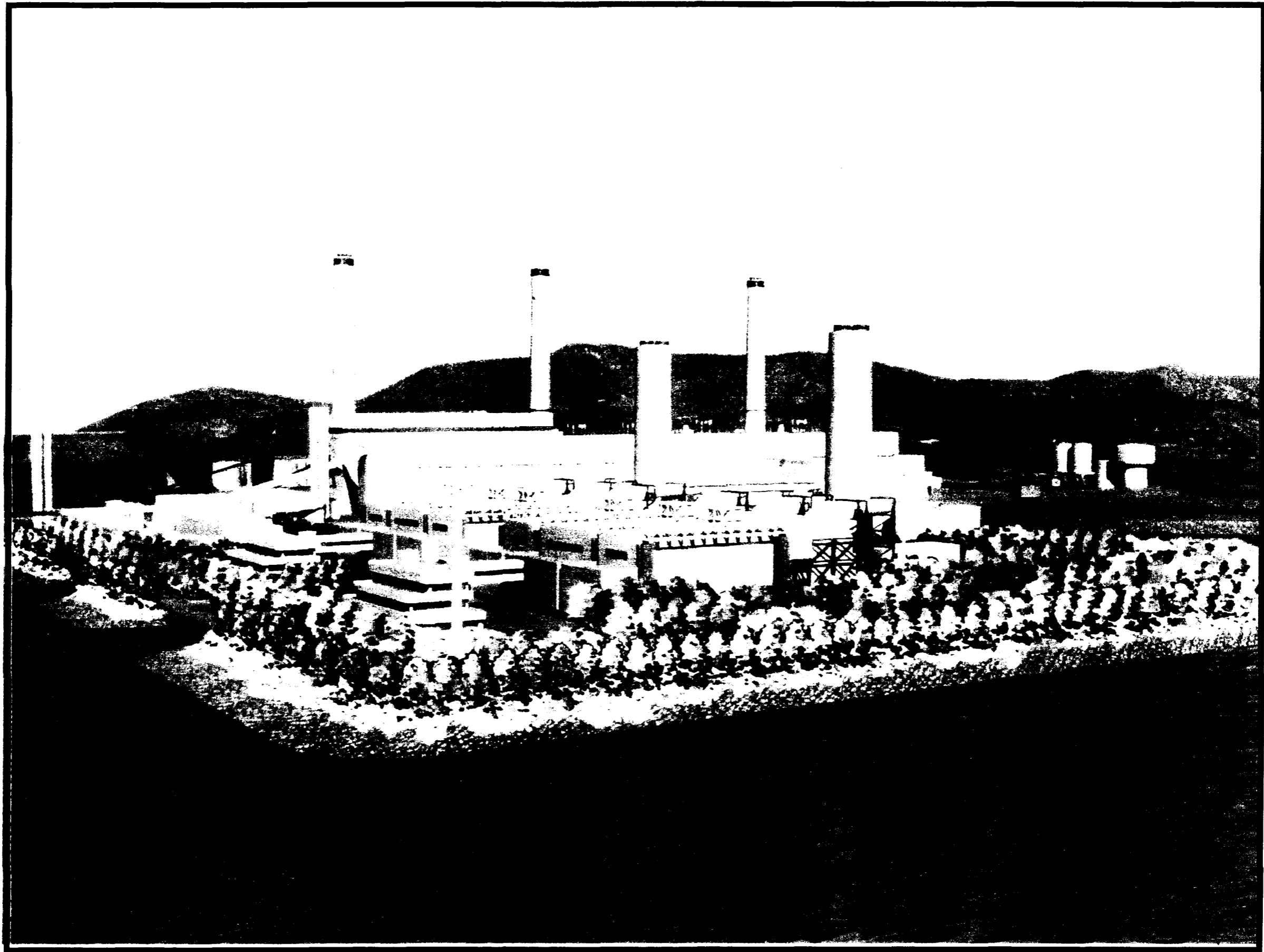


FIGURE 18 - PERSPECTIVE OF THE SITE FROM SOUTHWEST WITH LANDSCAPING



19.1 EXISTING VIEW



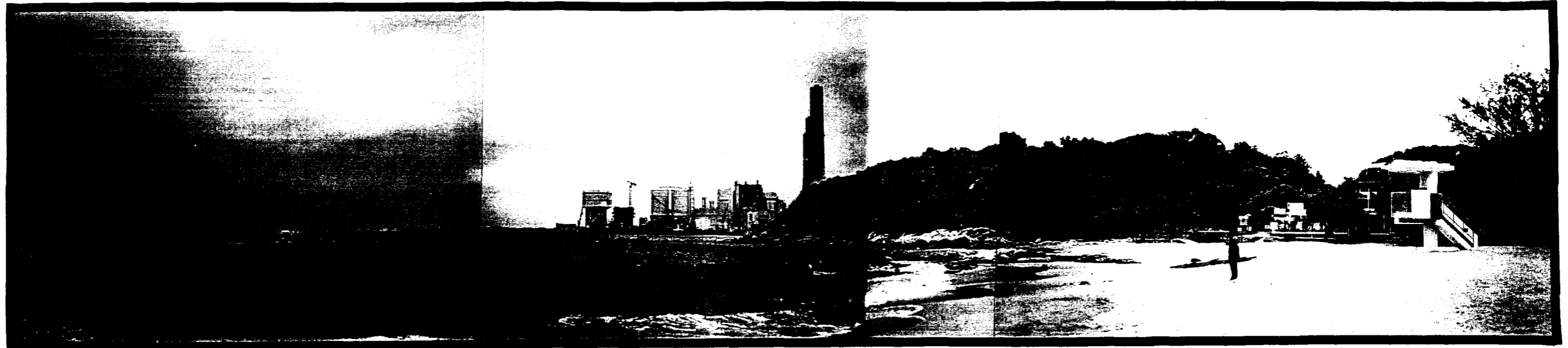
19.2 FUTURE VIEW

FIGURE 19 --VIEW FROM TAI WAN TO BEACH

Environmental  
Resources  
Management







20.1 EXISTING VIEW

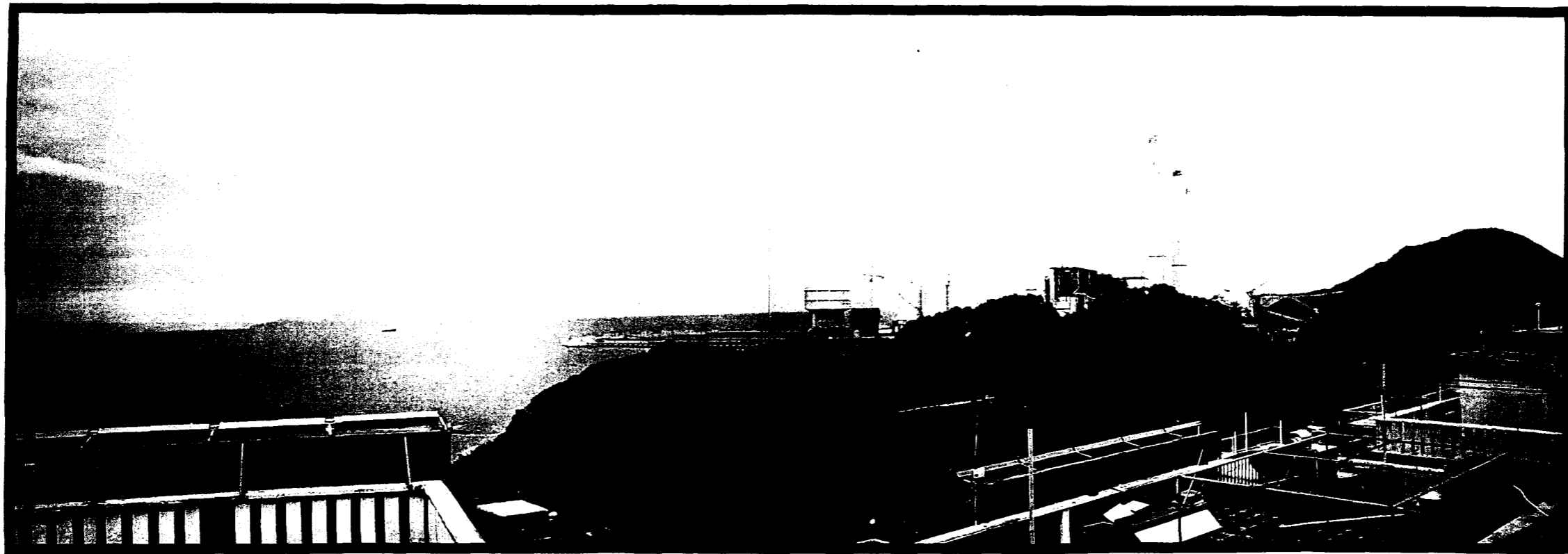


20.2 FUTURE VIEW

FIGURE 20-- VIEW FROM HUNG SHING YE BEACH

Environmental  
Resources  
Management





21.1 EXISTING VIEW

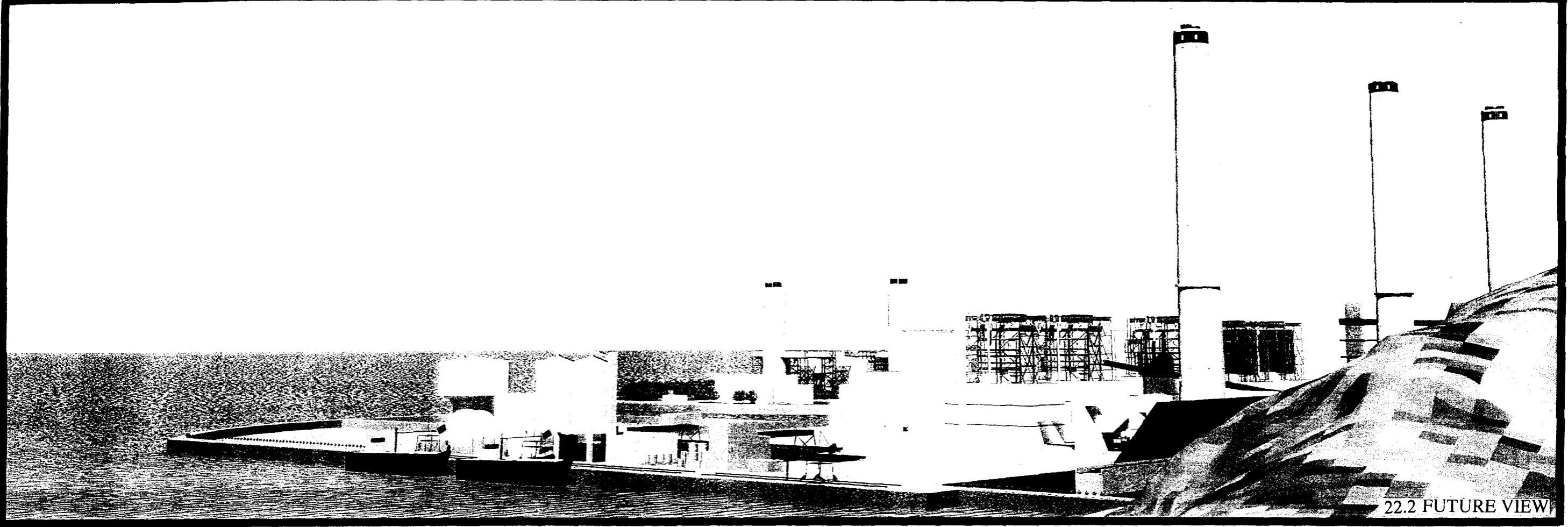


21.2 FUTURE VIEW

FIGURE 21-- VIEW FROM HUNG SHING YE VILLAGE AT 40 MPD



22.1 EXISTING VIEW

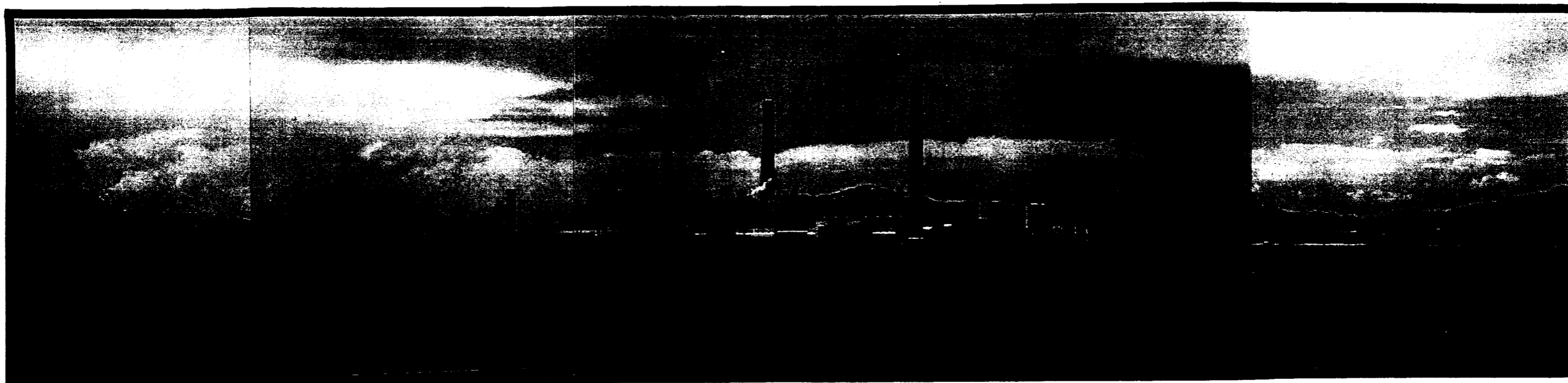


22.2 FUTURE VIEW

FIGURE 22-- VIEW FROM TAI LING TSUEN AT 60 MPD

Environmental  
Resources  
