



Territory Development Department
New Territories North Development Office
Hong Kong Government

Agreement No. CE 90/96

Feasibility Study for Pak Shek Kok Development Area

**PAK SHEK KOK DEVELOPMENT -
ENVIRONMENTAL IMPACT ASSESSMENT**

- EXECUTIVE SUMMARY

June 1998

MAUNSELL CONSULTANTS ASIA LTD.

1 INTRODUCTION

1.1 Overall Approach

1.1.1 The purpose of the EIA is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Pak Shek Kok Development Area (PSKDA) and related activities. The PSKDA Study Area is shown in *Figure 1.1*.

1.1.2 The first environmental input comprised an environmental baseline review of the previous studies conducted within the PSKDA Study Area and relevant government regulations and guidelines was undertaken. The following previous reports were of particular relevance in terms of identifying environmental constraints and opportunities and in the formulation of the Preferred Development Concept.

- Pak Shek Kok Reclamation - Public Dump (PSKRPD) EIA Study (April 1994);
- Widening of Tolo Highway and TSIS Feasibility Assignment (Agreement No. CE 35/95) EIA Final Report (April 1997);
- Tai Po Development: Formation & Servicing of Area 12 (Part) & 39 EIA (June 1996);
- Agreement No. HR/WM/1-92 Kowloon-Canton Railway Corporation - Noise Mitigation Measures (1992);
- Study of Fisheries Resources and Fishing Operations in Hong Kong Waters for Agricultural Fisheries Department (ongoing); and
- Tolo Harbour Sewerage of Unsewered Area Stage I Phase II EIA.

1.1.3 The EIA Study has provided environmental planning input throughout the PSKDA Study and has ensured that environmental consideration has been incorporated into the development of the Preferred Development Concept to recommend an environmentally acceptable option for the PSKDA.

1.1.4 The PSKDA EIA Study Team further investigated the potential environmental impacts associated with construction and operation of the Preferred Development Concept to ensure compliance with environmental legislation and standards with the submission of the *EIA - Initial Assessment Report (EV/01)*. In particular, direct noise mitigation measures were recommended to ensure proposed sensitive receivers are within the standards specified in the *Hong Kong Planning Standards and Guidelines (HKPSG)*. The results of the EIA - IAR were incorporated as mitigation into the development of the RODP.

2 PROJECT DESCRIPTION

2.1 Construction Phase

2.1.1 The construction of the proposed PSKDA is expected to proceed in three stages, with the development of the Science Park proceeding in the southern section first by the year 2001, followed by the development of residential development in the north in 2003 and recreation in the central area by the year 2006. A preliminary construction programme is shown in *Figure 2.1*. At present, it is not known how the development on the existing Area 12 (Part) and 39 reclamation will proceed, apart from the area reserved for HKIED playing fields should be completed by the year 2000.

Key programme dates can be summarised as follows:

- CED reclamation programme is essentially fixed, with land for the Science Park Phase 1 being produced first (in portions from February 1998 to June 1999), followed by the northern portion (December 2000), then the remaining central section of land (July 2004).

- Substantial additional sewerage disposal capacity, beyond that needed for the Science Park Phase 1, is not expected to be available until 2003.

2.1.2 A summary of concurrent projects within the PSKDA is given in *Table 2.1* and described in the following sections:

Table 2.1 Concurrent Projects

Development	Proposed/Likely Programme
Tolo Highway Widening	December 1998 - December 2001
Tai Po Development - Formation and Servicing of Area 12 (part) and 39, Phase I	March 1998 - March 2000
Tai Po Development - Formation and Servicing of Area 12 (part) and 39, Phase II	mid 1999 - end 2001

Infrastructural Works

2.1.3 Infrastructural works to be conducted on the reclamation will include construction of the Science Park, residential development and recreational uses and the associated road works, infrastructural services and pipe laying.

Southern and Northern Access Roads

2.1.4 Access options to the north and south have been proposed due to the implementation of the proposed developments and potential connections with the Tolo Highway. There will also be small reclamation requirements associated with these access roads as shown in *Figure 2.2*.

KCRC Station

2.1.5 The options for rail access have been proposed in the PSKDA Study which would involve the option of the provision of a station along a straight section of rail in the middle of the site.

2.2 Operation Phase

2.2.1 As part of the requirements for the PSKDA Study, various land uses options have been evaluated in the Planning and Land Use Study which has resulted in the selection of a preferred land use concept for the PSKDA Study. The Recommended Outline Development Plan (ODP) was submitted as part of the *ODP Report (PL/10)* and shown in *Figure 2.3*.

2.2.2 The five main land uses proposed for PSKDA RODP include the Science Park, residential, strategic recreation, other uses (education) and the Hong Kong Institute of Education Sports Centre and are discussed in the following sections. The proposed development parameters for the main land uses are summarised in *Table 2.2*.

Table 2.2 Proposed Development Parameters for Main Land Uses

	Plot Ratio	Max. Site Coverage	Max. Building Height (m)
Residential			
R1	5	-	70
R2	3	-	45
Recreation	Refer to design guidelines		
Science Park	Max. GFA 330,000 m ²	50% net on developable site (60% of total area)	30

Science Park ("OU (Science Park)") (22 ha)

2.2.3 The Science Park will be developed in 3 stages (8,7 and 7 hectares each) with the first stage expected to open in mid 2001. Total employment when full is expected to be 16,500 jobs. The Science Park may take up to 15 years to fill up, depending on the market situation. The exact development layout of the Science Park will be determined by the Science Park Corporation.

2.2.4 From the Science Park Study, the Science Park is likely to comprise IT related uses, biotechnical and advanced engineering type industries. Within these industries, the types of activities are likely to comprise research type activities with limited manufacturing and development. This will limit the potential environmental impacts generated by the Science Park. It should be noted that the exact types and makeup of the Science Park will not be known until the detailed design stage.

Residential ("R") Density Band 1 (plot ratio 5) (3.0 ha)

2.2.5 This area occupies a curving strip of land which has been defined by the requirements for environmental setbacks from the Tolo Highway. These taller blocks will create a tiered effect, allowing the taller buildings of this area to overlook the shorter residential buildings in front and closer towards Tolo Harbour. The maximum building height is proposed to be 70 metres.

Residential ("R") Density Band 2 (plot ratio 3) (6.2 ha)

- 2.2.6 This residential density faces the promenade and the Tolo Harbour. This site, will be on the remaining position of the PSK Reclamation to be completed in 2004. The maximum building height is proposed to be 45 metres. The R2 site facing both the nullah and the promenade will include the retail space and G/IC facilities through lease arrangements.

