

Hong Kong Housing Authority

**TERM TRAFFIC ENGINEERING
CONSULTANCY 1996 - 1999**

**EIA OF
PUBLIC ROADS AT TIU KENG LENG
VOLUME I**

FINAL REPORT






MVA ASIA Limited

ESA-146.3/BC

**EIA OF
PUBLIC ROADS AT TIU KENG LENG
VOLUME I**

FINAL REPORT

Project No.	10071/21
Version No.	1
Prepared for	Hong Kong Housing Authority

	Name	Title	Signature	Date
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EIA of Public Roads at Tiu Keng Leng Volume I

Final Report

March 1998

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1 INTRODUCTION

1.1 Background

The lead consultant for this project is MVA (Asia) Ltd who are one of the term consultants for Hong Kong Housing Authority (HKHA). CES (Asia) Ltd have been appointed by MVA to carry out the Environmental Impact Assessment (EIA) of the Study for the construction of public roads at Tiu Keng Leng, namely Roads D4, D8, L731, and L732. The general location plan of this project is shown in Figure 1.1 which also includes the extent of the 300m study boundary area.

1.2 The Proposed Project

The development of Tiu Keng Leng forms part of the Phase III development of Tseung Kwan O (TKO) New Town and was included in the TKO Feasibility Study of Opportunities for Further Development (TKOOFD) completed in May 1990. The TKOOFD was undertaken by the Territory Development Department and their Consultants. This study stated that the development of Tiu Keng Leng, Areas 72 and 73, requires the removal of the Shiu Wing Steel Works, clearance of the Tiu Keng Leng Cottage Area (formerly Rennie's Mill), reclamation in Tiu Keng Wan, and some platform formation. This area will house the major part of the Phase III population intake.

In 1989, the HKHA agreed with government to undertake the site formation and infrastructure works in Tiu Keng Leng. In 1994, EPD completed an Environmental Review for the site formation works, which has also been approved by other Government Departments. The site formation contract then commenced in March 1997 and is scheduled to be completed in July 2000.

This EIA study is for the assessment of the separate roadworks contract for the construction of public roads and associated drains in Tiu Keng Leng by the Housing Authority. These roads being distributor roads D4 and D8, and local roads L731 and L732, as shown on Figure 1.2, which also shows phasing of the roads construction programme.

1.3 Study Area

In general, the boundary of the study area for the purpose of this EIA shall be 300m from either side and along the full stretch of the proposed road alignments. However, for the visual impact assessment the study area shall be assessed regardless of the distance from the proposed road alignments.

1.4 Purpose of this EIA

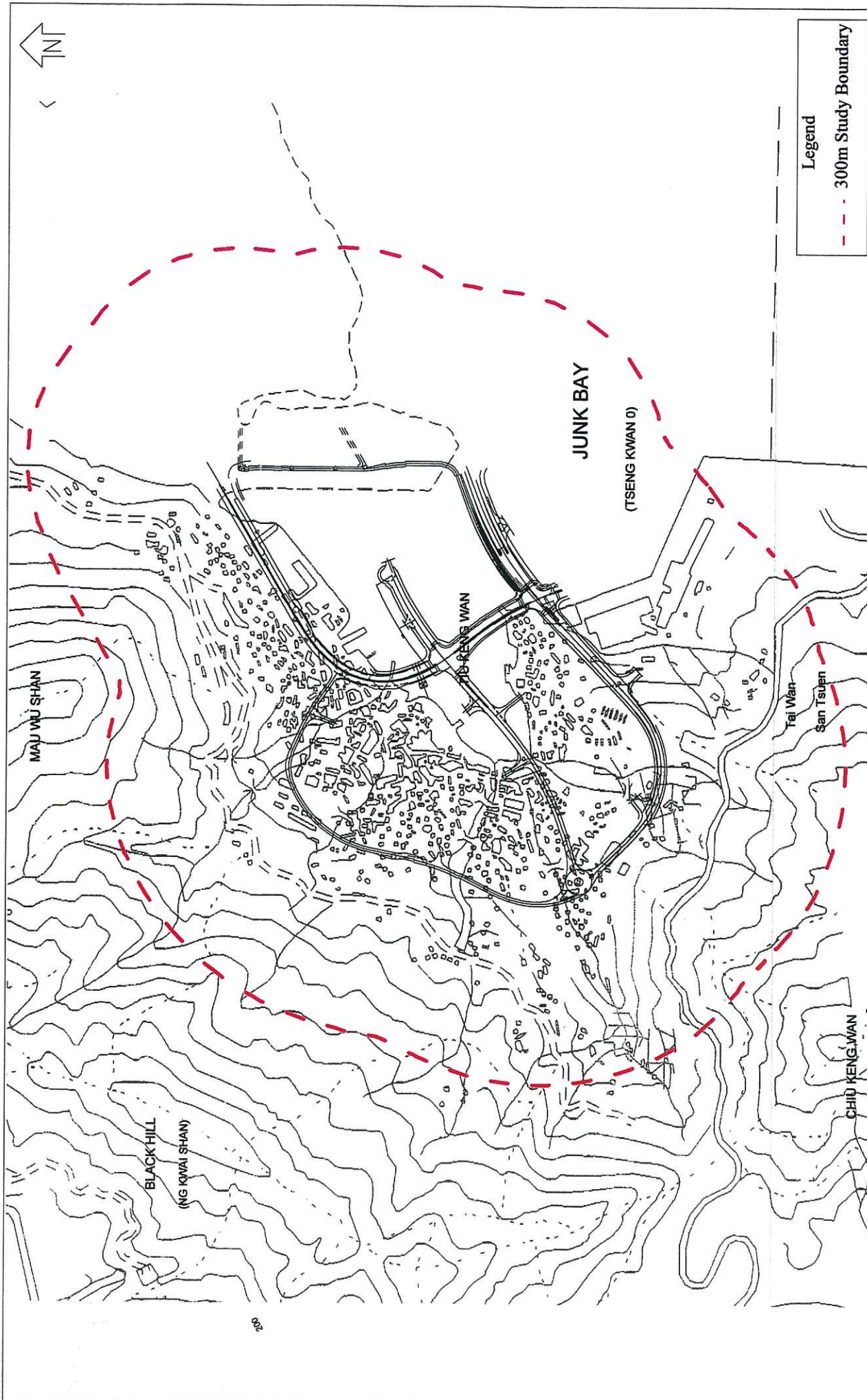
The scope of this EIA study is to provide information on the nature and extent of impacts arising from the construction and operation of Roads D4, D8, L731 and L732 at Tiu Keng Leng, Kowloon. The objective is to establish whether residual impacts are within the established standards/guidelines after any mitigation proposals are implemented.

This EIA examines impacts arising from the new roadworks on existing and future sensitive receivers. The Study Brief requires the construction phase impact assessment to include the analysis of noise impacts and monitoring/audit requirements, and the operational phase impact assessment to include the investigation of traffic noise and visual/landscape impacts.

1.5 Structure of this Report

This report is subdivided into eleven sections, namely:-

1. (This section) introduction;
2. Description of the Site;
3. Review of Previous EIA Studies;
4. Legislative Controls and Guidelines;
5. Sensitive Receivers;
6. Construction Phase Noise Assessment;
7. Operational Phase Traffic Noise Assessment;
8. Landscape and Visual Impact Assessment;
9. Land Use
10. Environmental Monitoring and Audit Requirements; and
11. Conclusions

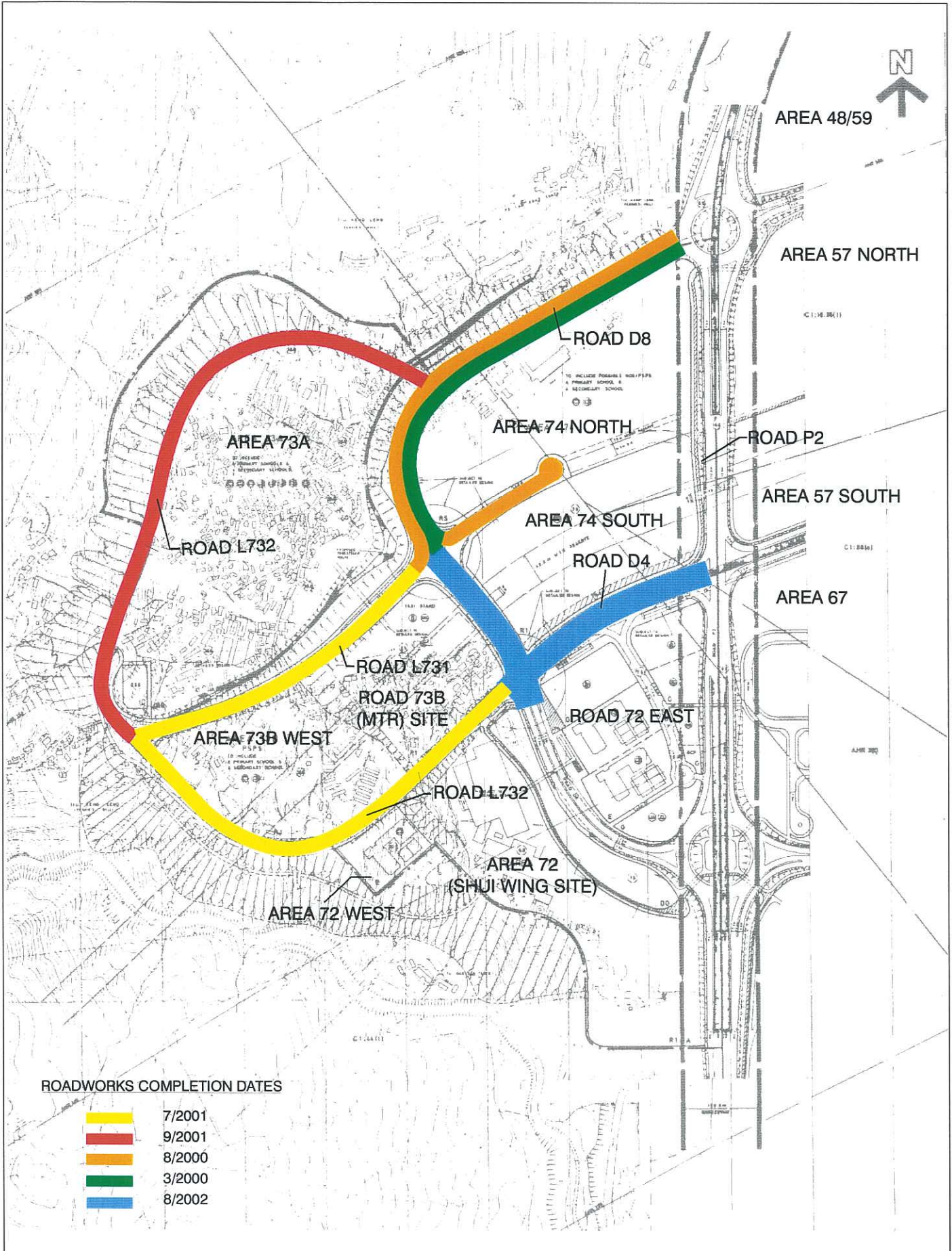


TITLE

General Location Plan with 300m Study Boundary

CES (ASIA) LIMITED

PROJECT NO.	C230	DATE	November 1997
DESIGNED	Fanny Lau	DRAWING NO.	Figure 1.1



ROADWORKS COMPLETION DATES

- 7/2001
- 9/2001
- 8/2000
- 3/2000
- 8/2002



TITLE
**Layout of the Proposed New Roads
 (Also Showing the Construction Works Phasing)**

CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	April 1998
DESIGNED	Laura Wong	DRAWING NO	Figure 1.2

2 DESCRIPTION OF THE SITE

2.1 General

The Tiu Keng Leng Area will, largely, be developed for residential use. The range of developments will include private housing, public housing, private sector participation schemes (PSPS), Home Ownership Scheme (HOS) and supporting services such as commercial centres, schools and recreational facilities.

2.2 Construction Programme

The tentative construction programme is shown in Figure 2.1 and the likely phasing of the completion of works is shown on Figure 1.2. The works will comprise the construction of drainage facilities and pavements. The roadworks are scheduled for commencement in September 1999 and completion by August 2002. The estimated completion dates of the roadworks are as follows:

- northern (eastbound) section of Road D8 from Roads P2 to L731 Aug 2000
- northern (westbound) section of Road D8 from Roads P2 to L731 Mar 2000
- Road L731 (dividing Area 74) Aug 2000
- northern section of Road L732 from Road L731 to Road D8 Sept 2001
- southern section of Road L732 Jul 2001
- Road D4 (part) Aug 2002
- southern section of Road D8 from Roads L731 to L732 Aug 2002
- Road L731 between areas 73A & 73B Jul 2001

2.3 Population Intake

The estimated timing of the population intake is shown in Table 2.1.

Table 2.1 Estimated Population Intake Dates

Housing Area	Estimated Population Intake Date
TKO Area 72 Shiu Wing Phase 1	May 2000
TKO Area 72 Shiu Wing Phase 2	April 2001
TKO Area 72 Shiu Wing Phase 3	Jul 2002
TKO Area 59 Phases 1&2	Feb 1998
TKO Area 59 Phases 3,4&7	Mar 1998
TKO Area 59 Phases 5&6	Nov 1998
TKO Area 59 Phase 8	Apr 1998
TKO Area 57	Dec 1998
TKO Area 67	Jan 2000
TKO Area 74 Phases 1,2&4	Feb 2001
TKO Area 74 Phase 3	Mar 2001
TKO Area 73A Phase 1&2	Jul 2002
TKO Area 73A Phases 3 & 4	Jan 2003
TKO Area 73B	Jan 2002

2.4 The Development Area

2.4.1 TKO Area 74 North - Housing Authority

Area 74 North is surrounded by public roads, namely, Road D8 to the north and west, P2 to the east, L731 to the south. The development includes the following:-

Phase One - Commercial Centre with car parking facilities;

Phase Two - Rental
Three, 40-storey high Harmony-1 domestic blocks

Phase Three - 21-storey high domestic block, a primary and secondary school

Phase Four - Housing Ownership Scheme
Six 40-storey high Concord-1 domestic blocks and an 8-storey high car park building.

2.4.2 TKO Area 74 South - Private Development

At the time of preparation of this Report no development plans were available of Area 74 south for assessment purposes. However, the planning parameters provided by Planning Department are as follows:

- site area: approximately 42,560 m²
- Domestic Plot Ratio: 7.15
- Maximum GFA: approximately 304,304 m²
- Estimated number of Flats: 5,530 (assuming an average flat size of 55 m²)
- Estimated Population: 14,500 (assuming a PPOF of 2.63 in the year 2004).

2.4.3 TKO Area 73A - Housing Authority

Area 73A is surrounded by public roads, namely Road L732 to the north and west, Road D8 to the east, and Road L731 to the south. The development includes:

Phase One - Rental
One 40-story high Harmony-1 domestic block with an annex building, a primary school, a commercial centre/car park with a housing for senior citizens in the podium level

Phase Two - Rental
Two 40-storey high Harmony-1 domestic blocks and a primary school

Phase Three - Housing Ownership Scheme
Four 37-storey high New Cruciform Block and a secondary school

Phase Four - Housing Ownership Scheme
Five 40-storey high concord-1 domestic blocks and a secondary school

2.4.4 TKO Area 73B -MTRC

Area 73B east is surrounded by public roads, namely Road L731 to the north, Road L732 to the west and south and Road D8 to the east. This section of the development site will be developed by the Mass Transit Railway Corporation (MTRC), which will include ten domestic blocks.

2.4.5 TKO Area 73B west - PSPS

Area 73B west is bounded by Roads L731 and L732. The site is designed for Private Sector Participation Scheme (PSPS) development and two schools. At the time of reporting there was no layout of the area available. Therefore, for the purposes of the traffic noise impact assessment a hypothetical layout of Area 73B was prepared. This layout was derived from the planning parameters provided by the Housing Authority, which were as follows:

- Site Area: 1.74 ha
- Number of flats proposed: 2,650
- Design Population: 8,640
- Total domestic ground floor area: 138,880 m²
- Plot Ratio: 8

It should be noted that, subsequent to the issue of the Draft Final Report, a proposed layout of Area 73B was made available. This proposed layout can be found in Appendix E.

2.4.6 TKO Area 72 (east) - G/IC Sites

Area 72 east is surrounded by public roads, namely Road D4 to the north, D8 to the west and south, and Road P2 to the east. This area has been outlined for G/IC use and at the time of issue of this report it has been proposed that two schools, and a police station be constructed on this site. The proposals are only conceptual and are subject to change.

2.4.7 TKO Area 72 (Shiu Wing Site)

TKO Area 72 (Shiu Wing) will be a private development site served by Road L732 to the north. This residential/commercial redevelopment site was previously occupied by Shiu Wing Steel Ltd., and it is being redeveloped by a private developer (Arrowtown Assets Ltd). The site will comprise the following:-

- Tower blocks 1, 2 & 3 (41 storeys high)
- Tower blocks 5, 6, 7, and 8 (44 storeys high)
- Tower blocks 9, 10, 11 & 12 (45 storeys high)
- recreational facilities
- car parking
- commercial facilities

2.4.8 TKO Area 72 (west) - G/IC site (one school)

Area 72 west is adjacent to Area 72 (Shiu Wing Site) and south of Area 73B. The proposed development comprises one school serviced by Road L732 to the northeast.

2.4.9 TKO Area 67 - Housing Authority

Area 67 is surrounded by public roads, namely, Road P2 to the west, Road D4 to the north, Road L652 to the east, and Road L 653 to the south. At the time of issue of the draft Final Report the proposed plan for this development area was as follows:-

- nine PSPS blocks (Blocks 1 to 5 are 40-storeys high, and blocks 6 to 9 are 33-storeys high above a 3-storey podium)
- one single aspect block (25-storeys high)
- shopping complex, containing shops, a kindergarten, a nursery and a car park (3-storey high)

The assessment was undertaken based on the most up to date layout available at the time of issue of the draft Final Report (see Figure 5.12). However, it should be noted that the proposals for this area have subsequently been changed to a Sandwich Class Housing Project. A preliminary roof plan is shown in Appendix E.