Management





23.1 EXISTING VIEW

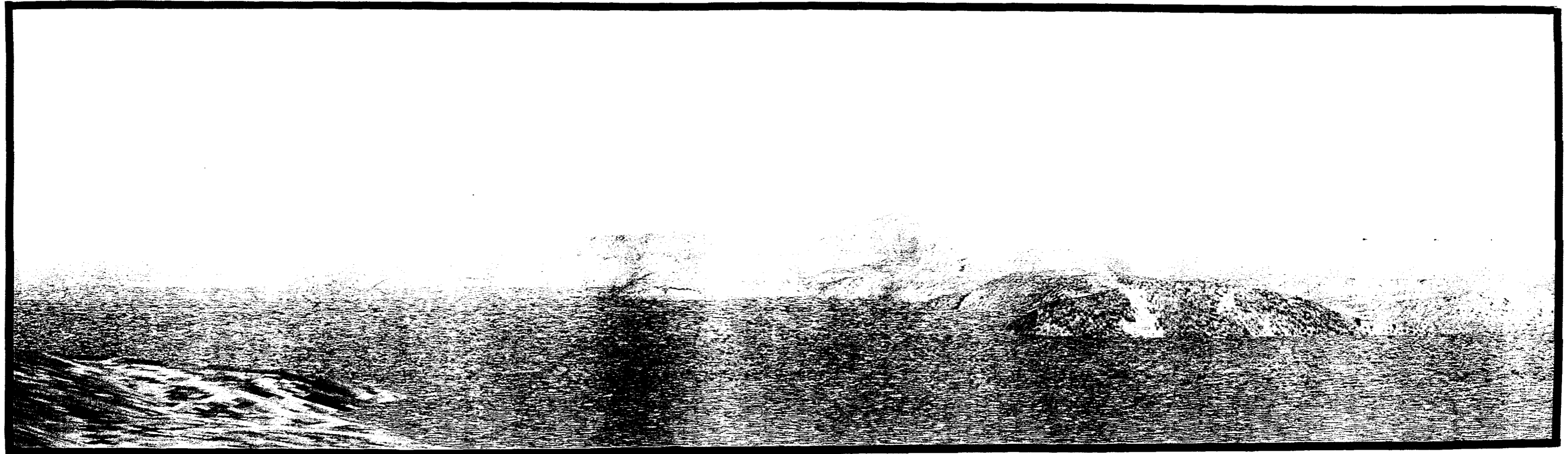


23.2 FUTURE VIEW

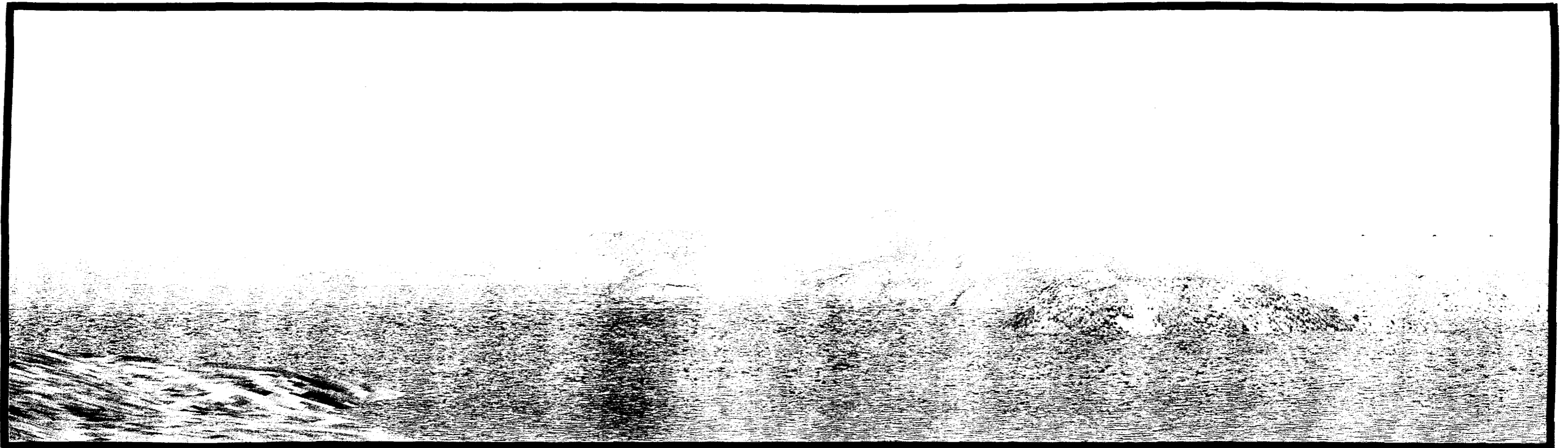
FIGURE 23--VIEW FROM LO SO SHING BEACH

Environmental  
Resources  
Management





24.1 - EXISTING VIEW



24.2 FUTURE VIEW

FIGURE 24- VIEW FROM MOUNT DAVIS AT 250 MPD

Environmental  
Resources  
Management



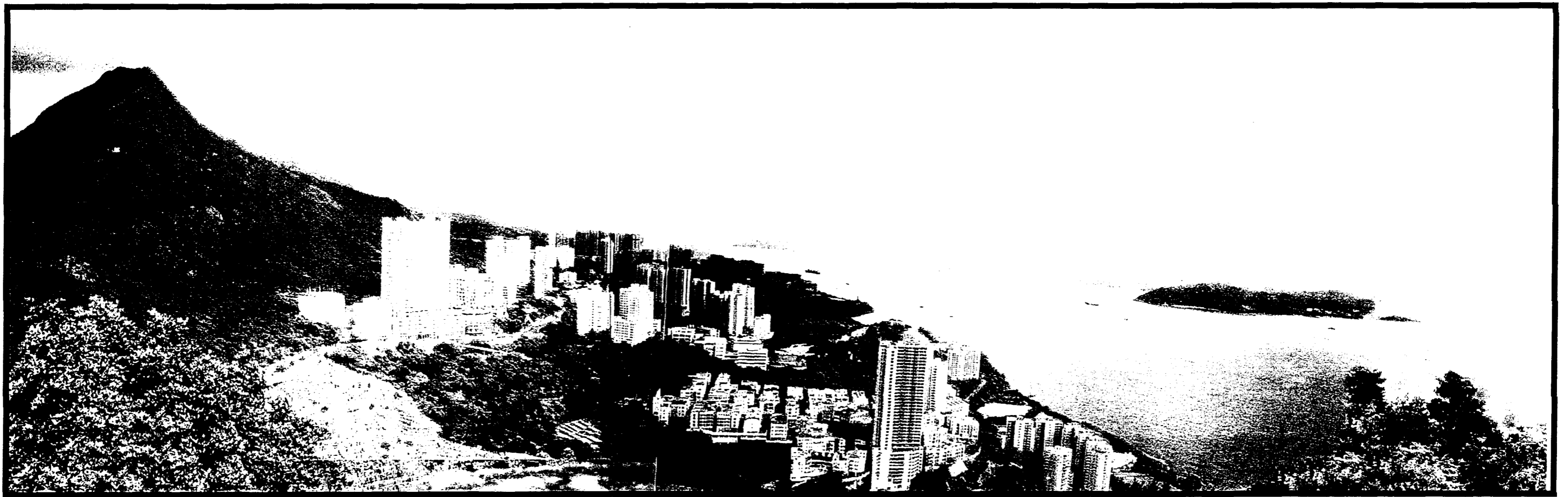
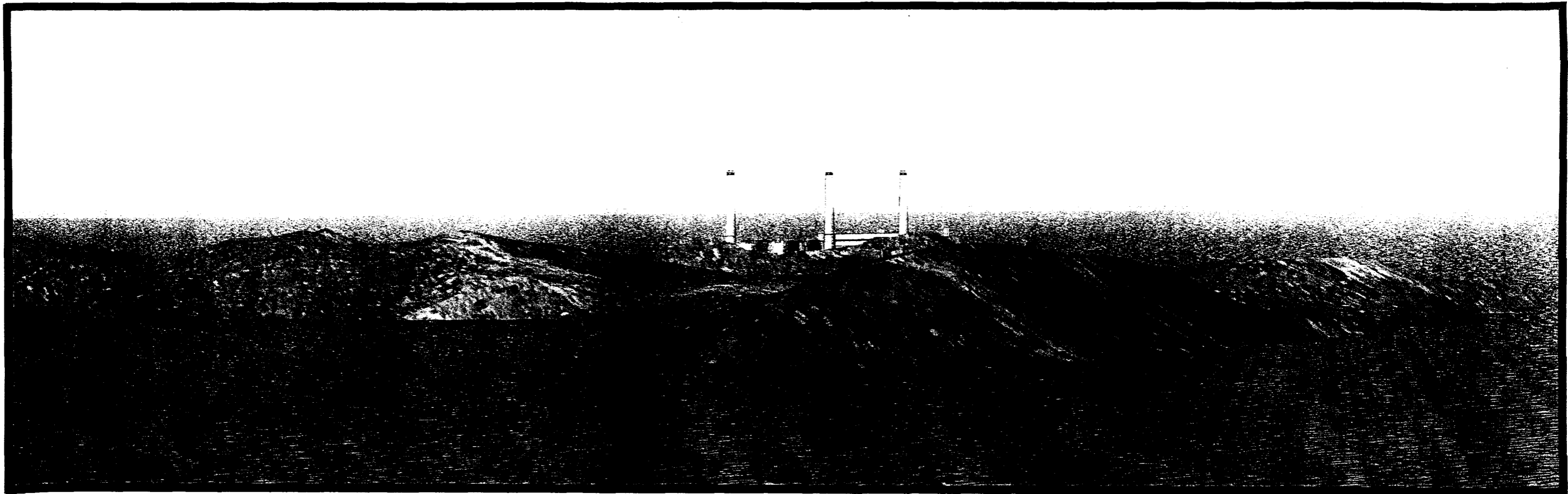


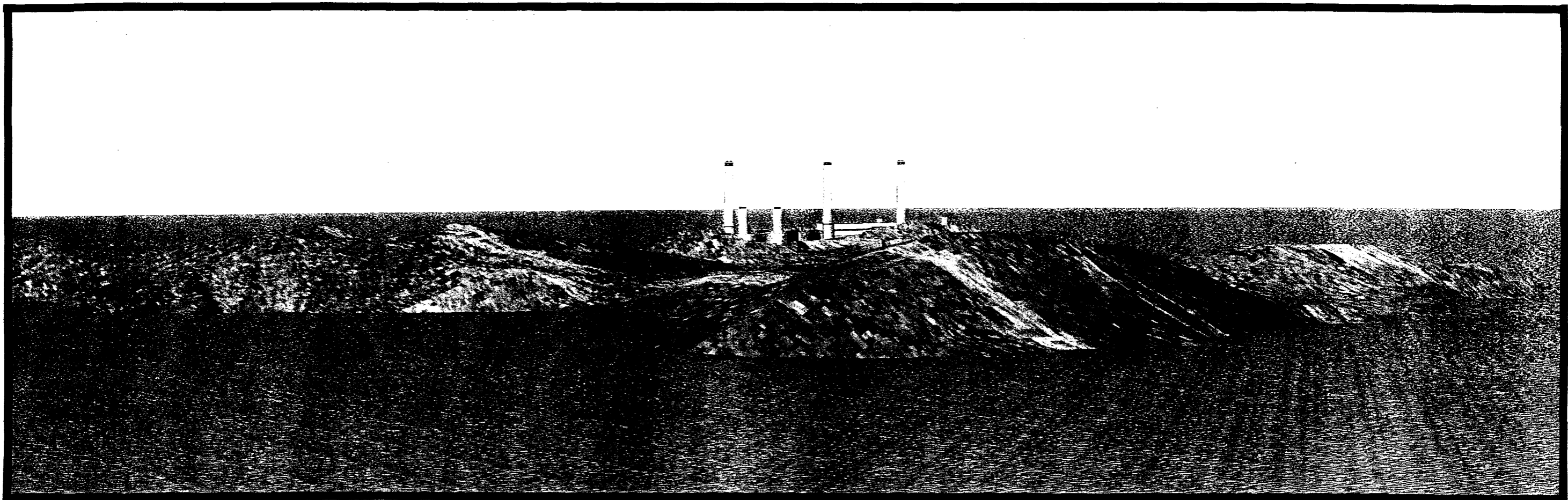
FIGURE 25 - PHOTOGRAPH TAKEN FROM MOUNT DAVIS AT 250 MPD

Environmental  
Resources  
Management





26.1 EXISTING VIEW

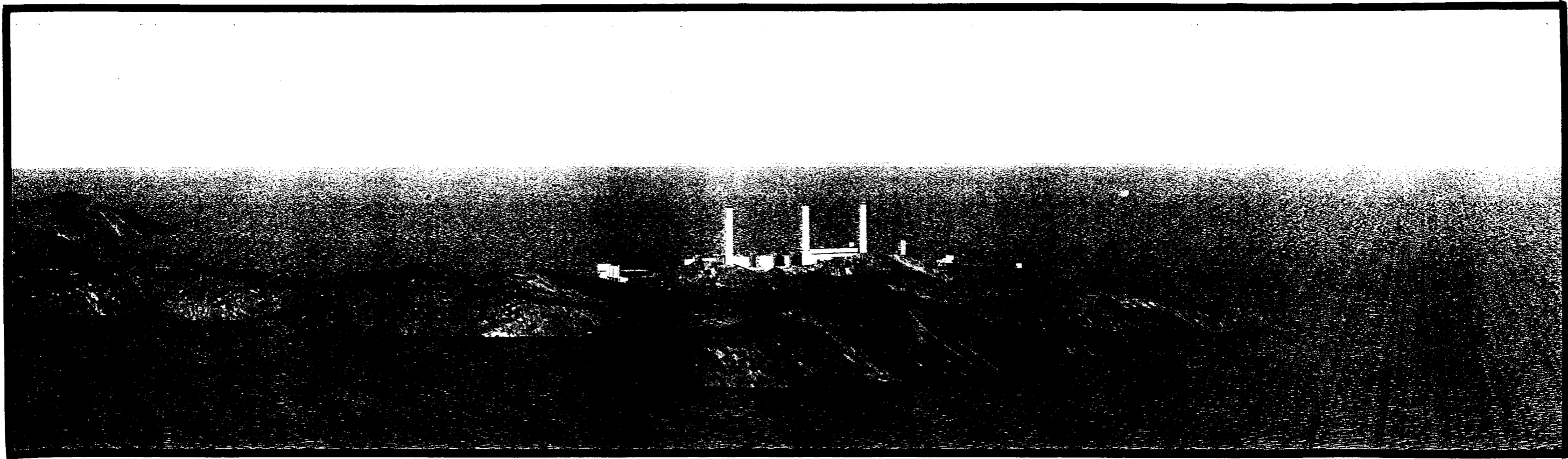


26.2 FUTURE VIEW

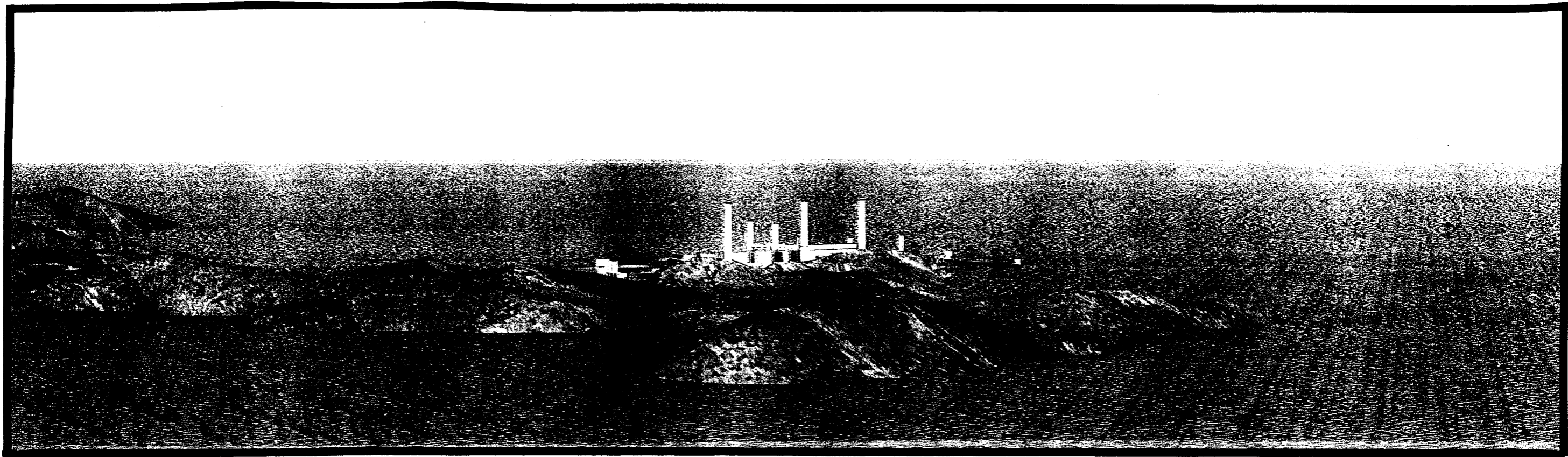
FIGURE 26-- VIEW FROM POK FU LAM GARDEN AT 200 MPD