Education ("E") (9.8 ha)

- 2.2.7 The "E" zone includes an initial reprovisioning site for the Marine Science Laboratory (MSL) near the HKIB site. The "E" zone west of the KCR adjoining the nullah will be the site of a secondary school. A primary school (to fulfill a G/IC shortfall from outside the study area i.e. Tai Po) will go next to the secondary school. The existing Hong Kong Institute of Biotechnology is included within this zoning because of its linkage to the Chinese University.
- 2.2.8 The HKIEd Sports Centre will serve the HKIEd's campus which is located at Tai Po. The only building will be a grandstand, otherwise most facilities will be for outdoor use, such as running track, tennis courts and similar. Construction of the Sports Centre can commence after Yau King Lane is extended to the site.

Possible Tertiary Education Institution ("E [Possible Tertiary Education Institution]") (6.8 ha)

- 2.2.9 This area is expected to be available for the potential tertiary education expansion of Chinese University. Part of this "E" area could be made available to the University as replacement land for that taken or sterilised for development by the Southern Access Road route through the eastern part of the campus, however this will need to be confirmed.

Strategic Recreation Site ("REC") (10 ha)

- 2.2.10 The possible uses of this site were considered and evaluated as part of the Visitor and Recreation Uses Study. The China Ecology Centre was found to be the most suitable use. This site has been placed between the Science Park and residential areas to form a buffer between these proposed uses. The site is located 200 m from the proposed KCR rail station allowing for easy accessibility. The area will also allow for the possibility of a hotel within this site.

Subsidiary & Supporting Uses & Facilities

- 2.2.11 These uses and facilities include items which are fixed or compulsory as well as some which are supporting or reprovisioned are summarised below:
- Open Space ("O") (11.0 ha);
 - Government Institution /Community ("G/IC") (2.0 ha);
 - Amenity ("A") (3.3 ha);
 - Other Specified Uses ("OU") (1.9 ha);
- 2.2.12 The following uses will designated within the above specified land use areas:

- KCR Station;
- Public Landing Steps;
- Fire Tug Pier;
- Sewage Pumping Stations & Electricity Sub-Station; and
- Refuse Collection Points (RCP)

Traffic and Transport

- 2.2.13 The existing KCR line consists of a double track railway, which now follows the alignment of the Tolo Highway across the Study Area. A station has been proposed to serve the Study Area.
- 2.2.14 The PSKDA connections to the Tolo Highway are at the northern end of the study area (Northern Access) and beyond the southern boundary of the study area (Southern Access) have been proposed. The PSKDA internal road network will consist of a District Distributor Road D1 and Local Roads within PSKDA.
- 2.2.15 A transport interchange is proposed at the north end of the proposed KCR station to allow for easy transport interchange. This terminus would have provision for bus, mini-bus and taxi services as well as drop-off / pick-up for cars.
- 2.2.16 A cycle path has been proposed along the waterfront promenade to allow for separate directional flow.

Utility Services

- 2.2.17 Existing water mains near the boundary of the PSKDA can be extended. A new reservoir will be built near Tai Po Road which will serve PSKDA.
- 2.2.18 The existing nullah will be extended to the new seawall and this will be the main drainage for most of the north and central part of the Plan area. A proposed carrier drain in the form of a box culvert will travel across the Science Park, serving some of the southern part of the PSKDA.
- 2.2.19 Sewage will be treated at the extended Shatin sewage treatment works. As the first phase of the Science Park will open before the sewage treatment works extension opens, a system of underground covered equalisation tanks will transfer waste to the Shatin works at off-peak times.
- 2.2.20 The PSKDA will require a sub-station which is proposed to be near the existing HKIB building. Telephone service can be provided from the boundaries of the PSKDA. A new telephone exchange will be constructed near Tai Po Road which will have capacity for PSKDA. Gas supply can also be supplied via extension and improvement of gas mains near the boundaries of the PSKDA.

3 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Findings of the EIA Report

3.1.1 The EIA Study was undertaken for the PSKDA to undertake a detailed assessment of the RODP to ensure compliance with the *Environmental Impact Assessment Ordinance* (EIAO), *Technical Memorandum on Environmental Impact Assessment Process* (EIAOTM), *Hong Kong Planning Standards & Guidelines* (HKPSG) and other relevant government criteria. A summary of each of the issues assessed are given below.

3.2 Noise

Construction Phase

3.2.1 Unmitigated construction activities of PSKDA were predicted to cause exceedances of the daytime construction criteria at the nearby NSRs shown in *Figure 3.1*. Suitable control measures were recommended for the construction works to meet the criteria. The *EIA Report* recommended that mitigation measures including the use of quiet plant, on-site movable noise barriers, limiting the number of plant operating concurrently will be required. The *EIA Report* also recommended that regular monitoring of noise as part of the EM&A programme which will be presented in a separate EM&A Manual at NSRs will be required during the construction phase.

Operational Phase

3.2.2 Without mitigation adverse road traffic noise impacts are predicted at both the existing and planned NSRs. A 5 m high cantilevered road side noise barrier was recommended along Road D1 adjacent to the CUHK Staff Accommodation to mitigate the noise impact caused by the nearby road networks. As a requirement of *Section 6.6.5e* of the Brief, a review of the adequacy of direct mitigation measures proposed in the Tolo Highway Widening Project (Agreement No. CE 35/95) was undertaken. If the use of direct measures were not found to be adequate nor feasible, appropriate indirect mitigation measure should be recommended and incorporated into the RODP. This study recommended a package of 8 m roadside cantilevered barriers and 5 m central barriers and agreed with government in November 1997 and gazetted as part of the THW Project.

3.2.3 For the planned PSKDA residential developments, the use of road side noise barriers along local roads were considered to be effective in mitigating the noise levels at the low level receivers. In addition, it was considered that the noise exceedances could be mitigated by careful building layout and design such as increasing setback distance. Where the size of the site was a constraint, the use of direct measures were not found to be impracticable for the local road network and as a last resort, the use of window insulation were recommended. Similarly, the planned schools development are constrained by road traffic noise. Due to the size of the site, the use of window insulation was found to be the most practicable solution.

3.2.4 Potential noise impacts associated with the KCRC rail and the operation of the ESS, RCP, sewage pumping station, public interchange, public landing steps and fire tug pier have been assessed. The assessment showed that both the rail and other operational noise sources will not be a constraint upon the PSKDA.