2.4.10 TKO Area 57 North - HOS Development

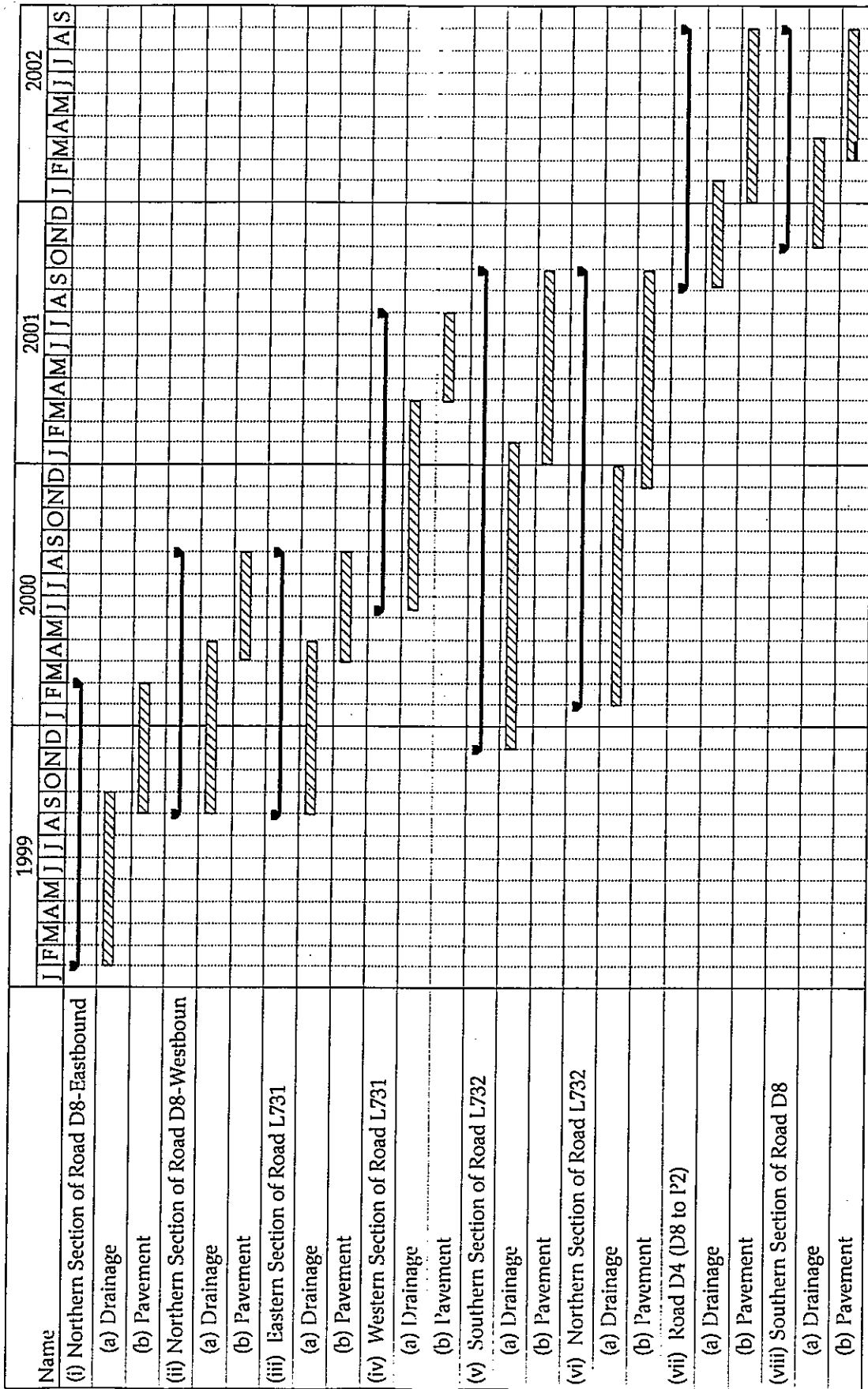
Area 57 North is surrounded by public roads; namely, Road P2 to the west, Road L463 to the north, Road L462 to the east and Road L464 to the south. This HOS development site consists of three 40-storey high Harmony 1 domestic blocks and a car park building.

2.4.11 TKO Area 57 South - Private Development

Area 57 South is surrounded by public roads, namely, Road P2 to the west, Road L464 to the north, Road L462 to the east and Road D4 to the south. This development site consists of nine domestic blocks.

2.4.12 TKO Area 59 - Housing Authority

Area 59 is bounded by P2 to the west and north, D1 to the east and L463 to the south. This site is under construction by the Housing Authority for residential use.



TITLE



Tentative Construction Programme

CES (Asia) LIMITED

PROJECT NO	C230	DATE	January 1998
DESIGNED	Maggie Wong	DRAWING NO	Figure 2.1

3 REVIEW OF PREVIOUS EIA STUDIES

3.1 Introduction

Predicted impacts in the Tseung Kwan O area have been the subject of several detailed environmental studies. The objective of this section is to outline the noise mitigation measures already identified for the public roads D4, D8, L731 and L732. Furthermore, this section identifies the mitigation measures for Road P2 which is within the 300m study boundary area. This is necessary as the operational phase noise impact assessment will include these measures in the unmitigated scenario. This is undertaken because contribution of road traffic noise from P2 is a significant factor and any, previously agreed, proposed mitigation will lower cumulative noise levels affecting sensitive receivers. Plans showing the suggested locations of mitigation measures recommended in these previous studies can be found in Appendix A.

Following this summary of mitigation measures a review will be carried out which will consider the implications of Hong Kong Government "*Noise Mitigation Works for Public Roads*" Guidelines (NOMPRO), and the constraints caused by the progress of various development projects and hence the feasibility of the identified measures.

3.2 Mitigation Measures Recommended in Previous Studies

3.2.1 Territory Development Department Hong Kong Government (TDD) Feasibility Study of Opportunities for Further Development (TKOOFD) - May 1990 (Appendix A - Figure A1)

This study was completed in May 1990 and recommended the following noise mitigation measures:-

- Pervious macadam road surfacing;
- four sections of noise canopies along Road P2 to protect the residential blocks in Area 59;
- four sections of noise canopies to protect the residential blocks along Road D4 in sites 55a, 55b, 65a, 65b, 57a, 57b, Areas 67, and 74; and
- three sections of noise canopies to protect the residential blocks along Road D8 in Area 74.

3.2.2 Housing Authority, Noise Assessment Study of TKO Area 59 - Sept 1994 (Appendix A - Figure A2)

This study, completed in September 1994, recommended the following:-

- Pervious macadam road surfacing on Roads P2; and
- Noise barriers on Road P2 (a combination of 8m and 6.5m high).

3.2.3 Territory Development Department, EIA of TKO Town Centre North- Roads, Bridges and Subways - May 1995 (Appendix A - Figure A3)

This study, completed in May 1995, recommended two sections of noise barriers along Road P2 at the following locations :-

- 6.5m and 6m noise barriers along Road P2 and the slip road;
- 2m high barriers on top of the edge of the parapet along the southbound lane of Road P2 flyover to the south of the roundabout at Roads P2 and L463; and
- open textured road surfacing on Roads P2.

3.2.4 Housing Authority, Noise Assessment of Tiu Keng Leng Public Housing Area 74 North - Jul 1996 (Appendix A - Figure A4)

This study, completed in Jul 1996, recommended a 2m high (140m long) noise barrier along the northbound kerb of Road P2 to protect the secondary school in Area 74.

3.2.5 Housing Authority, Environmental Noise and Vehicular Emissions Impact Assessment for the proposed development at TKO Area 67 - Sept 1997 (Appendix A - Figure A5)

This study, completed in September 1997, recommended the deck-over of two sections of Road D4 (between Areas 67/57 and Areas 55/65).

3.2.6 Territory Development Department, EIA of Engineering Infrastructure in TKO Town Centre Central - Sept 1997 (Appendix A - Figure A6)

This study, which reviewed the mitigation options outlined in the TKOOFD Study was completed in September 1997. It was recommended that the following measures would be practical and effective:-

- pervious macadam road surfacing on Road P2;
- deck-over of two sections of Road D4 (no change from section 3.2.1 (Road D4); and
- 2m plain noise barrier along the edges of the P2 flyover to the south of the roundabout on Road P2.

3.2.7 Arrowtown Assets Ltd., EIA of Residential/commercial Redevelopment of TKO Area 72 (Shiu Wing Steel Site) - Sept 1997 (Appendix A - Figure A7)

This study, completed in September 1997, suggested that, pervious macadam road surfacing on Road P2, and a 3m high noise barriers on Road P2, should be considered.

3.2.8 Housing Authority, Environmental Assessment Study of Tiu Keng Leng Public Housing Development Area 73A -Sept 1997 (Appendix A - Figure A8)

This study, completed in September 1997, recommended the following:-

- 7.5m noise barrier along Road L731 adjacent to block 6; and
- 2.5m noise barrier along Road D8 adjacent to the secondary School (SS1).

3.3 Feasibility Review of Mitigation Measures

Table 3.1 summaries the above mentioned mitigation measures together with a review of their feasibility.

Table 3.1 Review of the Feasibility of Proposed Mitigation Measures

Road	Mitigation Measures	Feasibility Review
P2	(a) sections of canopies ¹ (b) 8m high noise barrier ² (c) 6m and 6.5m noise barrier along Road P2 and the slip road ³ (d) 2m high noise barrier adjacent to Area 57 ^{3&4} (e) 3m high noise barrier east of Area 55 ⁷	Recommendations (a) and (b) superseded by recommendations made in the TKO Town Centre North EIA Study which recommends (c). But NOMPRO recommends that 6m should be the maximum height of a noise barrier on a primary distributor road. Recommendation (d) is feasible and has been incorporated in the unmitigated scenario of the noise impact assessment. Recommendation (e) is feasible but is too far from the study area to require input in the prediction modelling.
D4	(a) 4 sections of noise mitigation canopy or deck-over ^{1,5,6,9}	Recommendations only feasible if there are no constraints on the engineering/safety requirements. A detailed review of the need to have the section of canopy/deck-over at Area 74 (south) over part of Road D4 is discussed in section 7 of this report.
D8	(a) 3 sections of canopies ¹ (b) 2.5m high noise barrier ⁸	Recommendations to provide mitigation measures at these locations are reviewed in section 7 of this report
L731	(a) 7.5m high noise barrier adjacent to block 8 Area 73A ⁸	Recommendations to provide barriers at this location will be reviewed in section 7 of this report particularly since the maximum height of barriers recommended in NOMPRO is 3m on a local distributor road.
L732	none recommended	n/a

- Notes
- 1 TKO Feasibility Study of the Opportunities for Further Development - May 1990
 - 2 Noise Assessment Study of TKO Area 59 - Sept 1994
 - 3 EIA of TKO Town Centre North- Roads, Bridges and Subways - May 1995
 - 4 Noise Assessment of Tiu Keng Leng Public Housing Area 74 North - Jul 1996
 - 5 Environmental Noise and Vehicular Emissions Impact Assessment for the proposed development at TKO Area 67 - Sept 1997
 - 6 EIA of Engineering Infrastructure in TKO Town Centre Central - Sept 1997
 - 7 EIA of Residential/commercial Redevelopment of TKO Area 72 (Shiu Wing Steel Site) - Sept 1997
 - 8 Environmental Assessment Study of Tiu Keng Leng Public Housing Development Area 73A -Sept 1997
 - 9 Subsequent to the issue of the Draft Final Report the Consultants were informed that Government has decided to provide deck-overs at Road D4 fronting Areas 65 and 67.

3.4 Committed Further Studies

It is understood that there are a number of, site specific, environmental assessments still under preparation, *inter alia*, Environmental Reviews of Area 74 (south), 73A 73B, and 72 (west), an Environmental Impact Assessment for Area 73B (MTRC site), and the finalisation of the TKOLT 55 Shiu Wing Site EIA. These studies will look at on-site mitigation measures in more detail.

4 LEGISLATIVE CONTROLS AND GUIDELINES

4.1 Traffic Noise

There are currently no statutory controls to limit the impacts from road traffic noise, however, the Hong Kong Planning Standards and Guidelines (HKPSG) provide criteria. These are provided in Table 4.1.

Table 4.1 Hong Kong Planning Standards and Guidelines: Road Traffic Noise

Use	Road Traffic Noise dB(A)
Domestic premises	70
Offices	70
Educational institutions including kindergartens and nurseries	65
Hospitals, clinics, convalescences and homes for the aged	55

Notes: The above standards apply to uses which rely on opened windows for ventilation.
Facade noise levels are quoted in terms of L10(1-hour)

In case practical and effective direct mitigation measures are not available or the identified measures cannot provide adequate protection to reduce the noise levels of existing receivers to within the HKPSG standard, provision of indirect technical remedies in the form of acoustic insulation and air conditioning should be considered under the ExCo directive *"Equitable Redress for Persons Exposed to Increased Noise Resulting From the Use of New Roads"*. The eligibility for indirect technical remedies should be tested against the following three criteria and recommendations should be presented to ExCo for approval.

- The predicted overall noise level from the new or improved road together with other traffic noise in the vicinity must be above the HKPSG criteria.
- The predicted noise level must be at least 1.0 dB(A) more than the prevailing noise level, ie the total traffic noise level existing before the works to construct the road were commenced.
- The contribution to the increase in the noise level from the new road must be at least 1.0 dB(A).

4.2 Construction Noise

The Noise Control Ordinance provides for the control of construction noise. Assessment procedures and standards are set out in three Technical Memoranda associated with the NCO: *Technical Memorandum on Noise from Construction Work in Designated Areas (TM1)*, *the Technical Memorandum on Noise from Construction Work other than Percussive Piling (TM2)* and *the Technical Memorandum on Noise from Percussive Piling (TM3)*.

Under the existing provisions, there is no legal restriction on noise generated by construction activities (other than percussive piling) between the hours of 0700 and 1900 on normal weekdays. However, EPD's *Practice Note for Professional Persons PN 2/93* sets a non-statutory daytime noise limit of 75 dB(A) L_{eq} (30 min) at the facades of dwellings, and 70 dB(A) at the facades of schools (65 dB(A) during examinations).

Outside the hours of 0700 to 1900, the NCO applies, and contractors are required to obtain a Construction Noise Permit (CNP) to carry on works involving powered mechanical equipment and/or prescribed works. The applicable noise limits depend upon the existing noise environment in which a NSR is located, and is reflected in an Area Sensitivity Rating (ASR). Table 4.2 below shows the Basic Noise Limits for construction sites outside designated areas or where a site lies within a designated area where no SPME is involved.

Table 4.2 Construction Noise: Basic Noise Limits

Time Period	Basic Noise Level dB(A)		
	ASR = A	ASR = B	ASR = C
All days during the evening (19.00-23.00), and general holidays during the daytime and evening (07.00-23.00)	60	65	70
All days during the night-time (23.00-07.00)	45	50	55

TM1 serves to control noise from construction works conducted inside the boundary of indicated designated areas caused by Specified Powered Mechanical Equipment (SPME) and/or Prescribed Construction Work (PCW). SPME includes particularly noisy items of plant, such as *inter alia* handheld percussive breakers, bulldozers, dump trucks, concrete lorry mixer and vibratory pokers. PCW includes activities such as *inter alia* erection or dismantling of formwork or scaffolding, handling rubble etc. and hammering. For any such activities conducted outside the hours of 0700 to 1900, the TM2 applies and contractors are required to obtain a Construction Noise Permit (CNP) from the Noise Control Authority for all SPME and PCW. CNPs are issued at the discretion of the Noise Control Authority, and any conditions which may be attached to such CNPs must be strictly complied with.

With regard to construction works subject to the TM1, the applicable acceptable Basic Noise Levels (BNLs) for evening, night-time and holiday works are shown in Table 4.3.

Table 4.3 Basic Noise Levels Within Designated Areas

Time Period	Basic Noise Level L_{eq} (dB(A)) at Facade of nearest NSR ²		
	ASR = A	ASR = B	ASR = C
All days during the evening (19:00 to 23:00 hours) and general holidays during the daytime and evening (07:00 to 23:00 hours) ¹	45	50	55
All days during the night-time (23:00 to 07:00 hours) ¹	30	35	40

NOTES:

¹ From the NCO *Technical Memorandum on Noise from Construction Work in Designated Areas* (measurement period 5 minutes).

² Does not apply to noise from percussive piling.

Applications for CNP will be assessed by the Noise Control Authority (EPD). The CNP is a statutory document issued under the NCO and may include conditions, such as permitted hours of operation, type and number of equipment items allowed to be used, and noise control measures to be adopted, which must be observed.

In addition, the NCO requires that hand-held percussive breakers over 10 kg and air compressors bear Noise Emission Labels, certifying that they comply with noise emission standards.

Percussive piling is subject to controls during the daytime, and is prohibited between 1900 and 0700 on normal weekdays and all day on public holidays (including Sunday). Permitted hours of piling depend on the noise levels as received at the worst-affected NSRs: The Acceptable Noise Level (ANL) for piling is 85 dB(A), based on the assumption that the NSRs have openable windows and no central air-conditioning. The permitted hours of piling are shown in Tables 4.4 and 4.5 (i to v).

Table 4.4 Construction Noise: Permitted Hours of Operation for the Carrying Out of Piling Work Not Involving the Use of Diesel, Pneumatic and/or Steam Hammers

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL) $CNL-ANL$	Permitted hours of operation on any day not being a general holiday
10 dB(A) < $CNL-ANL$	0800 to 0900 AND 1230 to 1330 AND 1700 to 1800
0 dB(A) < $CNL-ANL$ ≤ 10 dB(A)	0800 to 0930 AND 1200 to 1400 AND 1630 to 1800
$CNL-ANL$ ≤ 0 dB(A)	0700 to 1900

Table 4.4 is also applicable to the piling work involving the use of diesel hammers permitted under Section 3.3 of the TM on Noise from Percussive Piling.

Table 4.5 Construction Noise: Permitted Hours of Operation for the Carrying Out of Piling Work Involving the Use of Diesel, Pneumatic and/or Steam Hammers

(i) Effective for percussive piling work to be conducted until 31.3.98

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), CNL-ANL	Permitted hours of operation on any day not being a general holiday
10 dB(A) < CNL-ANL	0800 to 0900 AND 1230 to 1330 AND 1700 to 1800
0 dB(A) < CNL-ANL ≤ 10 dB(A)	0800 to 0930 AND 1230 to 1400 AND 1630 to 1800
CNL-ANL ≤ 0 dB(A)	0700 to 1900

(ii) Effective for percussive piling work to be conducted between 1.4.98 and 30.9.98 (Stage 1)

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), CNL-ANL	Permitted hours of operation on any day not being a general holiday
20 dB(A) < CNL-ANL	Nil
10 dB(A) < CNL-ANL ≤ 20 dB(A)	0800 to 0900 AND 1230 to 1330 AND 1700 to 1800
0 dB(A) < CNL-ANL ≤ 10 dB(A)	0800 to 0930 AND 1200 to 1400 AND 1630 to 1800
CNL-ANL ≤ 0 dB(A)	0700 to 1900

(iii) Effective for percussive piling work to be conducted between 1.10.98 and 31.3.99 (Stage 2)

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), CNL-ANL	Permitted hours of operation on any day not being a general holiday
10 dB(A) < CNL-ANL	Nil
0 dB(A) < CNL-ANL ≤ 10 dB(A)	0800 to 0930 AND 1200 to 1400 AND 1630 to 1800
CNL-ANL ≤ 0 dB(A)	0700 to 1900

(iv) Effective for percussive piling work to be conducted between 1.4.99 and 30.9.99 (Stage 3)

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), CNL-ANL	Permitted hours of operation on any day not being a general holiday
0 dB(A) < CNL-ANL	Nil
CNL-ANL ≤ 0 dB(A)	0700 to 1900

(v) Effective for percussive piling work to be conducted on or after 1.10.99 (Stage 4)

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), $CNL-ANL$	Permitted hours of operation on any day not being a general holiday
$-10 \text{ dB(A)} < CNL-ANL$	Nil
$CNL-ANL \leq -10 \text{ dB(A)}$	0700 to 1900

4.3 Landscape and Visual Assessment

The requirement to assess the landscape and visual impact of the project has been undertaken as part of the necessity to address visual issues within the environmental review and assessment process.

Evaluation guidelines are given in the following literature:-

- Part 5, Section 3, Vol.11 Design Manual for Roads and Bridges, Transport Department, UK;
- Guidelines for Landscape and Visual Impact Assessment, the Landscape Institute and Institute of Environmental Assessment; and
- Annexes 10 & 18 of the EIA Ordinance Technical Memorandum of Hong Kong Government.

These outline the criteria to be considered when assessing landscape and visual impacts.

5 SENSITIVE RECEIVERS

5.1 Construction Phase

5.1.1 Noise

Five representative noise sensitive receivers (NSRs) were selected for assessment purposes. There are only a limited number of NSRs affected because; all works will be situated on reclaimed land, therefore there are no existing NSRs in close proximity to the works areas; population intake for the new developments occur after the completion of the roadworks; and buildings on the perimeter of the reclamation area such as village houses have been vacated and demolished to make way for the development of the Tseung Kwan O Area, with the exception of the Po Yin Temple which is included in the construction noise impact assessment.

Some future NSRs have been included in this assessment because the works schedule will coincide with the occupation of some of the residential development population intakes (see Table 2.1). Details of the five selected NSRs are given in Table 5.1. Note that no date is available for the population intake of Areas 72 east and west (schools sites) but it is unlikely that they will be occupied prior to the completion of the roadworks.