Environmental  
Resources  
Management





27.1 EXISTING VIEW



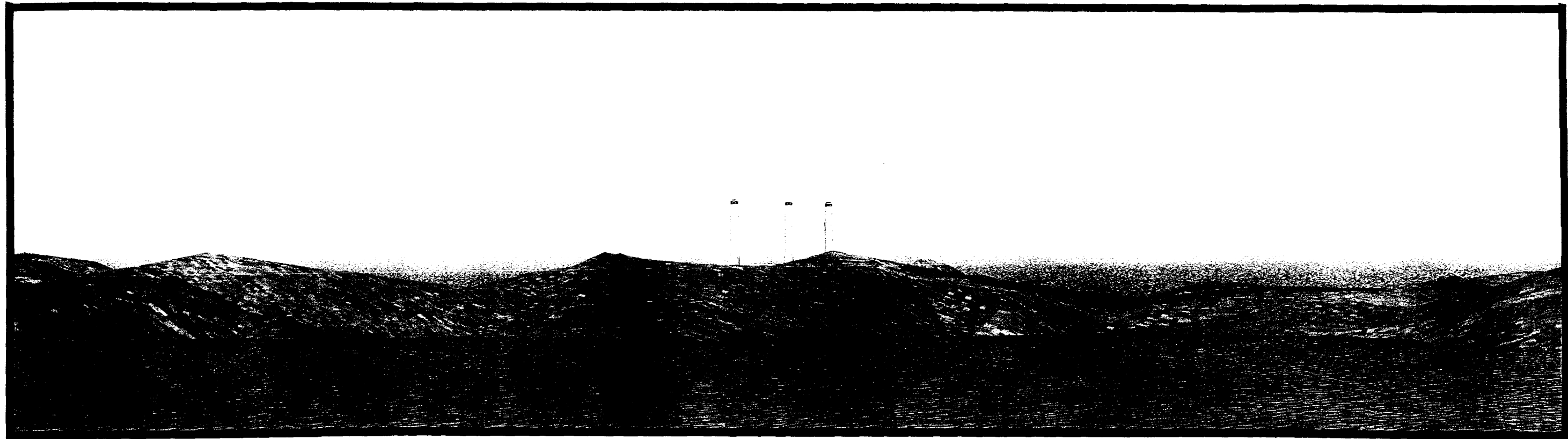
27.2 FUTURE VIEW

FIGURE 27-- VIEW FROM VICTORIA PEAK AT 520 MPD

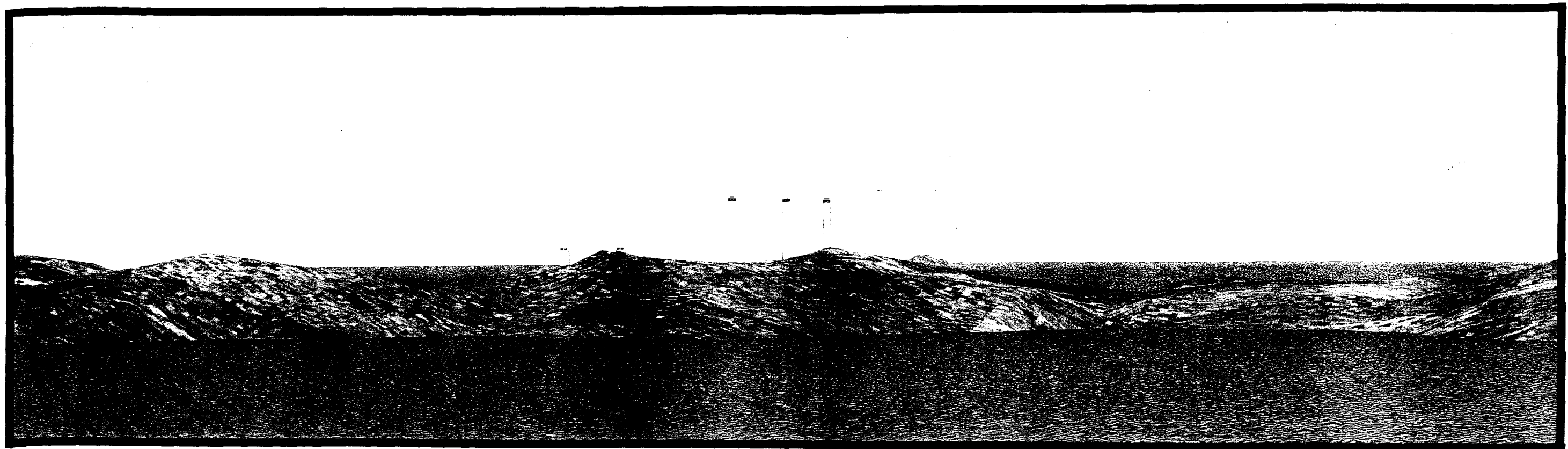
Environmental  
Resources  
Management







28.1 EXISTING VIEW

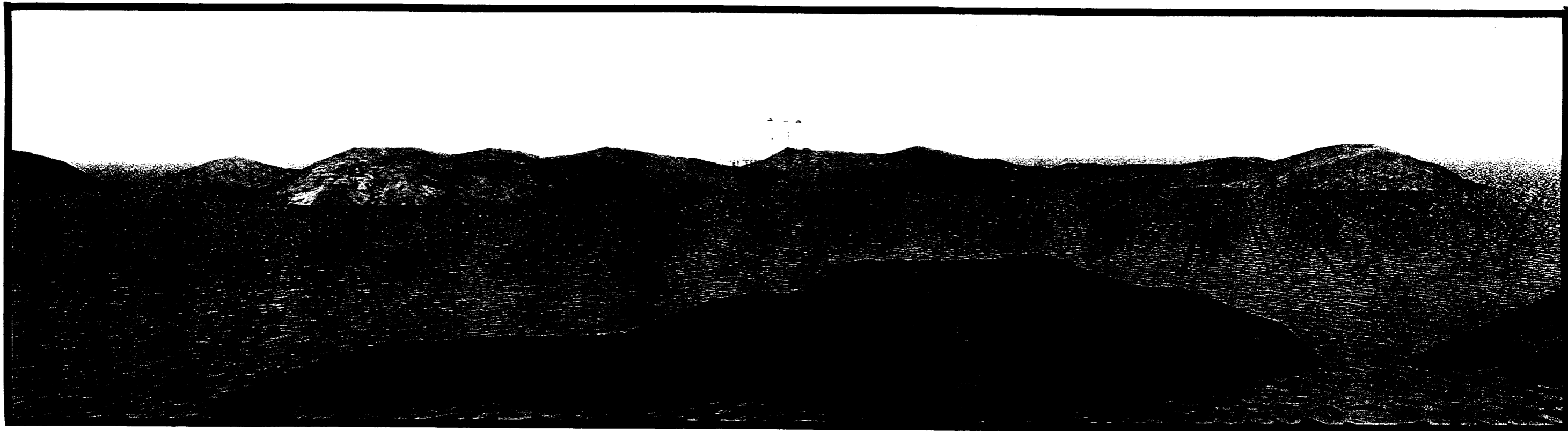


28.2 FUTURE VIEW

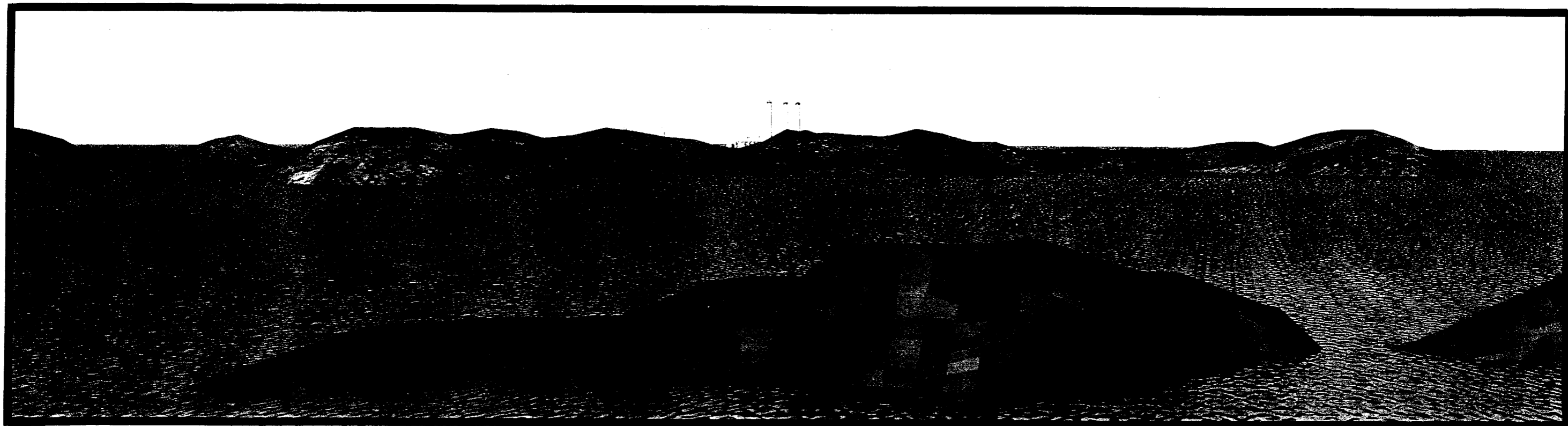
FIGURE 28-- VIEW FROM LEI TUNG ESTATE AT 40 MPD