3.3 Air Quality

Construction Phase

- 3.3.1 Fugitive Dust Modelling was undertaken for the worst case scenarios year 2001 and 2004. Modelling undertaken for the PSKDA and PSK Reclamation predicted that dust levels will comply with TSP dust criteria at all ASRs shown in *Figure 3.2* for both scenarios.
- 3.3.2 Cumulative dust levels in excess of the TSP criterion were predicted under certain dry conditions at some ASRs A1 and A2 during the construction phase in the year 2001, due to the close proximity of the ASRs to the construction sites of Marine Science Laboratory and the Science Park - Phase I.
- 3.3.3 Dust suppression measures have been recommended to be included in the Contract Specification to minimize dust nuisance arising from the PSKDA and PSK Reclamation. The TSP dust criterion will be achieved at all ASRs with the incorporation of the proposed mitigation measures. EM&A have also been recommended to ensure the TSP dust criteria would be complied at the ASRs and will be presented separately in the EM&A Manual.

Operational Phase

- 3.3.4 Setback distances from Tolo Highways have already been incorporated into the RODP during the Planning Study. Due to the incorporation of these setbacks, the air quality in the PSKDA and all ASRs will comply with the AQO requirements as shown in *Figure 3.3*.
- 3.3.5 The sewerage pumping stations and equalization tank proposed for the PSKDA will be underground and enclosed and any odour generated by the plant should therefore not cause an odour nuisance to the surrounding sensitive receivers.

3.4 Water Quality

Construction Phase

- 3.4.1 The potential environmental impacts caused from the construction of the reclamation through public filling activities have already been assessed in the previously endorsed PSKRPD EIA. However, due to a proposed change in reclamation staging proposed in PSKDA Study Working Paper ET/02, a PSKDA Demonstration Paper entitled "Demonstration Paper on Environment due to Change of Reclamation Sequence" was submitted to assess the changes proposed.
- 3.4.2 The PSKDA Study Demonstration Paper has shown that the proposed changes in reclamation staging will not result in water quality impacts greater than previously predicted in the PSKRPD EIA and thus the previously proposed mitigation measures will be sufficient to protect receiving water quality during public filling.
- 3.4.3 The SS impact caused by the construction by reclamation of the Northern and Southern Access Road is assessed using the same methodology as the PSKRPD EIA and additional mitigation measures for Southern Access Road construction are recommended.
- 3.4.4 The construction phase assessment, therefore, concludes that residual insurmountable water quality impact should not eventuate from PSKDA proposed construction, assuming mitigation is incorporated, as described. EM&A have been recommended to ensure efficacy of mitigation and will be reported separately in the EM&A Manual.

Operational Phase

- 3.4.5 The formation of a new coastline configuration will not lead to water quality or movement impacts associated with changes in local and far field water movement patterns which has been examined in previous PSKRPD EIA.
- 3.4.6 No residual water quality impact to the PSKDA is anticipated from the proposed operation of PSKDA KCRC Station alignment, provided that proper mitigation measures are implemented.
- 3.4.7 As the Science Park will comprise only high technology based and Research and Development businesses and as the conditions of the WPCO discharge licences for all Science Park operators will have to be followed, residual water quality impact from the Science Park will not eventuate.
- 3.4.8 It is expected that the increased sewage due the proposed population on PSKDA will be served by the Sha Tin STW for treatment and disposal. However, due to the capacity at the Sha Tin STW, an equalization tank at PSKDA will be used in the interim until upgrading works have been completed by 2003.

3.5 Waste Management

Construction Phase

- 3.5.1 It is considered that only 2,800 m³ of construction and demolition wastes will be

generated and that any excess excavated material will primarily comprise previously filled materials and should therefore be suitable for re-use for later phase of the PSK Public Filling Area. It is considered also that construction, chemical and general refuse impacts should be no greater than for other developments of a similar scale and therefore, should be amenable to the standard mitigation measures recommended.

- 3.5.2 The quality of marine mud to be dredged for reclamation of the Southern Access Road are presently not be available for this Study and will need to be determined as part of the Site Investigation works.

Operational Phase

- 3.5.3 It is presently understood that the various developments proposed for the PSKDA will include the Science Park, residential development, recreational uses and a potential KCR station, based on the RODP. An estimated 36.8 tonnes of potential waste will be generated by the PSKDA, based on the RODP. Mitigation measures and strategies to minimise waste have been assumed to be applicable as they have in the past to similar types of developments. There is no information to suggest that waste impacts during the operational phase will not be amenable to the standard forms of mitigation.

- 3.5.4 In addition the Science Park could also generate chemical waste. However, from the Science Park Study, the Science Park is likely to comprise IT related uses, biotechnical and advanced engineering type industries. Within these industries, the types of activities are likely to comprise research type activities with limited manufacturing and development. This will limit the potential environmental impacts generated by the Science Park. It is recommended that further review of the potential waste generated by the Science Park at the detailed design stage be undertaken to ensure that appropriate waste handling facilities are incorporated.

3.6 Ecology

Terrestrial Ecology

- 3.6.1 Based on literature review of previous relevant reports and recent field surveys, the existing baseline ecological condition of the PSKDA site is considered poor with limited ecological value. The PSKDA to be developed on the present reclaimed land is expected to have low ecological impact.

- 3.6.2 Mitigation measures for the PSKDA development in relation to transplanting the two protected plant species and good construction practice to minimise disturbance to the surrounding environment are recommended, and no residual impact is anticipated.

Marine Ecology

- 3.6.3 A review of existing information on the marine ecological resources located within and around the PSKDA has identified the area as supporting soft bottom benthic assemblages, rocky intertidal assemblages, fish and pelagic invertebrates few of which are of high commercial value. The subtidal benthic habitat of the area is considered to of low ecological value and the reclamation is considered to have a low ecological impact given the poor water quality in Tolo Harbour and the documented degradation that has occurred to benthic communities since the 1970s.

- 3.6.4 Fisheries resources in Tolo Channel, although abundant in comparison with other areas in Hong Kong, are dominated by small and low value species. The review identified an important nursery ground to the east of the PSKDA area at Wu Kwai Sha and at East Yim Tin Tsai. As sediment from the reclamation will settle within a 1 km radius of the PSKDA, no impacts were predicted at this sensitive receiver. Potential impacts to fisheries resources and fishing operations were considered to be low and acceptable.
- 3.6.5 Intertidal habitats appear to be diverse and the existing man - made shore will be lost during the reclamation. However, any loss of habitat in the area can be mitigated, wherever possible, through seawall design. By ensuring that a gently sloping seawall that is heterogeneous in nature (ie high numbers of crevices and holes) is used at the edge of the reclamation, an assemblage of similar nature to that present, will establish.
- 3.6.6 Mitigation measures for the PSKDA development and good construction practice to minimise disturbance to the surrounding environment are recommended, and no residual impact is anticipated.