Table 5.1 Construction Phase Noise Sensitive Receivers

Sensitive Receiver ID	Location/Description	Type	Occupation
CN1	Po Yin Temple	Temple	Existing
CN2	Area 59 - block on the south western corner of the site	Residential	Mar 1998
CN3	Area 57 (N) - block adjacent to road P2	Residential	Dec 1998
CN4	Area 57 (S) - block on the south western corner of the site	Residential	2002/2003*
CN5	Area 67 - block 9 on the north western corner of the site	Residential	Jan 2000

Note: * This date is an assumed date only because no completion date is available for this private property development site, to be constructed by Sun Hung Kai Properties. The above dates were assumed so that they would become sensitive to construction phase noise impacts.

The locations of these construction phase NSRs are indicated in Figure 5.1

5.2 Operation Phase

5.2.1 Noise

A large number of NSRs were selected for assessment purposes, the details of which are shown in Table 5.2.

Table 5.2 Noise Sensitive Receivers

NSR ID	Location		Total No.
Residential			
1 to 74	Area 74 north		74
170 to 177	Area 74 north		8
75 to 169	Area 73A		95
R1 to R34	Area 74 south		34
O14 to O26	Area 73B east(MTRC)		13
H1 to H57	Area 73B west		57
O33 to O51	Area 72 Shiu Wing		19
Ex-1 to Ex-6	Area 67		6
Ex-7 to Ex-18	Area 57 north		12
Ex-19	Area 59		1
Ex-20 to Ex-25	Area 57 south		6
Schools			
S1 to S16	Primary	Area 74 north	16
S17 to S33	Secondary	Area 74 north	17
S34 to S50	Secondary	Area 73A (phase 1)	17
S51 to S66	Primary	Area 73A (phase 2)	16
S67 to S83	Secondary	Area 73A (G/IC Site)	17
S84 to S100	Secondary	Area 73A (G/IC Site)	17
S101 to S116	Primary	Area 73A (G/IC Site)	16
S117 to S133	Secondary	Area 73A (phase 3)	17
S134 to S149	Primary	Area 73A (phase 4)	16
S150 to S166	Secondary	Area 73B	17
S167 to S182	Primary	Area 73B	16
S183 to S198	Primary	Area 72 west	16
S199 to S215	Secondary	Area 72 east	17
S216 to S232	Secondary	Area 72 east	17
Places of Worship			
Ex-26	Po Yin Temple		1

These represent a total of 548 noise sensitive receivers comprising 315 residential receiver locations and 232 school receiver locations and one place of worship. The locations of these operational phase NSRs are shown in Figures 5.2 to 5.12.

Noise level prediction modelling was carried out at every Second floor level of each residential block, starting from the first floor (no modelling was required for the entrance/ground level of each block), unless stated otherwise. For the schools, calculations were undertaken at all classrooms on every floor.

5.2.2 Landscape and Visual

As practically all of the study area is newly reclaimed land, landscape impacts will be limited in number and extent. The only area of concern is the proposed cut slopes; into Lei Yue Mun headland, to the west of the proposed roads.

Many of the future sensitive receivers for visual impact will be the residents in the immediate area. Visual impact is dependent upon direct line of sight and the level of impact is inversely proportional to the distance from the source of the impact.

Consequently, the residential receivers in the vicinity of the site will be similar to those identified in the operational phase road traffic noise assessment. The direct line of sight will be restricted to the front-line of flats within the front-line of blocks within Area 73A, Area 73B west, Area 73B (MTRC Site), Area 74 north and south, Area 72 (Shiu Wing Site and schools sites to the west and east). Together, the four new public roads have significant frontage onto Tiu Keng Leng, and cumulatively there will be a significant number of flats with direct line of sight of the roads.

In addition to the above residential receivers, there will be further visual sensitive receivers. These arise from two differences to be considered for visual impact, namely;

- i. the distance for consideration for visual impact may be up to 4km, or even longer in exceptionally clear visibility. This is a much greater study area than is required for the road traffic noise assessment, which generally is 300m.
- ii. the sensitive receivers to be considered for visual impact requires far more concern regarding people located or travelling through public land; such as travelling along roads or walking in hilly areas.

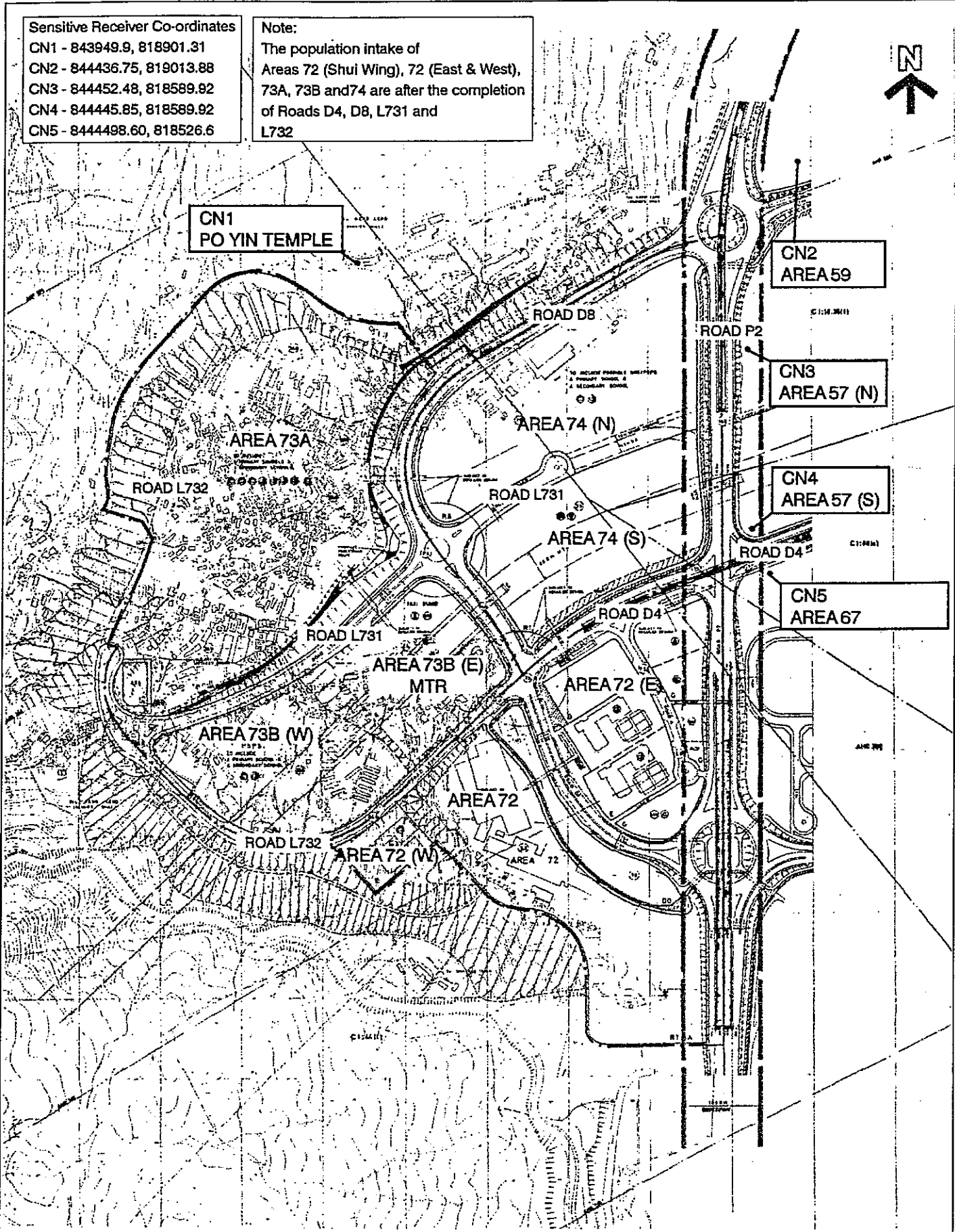
This means the number of sensitive receivers will be greater than the residents mentioned above. However, it should be noted that views from the wider area; from Tseung Kwan O New Town and from the east, will be screened by the blocks located in Area 74. Of greater concern will be members of the general public walking or travelling by vehicle in the area and people walking in the hills at Lei Yue Mun peninsula, to the west.

5.2.3 Land use

Tseung Kwan O is physically separated from the rest of Sai Kung District in SE New Territories. The northern, eastern and western sides of the new town at Tiu Keng Leng are bounded by hillslopes. Settlements including village houses have been vacated and demolished to make way for the major works, with the exception of the Po Lin Temple which is the only building in the study area that remains occupied. The public roads construction will only be possible on completion of the platform formation and reclamation contracts. As land has to be created to accommodate the development, there are no land use sensitive receivers affected by the construction of the new roads.

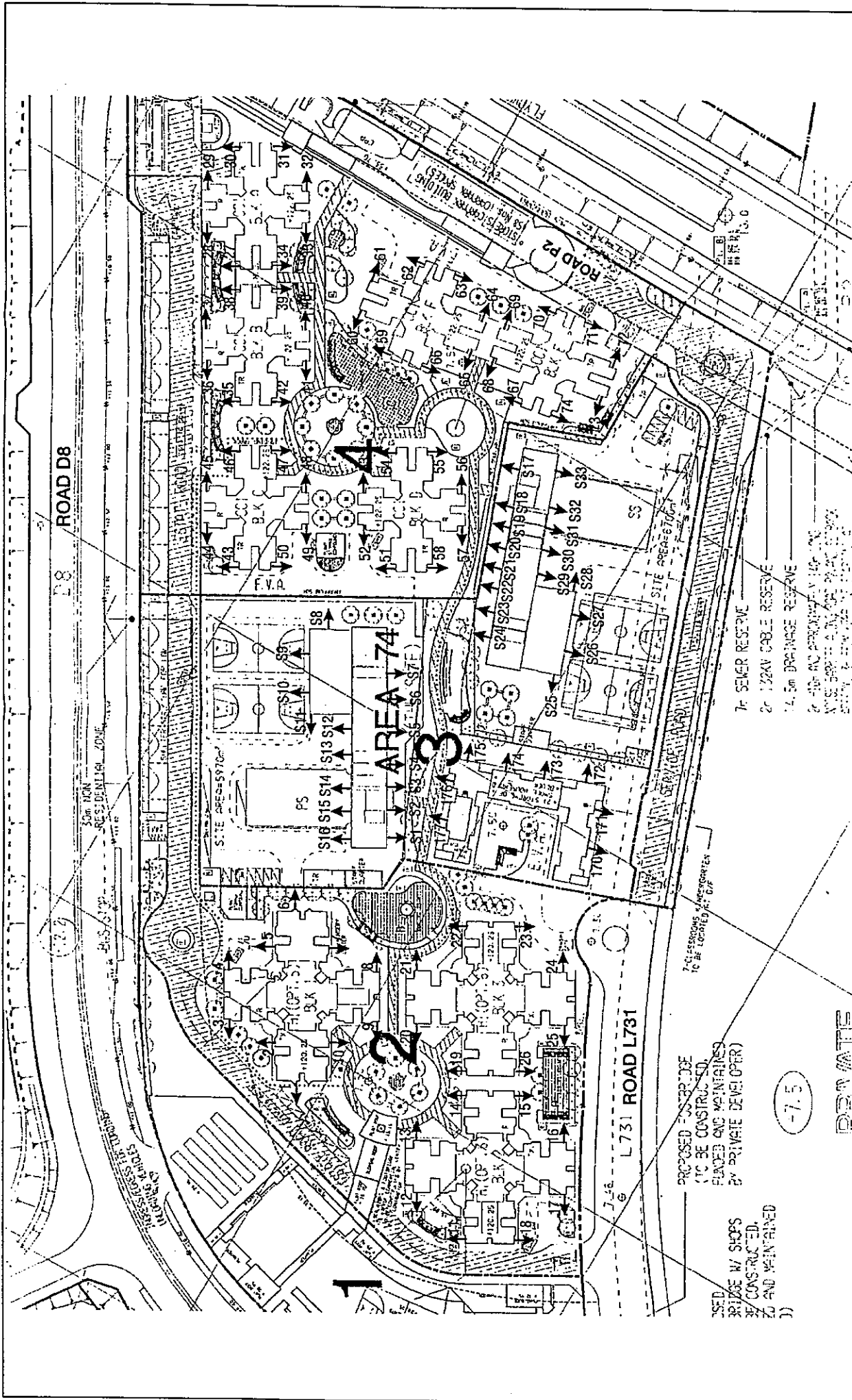
Sensitive Receiver Co-ordinates
 CN1 - 843949.9, 818901.31
 CN2 - 844436.75, 819013.88
 CN3 - 844452.48, 818589.92
 CN4 - 844445.85, 818589.92
 CN5 - 8444498.60, 818526.6

Note:
 The population intake of
 Areas 72 (Shui Wing), 72 (East & West),
 73A, 73B and 74 are after the completion
 of Roads D4, D8, L731 and
 L732



TITLE
 Construction Phase Noise Sensitive Receivers

CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Figure 5.1



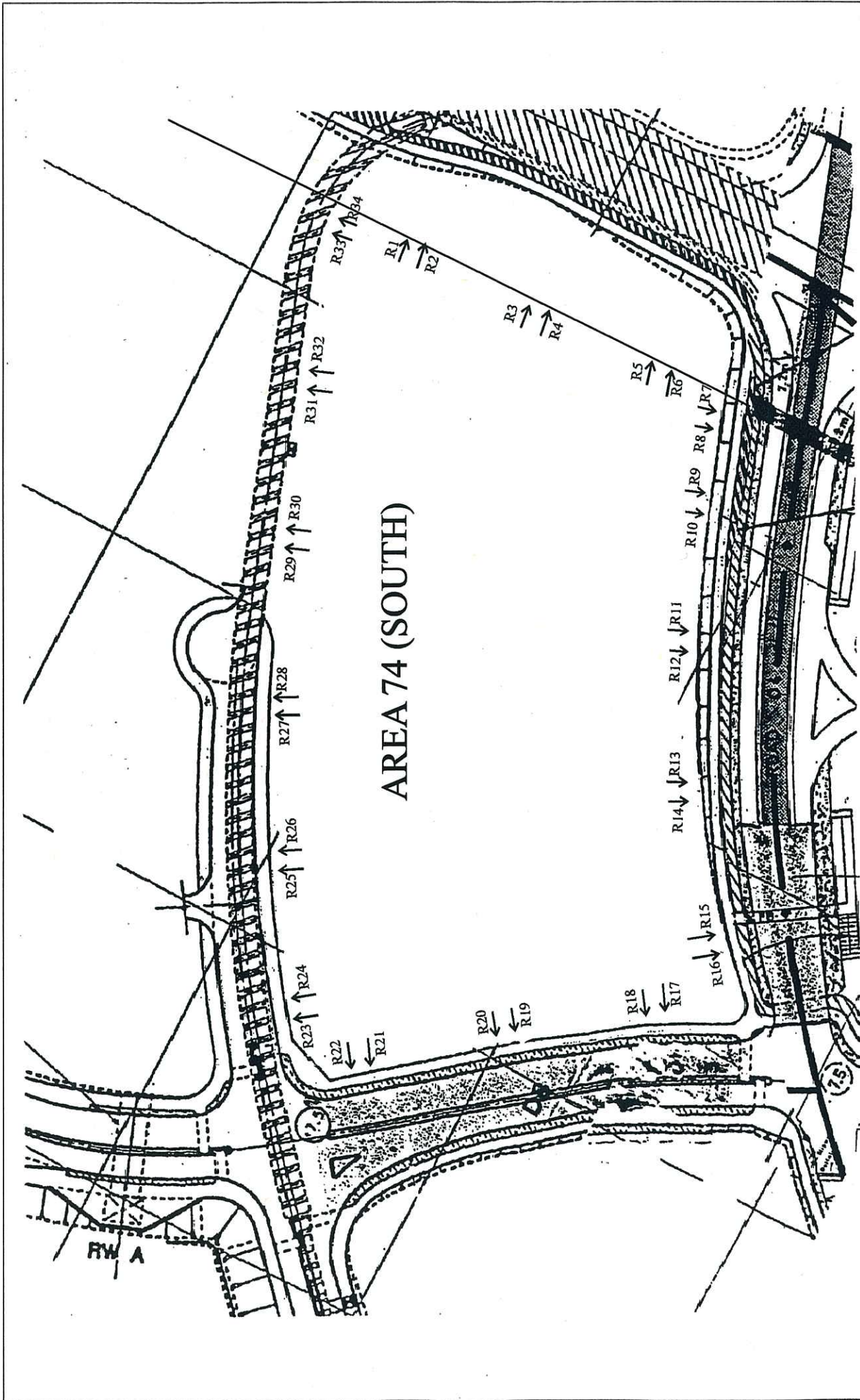
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TITLE

Proposed Layout of Area 74 North and NSR Locations

CES (ASIA) LIMITED

PROJECT NO	C230	DATE	March 1998
DESIGNED	Brian Ng	DRAWING NO	Figure 5.2



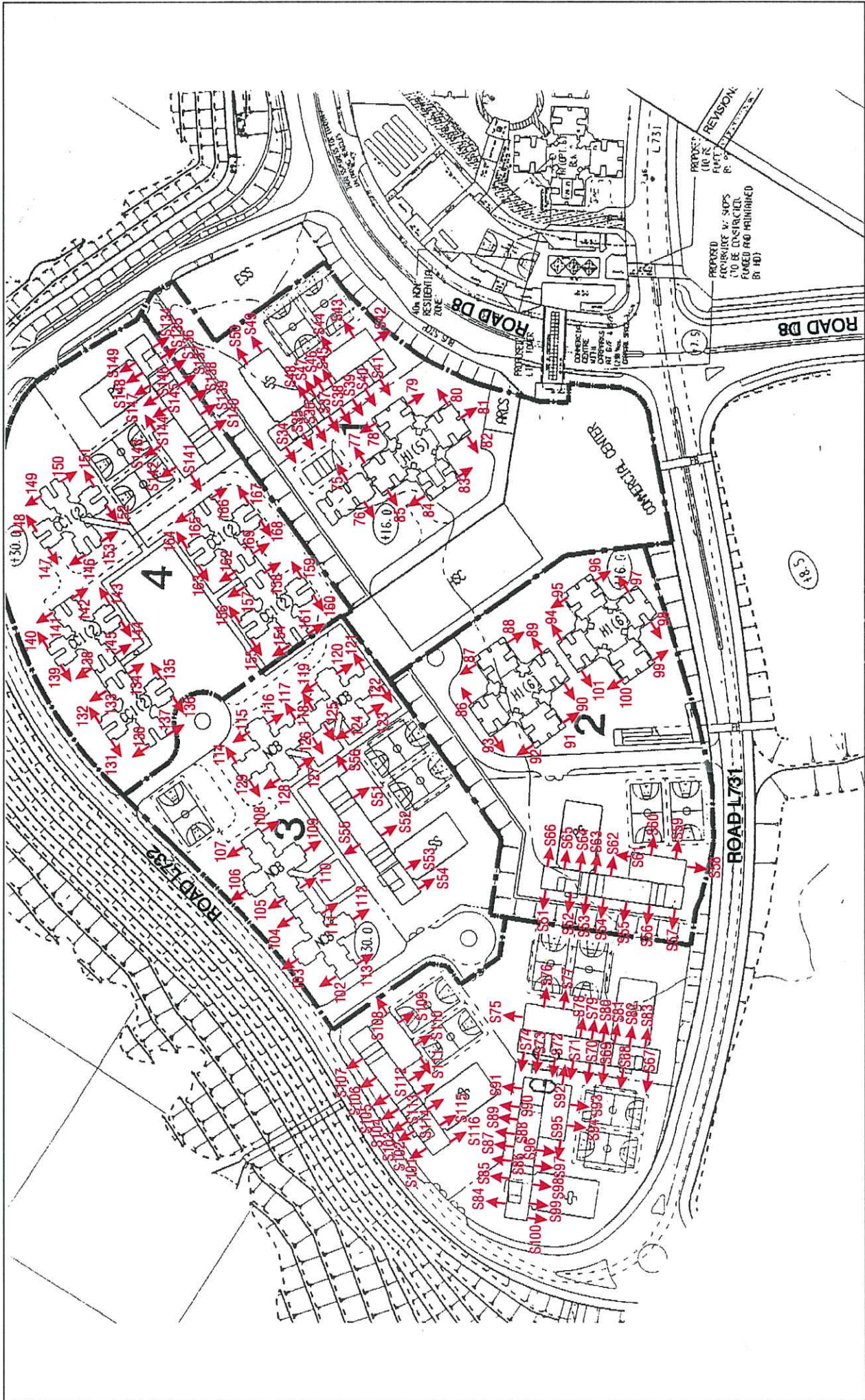
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CES