Environmental  
Resources  
Management



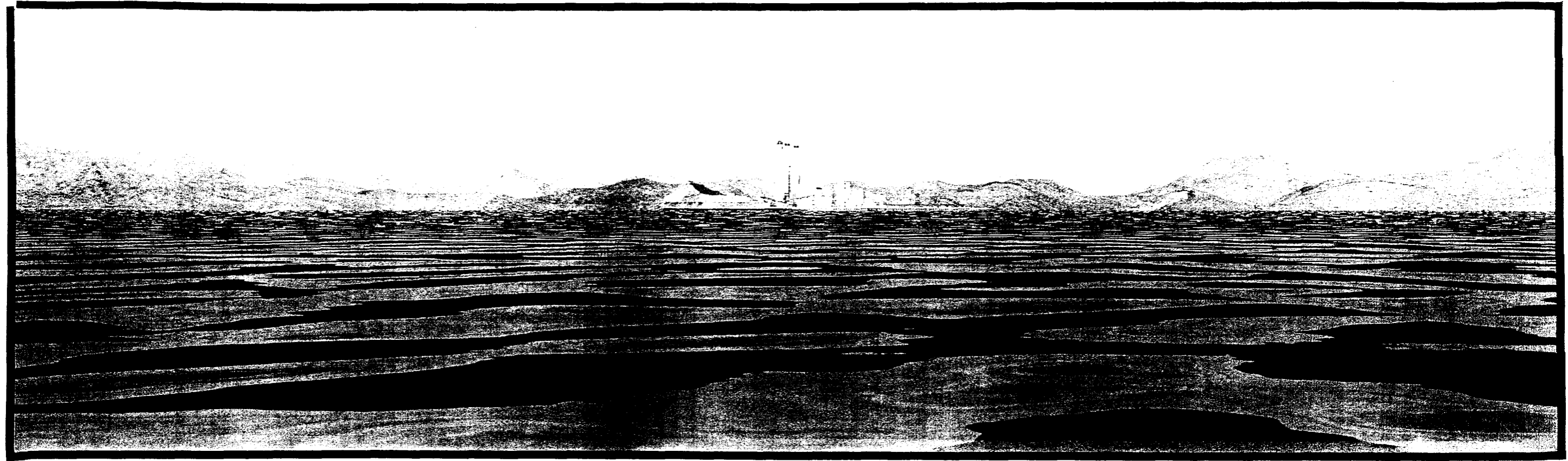


29.1 EXISTING VIEW

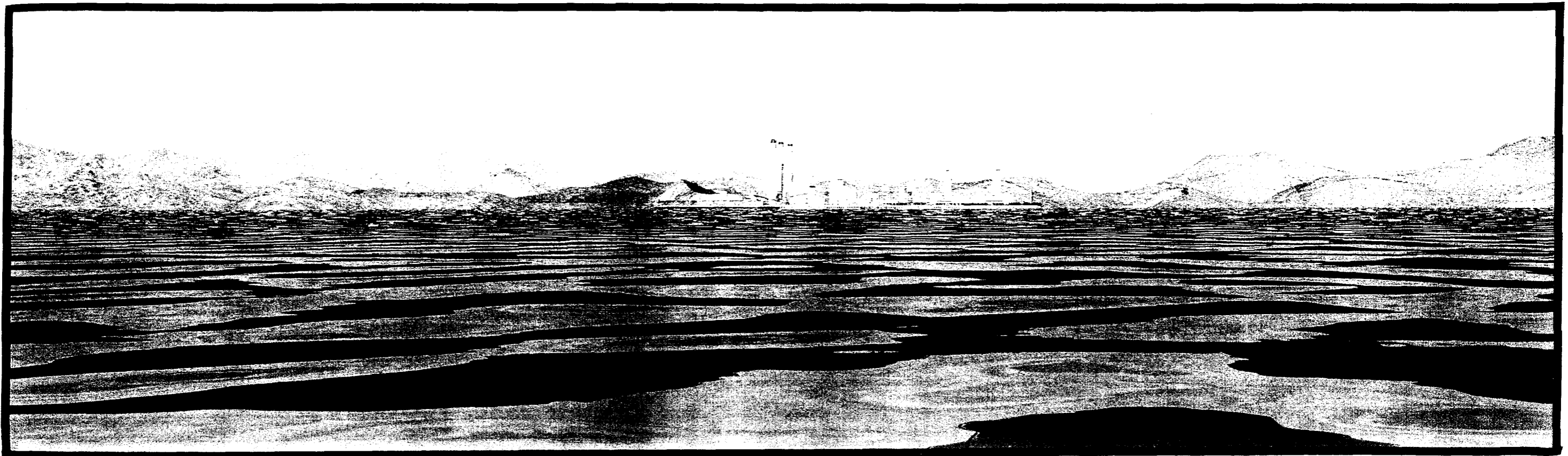


29.2 FUTURE VIEW

FIGURE 29 - VIEW FROM OCEAN PARK AT 120 MPD



30.1 EXISTING VIEW

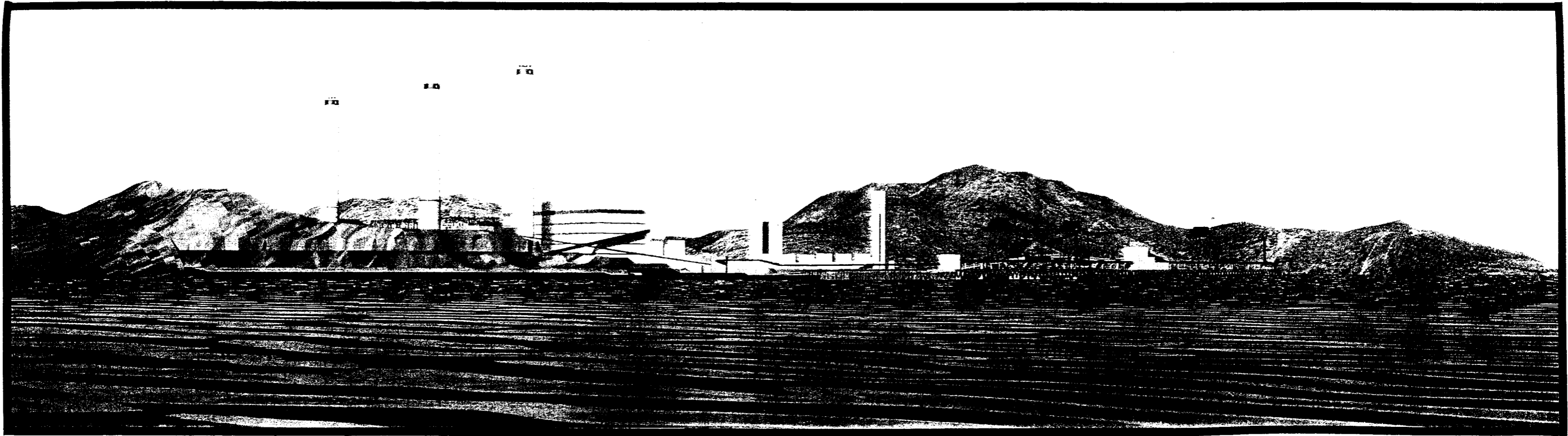


30.2 FUTURE VIEW

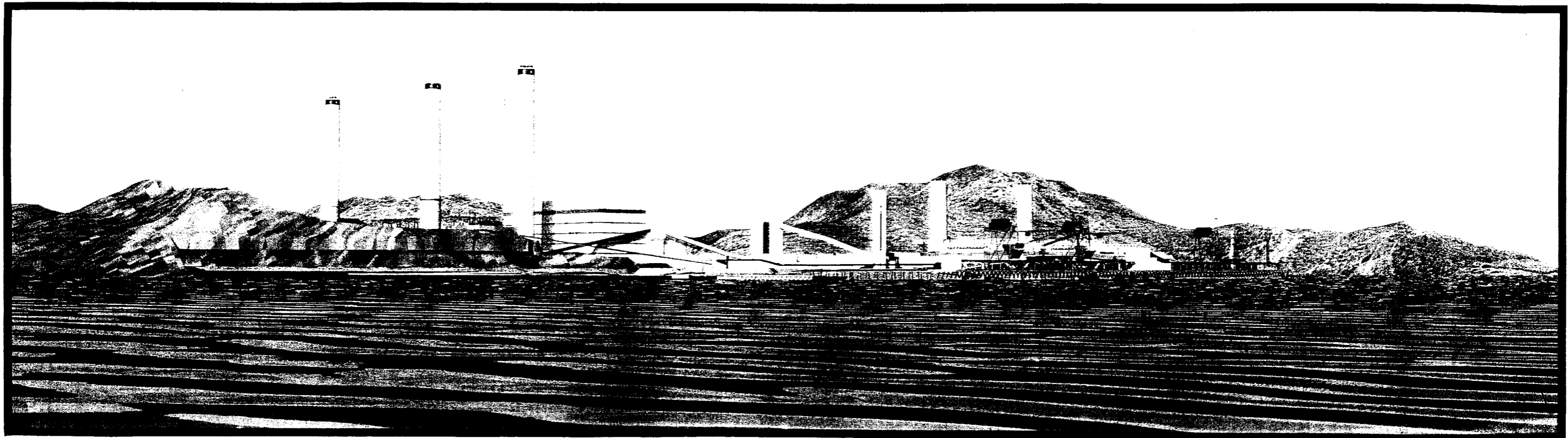
FIGURE 30- VIEW FROM CHEUNG CHAU AT SEA LEVEL

Environmental  
Resources  
Management





31.1 EXISTING VIEW

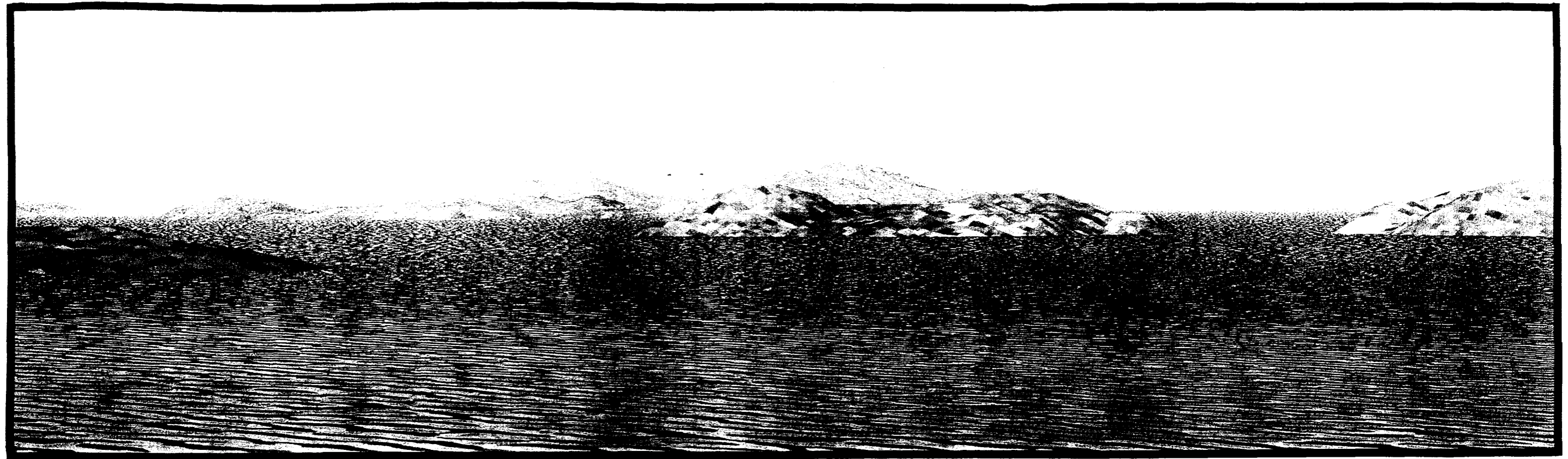


31.2 FUTURE VIEW

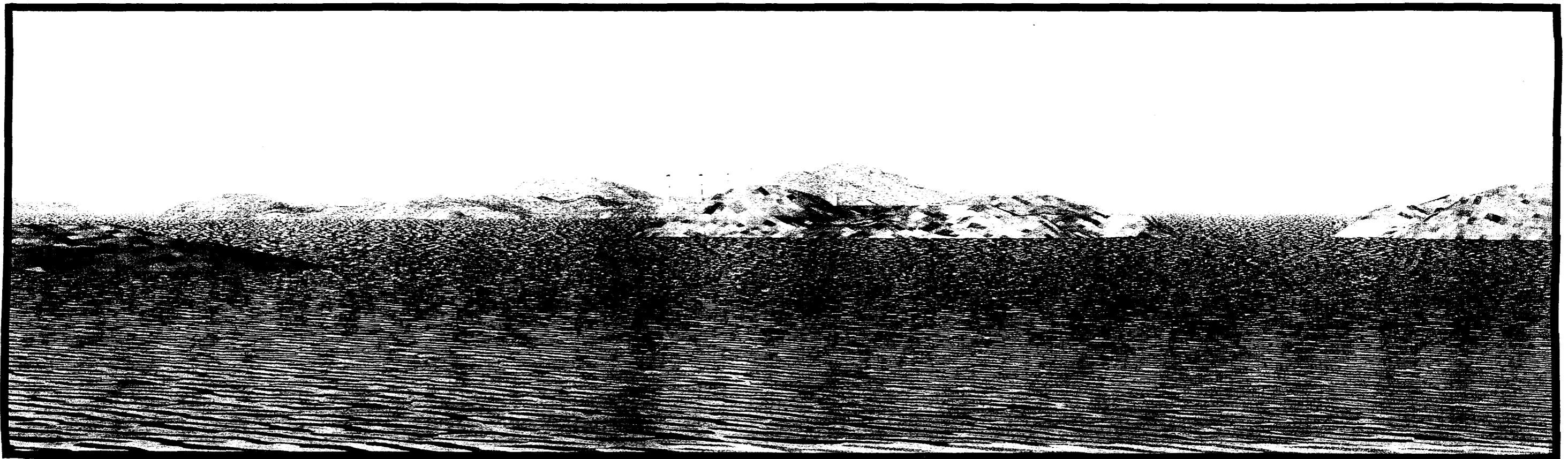
FIGURE 31- VIEW FROM WEST LAMMA CHANNEL AT SEA LEVEL

Environmental  
Resources  
Management





32.1 EXISTING VIEW

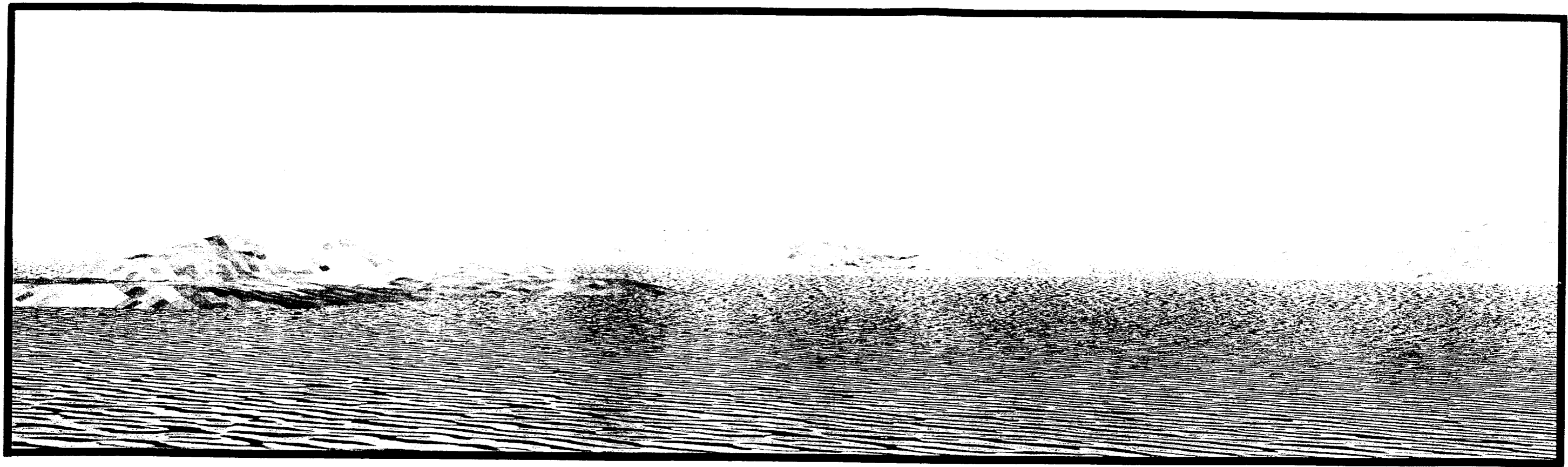


32.2 FUTURE VIEW

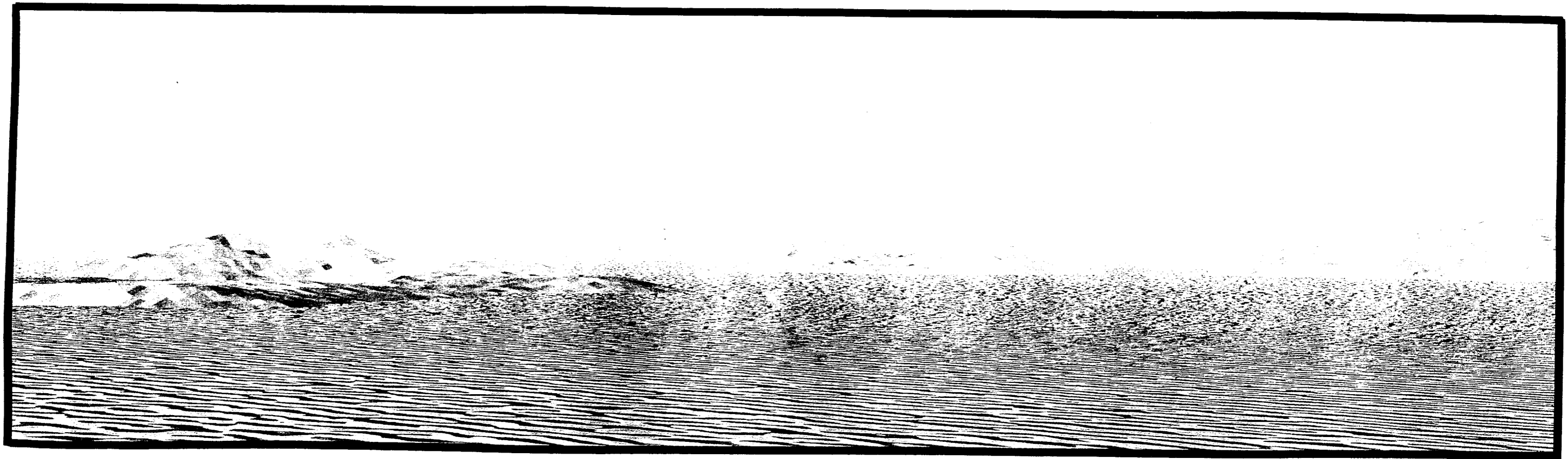
FIGURE 32- VIEW FROM DISCOVERY BAY AT 60 MPD -- LOCATION A