3.7 Visual and Landscape Impacts

Visual Impacts

- 3.7.1 The final VIA using three-dimensional modelling outputs of the RODP to test the case studies followed by actual photomontages to assimilate PSKDA in its fully developed state has revealed no detrimental visual effects on the surrounding VSRs. The developments on the PSKDA will impose a visual impact onto the surrounding VSRs. However, through careful planning and appropriate massing hierarchy, interesting profiles and focal nodes softened with green open spaces will emerge to ultimately present a lush semi-urban setting. Control measures to reduce visual impacts have already been incorporated into the RODP.
- 3.7.2 The findings of the Visual Impact Assessment indicates that the visual impacts of the PSKDA on the surrounding VSRs is not considered unacceptable given the need to develop the area.

Landscape Impacts

- 3.7.3 The loss of the existing vegetation as a result of the PSKDA is not considered to be significant and will be offset by the planting of thousands of new trees, shrubs and groundcover as part of the project. The proposed landscaping plans for the shoreline promenade, highway access ramps and perimeter roadways will, in time, create a much more desirable visual landscape than currently exists. The grading and landscape of the transition areas between the project and the surrounding landscape will help to create a compatible new environment within acceptable tolerances for new development. The overall impact of the project on the surroundings will be greatly mitigated by the proposed landscape treatments that create a green buffer and extended "Fingers" of green to the sea.

3.8 Residual Impacts

- 3.8.1 With the implementation of the recommended mitigation measures, it is considered that there will be no residual impacts that will exceed the relevant government legislation and standards.

Fig. 3.1 Location of NSR's During Construction Phase

圖3.1 施工階段各個對噪音感應強的地點

Key

圖例

N1 - CUHK Staff Accommodation

N1 - 香港中文大學職員宿舍

N2 - Chinese University of Hong Kong Residence No. 10

N2 - 香港中文大學第十苑

N3 - Cheung Shue Tan Village

N3 - 樟樹灘村

N4 - Tsiu Hang Village

N4 - 蕉坑村

N5 - Deerhill Bay

N5 - 鹿茵山莊

N6 - Villa Castell

N6 - 新翠山莊

N7 - Educational Uses in Area 12 (Part)

N7 - 第12區（部份）之教育用地

N8 - Tertiary Education Institution in Area 39

N8 - 第39區內專上教育用地

N9 - Residential Development - R2

N9 - 住宅發展用地 - R2

N10 - Residential Development - R1

N10 - 住宅發展用地 - R1

N15 - CUHK: Chung Chi Campus Block C24

N15 - 香港中文大學：崇基學院大樓 C24

STAGE I RECLAMATION (WORKS IN PROGRESS)

第一階段填海區（進行中）

STAGE II SECTION I

第二階段第一期填海區

NOISE SENSITIVE RECEIVERS

Key

- N1 - HKIB Staff Accommodation
- N2 - CUHK: Residence No.10
- N3 - Cheung Shue Tan Village
- N4 - Tsiu Hang Village
- N5 - Deerhill Bay
- N6 - Villo Castell
- N7 - Educational Uses in Area 12 (Part I)
- N8 - Tertiary Education Institution in Area 39
- N9 - Residential Development R2
- N10 - Residential Development R1
- N15 - CUHK: Chung Chi Campus Block C24

STAGE I RECLAMATION
(WORKS IN PROGRESS)