TITLE

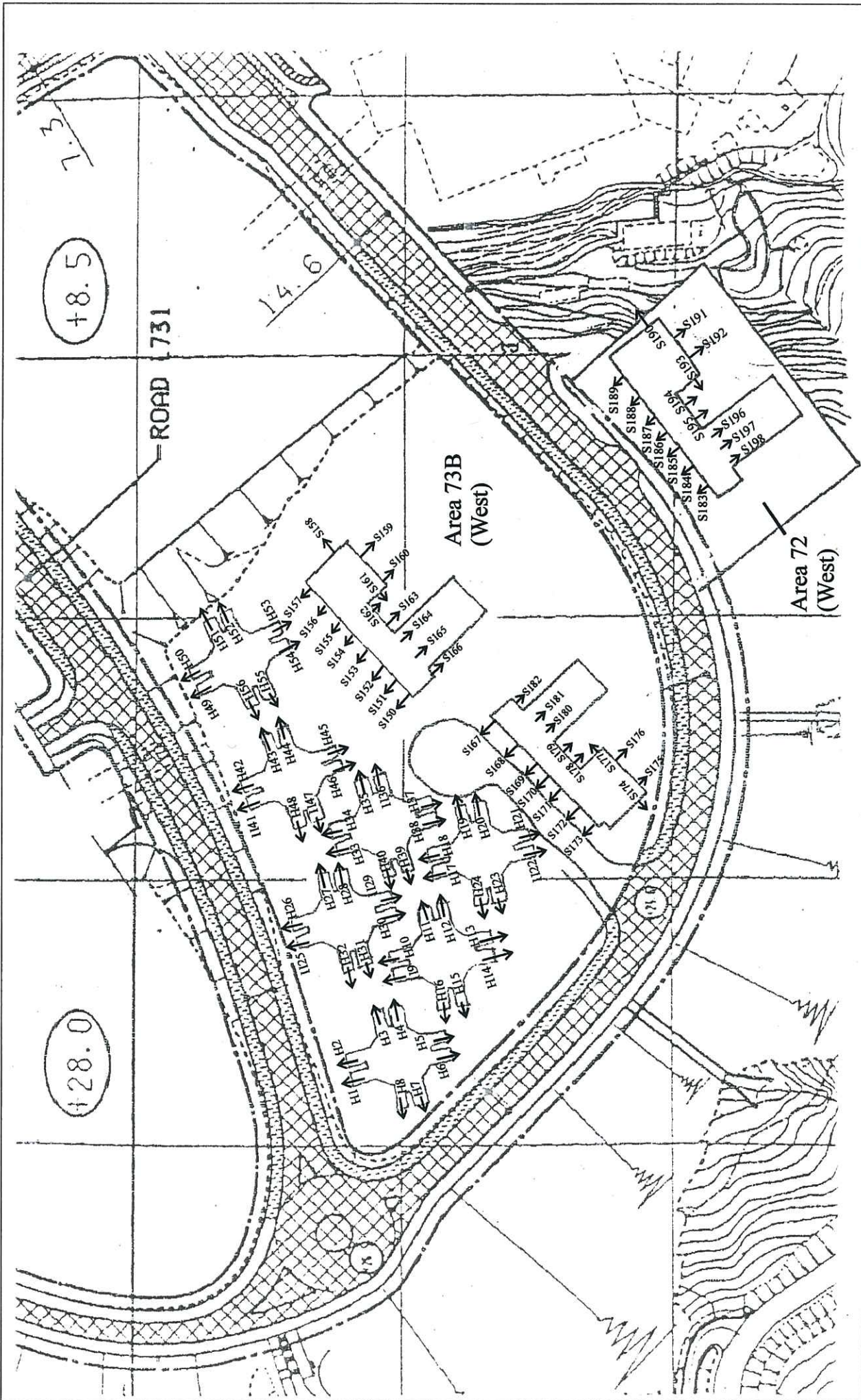
Locations of Mitigation Protecting Area 74 South

CES (ASIA) LIMITED

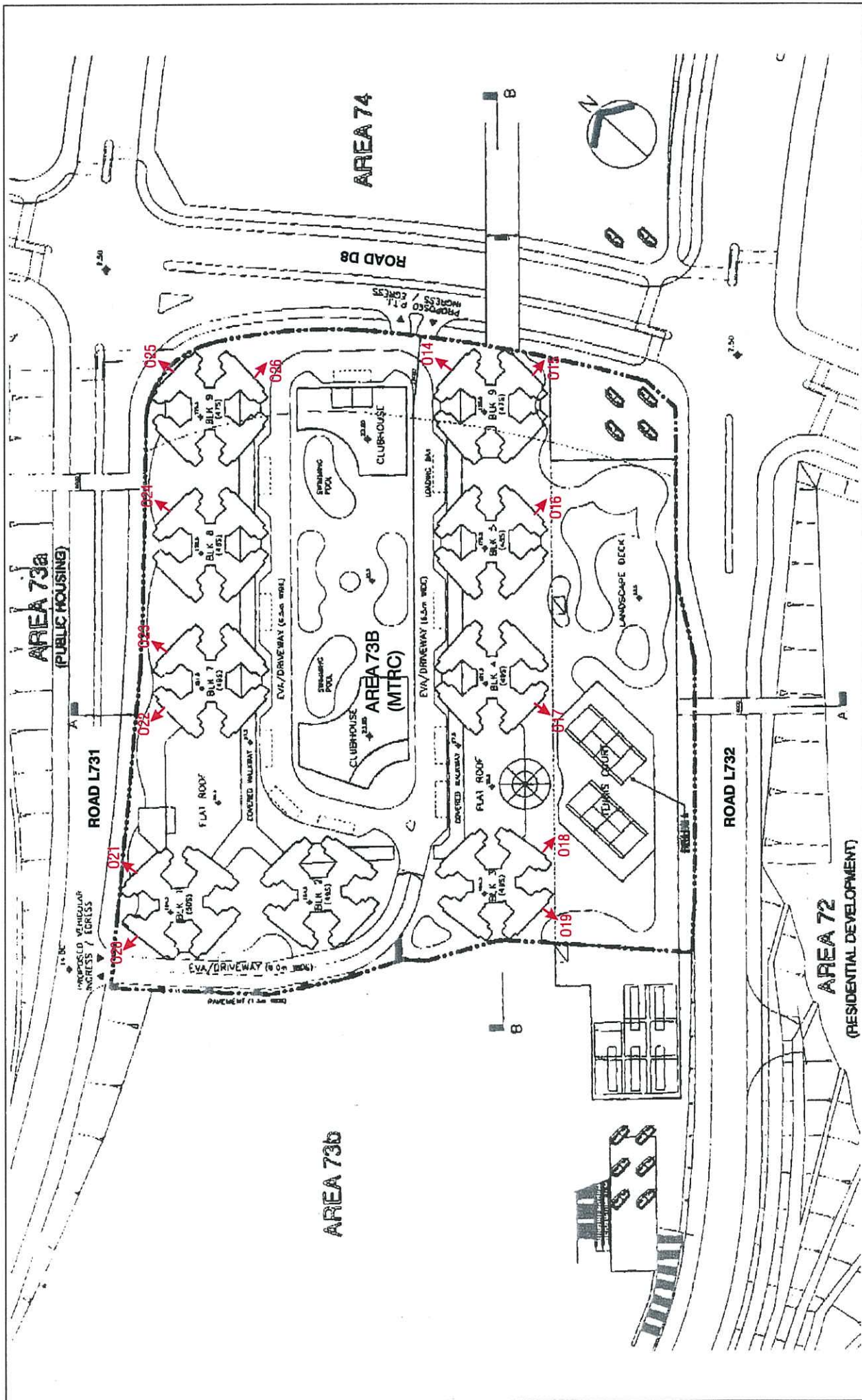
PROJECT NO	DATE	DESIGNED	DRAWING NO
C230	March 1998	Brian Ng	Figure 5.3



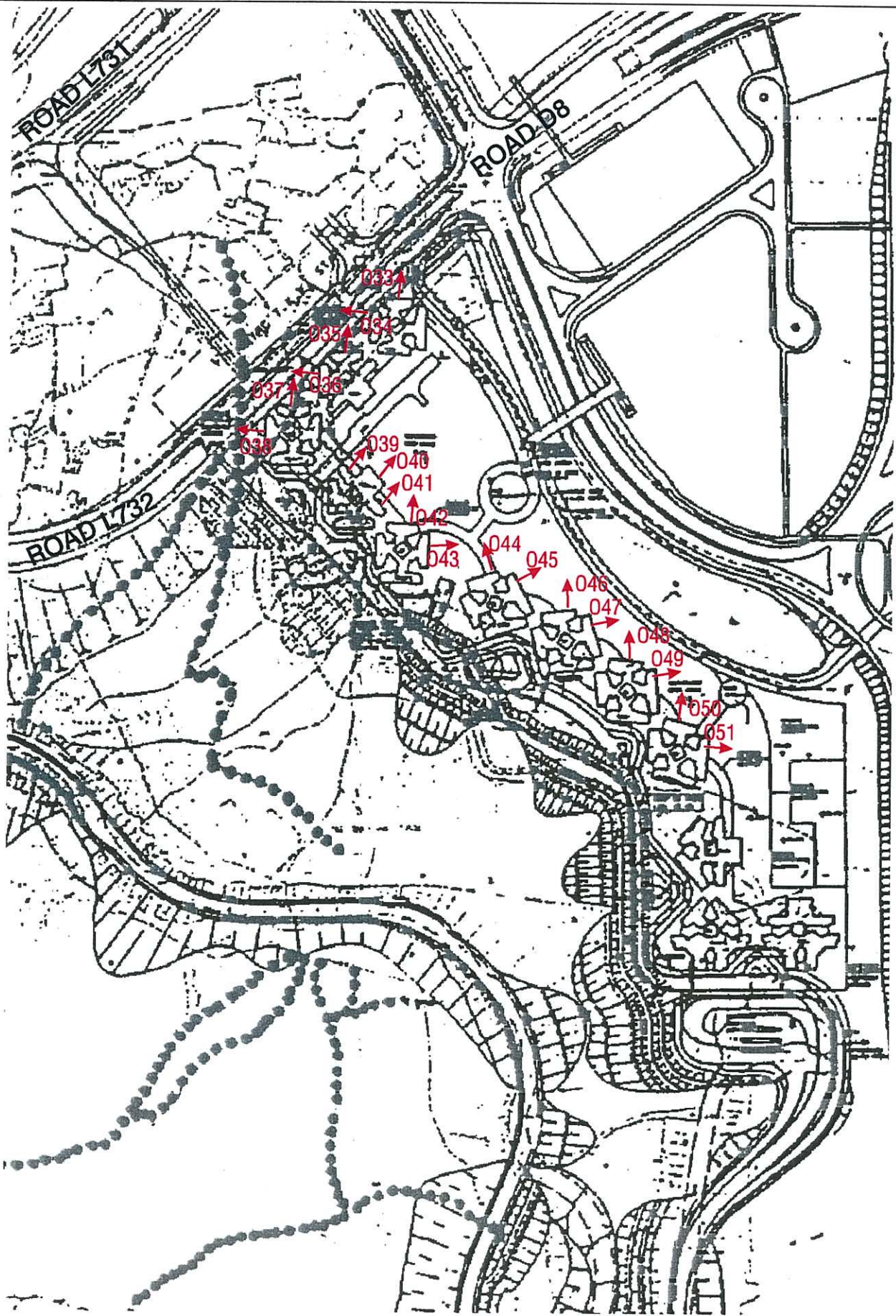
 環 科	TITLE Proposed Layout of Area 73A and NSR Locations		CES (ASIA) LIMITED	
	PROJECT NO C230	DATE November 1997	DESIGNED Suki Chung	DRAWING NO Figure 5.4



PROJECT NO	C230	DATE	March 1998
DESIGNED	Brian Ng	DRAWING NO	Figure 5.5

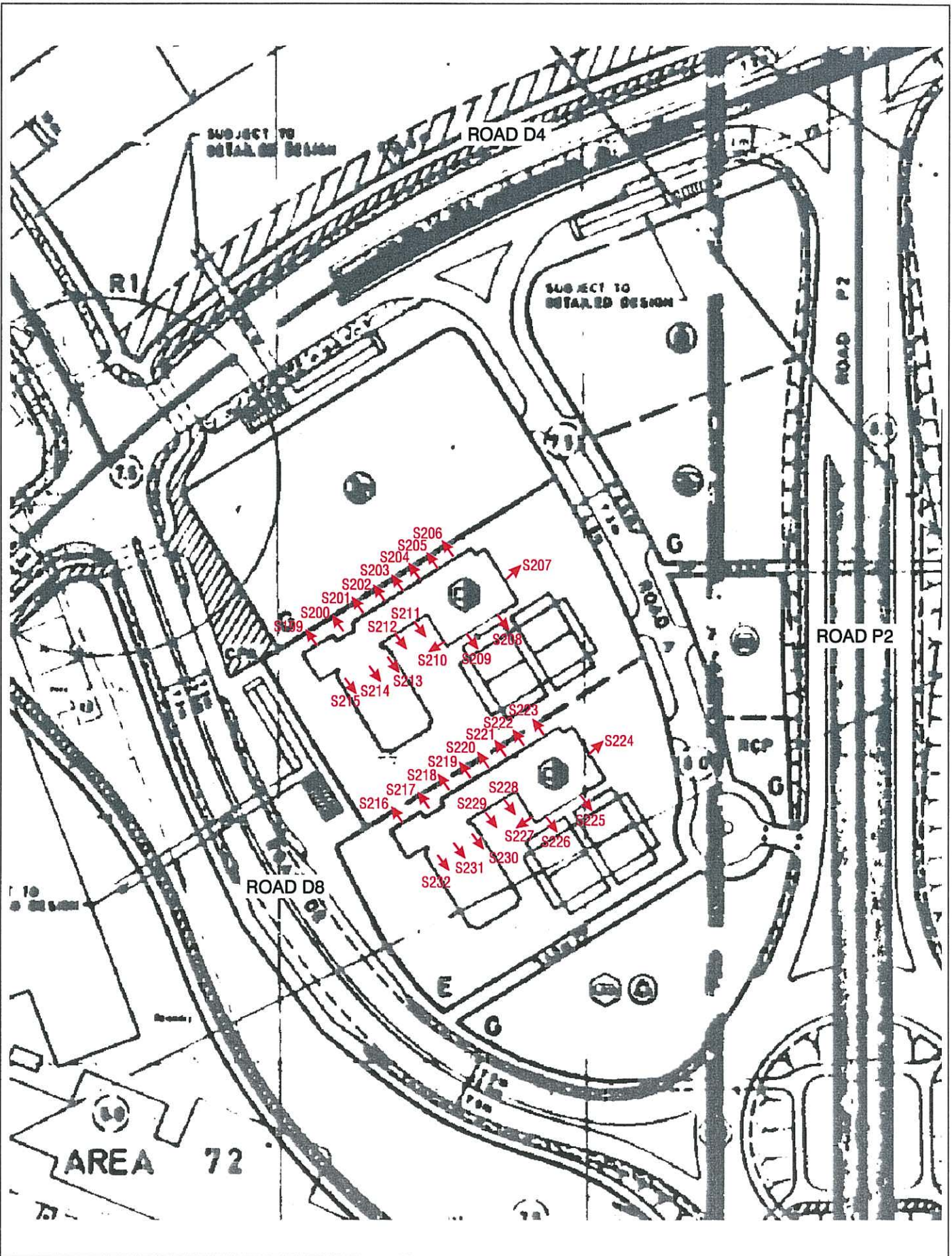


 環 科	TITLE Proposed Layout of Area 73B (MTRC) and NSR locations		
	CES (ASIA) LIMITED		
PROJECT NO C230	DATE November 1997		
DESIGNED Suki Chung	DRAWING NO Figure 5.6		