Environmental  
Resources  
Management





33.1 EXISTING VIEW



33.2 FUTURE VIEW

FIGURE 33- VIEW FROM DISCOVERY BAY AT 60 MPD -- LOCATION B

Environmental  
Resources  
Management



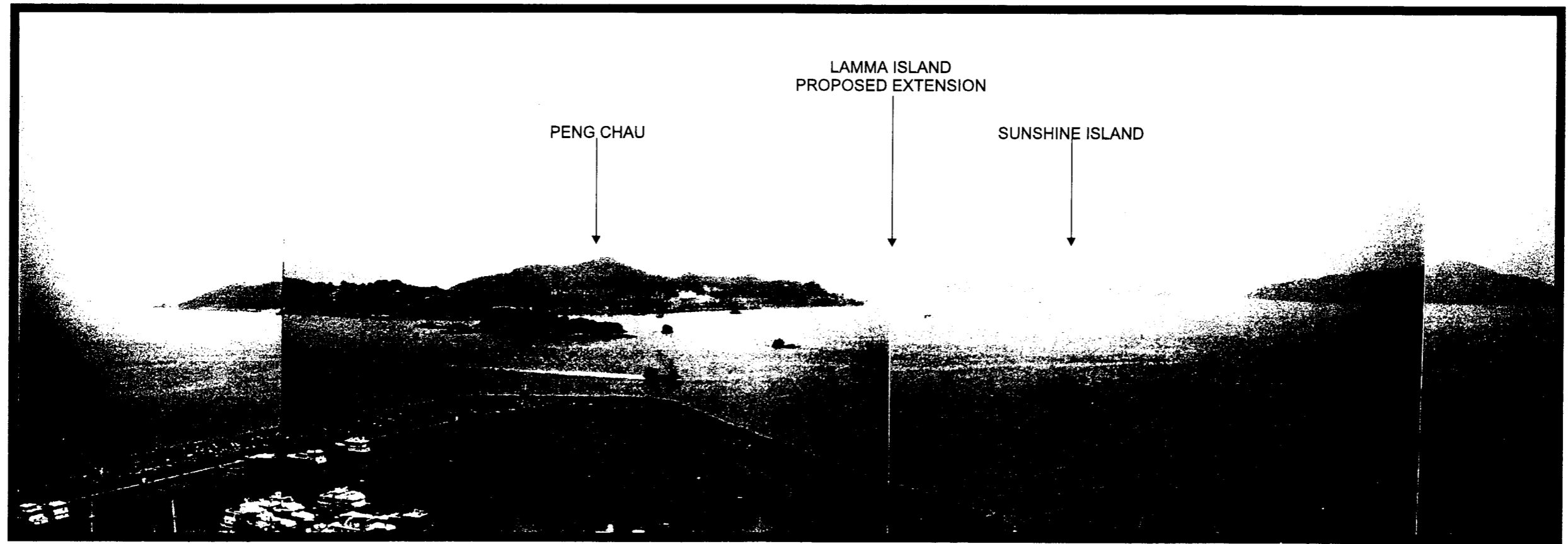


FIGURE 34- PHOTOGRAPH TAKEN FROM DISCOVERY BAY AT 60MPD - LOCATION B



35.1 EXISTING VIEW



35.2 FUTURE VIEW

FIGURE 35- VIEW FROM MUI WO (SILVERMINE BAY) AT SEA LEVEL

Environmental  
Resources  
Management



ERM



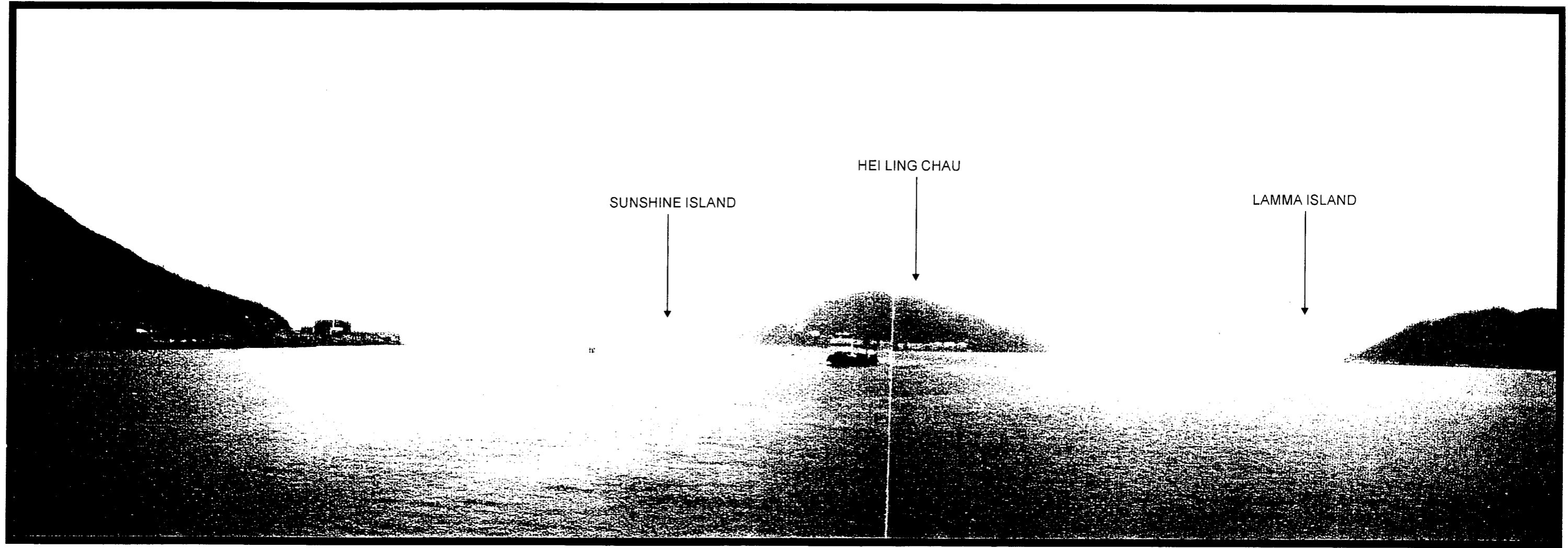
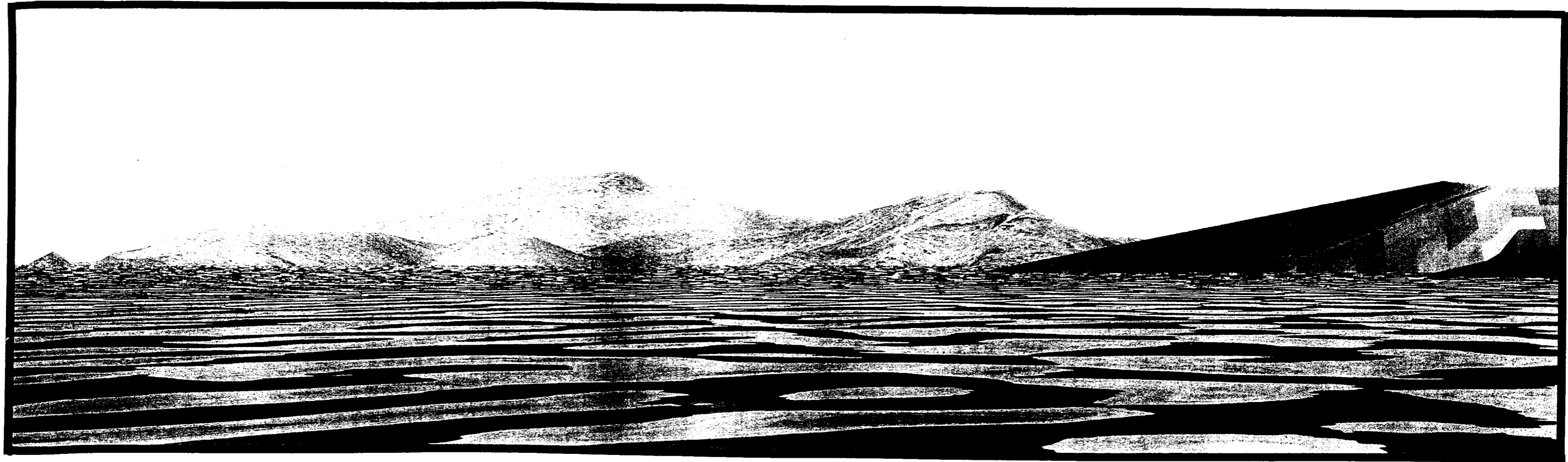