STAGE II
SECTION I

STAGE II
SECTION II

STAGE II
REMAINING

TO TAIPO

STATION III

TOLO HIGHWAY/TOLO HIGHWAY

TO SEA TIN

MA LIU SHUI

MA LIU SHUI

MA LIU SHUI

PAK SHEK KOK

CHEUNG SHUE TAN

AGREEMENT NO. CE 90/96
FEASIBILITY STUDY FOR PAK SHEK KOK DEVELOPMENT AREA

LOCATION OF NSRS DURING CONSTRUCTION

SCALE :
N.T.S.
DATE :
12/05/98

Maunsell
茂盛亞洲工程顧問有限公司

FIGURE NO. :
3.1

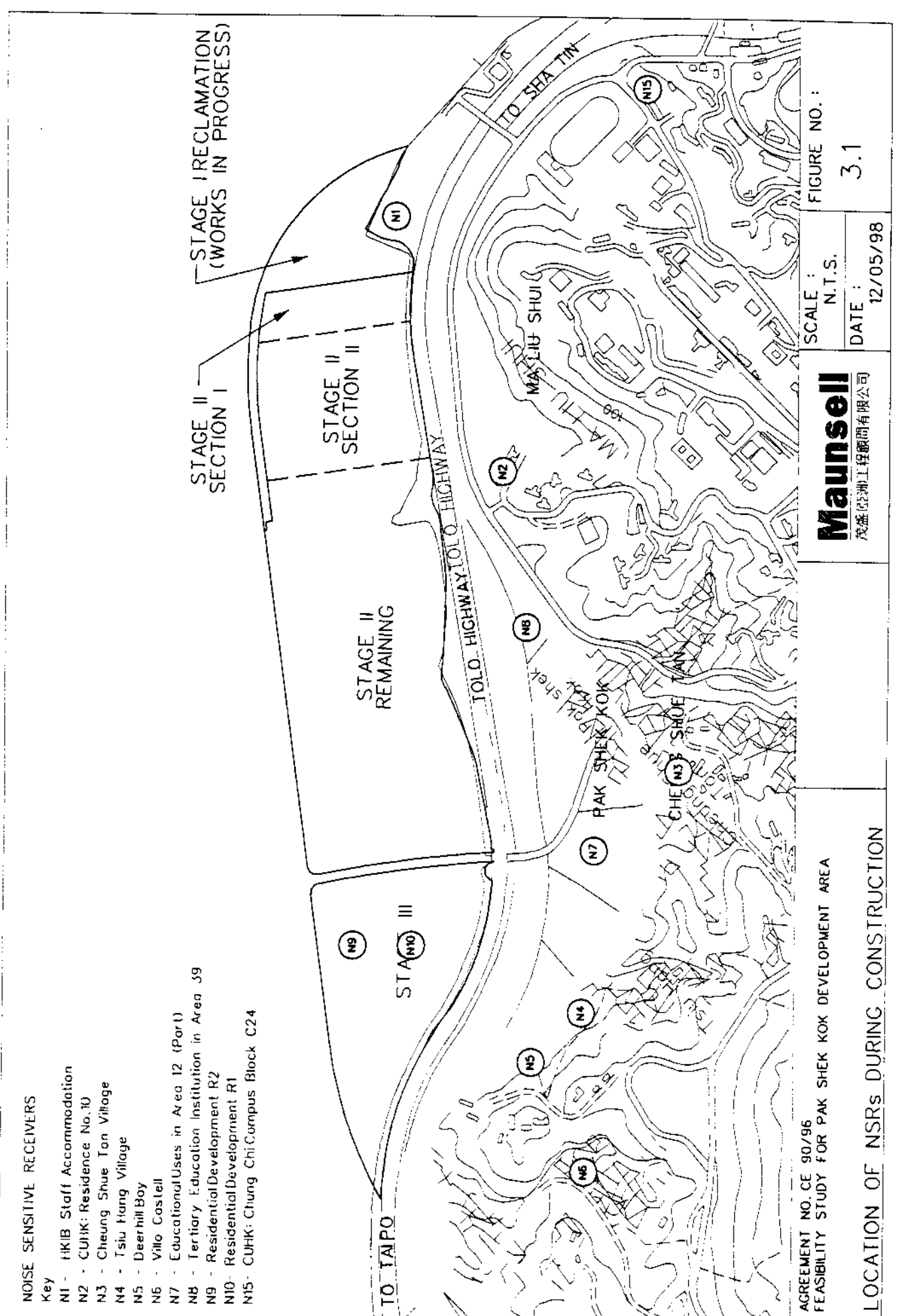


Fig. 3.2 Location of NSR's During Operation Phase
圖3.2 運作階段各個對噪音感應強的地點

Key
圖例

N1 - HKIB Staff Accommodation

N1 - 香港生物科技研究院職員宿舍

N2 - CUHK: Residence No. 10

N2 - 香港中文大學第十苑

N3 - Cheung Shue Tan Village

N3 - 樟樹灘村

N4 - Tsiu Hang Village

N4 - 蕉坑村

N5 - Deerhill Bay

N5 - 鹿茵山莊

N6 - Villa Castell

N6 - 新翠山莊

N7a - Educational Uses in Area 12 (Part)

N7a - 第12區（部份）之教育用地

N7b - Educational Uses in Area 12 (Part)

N7b - 第12區（部份）之教育用地

N8 - Tertiary Education Institution in Area 39

N8 - 第39區內作專上教育用地

N9 - Residential Development - R2

N9 - 住宅發展用地 - R2

N10 - Residential Development - R1

N10 - 住宅發展用地 - R1

N11 - Residential Development - R2

N11 - 住宅發展用地 - R2

N12 - School

N12 - 學校

NOISE SENSITIVE RECEIVERS

- Key:
- M1 - HKB Staff Accommodation
 - M2 - CUHK: Residence No. 10
 - M3 - Cheung Shue Tan Village
 - M4 - Tsz Hong Village
 - M5 - Deerhill Bay
 - M6 - Villa Coslè
 - M7a - Educational Uses in Area 12 (Part I)
 - M7b - Educational Uses in Area 12 (Part II)
 - M8 - Tertiary Education Institution in Area 39
 - M9 - Residential Development R2
 - M10 - Residential Development R1
 - M11 - Residential Development R2
 - M12 - School
 - M13 - Residential Development R1
 - M14 - Science Park Accommodation
 - M15 - CUHK: Chung Chi Campus Block C24

STAGE I RECLAMATION
(WORKS IN PROGRESS)

STAGE II
SECTION I

STAGE II
SECTION II

STAGE II
REMAINING

TO TAIPO

TOLO HIGHWAY/TOLO HIGHWAY

TO SHA TIN

MA TUI SHUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

MA TUI

AGREEMENT NO. CE 90/96

FEASIBILITY STUDY FOR PAK SHEK KOK DEVELOPMENT AREA

LOCATION OF NSRs DURING

OPERATION PHASE

SCALE :
N.T.S.

DATE :
27/05/98

FIGURE NO. :

3.2

Maunsell
茂盛亞洲工程顧問有限公司

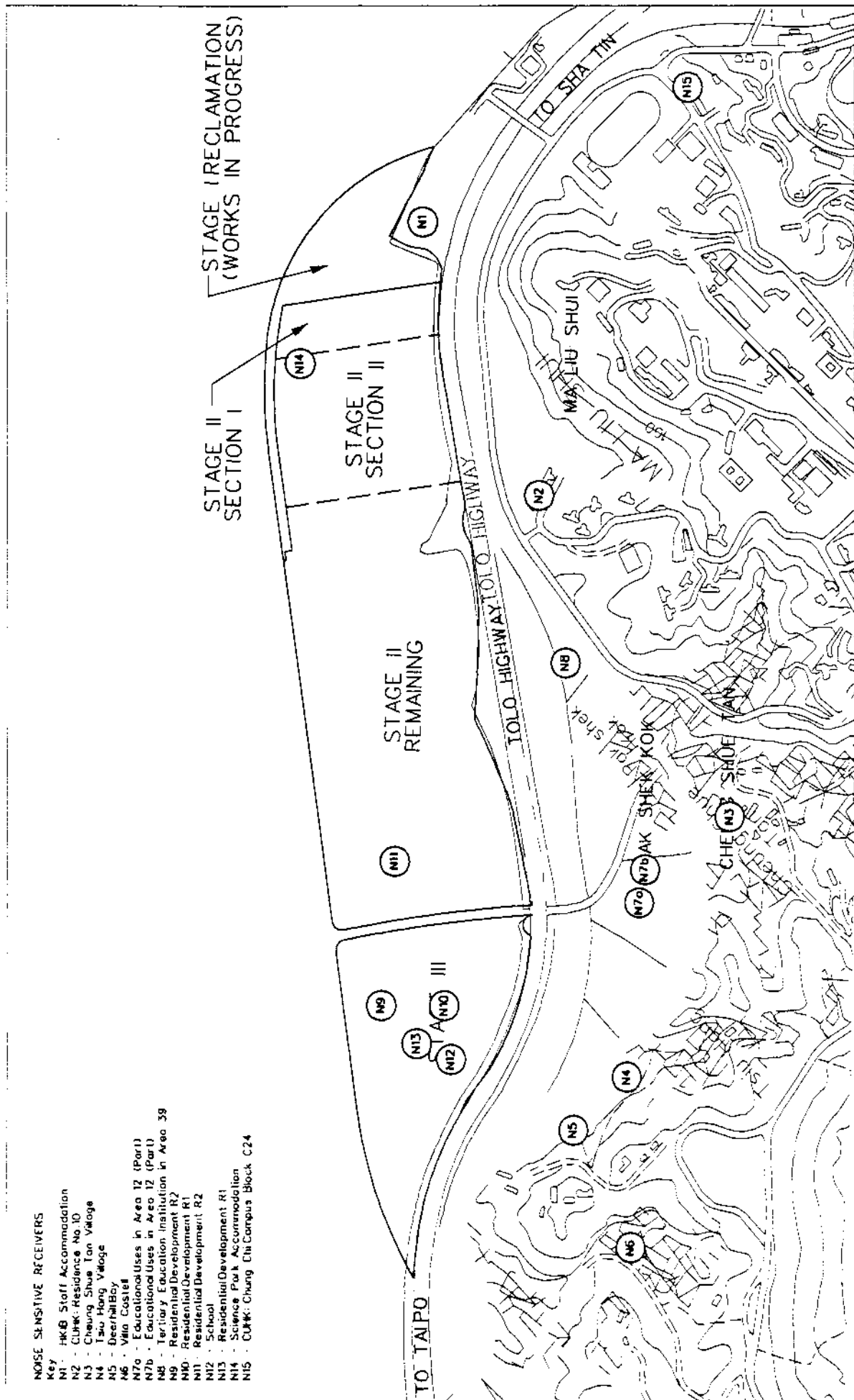


Fig. 3.3 Location of ASRs During Construction

圖3.3 施工階段對空氣質素感應強的地點

STAGE I RECLAMATION (WORKS IN PROGRESS)