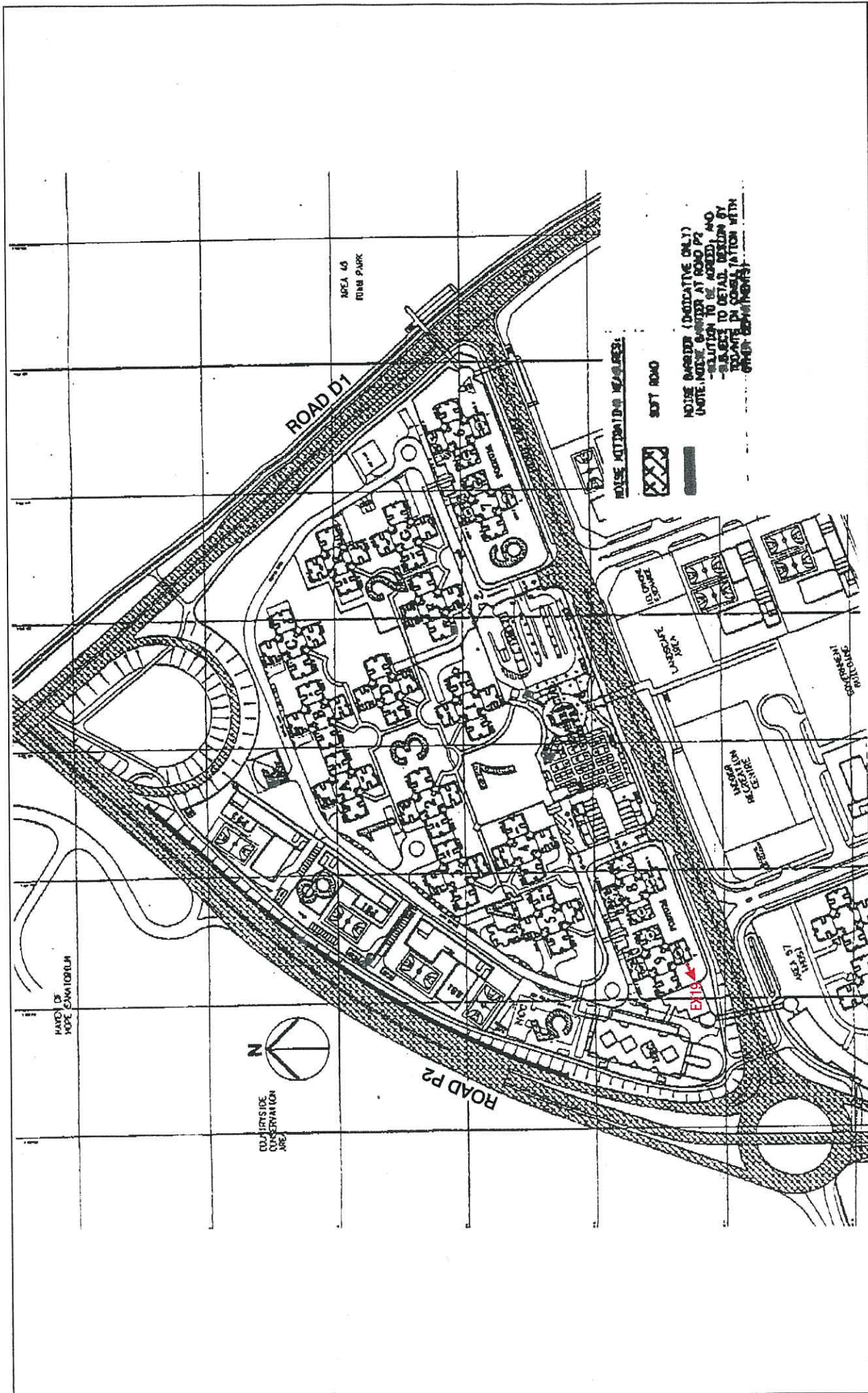


TITLE
**Proposed Layout of Area 72 (Shui Wing Steel Site)
 and NSR Locations**

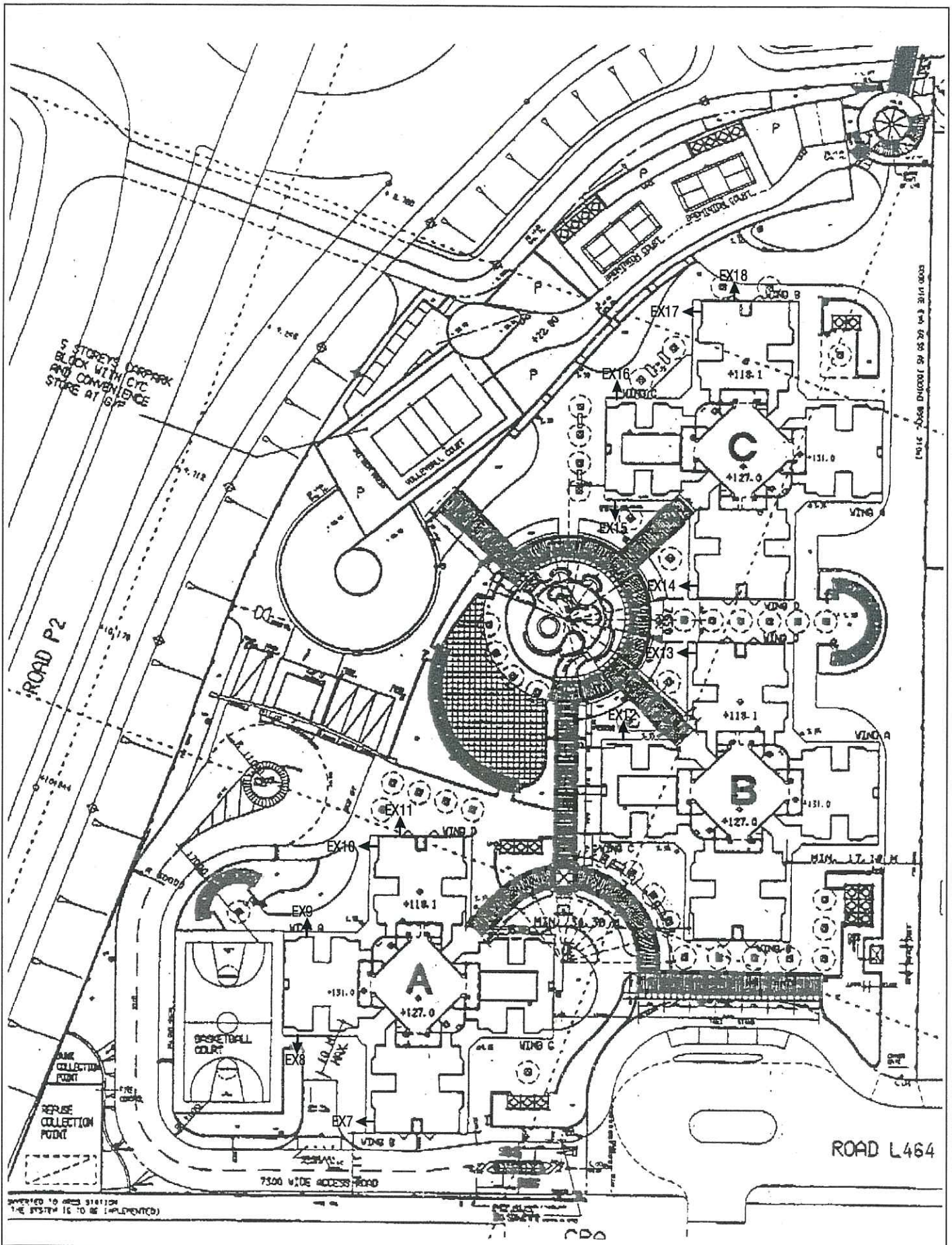
CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Figure 5.7



	TITLE	CES (ASIA) LIMITED			
	Proposed Layout of Area 72 and NSR Location	PROJECT NO	C230	DATE	November 1997
		DESIGNED	Suki Chung	DRAWING NO	Figure 5.8

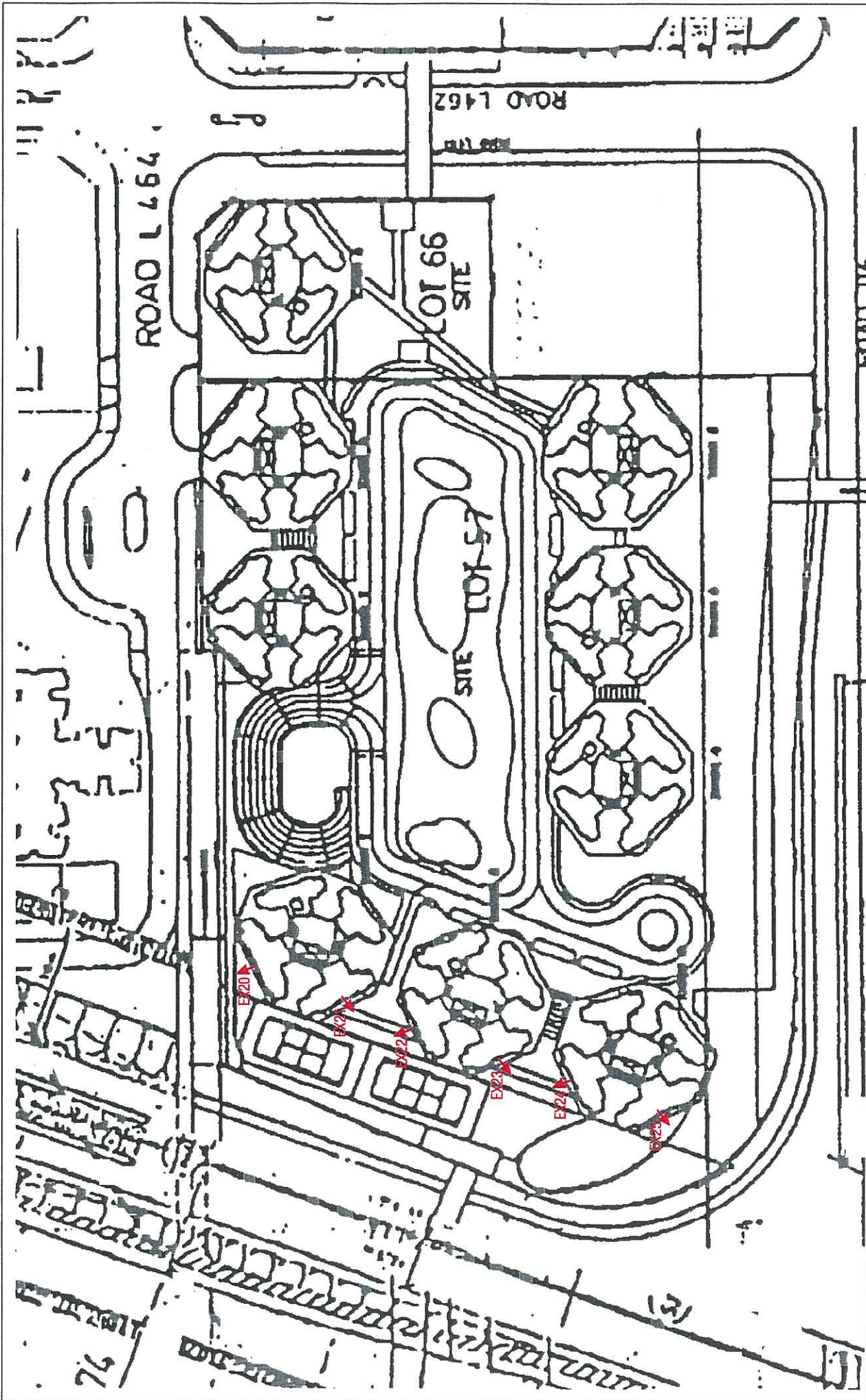


 環 科	TITLE			CES (ASIA) LIMITED	
	Proposed Layout of Area 59 and NSR Locations			PROJECT NO	DATE
			C230	November 1997	Figure 5.9
			DESIGNED	Suki Chung	



TITLE
Proposed Layout of Area 57 North and NSR Locations

CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Figure 5.10



TITLE

環 科

 C E S

Proposed Layout of Area 57 South and NSR Locations

CES (ASIA) LIMITED

PROJECT NO

C230

DATE

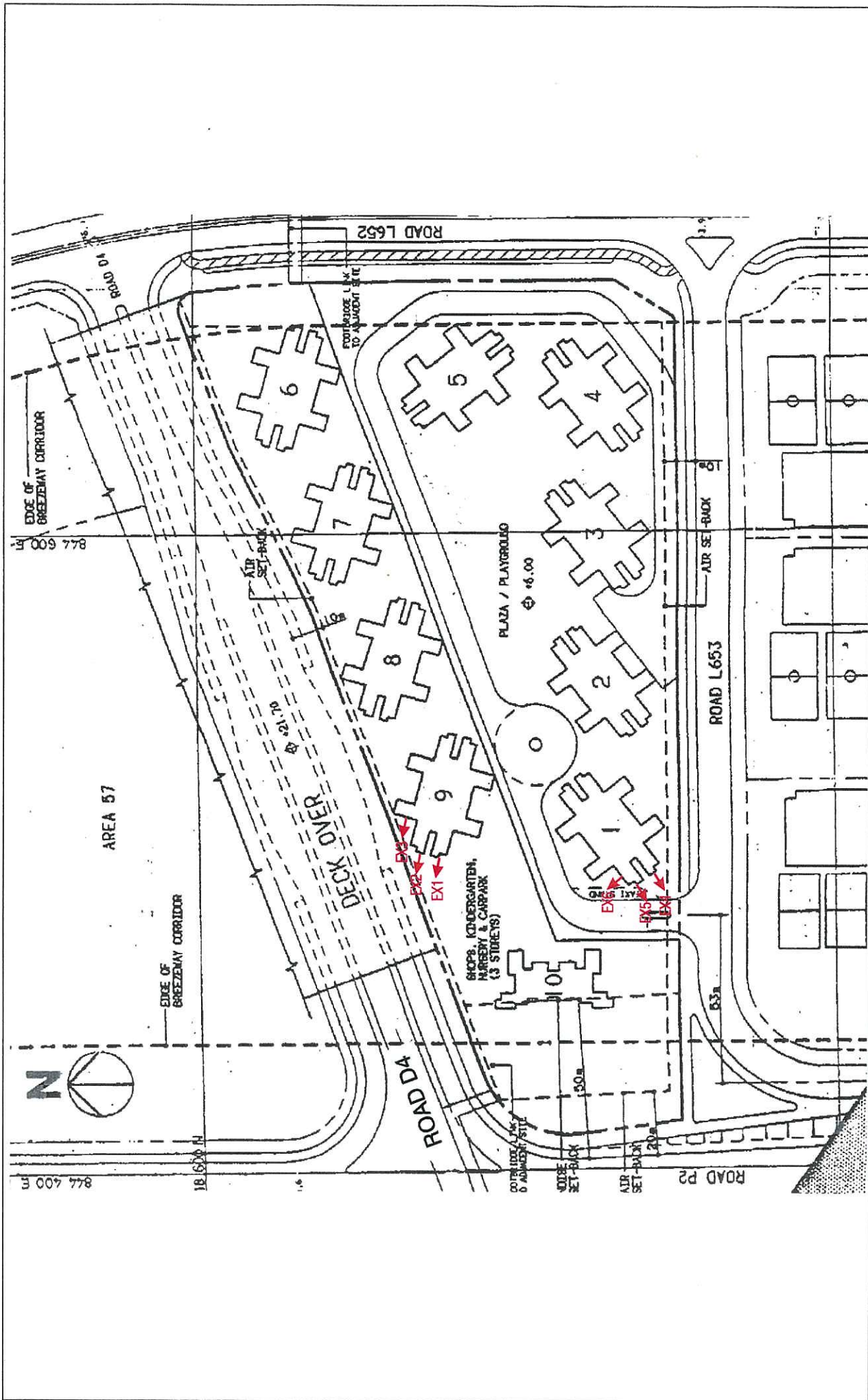
November 1997

DESIGNED

Suki Chung

DRAWING NO

Figure 5.11



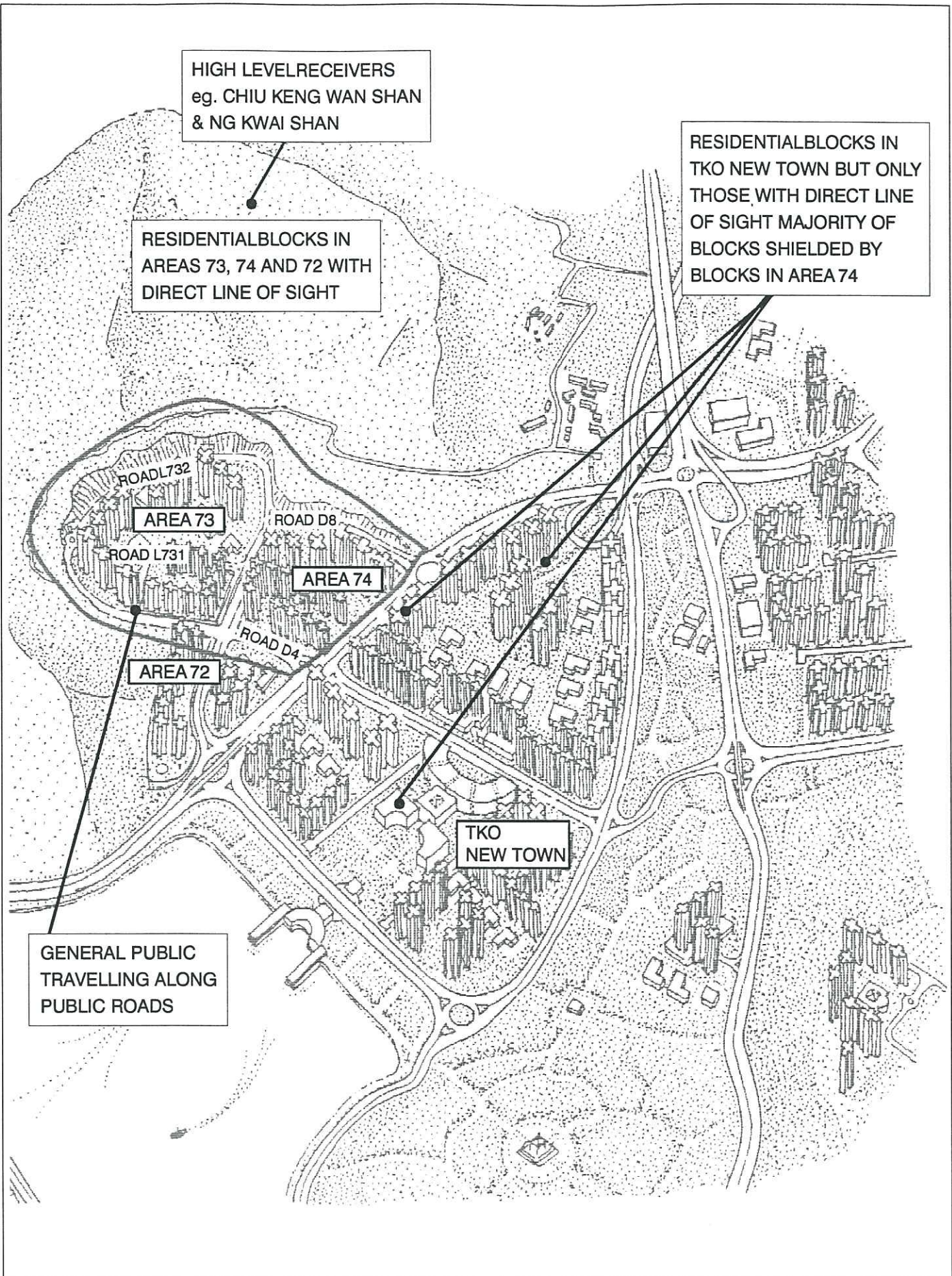
 環 科	TITLE Proposed Layout of Area 67 North and NSR Locations		
	PROJECT NO C230	DATE November 1997	DRAWING NO Figure 5.12
CES (ASIA) LIMITED		DESIGNED Sukki Chung	

Viewpoints Chiu Keng Wan Shan and Footpaths

Black Hill (Ng Kwai Shan) Viewpoints and Footpaths



Notes:
 Impacts Dependant Upon Direct Line of Sight and the Level of Impact is Innersely Proportional to the Distance from
 the Source of Impact receivers include people walking in the Hilly Areas



	TITLE	CES (ASIA) LIMITED			
	Proposed Future Visual Sensitive Receivers	PROJECT NO	C230	DATE	January 1998
		DESIGNED	Suki Chung	DRAWING NO	Figure 5.14

6 CONSTRUCTION PHASE NOISE IMPACTS

6.1 Assessment Methodology

The methodology outlined in the *Technical Memorandum on Noise from Construction Works other than Percussive Piling (TM2)* was used for the assessment of construction noise. Notional noise sources were assumed in accordance with TM2. All items of powered mechanical equipment (PME) were assumed to be located at these notional, or actual, source positions.

Two scenarios were modelled for each NSR, and include; an 'unmitigated' scenario adopting Sound Power Levels (SWLs) derived from the TM2; and a 'mitigated' scenario exploiting the use of quieter plant and acoustic screening where this was considered practical.

The purpose of this approach was to determine the nature of any benefits derived through the application of mitigation, and the extent of any outstanding residual impacts. To this end, SWLs of 'quieter plant' were taken from *BS 5228: Part 1: 1984 Noise Control on Construction and Open Sites*. Also, in accordance with TM2, an attenuation of 10 dB(A) was applied where acoustic screens were assumed in the 'mitigated' scenario. A positive correction of 3 dB(A) was made to all calculated results in order to allow for facade effect.

Details of alternative 'quieter' PME and the potential for practical acoustic screening that were used for the 'mitigated' scenario are presented in Table 6.1. Types and numbers of PME used for the roadwork, are presented in Table 6.2.

Table 6.1 Details of Alternative 'Quieter' Powered Mechanical Equipment and Potential for Practical Acoustic Screening

PME Used Over Duration of Works	Acoustic Screening Practical?	BS 5228: Part 1: 1984	
		SWL, dB(A)	Reference
Air Compressor	Yes	104	TM
Pneumatic Breaker	Yes	114	Table 11, Item 9
Mounted Breaker	No	110	Table 11, Item 13
Asphalt Paver	No	101	Table 11, Item 24
Road Roller	No	101	Table 11, Item 28
Backhoe	No	102	Table 11, Item 33
Dump Truck	No	109	Table 7, Item 52
Concrete, Vibrator	No	102	Table 9, Item 20
Vibratory Roller	No	106	Table 7, Item 116
Concrete Lorry Mixer	No	109	TM

Table 6.2 Powered Mechanical Equipment Used for the Roadworks

Activity	PMH Item	No. Items	SWL/Item	
			Unmitigated ¹	Mitigated ²
Drainage	a. Backhoe	1	112	102
	Dump Truck	1	117	109
	b. Vibratory roller	2	106 ³	106
	Dump Truck	2	117	109
	Concrete vibrator	3	105	102
	Concrete Lorry Mixer	1	109	109
Pavement	a. Excavator Mounted Breaker (pneumatic)	3	122	114
	Air compressor	1	104	104
	b. Asphalt Paver	1	109	101
	Vibratory roller	3	106 ³	106
	Dump Truck	3	117	109

1 Sourced from BS 5228: Part 1: 1984.

2 Sourced from TM2

3 Sourced from BS:5228 because SWLs are not quoted in TM2

6.2 Construction Programming

There will be some interface between population intake in some areas and ongoing roadworks in others. Also it should be noted that some NSRs will not be affected by some sections of roadworks due to the separation distance. The NSRs, works affecting them, and the duration they are exposed to roadwork construction noise are listed in Table 6.3.