FIGURE 36 - PHOTOGRAPH TAKEN FROM MUI WO (SILVERMINE BAY) AT SEA LEVEL



37.1 EXISTING VIEW



37.2 FUTURE VIEW

FIGURE 37- VIEW FROM ST. STEPHEN'S BEACH, STANLEY

Environmental  
Resources  
Management



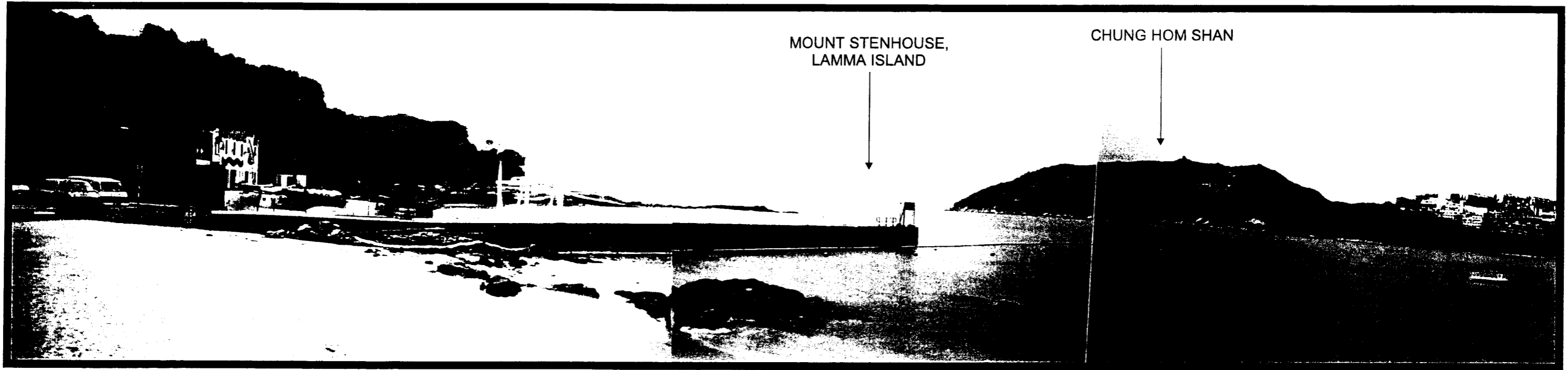


FIGURE 38 - PHOTOGRAPH TAKEN FROM ST. STEPHEN'S BEACH, STANLEY

**Annex C10-1**

**Landscape and Visual Impacts  
Figures**

KEY

- SUBMARINE CABLE
- UNDERGROUND CABLE
- POTENTIAL LANDING POINT

NOT TO SCALE

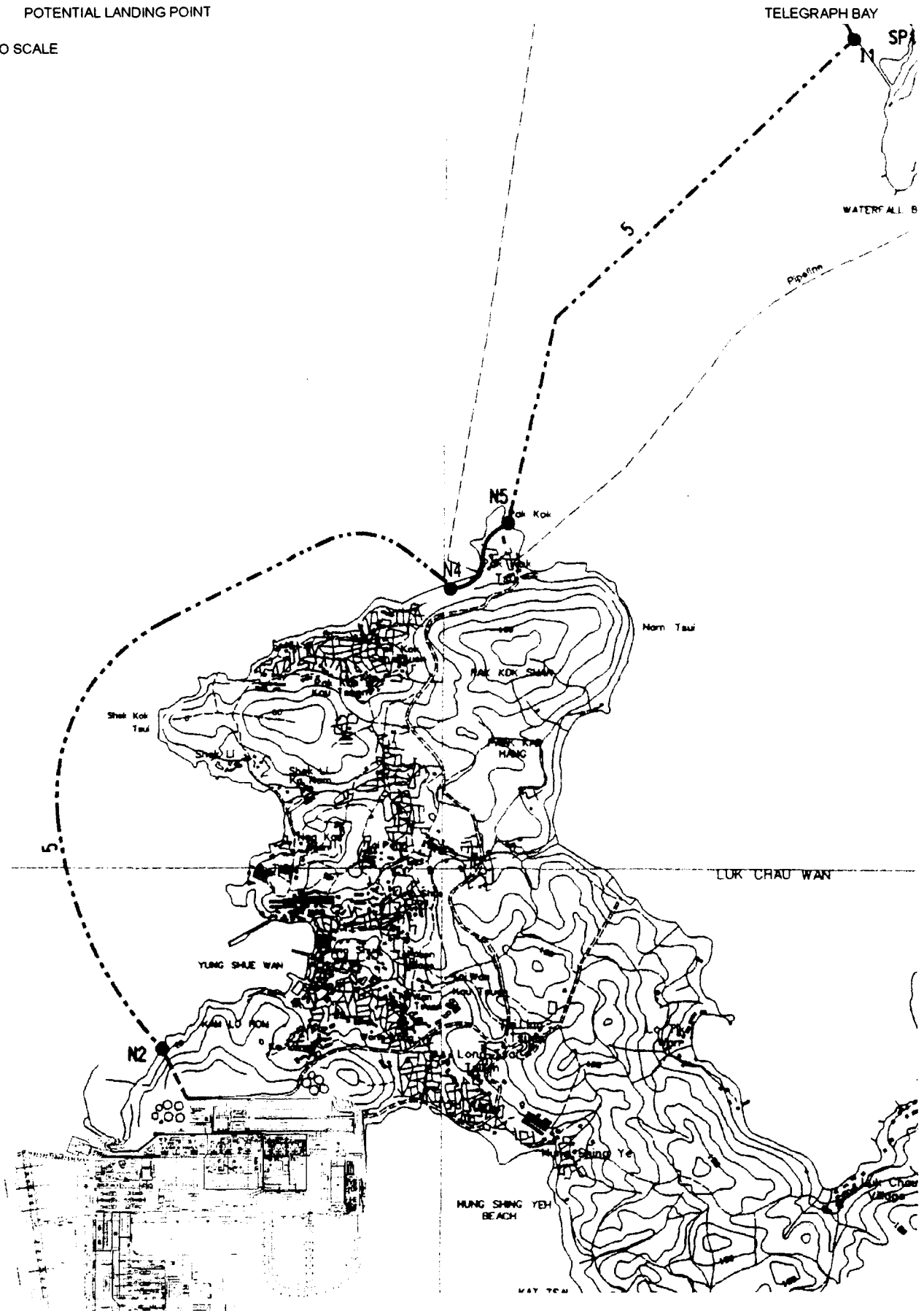
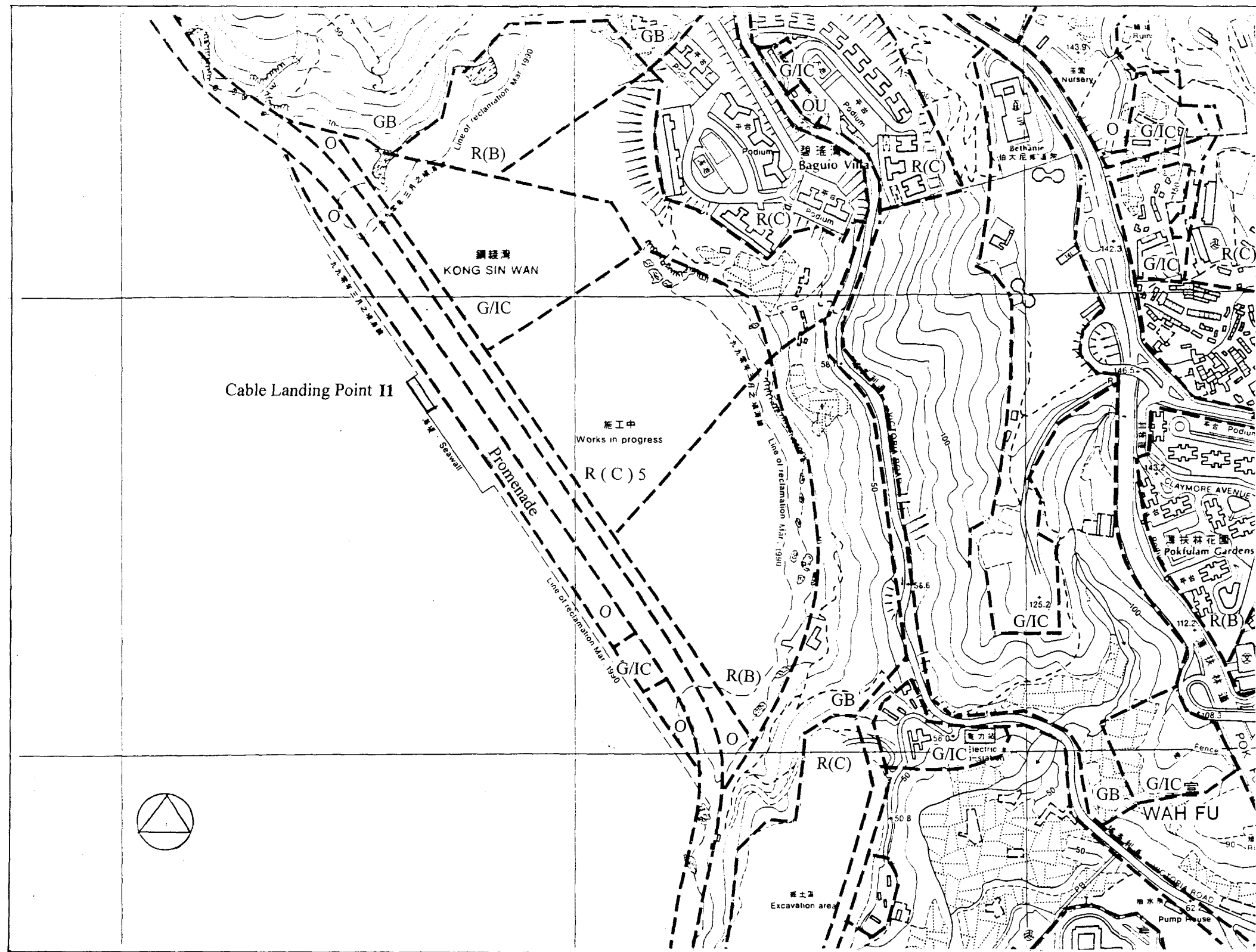


FIGURE 39

TRANSMISSION ROUTE OF EXTENSION

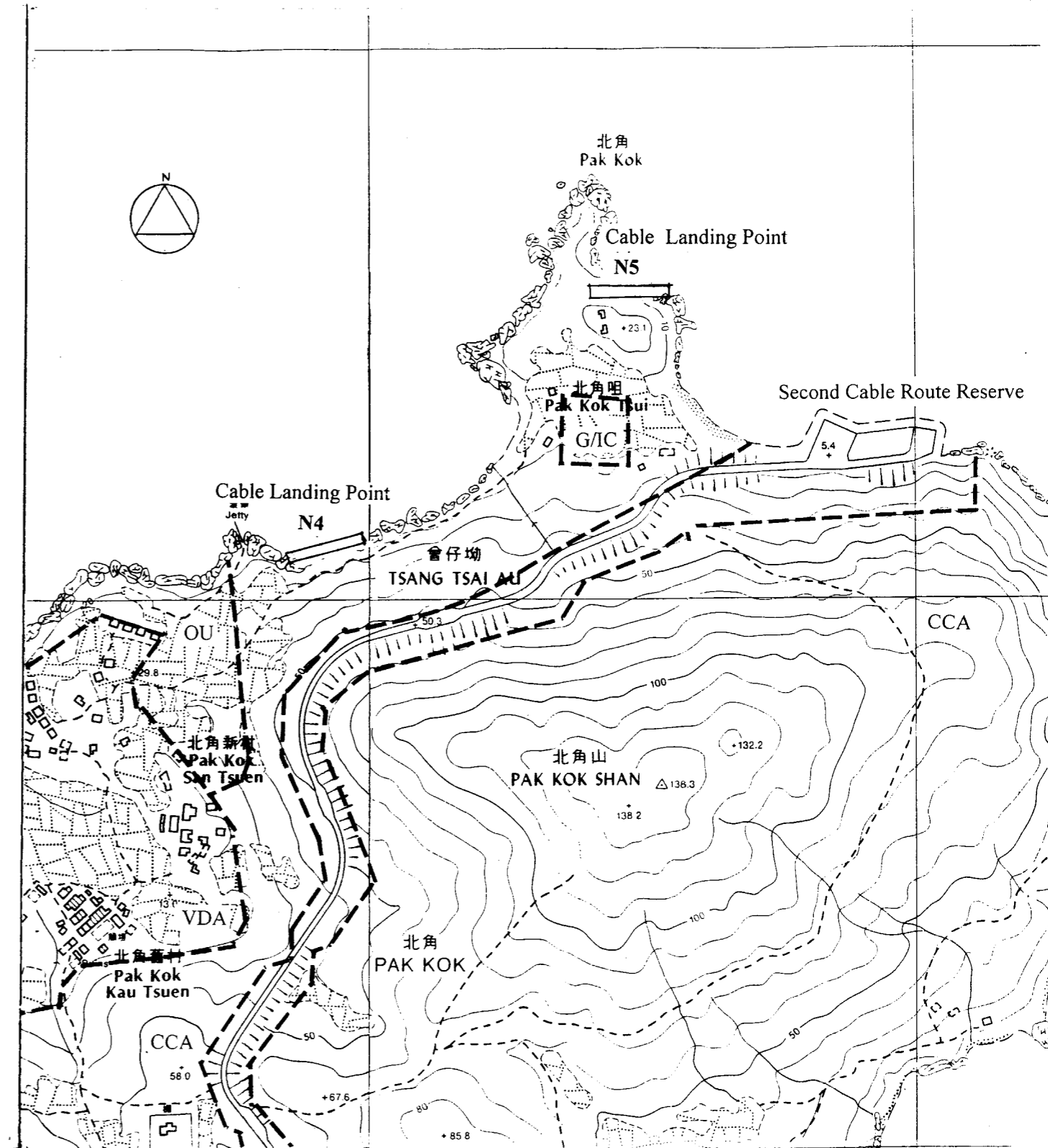
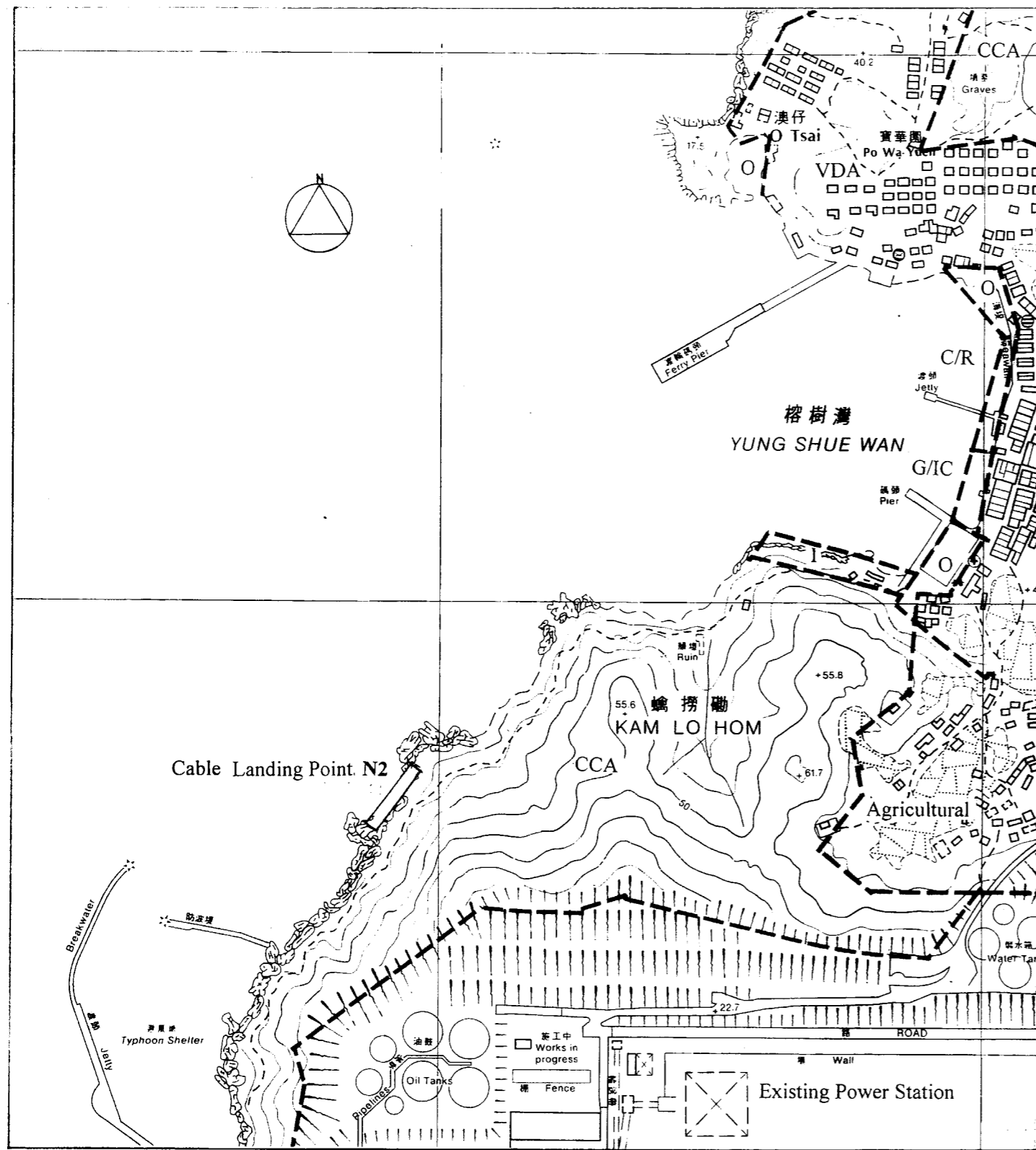
Environmental  
Resources  
Management





KEY :			
R(B)	Residential (Group B)	O	Open Space
R(C)	Residential (Group C)	GB	Green Belt
G/IC	Government Institution And Community	OU	Other Specified Uses

FIGURE 40 -LAND USE OF SURROUNDING AREA – CABLE LANDING POINT II, HONG KONG ISLAND



KEY:	O	Open Space
C/R	G/IC	Commercial / Residential Government Institution And Community
I	CCA	Industrial Countryside Conservation Area
VDA	OU	Village Development Area Other Specified Uses