第一階段填海區（進行中）

STAGE II SECTION I

第二階段第一期填海區

STAGE II SECTION II

第二階段第二期填海區

STAGE II REMAINING

第二階段其餘部份填海區

STAGE III

第三階段填海區

TOLO HIGHWAY

吐露港公路

TO SHA TIN

往沙田

TO TAI PO

往大埔

MA LIU SHUI

馬料水

PAK SHEK KOK

白石角

CHEUNG SHUE TAN

樟樹灘

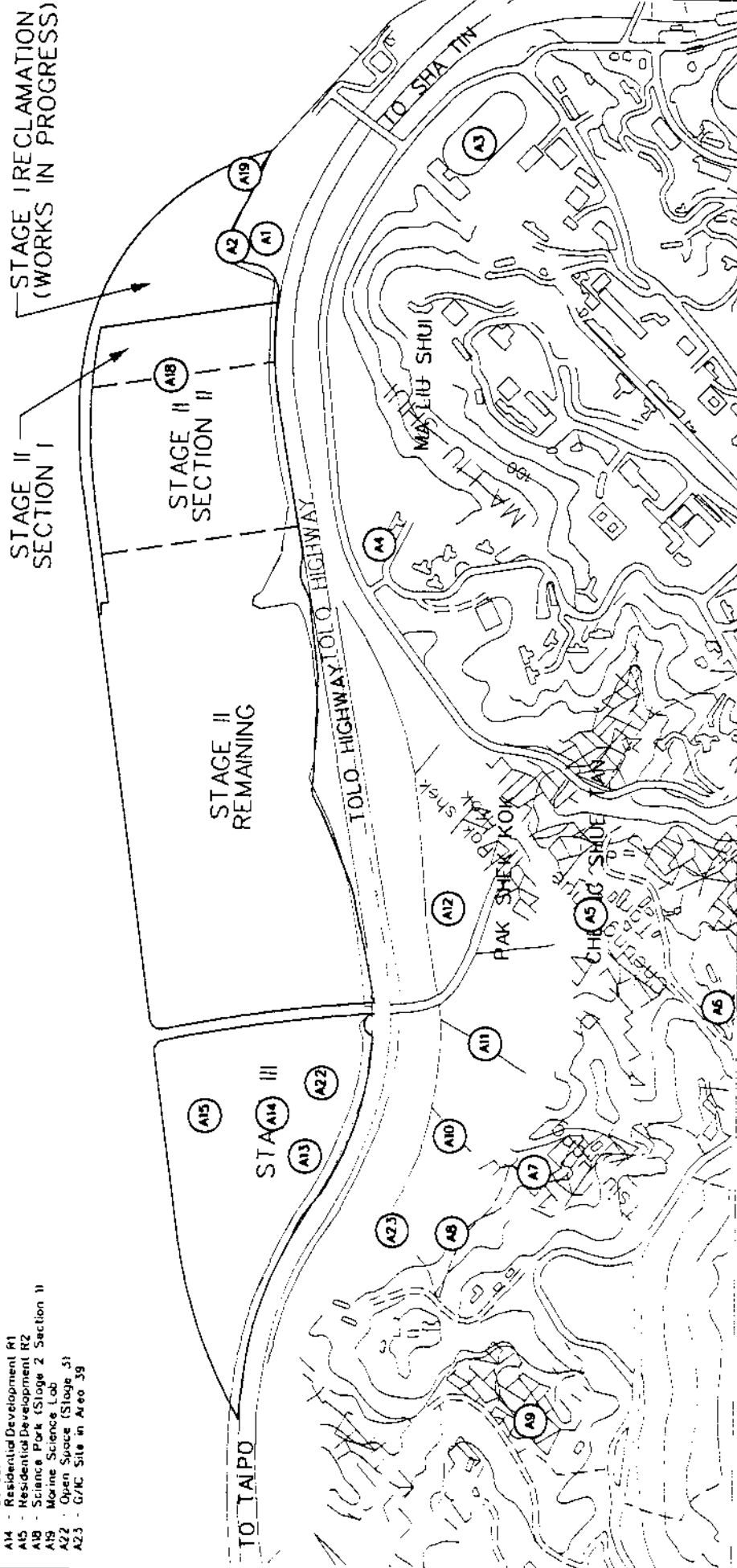
TSIU HANG

蕉坑

- A2 - HKIB Staff Accommodation
A2 - 香港生物科技研究院職員宿舍
- A3 - CUHK Playing Fields
A3 - 香港中文大學運動場
- A4 - CUHK Residential No. 10
A4 - 香港中文大學宿舍 No. 10
- A5 - Cheung Shue Tan Village
A5 - 樟樹灘村
- A6 - Wong Nai Fai Village
A6 - 黃泥塊村
- A7 - Tsiu Hang Village
A7 - 蕉坑村
- A8 - Deerhill Bay
A8 - 鹿茵山莊
- A9 - Villa Castell
A9 - 新翠山莊
- A10 - Hong Kong Institute of Education (HKIE) Playing Fields
A10 - 香港教育學院運動場
- A11 - Educational Uses in Area 12
A11 - 第12區之教育用地
- A12 - Tertiary Education Institution in Area 39
A12 - 第39區內作專上教育用地
- A13 - School
A13 - 學校
- A14 - Residential Development - R1
A14 - 住宅發展用地 - R1
- A15 - Residential Development - R2
A15 - 住宅發展用地 - R2
- A16 - Residential Development - R2
A16 - 住宅發展用地 - R2

AR SENSITIVE RECEIVERS

- Key
- A1 - Hong Kong Institute of Biotechnology (HKIB)
- A2 - HKIB Staff Accommodation
- A3 - CUHK Playing Fields
- A4 - CUHK Residence No10
- A5 - Cheung Shue Tan Village
- A6 - Wong Nai Fong Village
- A7 - Tsui Hong Village
- A8 - Deerhill Bay
- A9 - Villa Castel
- A10 - Hong Kong Institute of Education (HKE) Playing Fields
- A11 - Education Uses in Area 12
- A12 - Teritary Education Institution in Area 39
- A13 - School
- A14 - Residential Development R1
- A15 - Residential Development R2
- A16 - Science Park (Stage 2 Section 1)
- A18 - Marine Science Lab
- A22 - Open Space (Stage 3)
- A23 - G/K Site in Area 39