Table 6.3 Details of Extent of Works affecting NSRs

NSR ID	Roadworks Affecting NSR	Distance (m)	Commencement of Exposure to Roadworks Noise	Programmed Completion Date of Roadworks	Estimated Duration of Exposure to Works (Days)
CN1	Road D8 (i)	157	Feb 1999	Mar 2000	364
	Road D8 (ii)	181	Sept 1999	Aug 2000	312
CN2	Road D8 (i) and (ii)	126	Feb 1999	Aug 2000	520
CN3	Road L731	380	Sept 1999	Aug 2000	312
CN4 **	Road D4	338	Sept 2001	Aug 2002	312
CN5 *	Road D4	132	Sept 2001	Aug 2002	312

- Notes Road D8 is split into two construction programmes (i) westbound and (ii) eastbound)
There are no sensitive receivers identified for Areas 72 (Shiu Wing), 72 (schools), 73A, 73B, or 74 because the roadworks are complete prior to population intake.
- * The population intake occurs after the construction of roads has already commenced.
 - ** Subsequent to the issue of the Draft Final Report, Planning Department have advised that CN4 (Area 57S) intake should not occur until the year 2002

6.3 Results

The predicted unmitigated and mitigated noise levels at NSRs are shown in Table 6.4 and are presented in detail in Appendix C. The noise levels greater than the non-statutory daytime criteria for construction noise have been highlighted for ease of reference.

Table 6.4 Predicted Construction Noise Impact, (L_{eq} dB(A))

Construction Activity	Noise Levels, (L_{eq} dB(A))											
	CN1 (i)		CN1 (ii)		CN2		CN3		CN4		CN5	
	A	B	A	B	A	B	A	B	A	B	A	B
Distance	157 m		181 m		126 m		380 m		338 m		132 m	
Drainage (a)	69.3	60.9	68.0	59.6	71.2	65.8	61.6	53.2	62.6	54.2	70.8	62.4
Drainage (b)	72.1*	66.7	70.8*	65.5	74.0	68.6	64.4	59.0	65.4	60.1	73.6	68.2
Pavement (a)	77.9*	69.9	76.6*	68.6	79.8*	71.8	70.2	62.2	71.2	63.2	79.4*	71.4
Pavement (b)	73.4*	66.8	72.2*	65.5	75.3*	68.7	65.7	59.1	66.7	60.1	74.9	68.3

- Notes (i) from westbound carriageway construction
(ii) from eastbound carriageway construction
A no mitigation
B includes quieter PME and screening where applicable
* noise levels in exceedance of the ProPECC Note PN 2/93

The results presented in Table 6.4 demonstrate that predicted noise levels at CN1, CN2 and CN5 (i.e. 3 out of the 5 selected representative NSRs (60%)) would exceed the non-statutory day time criteria for construction noise assuming no mitigation. The highest exceedances are mainly caused by the pavement works. When mitigation, including the use of quieter equipment and screening, was assumed, there were no exceedances of the non-statutory criteria.

6.4 Recommendations

6.4.1 Good Site Practice

There are many good site practices which would serve to reduce noise levels still further. Consequently, it is strongly recommended that any appointed contractor should observe the following measures.

- Noisy equipment and activities should be sited by the contractor as far from sensitive receivers as is practical. Also, temporary site offices etc. should be located, as far as is possible, such that the maximum number of sensitive receivers are screened from the line of sight of the construction areas.
- Intermittent noisy activities should be scheduled to minimize exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled at times coinciding with periods when dwellings are unoccupied. Prolonged operation of noisy equipment close to dwellings should be avoided.
- Idle equipment should be turned off or throttled down. Noisy equipment should be properly maintained and used no more often than is necessary.
- Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided.
- If possible, the numbers of concurrently operating items of powered mechanical equipment used for a given task should be reduced through sensitive programming.
- Construction plant should be properly maintained and operated. Construction equipment often has silencing measures built in or added on, e.g., bulldozer silencers, compressor panels, and mufflers. Silencing measures should be properly maintained and utilised.

7 OPERATION PHASE TRAFFIC NOISE IMPACT

7.1 Assessment Methodology

The purpose of this assessment is:

- to evaluate the extent of noise impacts arising from the proposed new public roads D4, D8, L731 and L732;
- to establish if mitigation measures are required; and
- to identify whether residual impacts arise following the implementation of mitigation measures.

Noise calculations were carried out using the UK Department of Transport '*Calculation of Road Traffic Noise*' 1988 (CRTN) guidance, which is the method accepted by EPD for use in Hong Kong.

7.1.1 Traffic Data

The assessment was based on 2016 AM peak hour traffic flow projections. The traffic flows and the percentage of heavy vehicles are shown in Figure 7.1.

7.1.2 Assumptions

The future worst case unmitigated scenario, for year 2016, is represented by a scheme which includes no noise mitigation on roads D4, D8, L731, and L732 but does include mitigation measures on the roads outwith the study brief, such as those on Road P2 and the eastern section of Road D4. These include a 2m high noise barrier on Road P2 adjacent to Area 57 south and Area 74 south and a deckover over a portion of Road D4 between Area 67 north and Area 57 south. The location of these structures are shown in Appendix A Figures A4 and A5.

At the time of reporting there were no layout plans available of Areas 74 south and the northern section of Area 73B. Therefore the assessment was based on assumed layouts. All residential blocks were located at a setback distance of 10m from the roadside.

7.1.3 Quality Checking

As part of the CES Quality Assurance Procedures manual calculations were carried out to verify the results of the main modelling exercise. Of these checked results there was close correlation between the two data sets. Sample spreadsheets can be found in Appendix D.

7.2 Noise Impact Assessment

The predicted noise levels, in general, result from the generation of future traffic serving the new developments. Practical mitigation measures for the new roads were considered. By the time the new public roads will be operational there will be existing sensitive receivers in Area 59 and Area 57 (north). However, the noise levels at these future sensitive receivers have been assessed in the *EIA for Area 59* and *EIA for Tseung Kwan O Town Centre Central*. These studies indicated that

dominant source of traffic noise affecting these receivers will be from Road P2 and not the proposed new public roads.

Figure 7.2 shows the locations of receivers where exceedances of the HKPSG criteria are predicted, and the range of predicted noise levels.

In order to reduce traffic noise impacts from the new roads, mitigation in the form of noise barriers, use of podium and deck-over structures were considered and the resultant effects on NSRs were tested. Noise reducing road surfacing was not considered suitable or effective due to the nature of the roads. This is in accordance with the advice given in "Noise mitigation for Public Roads (NOMPRO)", HyD, EPD, 1996.

Impacts and proposed mitigation are considered on an area basis in the following sections, and all noise level prediction results are presented in Appendix B.

7.2.1 Impacts on Area 74 north

Impacts on Residential Receivers

Predicted noise levels are below 70 dB(A) at all receivers with the exception of two receiver locations in Block 2 and one receiver location in Block 3, all of which face Road L731. The maximum noise levels predicted at NSRs 17, 18 (Block 2) are 72 dB(A) and 71 dB(A) respectively, and the maximum noise level predicted at NSR 25 (Block 3) is 72 dB(A). The exceedances at NSRs 18 and 25 were only predicted to occur at the first floor up to the sixth floor, and at NSR 17 from the first floor up to the eight floor. Therefore, it is estimated that, in Area 74 north, only 22 flats out of a total of 4,558 flats would be affected by noise greater than the HKPSG criteria of 70 dB(A) (i.e. 0.5% of the total number of flats).

A 3m barrier was tested but it was found that this barrier would only reduce noise levels at two flats and is therefore not recommended. The residual impact will be that 22 flats in Area 74 north will receive noise levels greater than the HKPSG criteria.

Impacts on School Receivers

There is one primary school and one secondary school located in Area 74 north. The maximum noise levels predicted at the primary school and secondary school are 65 dB(A) and 54 dB(A) respectively. As there are no exceedances of the HKPSG criteria of 65 dB(A), at either school, mitigation is not required. Note the barrier and low noise surfacing on Road P2, recommended by other studies (see section 3 of this report) have been incorporated in the unmitigated scenario of this assessment.

7.2.2 Impacts on Area 73A

Impacts on Residential Receivers

There are no exceedances of the 70 dB(A) criteria at any of the residential facades. The maximum predicted level is at NSR 99 in Phase 2 which faces Road L731 (maximum of 70 dB(A)).

Impacts on Phase 1 secondary school (S34 to S50)

The predictions show exceedance of the HKPSG criteria of 65 dB(A) at receiver locations S42 (up to the 4th floor) and S43 (for all floors). Both of these receiver positions represent the same room. The rooms affected by levels in exceedance of the criteria are presented in Table 7.1. Note that the noise levels quoted are for NSR S43 only because this aspect of the affected room receives the highest noise level.

Table 7.1 Classrooms in Phase 1 Secondary School Affected by Noise > 65 dB(A)

Level	Classroom *	Maximum Predicted Noise Level (dB(A))
		NSRS S43
1	Design and Technology Room	70.2
2	Music Room	70.0
3	Needlework & Dress Room	69.8
4	Geography Room	69.6
5	Integrated Science Laboratory 2	69.4
6	Chemistry Laboratory	69.2

Note * Based on the Standard Secondary School design layout produced by Architectural Services Department. Note that there are no sensitive receivers on the seventh floor.

A 5m barrier, located on the kerbside of Road D8 adjacent to the school, was tested but was found to be ineffective in reducing noise levels in the above classrooms to within the HKPSG criteria of 65 dB(A) (noise reductions were all predicted to be lower than 1.0 dB(A)). This is because Road D8 is at a lower level than the school platform. Therefore mitigation on Road D8 would not be acoustically effective.

It should be noted that the, *Environmental Assessment Study of Tiu Keng Leng Public Housing Development Area 73A - Housing Authority Sept 1997* (Appendix A - Figure A8 [note that the layout has been superseded]) recommended construction of a 2.5m noise barrier within the site boundary aligned with Road D8, adjacent to the phase 1 secondary School.

The school building and the 2.5 m site boundary solid barrier would be constructed at the same platform height level and thus the extent of any shielding is likely to be greater. Due to the fact that the school layout design and traffic data assumed in the previous assessment have been superseded, it is recommended that the requirement for this 2.5 m barrier be further reviewed, as detailed below.

The proposed layout has not been finalised and hence favourable design, in terms of noise reduction, can be facilitated, as HKHA should be conducting further Environmental Reviews to define any potential environmental impacts of a finalised layout and identify mitigation measures within site boundaries. It is recommended that the further traffic noise assessment should include the assessment of the feasibility of on-site mitigation including the following (see Table 11.2):

- erection of solid site boundary wall(s) of the appropriate height;
- orientation of building structures; and/or
- installation of special glazing/air conditioning.

Impacts on Phase 2 primary school (S51 to S66)

Predictions show exceedance of 65 dB(A) at receiver locations S58, S59 and S60 on both floors (this part of the school is only 2 storeys in height). Note that NSRs S58 and S59 represent the same room. The predicted noise levels at the affected classrooms are presented in Table 7.2.

Table 7.2 Classrooms in Phase 2 Primary School Affected by Noise > 65 dB(A)

Level	Maximum Predicted Noise Level (dB(A))	
	NSRs S58 / S59	NSR S60
1	Design and Technology Room 71.3	not a noise sensitive room -
2	Music Room 71.2	Arts & Craft Room 67.1

Note Based on the Standard Primary School Design Layout produced by Architectural Services Department

A 3m high barrier on Road L731 was tested but was found to be ineffective because Road L731 is at a lower level than the school platform, and is therefore not recommended. The noise level reductions were predicted to be all lower than 1 dB(A).

The proposed layout has not been finalised and hence favourable design, in terms of noise reduction, can be facilitated, as Housing Department should be conducting further Environmental Reviews to define any potential environmental impacts of a finalised layout and identify mitigation measures within site boundaries. It is recommended that the further traffic noise assessment should include the assessment of the feasibility of on-site mitigation including the following (see Table 11.2):

- erection of solid site boundary wall(s) of appropriate height;
- orientation of building structures; and/or
- installation of special glazing/air conditioning.

Impacts on G/IC Site secondary school (receivers S67 to S83)

Predictions show no exceedance of the 65 dB(A) criteria. The maximum predicted noise level was 64 dB(A).

Impacts on G/IC Site secondary school (receivers S84 to S100)

Predictions show no exceedance of the 65 dB(A) criteria. The maximum predicted noise level was 61 dB(A).

Impacts on G/IC Site Primary School (receivers S101 to S116)

Predictions show no exceedance of the 65 dB(A) criteria. The maximum predicted noise level was 63 dB(A).

Impacts on Phase 3 Secondary School (receivers S117 to S133)

Predictions show no exceedance of the 65 dB(A) criteria. The maximum predicted noise level was 57 dB(A).

Impacts on Phase 4 Primary School (receivers S134 to S149)

Predictions show no exceedance of the 65 dB(A) criteria. The maximum predicted noise level was 65 dB(A).

7.2.3 Impacts in the Area 74 South (Private Sector)

Impacts on Residential Receivers

This site has been zoned for private sector development. However, at the time of preparation of this Final Report, layout plans were not available because the site had not yet been sold for development. It is likely that the tower block arrangement in Area 74 south will be similar to the setup in Area 57 south. The site area for both sites are similar, with similar site constraints, such as the no-build zone due to the MTR reserve and the breezeway. Therefore, similar to Area 57 south, the tower blocks in Area 74 south are likely to be arranged into two rows with 6 blocks on either side of the MTR reserve.

For assessment purposes receiver positions around the perimeter of the site were identified (see Figure 5.3). Each receiver position was setback from the site boundary by 10m and there were no receivers placed within the breezeway zone. Noise level predictions were carried out for every 5th floor, up to the 41st floor.

The results indicated that, without any mitigation, there may be exceedances of the 70 dB(A) level around the perimeter of the site, (the exceedances ranged from 70.5 dB(A) to 75.1 dB(A)).

Mitigation options were tested but not a deckover, because there is no structure on Area 72 east which can support the deckover. Also, canopies were not tested because they would be acoustically ineffective due to:

- restricted size of canopy
It is only possible to place the structure from the exit of the Road D4 flyover to the junction of Road D4/D8 (it would not be practicable to construct canopies where there is a flyover or parts of its structure), and the extent of any canopy would be setback from the Road D4/D8 junction to allow for a safe line of sight for turning traffic to and from the roads; and
- noise break out from the portal openings.

The following mitigation measures were tested:

- 5m barriers with a 3m cantilever section on:
 - ▶ Road D8, between Area 73B (MTRC) and Area 74 south
 - ▶ Road D4 (At-grade eastbound section), between Area 74 south and Area 72 east
 - ▶ Road D4 flyover (eastbound section), between Area 74 south and Area 72 east
- 3m barrier on Road L731, between Area 74 north and Area 74 south

The predicted resultant noise levels were as follows:

- The 3m roadside barrier on Road L731
The results indicated a noise reduction are only marginally over 1.0 dB(A). Therefore this 3m barrier is not recommended.
- The 5m cantilever barrier on Road D8
The results indicated that a noise reduction of greater than 1.0 dB(A) at NSRs R17 to R22 (ranging from reductions of 1.5 dB(A) to 11.5 dB(A)), resulting in exceedances only near the junctions. Noise reductions of more than 1.0 dB(A) occurred up to the of the criteria up to the 10th floor.
- The 5m cantilever barrier on the at-grade section of Road D4 and the Road D4 flyover
The results indicated a noise reduction of greater than 1.0 dB(A) at NSRs R7 to R16 (ranging from reductions of 1.1 dB(A) to 10.8 dB(A)). The noise reductions of more than 1.0 dB(A) occur up to higher floors (20th floor) because of the mitigation of traffic noise from the elevated Road D4 section.

Therefore, it is recommended that Housing Authority construct the 5m cantilever barriers on Road D8, and on the at-grade section of Road D4.

As the flyover on Road D4 is outside the remit of Housing Authorities project, it is suggested that the Project Proponent for Road D4 flyover considers provision of the 5m cantilever barrier on the flyover, or an equivalent measure.

The locations and extent of barriers are shown in Figure 7.3 and Table 7.3 indicates the percentage of non-compliance at blocks facing each road.

Table 7.3 Extent of Non-compliance

Road	NSR ID	% of Non-compliance
Road P2	R1 to R6	30.5 %
Road D4	R7 to R16	15.7 %
Road D8	R17 to R22	7.6 %
Road L731	R23 to R28	6 %

Note: The non-compliance percentage was calculated based the overall number of flats with direct line of sight to the public roads (i.e. Road P2 - 328 flats, Road D4 - 984 flats, Road D8, 328 flats, and Road L731 - 492 flats).

Residual Impacts

The resultant residual impacts, with the adoption of the perimeter barriers, will be in exceedances of the HKPSG criteria at the mid to upper levels of the residential blocks. It is estimated that there will be 86% compliance of the HKPSG criteria overall. This estimation is conservative because the future development is likely to have greater setback from the roads and the angle of view from each flats will be narrower than that assumed in this study. These factors would result in lower predicted noise levels at the receiver positions.

As the development plans for Area 74 south are as yet unavailable there is scope for the adoption of on-site mitigation measures such as, further setback of buildings, screening by noise tolerant buildings, building orientation, and as a last resort the installation of acoustic insulation to affected noise receivers, to be defined at the design stage.

7.2.4 Impacts on Area 73B west*Impacts on Residential Receivers*

The site is designed for Private Sector Participation Scheme (PSPS) development. At the time of reporting there was no layout of the area available. Therefore, for the purposes of the traffic noise impact assessment a hypothetical layout of Area 73B was prepared. This layout was derived from the planning parameters provided by the Housing Authority, which were as follows:

- Site Area: 1.74 ha
- Number of flats proposed: 2,650
- Design Population: 8,640
- Total domestic ground floor area: 138,880 m²
- Plot Ratio: 8

The hypothetical layout is shown in Figure 5.5. Note that the layout also incorporates a 10m setback from the road kerb. The results indicated compliance with the HKPSG criteria of 70 dB(A) at all locations. Therefore, mitigation proposals are not necessary.

It should be noted that a proposed layout was made available after the issue of the draft final report (see Appendix E). The comparison between the two layouts is quite similar and would not alter the findings of the present EIA traffic noise assessment.

*Impacts on School Receivers**Secondary school (S150 - S166)*

There are no exceedances of the HKPSG criteria of 65 dB(A). The maximum noise level is predicted to be 52 dB(A).

Primary school (S167 - S174)

There are no exceedances of the HKPSG criteria of 65 dB(A). The maximum noise level is predicted to be 64.8 dB(A).

7.2.5 Impacts on Area 73B MTR Development Site (Private Sector)

Impacts on Residential Receivers

This site is subject to a current planning application. The development will be on podium above the proposed MTR station. Noise levels are predicted to exceed 70 dB(A) at NSR O15, O21, O22, O23, O24, and O25), where the noise levels are predicted to be a maximum of 73 dB(A). The details of the exceedances are presented in Table 7.4.

Table 7.4 Noise level exceedances at Area 73B (MTRC)

NSR ID	Location of Exceedances	Maximum Predicted Noise Level (dB(A))
O15	3rd to the 32nd floor	72.9
O21 and O22	1st to the 2nd floor	71.1
O23 and O24	3rd to the 8th floor	71.4
O25	3rd to the 14th floor	71.7

The sources of impact include Road L731 and Road D8 (north of Road D4).

Two mitigation options were tested as follows:-

- (1) 3m high roadside barriers on Road L731; and
- (2) a deck-over structure between Area 73 (MTRC) and the adjacent Area 74 south, covering a section of Road D8 (north of Road D4).

The results indicated the following:

- (a) 3m roadside barriers were found to be of no benefit because the residential blocks are on podium; and
- (b) the deck-over resulted in noise reductions of less than 1 dB(A). Therefore, the deck-over is not recommended.

It should be noted that an Environmental Impact Assessment including a traffic noise assessment for the MTRC development site in Area 73 is currently under preparation, the findings of which are likely to be made public in 1998. This study should incorporate more refinement of the final layout details. It is understood that the domestic premises will be provided with air conditioning and insulated windows.