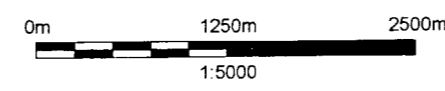
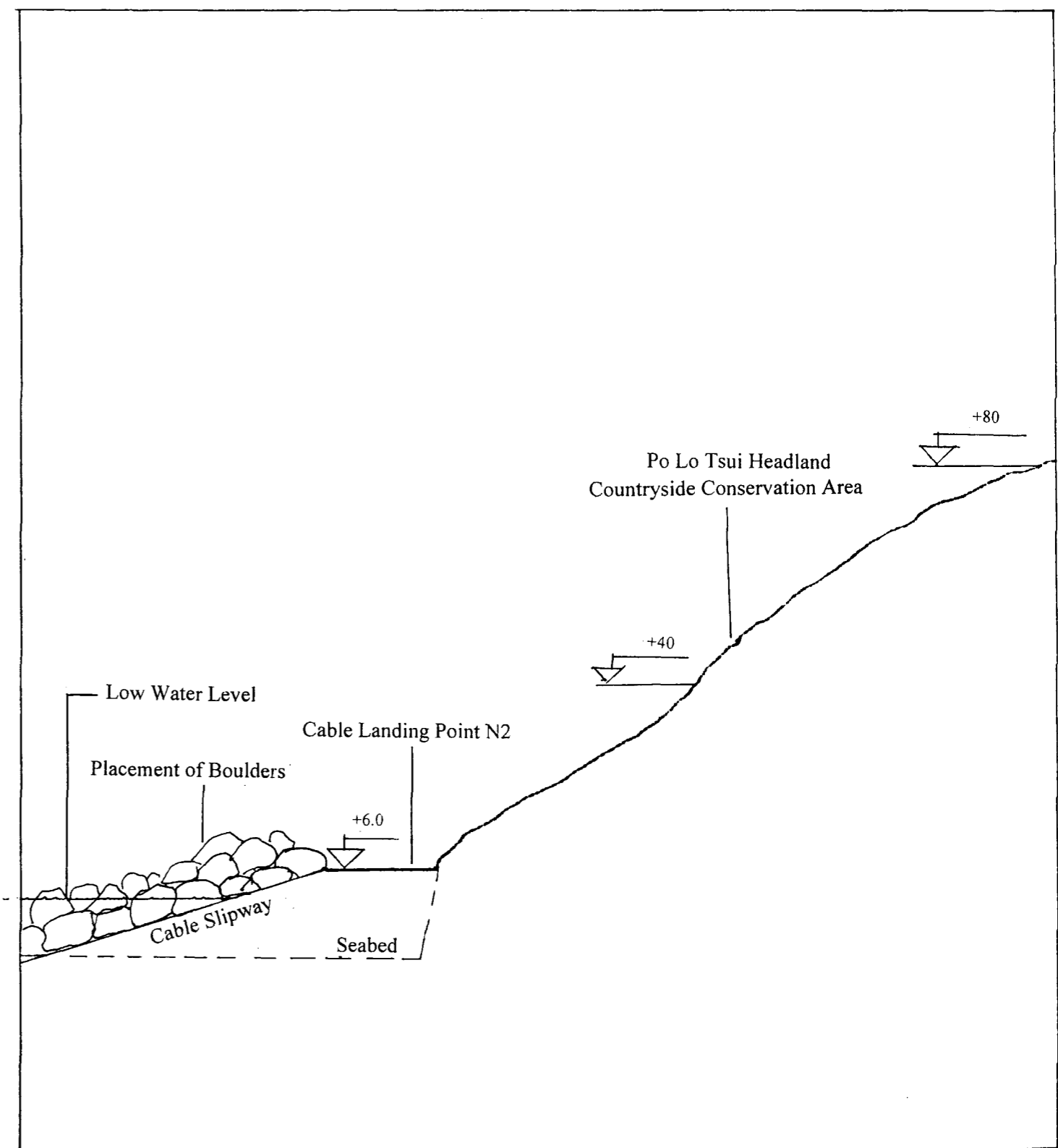
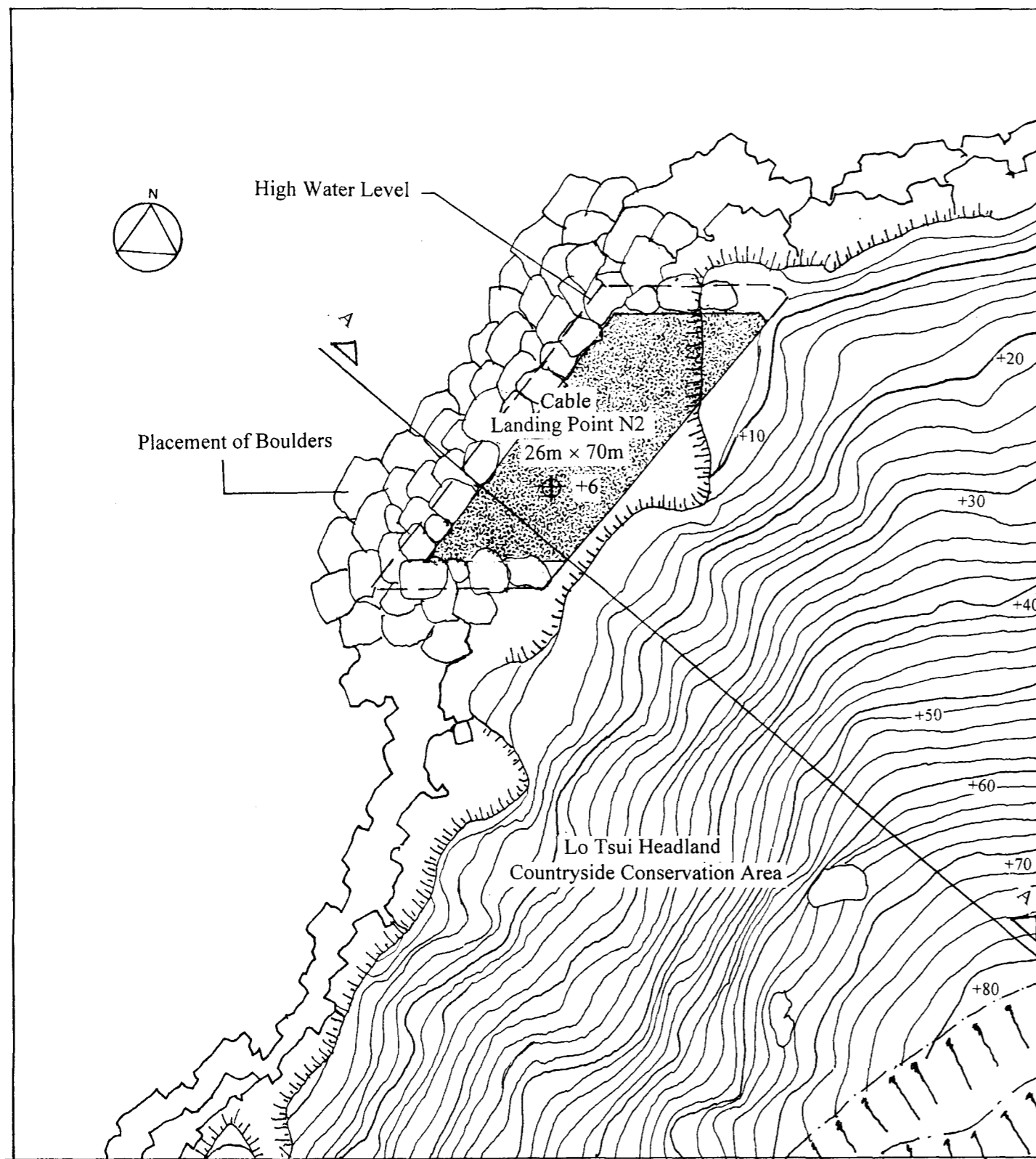


FIGURE 41--LAND USE OF SURROUNDING AREA - CABLE LANDING POINTS N2, N4 & N5 LAMMA ISLAND



SITE PLAN OF THE LANDING POINT N2

A-A SECTION THROUGH LANDING POINT N2

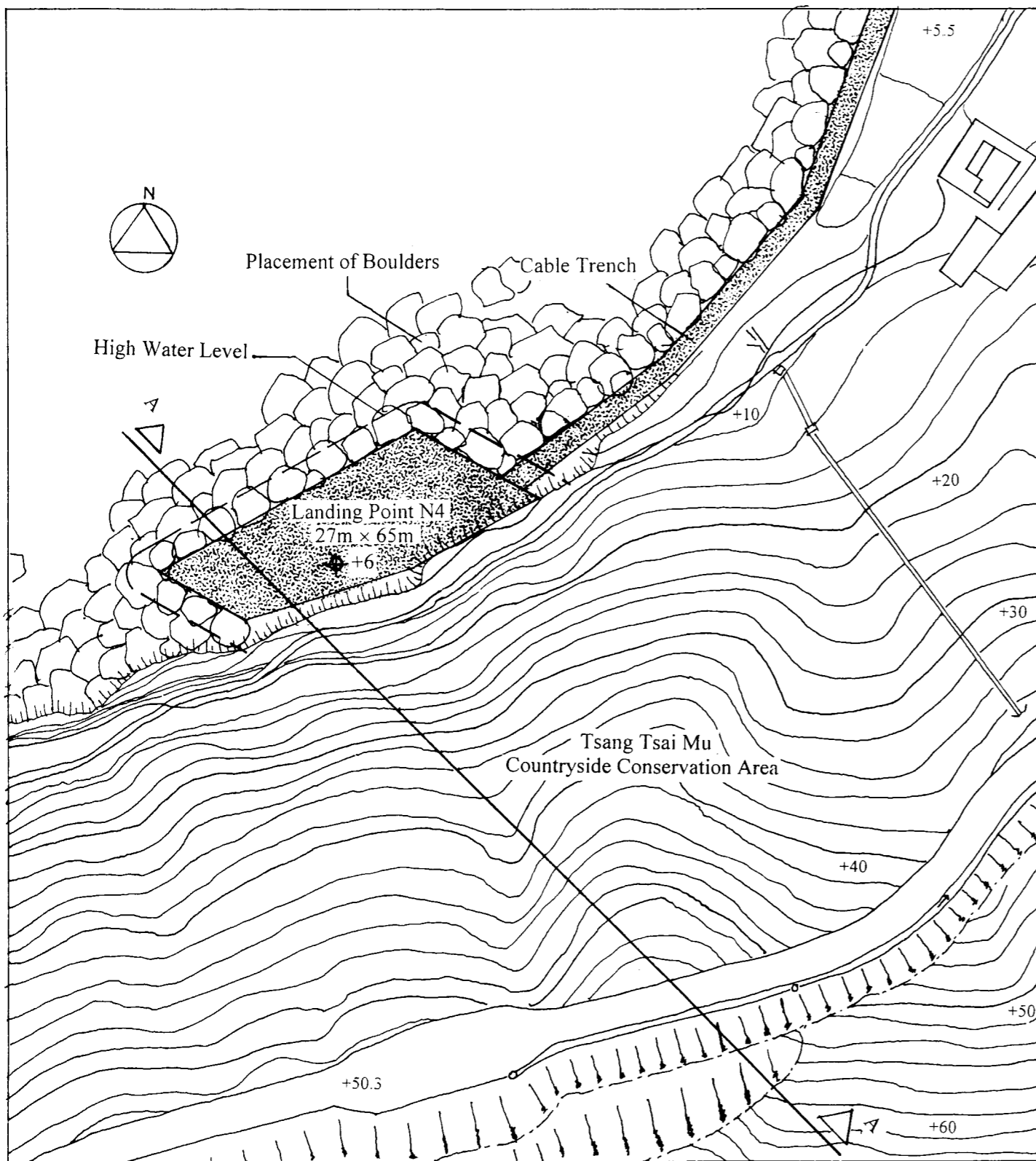
NOTE: ALL LEVELS GIVEN ARE IN mPd  
 0m 250m 500m  
 1:1000

FIGURE 42 - MITIGATION MEASURE FOR THE PROPOSED CABLE LANDING POINT N2 -- LANDSCAPING

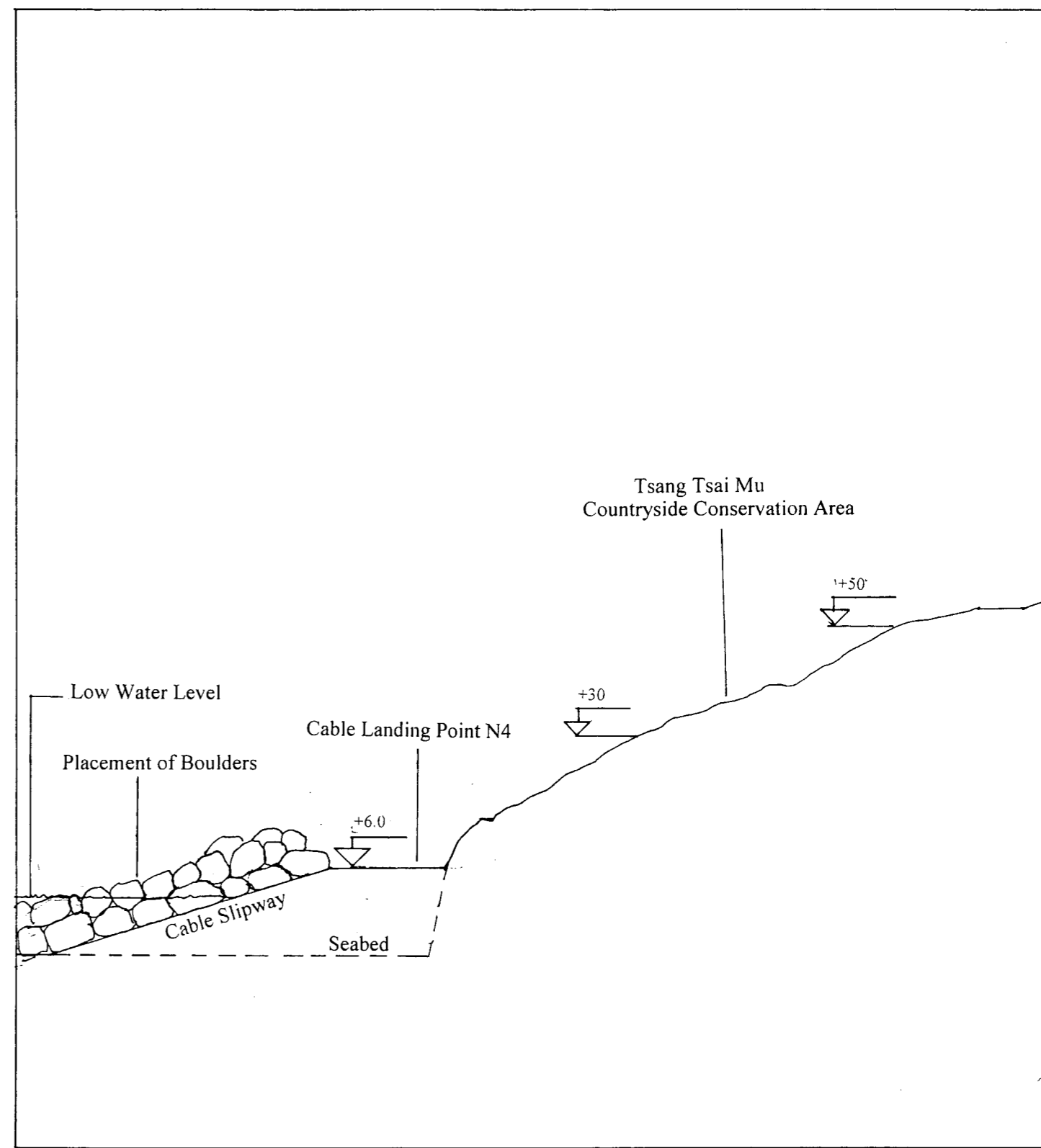
Environmental  
 Resources  
 Management