AGREEMENT NO. CE 90/96
 FEASIBILITY STUDY FOR PAK SHEK KOK DEVELOPMENT AREA
 LOCATION OF ASRS DURING CONSTRUCTION

SCALE : N.T.S.
 DATE : 02/06/98

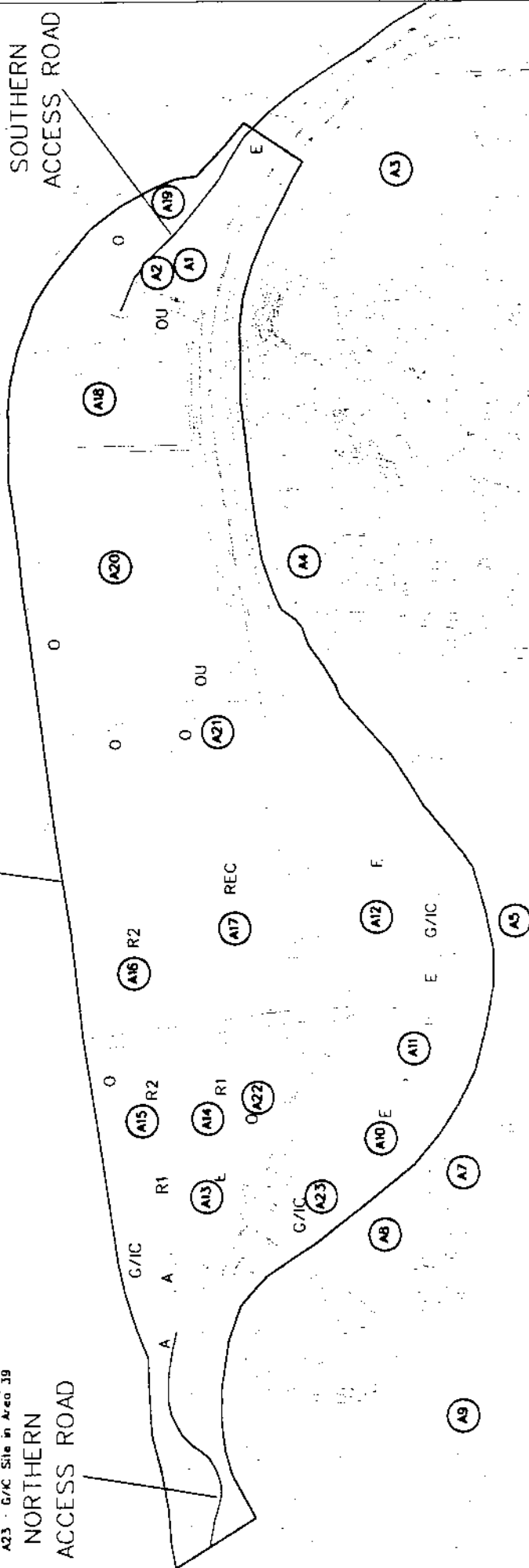
FIGURE NO. : 3.3

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 茂盛(亞洲)工程顧問有限公司

AIR SENSITIVE RECEIVERS

- A1 - Hong Kong Institute of Biotechnology (HKIB)
- A2 - HKEB Staff Accommodation
- A3 - CLKK Playing Fields
- A4 - CLKK Residence No10
- A5 - Cheung Shue Tan Village
- A6 - Wong Nai Foa Village
- A7 - Tsz Hong Village
- A8 - Deer Hill Bay
- A9 - Villa Castel
- A10 - Hong Kong Institute of Education (HKIE) Playing Fields
- A11 - Education Uses in Area 12
- A12 - Territory Education Institution in Area 39
- A13 - School
- A14 - Residential Development R1
- A15 - Residential Development R2
- A16 - Residential Development R2
- A17 - Recreational Area
- A18 - Science Park (Stage 2 Section 1)
- A19 - Marine Science Lab
- A20 - Science Park (Stage 2 Section 2)
- A21 - Open Space (Stage 2)
- A22 - Open Space (Stage 3)
- A23 - G/C Site in Area 39