7.2.6 Impacts on Area 72 Shiu Wing Site (Private Sector)

Impacts on Residential Receivers

This site has already been subject to detailed environmental assessment as part of the planning process (*TKOTL 55, Tseung Kwan O Residential/Commercial Redevelopment Final Environmental Impact Assessment*). The *TKOTL 55* study concluded that with appropriate mitigation (in the form of setback, favourable building orientation/architectural design, low noise road surfacing and a road side barrier on the Road P2 slip road) 85 % of the flats would comply with the HKPSG criteria of 70 dB(A), and that, in any case, all flats will be provided with air conditioning and window insulation as a matter of course.

At the time of reporting the *TKOTL 55 EIA Study* had not been endorsed. Therefore, the noise calculations in the present EIA study did not incorporate the on-site mitigation package identified by the Shiu Wing site developer. Therefore, this EIA assumes the worst case scenario, which explains why the noise levels predicted in the present study are higher than those predicted in the *TKOTL 55 EIA Study*. The predicted results are also higher because of higher traffic flow data, which takes account of the increase in the planned population in the Tiu Keng Leng Area.

Nevertheless, a noise assessment of the effects of the new public roads has been requested. It is predicted that noise levels may exceed the 70 dB(A) limit at locations O33, O34, O35, O36, O37, and O38, all of which face Road L732, and locations O45, O46, O47, O48, O49, O50, and O51, all of which face Road D8 and Road P2. The maximum noise levels for flats facing Road L732 and Road D8 (south of Road D4) are 76.9 dB(A) and 72.0 dB(A). Receivers O45 to O51 are, mainly affected by traffic noise on Road D8 (south of Road D4) and Road P2. It is suggested that the project proponent investigate the traffic noise impacts arising from these roads.

Roadside barriers on Road L732 were not tested because the Shiu Wing housing development will be constructed with a four storey high podium and therefore barriers would offer no protection due to the relative height of the receivers (barriers are only effective on lower floors). Furthermore, in accordance with NOMPRO a deck-over structure would be impracticable on local roads.

It is recommended therefore, that no mitigation on the proposed roads be recommended.

7.2.7 Impacts to the School in Area 72 west

Primary School (Receiver S183 to S198)

The predictions indicate that there are exceedances at receivers S183 to S188 all of which face Road L732. Note that there are no receivers on the first floor and there are no exceedances on the sixth floor. The school is only 6 storeys high. Table 7.5 indicates the noise levels at the affected classrooms.

Table 7.5 Classrooms in Area 72 west Primary School Affected by Noise > 65 dB(A)

Level	Maximum Predicted Noise Level (dB(A))					
	S183	S184	S185	S186	S187	S188
2	classroom 1 66.2	classroom 2 66.3	classroom 3 66.3	classroom 4 66.4	classroom 5 66.4	classroom 6 66.2
3	classroom 7 66.0	Library 66.1	Library 66.1	remedial teaching room 1 66.2	classroom 8 66.1	classroom 9 65.9
4	classroom 11 65.7	classroom 12 65.9	classroom 13 65.9	classroom 14 66.0	classroom 15 65.9	classroom 16 65.7
5	classroom 18 -	classroom 19 65.6	classroom 20 65.6	classroom 21 65.7	classroom 22 65.6	classroom 23 -

Note Based on the Standard Primary School design layout produced by Architectural Services Department
- no exceedance of 65 dB(A)

A 3m barrier, located on the kerbside of Road L732 (westbound) to the north of the school, was tested. However, due to the need to have a site access opening off Road L732, to service the school, the provision of this barrier would result in a reduction of greater than 1.0 dB(A) at only one room (guidance activity/interview room).

It is recommended that a further traffic noise assessment at the school sites be undertaken. The review study should include the assessment of the feasibility of on-site mitigation such as the following (see Table 11.2):

- erection of solid site boundary wall(s) of appropriate height;
- orientation of building structures (e.g. rotation by 180°);
- installation of special glazing/air conditioning; and/or
- setback from Road L732.

7.2.8 Impacts on the Schools in Area 72 east

Secondary Schools (Receivers S199 to S215 and S216 to S232)

The predicted noise levels were greater than the 65 dB(A) limit in most teaching rooms (the exceedances range from 0.5 dB(A) to 7.3 dB(A)). However, the dominant noise source is from Road P2 and the southern part of Road D8 (south of Road D4, which is not part of the public road works of the Housing Authority).

Although Road D8 (south of Road D4) will not be constructed by the Housing Authority it was requested that mitigation on this portion of Road D8 be tested.

Provision of a 5m roadside barrier did not result in full compliance with the criteria of 65 dB(A) at receivers in the northernmost school. However, noise reduction of more than 1.0 dB(A) were found at NSRs S199 to S206 (ranging from 1.2 dB(A) to 3.7 dB(A)). At the southernmost secondary school (S216 to S232), all teaching rooms are predicted to be exposed to noise levels greater than the HKPSG criteria of 65 dB(A). The provision of a 5m barrier reduced noise levels by more than 1.0 dB(A) at all heights of NSRs S216 to S223 (ranging from 1.4 dB(A) to 6.5 dB(A)). Furthermore, the noise levels at 33 teaching rooms would be reduced to within the HKPSG limit.

It is suggested that the construction of the 5m vertical barrier be considered. The suggested location of this 5m barrier is shown on Figure 7.3.

It should be noted that in the development areas around the school sites will be occupied with buildings, which will provide some screening of noise from the surrounding roads. As stated earlier, this section of Road D8, which is south of Road D4, will not be constructed by the Housing Authority. It is advised that the proponent for this road is made aware of the suggestions to construct a 5m barrier on Road D8, so that they may assess its feasibility.

As on-site mitigation would further mitigate noise impacts from the surrounding roads a review study should be undertaken to assess the feasibility of on-site mitigation (see Table 11.2) such as:

- erection of solid site boundary wall(s) of appropriate height;
- orientation of building structures; and/or
- installation of special glazing/air conditioning.

7.2.9 Impacts on Area 59

The receiver location is at a residential block. Noise levels are not influenced by the proposed public roads in Tiu Keng Leng.

7.2.10 Impacts on Area 57 North

These receivers are all residential uses. There are no predicted exceedances of the 70 dB(A) limit.

7.2.11 Impacts on Area 57 South

These receivers are all residential uses. The noise levels are predicted to exceed the criteria at NSR Ex-25 only (maximum noise level is 71.5 dB(A)). Noise levels are dominated by Road P2 and other roads in the area which are not related to this project. Therefore, no mitigation is proposed for the new roads.

7.2.12 Impacts on Area 67 North

These receivers are all residential uses. There are some predicted exceedances of the 70 dB(A) limit at NSRs Ex-4 and Ex-5. However, the dominant noise contribution arises from Road P2. Mitigation on the new public roads at Tiu Leng will not result in any noise reduction.

7.2.13 Impacts at Po Yin Temple

The predictions show that there are no exceedance of the 65 dB(A) limit.

7.3 Review of Mitigation Identified in Previous Studies

7.3.1 Mitigation on Road D4

The following studies have identified that mitigation in the form of deck-over structures is required on Road D4 (See Figures A1, A5, and A6 in Appendix A):

- TKO Feasibility Study of the Opportunities for Further Development (May 1990 (TKOOFD));
- Environmental Noise and Vehicular Emissions Impact Assessment for the proposed development at TKO Area 67 September 1997; and
- EIA of Engineering Infrastructure in TKO Town Centre Central - September 1997.

Only the TKOOFD identified one section of deck-over/canopy, which falls under the remit of this study, which is between Area 74 south and Area 72 east (Schools Site). The extent of this section of deck-over/canopy would appear to be from the D8/D4 junction and the exit of the Road D4 elevated road section.

This deckover/canopy mitigation option was found to be impractical because:

- a canopy structure would provide minimal noise reduction because of its limited length (due to the need for line of sight for turning traffic and traffic exiting the Road D4 flyover) and also because of detrimental portal effect; and
- a deck-over structure cannot be constructed because there is no podium in either Area 74 south or Area 72 east on which to support the deckover.

7.3.2 Mitigation on Road D8

The following mitigation measures were identified in previous studies:

- 3 sections of canopy over Road D8 (see Figure A1 appendix A), identified in the TKOOFD Study (May 1990); and
- a 2.5m high barrier between Area 73A and Area 74 north, identified in the Environmental Assessment Study of Tiu Keng Leng Public Housing Development Area 73A (September 1997).

The present EIA has concluded that the 3 sections of canopy are not required because the predicted noise levels in these locations are below the HKPSG 70 dB(A) criteria.

The school building and the 2.5 m site boundary solid barrier would be constructed at the same platform height level and thus the extent of any shielding is likely to be greater. Due to the fact that

the school layout design and traffic data assumed in the previous assessment have been superseded, it is recommended that the requirement for this 2.5 m barrier be further reviewed.

Therefore, due to the above reasons and also because the disposition of the school and traffic data assumed in the previous assessment have been superseded, it is recommended that a traffic noise impact assessment be undertaken at the school sites, which should evaluate the effectiveness of the 2.5m site boundary barrier.

7.3.3 Mitigation on Road L731

The following mitigation measures were identified in previous studies:

- a 7.5m high barrier between Area 73A and Area 72 (MTRC Site), identified in the Environmental Assessment Study of Tiu Keng Leng Public Housing Development Area 73A (September 1997).

The present EIA has concluded that these measures are not required because the predicted noise levels in these locations are below the HKPSG 70 dB(A) criteria. It should be noted that the site layout used in the Area 73A September 1997 study has been superseded, hence the deviation from the previous study findings.

7.4 Recommendations

The present EIA traffic noise impact assessment has demonstrated that there will be exceedances of the HKPSG criteria at a number of locations. Various mitigation options were tested and the following were the only measures, within the Housing Authority's remit, found to be practical:

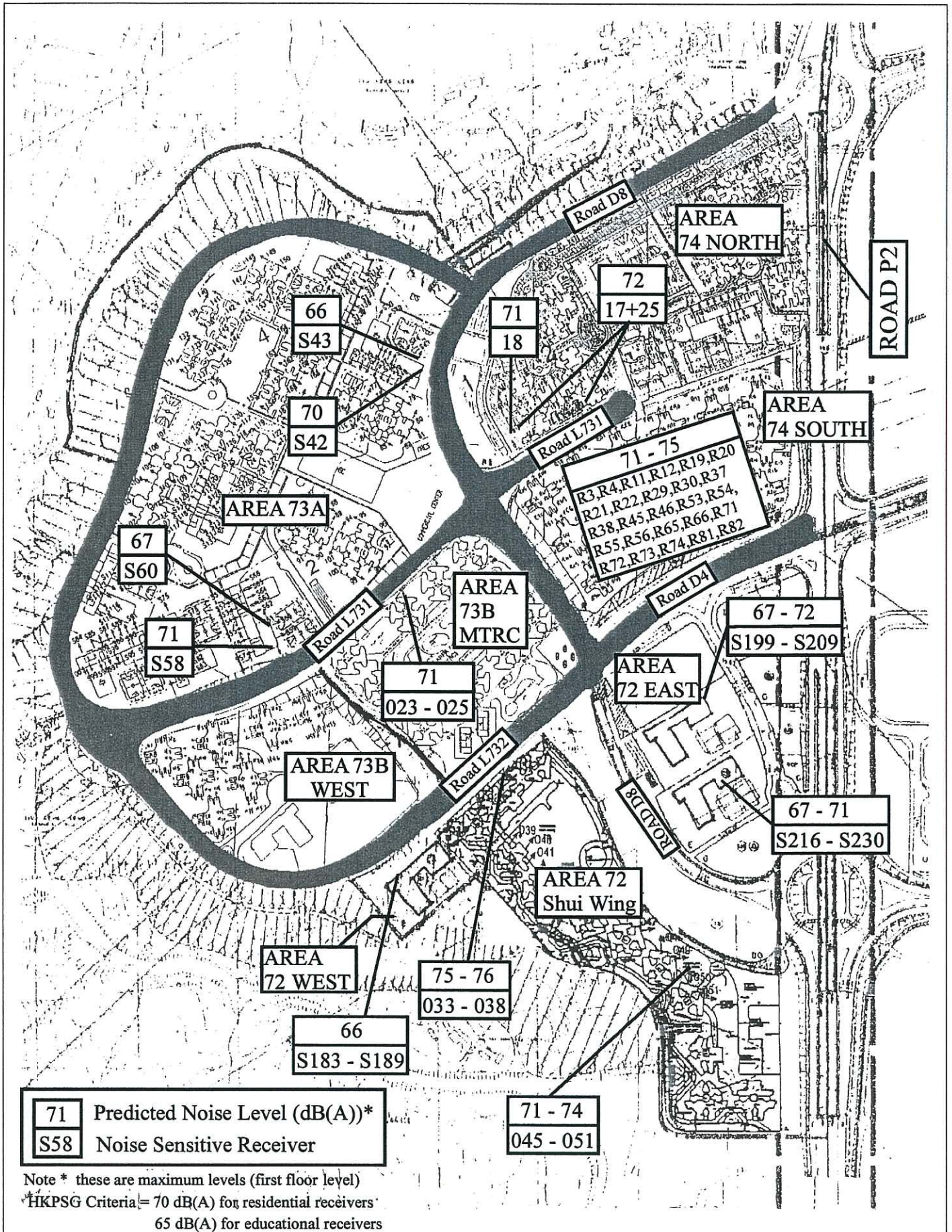
- 5m cantilever barrier (with a 3m overhang) on Roads D8 between Area 73B (MTRC site) and Area 74 south
- 5m cantilever barrier (with a 3m overhang) on the eastbound at-grade section of Road D4.

7.5 Other Suggested Mitigation Measures

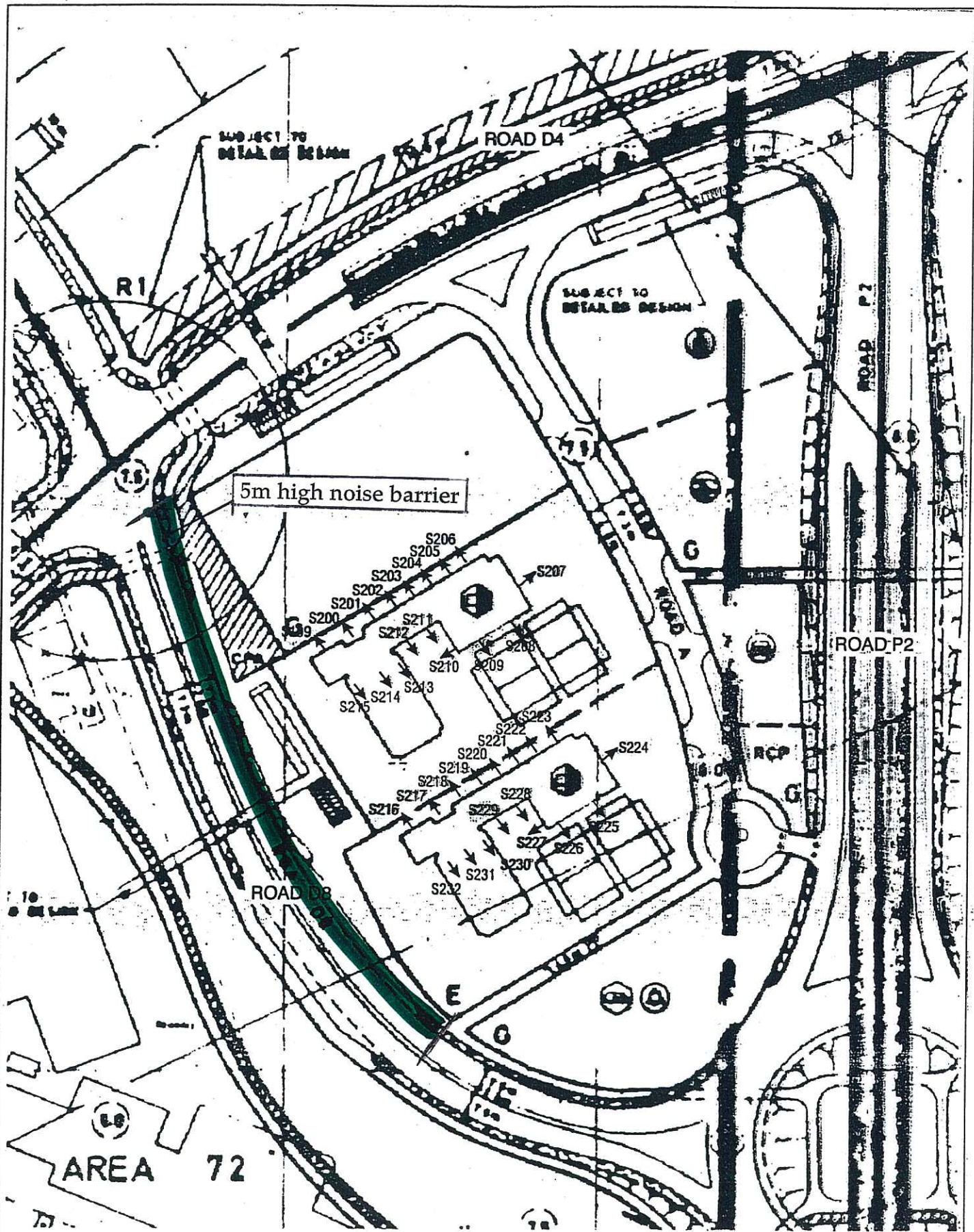
The present EIA study has identified other mitigation measures, and it was suggested that they be implemented by the relevant project proponent. These include the construction of:

- a 5m roadside barrier on the southbound section of Road D8 (south of Road D4) between Area 72 (east) and Area 72 (Shiu Wing)
- a 5m barrier with a 3m cantilever section on the Road D4 flyover

Furthermore, it has been suggested that further traffic noise impact assessments be undertaken for the schools, which have been predicted to receive noise levels in exceedance of the HKPSG criteria. The affected schools are indicated in Table 11.2 which lists the Departments responsible for the implementation of these studies.