SITE PLAN OF THE LANDING POINT N4



A-A SECTION THROUGH LANDING POINT N4

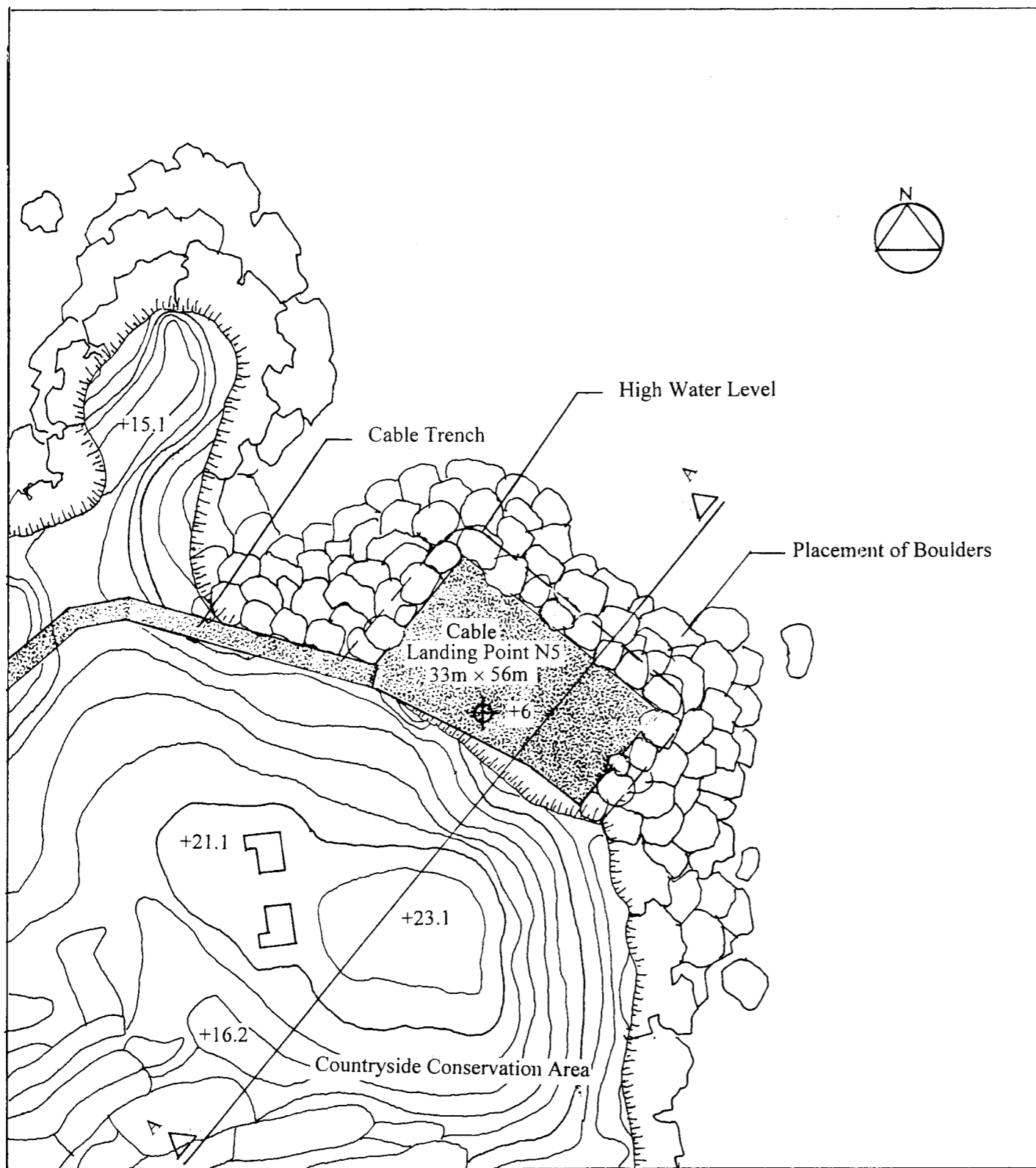
NOTE: ALL LEVELS GIVEN ARE IN mPd



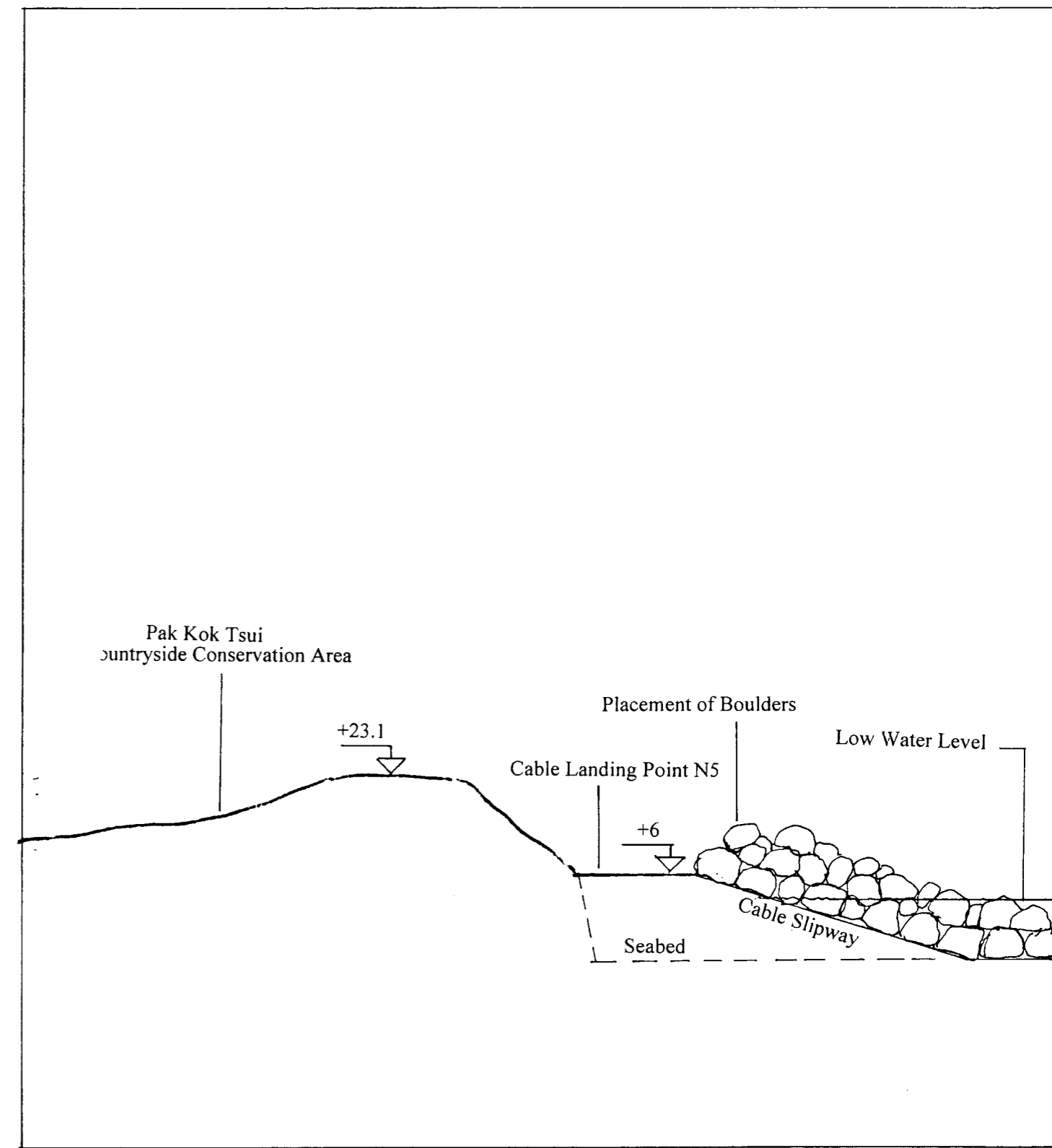
FIGURE 43 MITIGATION MEASURE FOR THE PROPOSED CABLE LANDING POINT N4 – LANDSCAPING

Environmental  
Resources  
Management





SITE PLAN OF THE LANDING POINT N5



A-A SECTION THROUGH LANDING POINT N5

NOTE: ALL LEVELS GIVEN ARE IN mPd

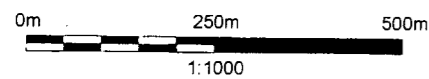


FIGURE 44 MITIGATION MEASURE FOR THE PROPOSED CABLE LANDING POINT N5 – LANDSCAPING

Environmental  
Resources  
Management





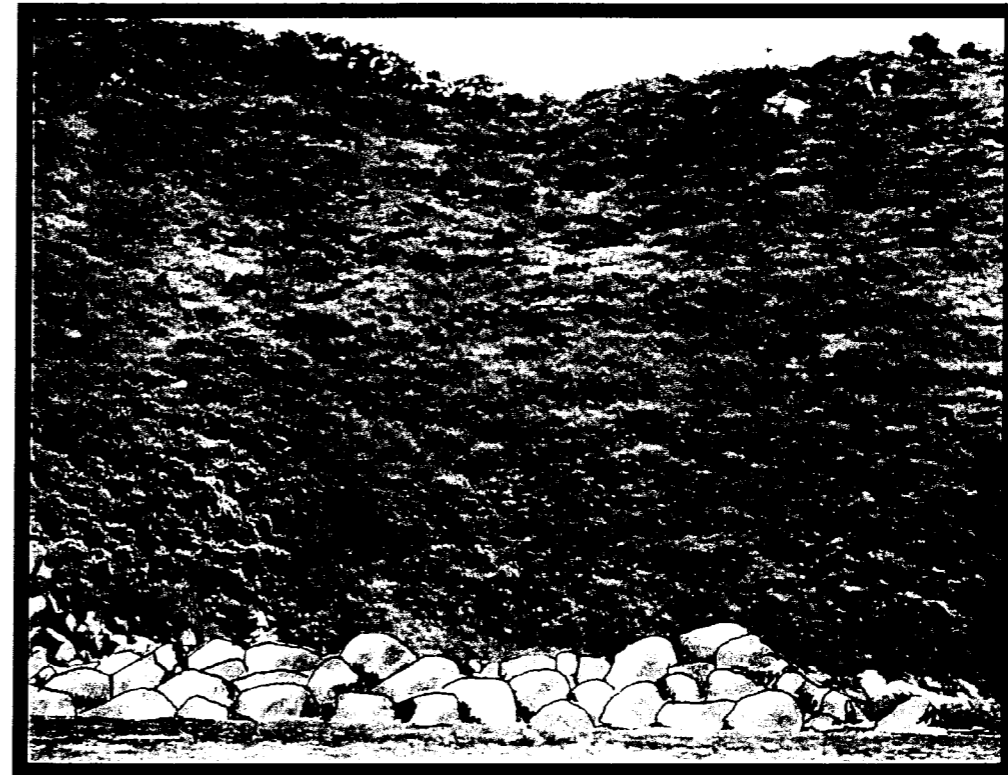
FIGURE 45 - VIEW OF CABLE LANDING POINT 11, AT TELEGRAPH BAY, HONG KONG ISLAND



ARTIST VIEW OF PROPOSED LANDING POINT N2

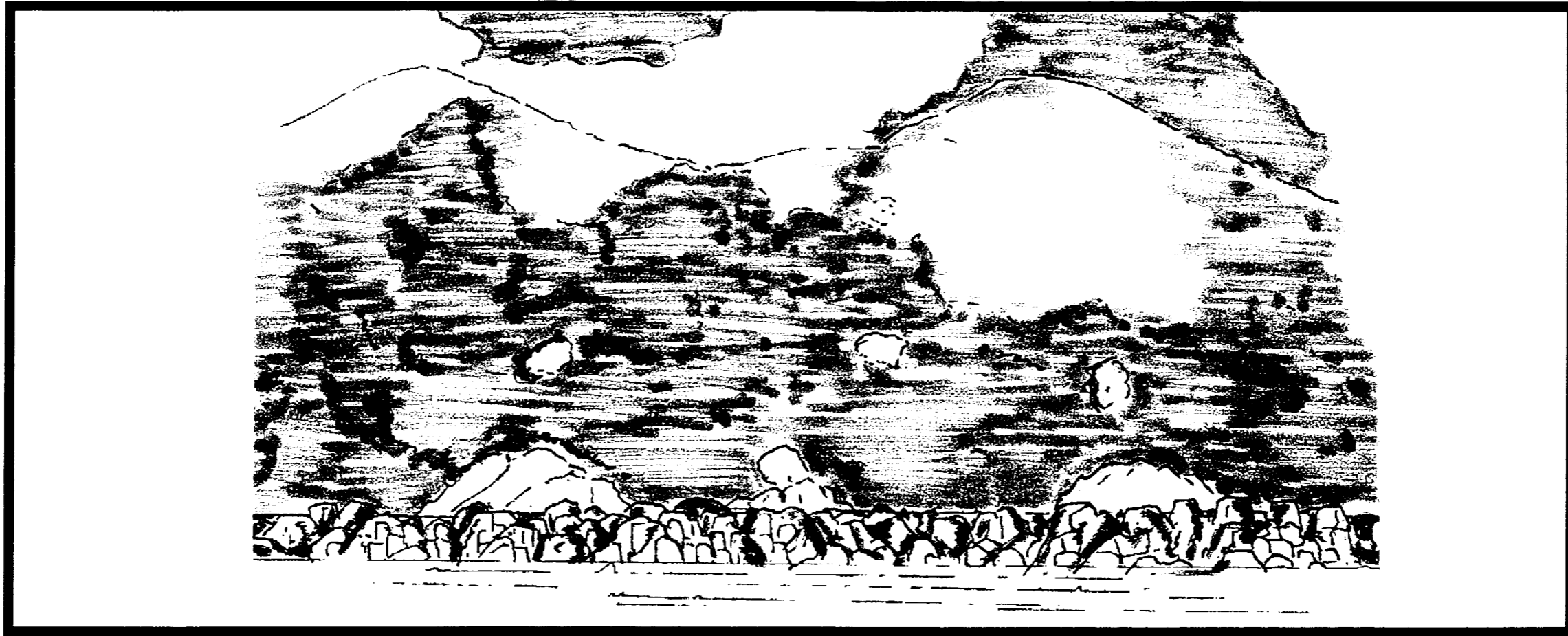


PHOTO OF EXISTING VIEW



PHOTOMONTAGE OF FUTURE VIEW

FIGURE 46 - VIEW OF CABLE LANDING POINT N2, LAMMA ISLAND



ARTIST VIEW OF PROPOSED PROMENADE



PHOTO OF EXISTING VIEW



PHOTOMONTAGE OF FUTURE VIEW

FIGURE 47 - VIEW OF CABLE LANDING POINT N4 & THE PROMENADE ABOVE CABLE TROUGH BETWEEN KOK SHAN TSUEN & PAK KOK TSUI, LAMMA ISLAND