STUDY AREA

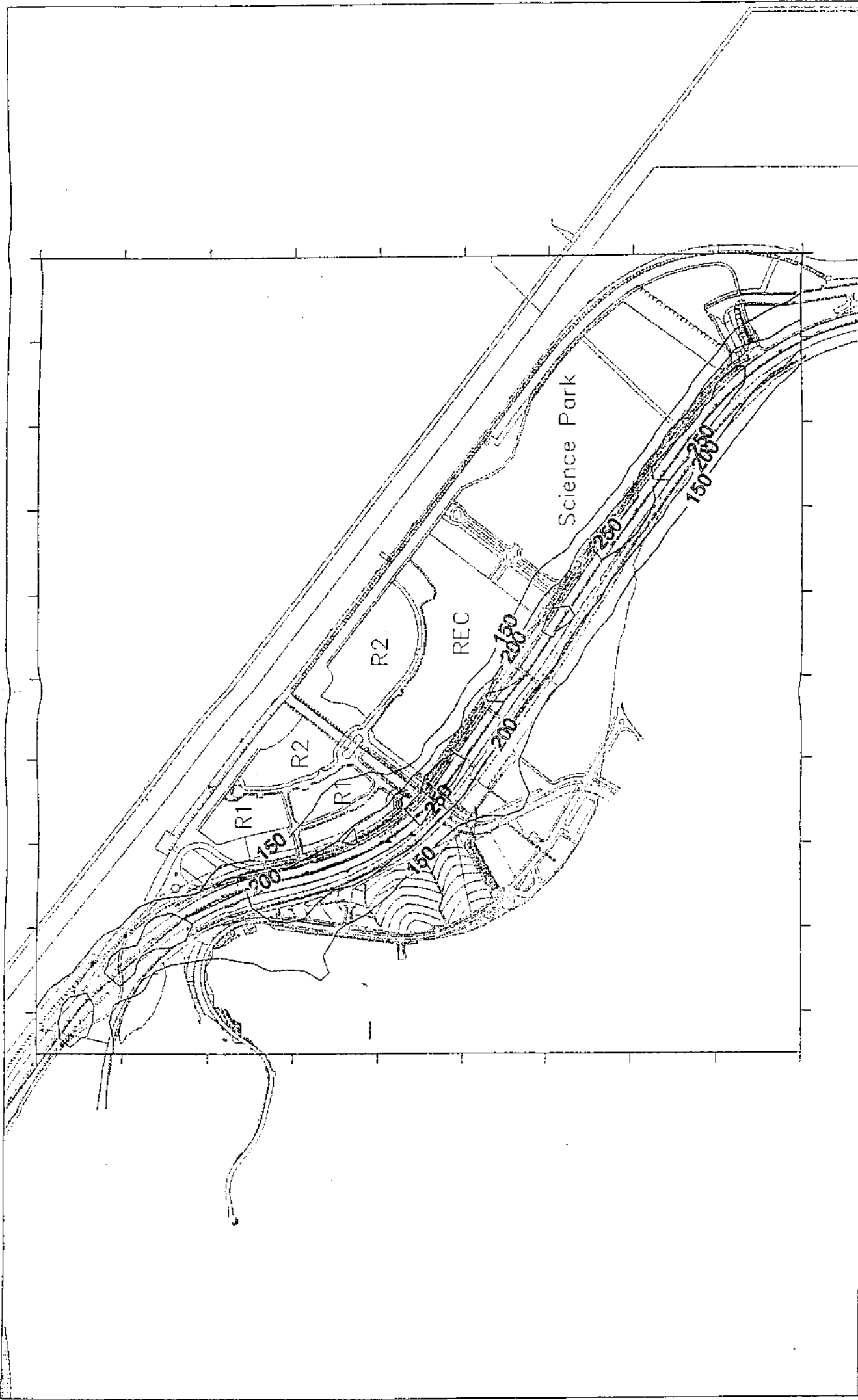


SCALE : N.T.S.
 DATE : 02/06/98

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AGREEMENT NO. CE 90/96
 FEASIBILITY STUDY FOR PAK SHEK KOK DEVELOPMENT AREA
 LOCATION OF ASRS DURING OPERATION

FIGURE NO. : 3.4

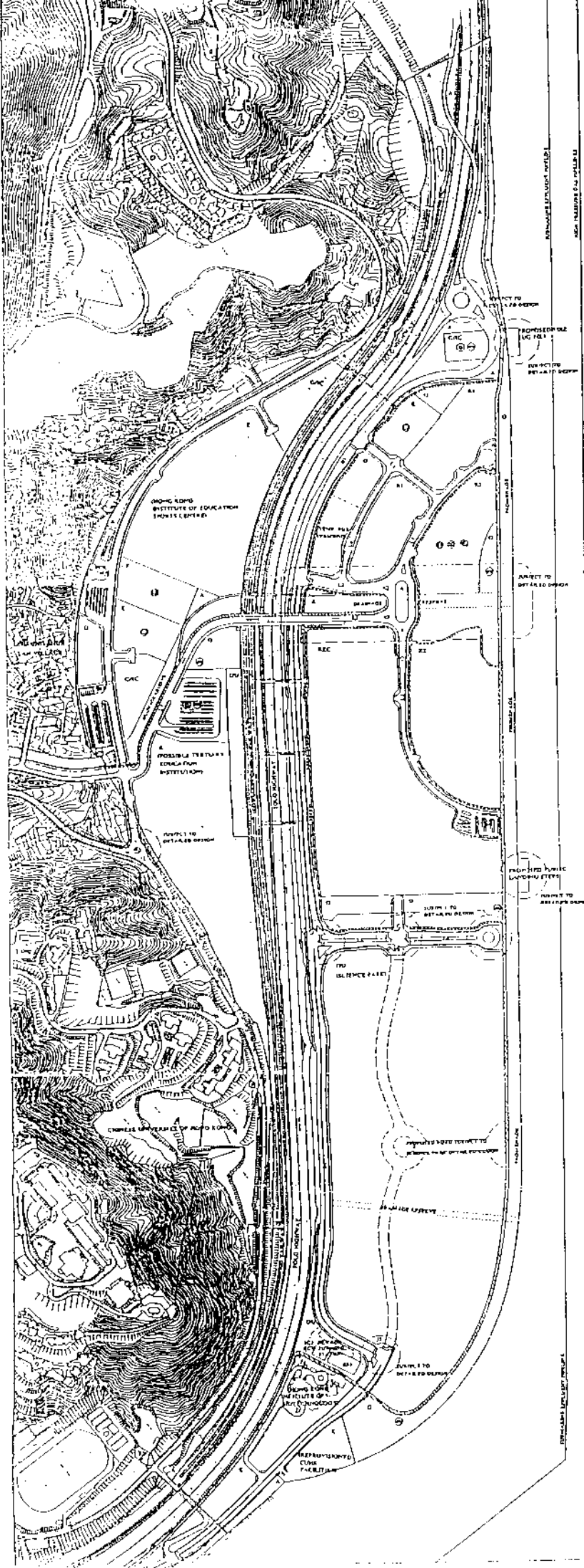


AGREEMENT NO CE 90/96
 FEASIBILITY STUDY FOR PAK SHEK KOK DEVELOPMENT AREA
 NO2 CONTOUR PLOT AT GROUND LEVEL
 (1:9/m3)

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SCALE :
 N.T.S.
 DATE :
 11/05/98

FIGURE NO. :
 3.5



	TOTAL - ZONE 1	3.0	2.54
R2	RESIDENTIAL - ZONE 2	6.2	5.26
REC	RECREATION	10	8.48
G/C	GOVERNMENT/INSTITUTION/ COMMUNITY	2.0	1.70
E	EDUCATION	16.6	14.08
O	OPEN SPACE	11	9.33
A	AMENITY AREA	3.3	2.80
OU	OTHER SPECIFIED USES	30.3	25.70
	ROADS	35.5	30.11
TOTAL		117.9	100

NOTATION	
	CAR PARK
	CYCLE PARKING AREA
	PUBLIC LIGHT BUS STATION
	BUS TERMINUS
	DIVISIONAL FIRE STATION
	AMBULANCE DEPOT
	COMMUNITY CENTRE (CARE AND ATTENTION HOMES)
	LOCAL COMMERCIAL CENTRE
	SECONDARY SCHOOL
	PRIMARY SCHOOL
	KINDERGARTEN
	BOUNDARY OF STUDY AREA
	D1 DISTRICT DISTRIBUTOR ROAD WITH NUMBER
	L1 LOCAL DISTRIBUTOR WITH NUMBER
	CYCLE TRACK

YOUR MARKING

Territory Development Department
 New Territories Planning Department
 FEASIBILITY STUDY FOR
 PAK SHEK KOK DEVELOPMENT AREA
**RECOMMENDED OUTLINE
 DEVELOPMENT PLAN**
 FINAL DRAFT 16 MAY 1978

Maunsell

Figure 2.3