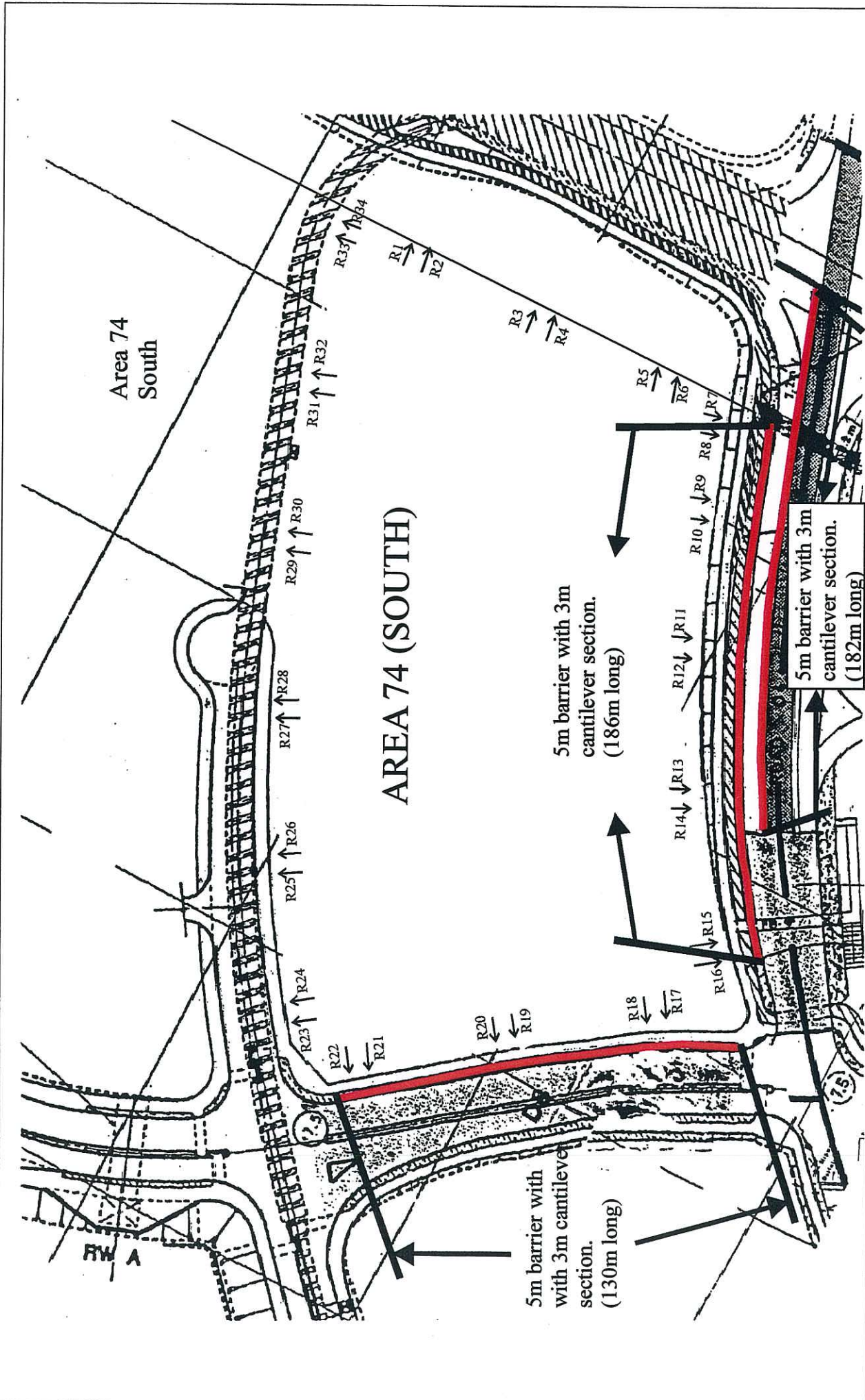


	TITLE	CES (ASIA) LIMITED			
	Locations of exceedances of the HKPSG Criteria	PROJECT NO	C230	DATE	March 1998
		DESIGNED	Brian Ng	DRAWING NO	Figure 7.2



TITLE
 Location of the 5m Roadside Noise Barrier on Road D8

CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Figure 7.3



 環 科	TITLE Locations of Mitigation Protecting Area 74 South		CES (ASIA) LIMITED	
	PROJECT NO C230	DATE March 1998	DESIGNED Brian Ng	DRAWING NO Figure 7.4

8 LANDSCAPE AND VISUAL IMPACTS

8.1 Scope and Contents

8.1.1 Introduction and Scope of Study

The scope of the study is confined to the impacts generated by the Roads D4, D8, L731 and L732. The methodology is in accordance with the study brief and *Annexes 10 and 18 of the EIA Ordinance Technical Memorandum*.

The study area is located on recently reclaimed land and is devoid of any vegetation (see Figures 1.1 and 8.5). This area was open sea, a natural bay and an informal cottage-type settlement. The sea is currently being reclaimed and the settlement has been demolished. Upon development, the area will form a substantial part of Tseung Kwan O (TKO). The proposed infrastructure development will therefore not result in the loss of existing vegetation or impact upon the landscape character of an otherwise featureless reclaimed platform.

8.1.2 Stages in the Project Life Cycle

The development of the area will be undertaken according to the following general phasing; firstly construction of the roads and secondly the construction of the development parcels. The fact that the roads will be flanked by the subsequent residential development has two major implications on the study:

- i. The development will partially screen the roads from viewpoints beyond; and
- ii. the development will introduce a high numbers of visually sensitive receivers.

8.1.3 Key Issues to be Addressed

The main tasks are to assess the likely levels of visual and landscape/townscape impacts arising from the roads, and to identify possible mitigation measures. Preliminary investigation would indicate that the key issues are likely to be as follows:

- i. Providing an acoustic barrier on Road D8, south of Road D4, (to protect users of the school in Area 72 east) while keeping the visual impact of the barrier to a minimum;
- ii. the need for other incidental structures and features such as cut faces and grade separation;
- iii. the level of visual impact on the newly introduced residential population, which will be in close proximity of the roads;
- iv. the extent to which the new development will provide visual screening to viewpoints beyond; and
- v. the likely impact on the landscape character of the wider area.

As the roads will be constructed on newly reclaimed land the direct impact on existing landscape assets is likely to be minimal. However, preliminary investigation has revealed the need for extensive cut faces to the west.

8.1.4 Level of Detail Required for the Baseline Study

The scope of the study allows for a visit to the site and adjacent environment and desk-top plan analysis. In the case of the subject study, the final development context is very different to the existing baseline conditions, and the plan analysis is of added importance. In general, the existing conditions will be indicated broadly, with the use of site photographs, perspective drawing and context analysis plans, while the planned context also will be illustrated broadly, with the aid of Government plans. More specific, smaller scale areas of concern will be addressed later in the study, and primarily relate to the size and design of the various acoustic barriers identified in the noise assessment study.

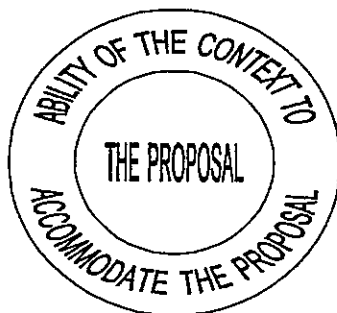
8.1.5 Principal Viewpoints to Be Covered

The principal viewpoints will be limited to a few relevant and representative cases. The following may be worthy of consideration (see Figures 5.12 and 5.13):

- i. Residents in adjoining development areas, who will have direct line of sight of one or more of the roads. In the Hong Kong context, and the specific development that is planned in the area, many of these residents will be viewing from high level;
- ii. members of the public walking or travelling by vehicle in the area
- iii. high-level viewpoints from the Lei Yue Mun headland, such as at Ng Kwai Shan, Chiu Keng Wan Shan, and associated footpaths;
- iv. street-level viewpoints from one or two residential development sites and one or two G/IC sites; and
- v. any impacted distant viewpoints, although these are likely to be minimal in number and level of impact due to the visual screening provided by the development planned in the area.

8.1.6 System to Be Used for Judging Impact Significance

The assessment of impact can be classified according to the criteria in Annex 10 of the Technical Memorandum of the EIA Ordinance, i.e. beneficial to unacceptable, with provision for undetermined impact. An initial analysis of the level of visual impact on each of the above potential receivers is included in the evaluation matrix. The general significance of impact depends upon the interaction of the inherent impact of the characteristics of the proposal and the capacity of the environment to accommodate change, i.e. as shown in the following model:

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Summary Model of the Level of Visual Impact Arising From A Scheme

In the case of landscape impact the relationship is quite objective. The level of impact is proportional to:

- i. the size of the proposal; and
- ii. the sensitivity of the directly impacted landscape.

The level of impact is inversely proportional to;

- i. the capacity of the wider area to accommodate change without undue impact on its character, e.g. due to general robustness arising from scale or other factors or general degradation.

In the case of visual impacts the relationship is complicated by subjective matters, i.e. the perception of impact.

The level of impact is proportional to:

- i. the size of the proposal;
- ii. the proximity of the proposal;
- iii. the intensity of colour or glare; and
- iv. the sensitivity and frame of mind of the viewer, e.g. a higher level of perceived impact would be expected from a residential or Country Park viewing location than from a workplace or otherwise distracted viewing location.

The level of impact is inversely proportional to;

- i. the capacity of the wider area to visually accommodate and absorb the proposal, e.g. due to dominating or similar scale, or similarity of visual treatment such as design, colour and materials;

- ii. the degree to which the proposal can be regarded as a positive intervention, e.g. an attractive proposal may be regarded in a positive light, and therefore not as a "visual impact" at all (whereby "impact" may have negative implications);
- iii. the degree of relationship between the viewer and the source of impact e.g. the roads of the subject study are primarily planned to serve the associated residential development areas, and it follows that criticism of the roads by residents of the areas which are served by those roads would not be as justified as criticism by a viewer who receives no benefit from the roads.

8.1.7 Alternatives

This is a committed new development area in a New Town, and is within close proximity of TKO Town Centre. At a strategic level, Hong Kong continues to have a huge demand for residential accommodation, and TKO has been identified as a good development area for addressing supply-side shortfalls; especially in the short-to-medium term. In light of these factors, there is not seen to be any viable alternative to continuing with the planned roads and subsequent developments, broadly as planned. The only way in which to significantly minimise the visual and landscape/townscape impacts at this stage would be to relocate the westernmost roads to the east, to avoid cut faces into the Lei Yue Mun headland. However, this would lead to reductions in the size of the adjacent development parcels at Area 73A and 73B, and would most likely not be acceptable, due to the above supply-side concerns, and the stage of programming; with these projects being committed.

8.2 Baseline Study

8.2.1 Physical Aspects

The broad context of the proposal is shown in Figure 8.1. TKO is located in a coastal valley and partly on reclamation. The study area is located in the south-western part of the town to the west of the proposed town centre. The site is located within the old Rennie's Mill settlement and adjacent bay area; partly on a recently constructed reclamation. The Lei Yue Mun headland is located immediately to the west, and rises to 304 mPD at Black Hill (Ng Kwai Shan), which is approximately 500m from the study area at the closest point. The headland rises to 247mPD at Chiu Keng Wan Shan, which is approximately 500m to the south-west of the study area. The overall effect is that the Lei Yue Mun headland encloses the study area, and due to its steep topography and proximity to the study area, it provides visual screening from the north, the west and from much of the south. Further visual screening will be provided for areas to the east by the development of Area 74, which will be at a similar time-frame to the proposed roads. While they will not provide total screening, the development in Area 74 will provide very tall screening buildings located in close proximity to the proposed roads. Taken together, the natural landform to the west and the new development to the east will closely define the viewshed of the proposed roads. Viewpoints which are even higher than the screening objects, such as the mountains of Clearwater Bay Country Park and Mount Parker on Hong Kong Island, are located at such distance that they will be screened from the roads. The visual envelope can be seen in Figure 8.1. An artist's impression of the area in context is included as Figure 8.2.

8.2.2 Human Aspects

The study area has a peculiar and specific cultural significance as the former home of the Kuomintang supporters at the Rennie's Mill cottage-type settlement. Nevertheless, it is believed that the study area no longer includes any aspect of cultural or historical significance. The area is located close to the Lei Yue Mun cemetery, which is about 750m to the south, but the specific landform will provide visual screening for the cemetery. The proposed roads generally are part of a much larger new development area, and it is not likely that the newly introduced residents will have any deep cultural nor historical affinity for the area.

8.2.3 Aesthetic Aspects

The proposed roads will not have any notable impact on the views available in the area, and with the exception of the proposed cut slopes to the west, they will not impact on the local visual amenity nor character. Of much greater impact will be the development of Area 73 and Area 74. One way in which there may be such impact is on the defining character of the whole new development area, comprising Area 73 and Area 74.

8.3 Review of Planning and Development Control Framework

The general area is part of the committed development plans for Tseung Kwan O New Town. As such, the proposed roads are entirely compatible with the wider area. The only cause for concern relates to the fact that the study area includes the urban fringe; where Tseung Kwan O interfaces with an attractive natural landscape area, at the Lei Yue Mun headland to the west. This interface will require consideration as the roads will require cut slopes into the headland. An extract from the Tseung Kwan O Outline Zoning Plan, ref. S/TKO/4, is included as Figure 8.3.

8.4 Landscape Impact Assessment

It is understood that the Master Landscape Plan (MLP) for Tseung Kwan O is now out of date due to the recent increase in population target for Tseung Kwan O New Town and area of reclamation for development. A review of the MLP and the landscape design guidelines for the New Town as a whole is currently being undertaken and is scheduled for completion in 1998.

The landscape impact assessment has to address two distinct aspects. The first aspect is actual physical intrusion on a landscape area, in which the proposal has an actual land take requirement. In such cases, the impact is major and may be absolute destruction of the previous landscape situation. The second aspect is incidental impact; in which the proposal does not physically intrude on the landscape area, but nevertheless does have a notable impact.

As practically all of the study area is newly reclaimed land, any landscape impacts will be limited in number and extent. The only area of concern is the proposed cut slopes; into the Lei Yue Mun headland, to the west of the roads. However, even here, the extent of cutting into natural landscape will be minimised by the fact that the Rennie's Mill cottage-type settlement already extends up the lower slopes of the headland. Nevertheless, there will be significant differences. Firstly, the cut slope will extend further up the landform than did the settlement. Secondly, the settlement was an informal, organic development which allowed for the retention of pockets of natural and man-made landscape areas, whereas the cut slope will result in absolute destruction.

Incidental impacts on areas beyond the cut slope need not be a cause for concern. The natural landform and natural landscape can be retained in its present form, and should not suffer from adverse impacts from the cutting below. Construction stage impacts should be avoided, and the works area for the cut slope should not extend significantly beyond the extent of the cutting, towards the ridgeline.

8.5 Visual Impact Assessment

8.5.1 Context and Proposals

The baseline context was reviewed above. As mentioned, the perceived net impact depends upon the physical characteristics of the proposal compared to the ability of the context to accommodate the proposal. The areas of greatest concern regarding the proposal are the cut slopes to the west, and the prospect of acoustic screening measures being required. These are addressed below, and the main areas of concern regarding the proposals can be seen in Figure 8.4.

8.5.2 Cut Slopes

There will be cut slopes to the west of almost the entire alignment of Roads D8, L731 and L732. This is a total distance of about 1.7km, and the cuttings will have a total vertical height of up to 70m. Of this, about 0.5km (primarily adjacent to Road D8) will be maximum 50 degree slope with soil nail. The remainder will be general cut slope. These represent major earthworks, and they will be a significant impact on the natural landform.

8.5.3 Acoustic Barriers

Acoustic barriers, to provide noise impact protection for the users in the schools in Area 72 (east), and residents in Area 74 south have been identified in the traffic noise impacts assessment. These measures are likely to give rise to visual impact. Conversely, the impacted users would be precisely those receivers who gain from the acoustic protection provided by the barriers, as noise impact, in a similar way to visual impact, largely depends upon direct line of sight. The awareness of the benefit gained from noise impact mitigation will minimise the perceived visual impact.

8.5.4 Incidental Matters

The other aspects relating to the proposed roads generally should not be a cause for concern regarding visual impact. There will be many items familiar to road reserves, such as signage. Provided such items are of appropriate standard design and size for district and local roads, such as not being too large, they should not give rise to a notable level of visual impact. Footbridges are proposed in the Tiu Keng Leng New Town (for locations see Figure 8.4). These generally will be located perpendicularly compared to the adjacent development areas, which will minimise its impact, but it will have an impact on travellers on the roads. Provided the footbridges are of good design, materials and construction quality, they should not give rise to unacceptable levels of visual impact. The design of the footbridges should be subject to further analysis and review, such as a design review with ACABAS.

8.5.5 Viewpoints and Initial Estimate of Visual Impact

The major viewpoints for consideration are those listed under Scope and Contents. The assessment takes account of visual compatibility with surroundings, visual obstruction, improvement in visual

quality (if and where appropriate), and potential for glare and reflection. The assessment is included in the matrix in Table 8.1.

Table 8.1 Visual Impact Assessment Matrix

Receiver	Beneficial	Acceptable	Acceptable with Mitigation	Not Acceptable	Un-determined
Residents of Area 73A *			x		
Residents of Area 73B * (i)			x		
Residents of Area 73B * (ii)		x			
Residents of Area 74 * (iii)			x		
Residents of Area 74 * (iv)		x			
Street-level at the above (v)					x
Users of the Roads (v)					x
Wider impact on rest of TKO		x			
Walkers/Others Lei Yue Mun			x		
Distant Points (vi)		x			

i. R(A) Area in the west of Area 73B

ii. OU Area in the east of Area 73B

iii. R(A) Area in the north of Area 74

iv. C/R Area in the south of Area 74

v. "Distant points" includes high-level vantage points such as the mountains of Clearwater Bay Country Park and Tai Tam Countrypark.

* The impact on views from residences will be confined to direct line of sight, and will therefore be limited to the front-line flats within the front-line blocks of the respective areas.

8.6 Mitigation Measures

The road infrastructure will be an integral and highly visible component of the townscape. However, this also provides good opportunity to enhance the overall townscape character by appropriate roadside landscape treatment. Typically, this can be achieved by dedicating adequate reserves for planting along the roadside between the carriageway and footpath and in central reservations to the district or primary distributor roads. Where space is more restricted, avenues of trees in the footpath paving can also make a valuable contribution to the landscape character of the area, providing partial screening to traffic, shade to pedestrians and visual relief to the surrounding mass of buildings and Highway's structures.

Mitigation measures should not only include damage reduction but also potential landscape enhancement. There are two main areas of concern, firstly the cut slopes in the west, and secondly the extent and design of the acoustic barriers.

In the case of the former, it is proposed that there will be cut slopes to the west of almost the entire alignment of roads. The proposed cut slopes were reviewed under the visual impact assessment section, above. As noted, the slopes will be a significant impact on the natural landform.

8.6.1 Cut Slopes

It is not likely that it will be possible to significantly minimise the visual impact of the slopes. As mentioned under alternatives, the best way to significantly minimise the visual impacts would be to relocate the westernmost roads to the east, to avoid cut faces into the Lei Yue Mun headland. This would not be acceptable due to the reduced area of the development parcels at Area 73 and Area 74. Alternatively, the slopes could be of much lesser gradient to allow landscape rehabilitation with web cover and hydro-seeding. This would require a much larger plan area for the same height of slope, and the slope would either have to encroach on the development areas to the east, which would be unacceptable in development terms, or encroach on the road and the natural landscape and landform at the Lei Yue Mun headland to the west, which also would be unacceptable. The prospects for mitigating against visual impact from the slopes are therefore extremely limited, and may be restricted to superficial measures, such as finishing colour, or landscape measures at the foot of the slopes. It is fortunate that the development blocks in the west of Area 73 and Area 74 will provide screening to the remainder of those areas and the remainder of TKO and areas to the east.

8.6.2 Acoustic Noise Barriers

Based on the assessment of road traffic noise impacts the provision of a variety of noise barriers have been recommended. The locations of these mitigation measures are indicated on Figure 7.3 and 7.4 of this report and can be summarised as follows:

- 5m high vertical noise barriers with planter to roadside of Road D8 (south of Road D4)
- 5m high barrier with a 3m cantilever section with planter to roadside of Roads D8 (north of Road D4) and Road D4 (at-grade)
- 5m high cantilever barrier on a 1m high parapet of the Road D4 flyover

Where a barrier is relatively isolated, the design is normally best considered on its own merit in its local context. However, in this particular case there is a variety of noise barriers in a distinct neighbourhood, which differ in height, form, and mounting position in close proximity to one another. To reduce the potential visual clutter and impact of the different noise barriers it is proposed that the design is co-ordinated as far as possible. While the optimal form of the barrier is dictated by the noise mitigation function, i.e. vertical height and cantilever requirements, the selection of materials and colour finishes are perhaps the most important elements to create a continuity and harmony between the different structures.

Since there are currently no specific design guidelines for noise barriers in Tseung Kwan O the following notes are intended to illustrate the rationale behind the proposed conceptual barrier design and associated roadside landscape treatment (Figure 8.6a to 8.6c). Note that the design guidelines are based on reflective barriers as this follows the current trend in Hong Kong.

Design Guidelines

Roadside noise barriers are visually intrusive due to their size and proximity to drivers and pedestrians. There are a number of techniques and design considerations which can help reduce the mass of the structure and mitigate the visual impacts. These include the following:

- **Use of transparent materials**
Use of transparent material such as has been proven in many Hong Kong applications. Colours on transparent materials include clear, umber, blue or green. The umber tone is considered to be more neutral and less intrusive than blue or green and is less likely to appear dirty over time than the clear product.
- **Combination of materials**
A patterned barrier using different materials such as concrete, tiled or aluminium/steel panels breaks up the linearity of the structure and adds interest. Tapered ends also provide a subtler transition to the barrier interface. There are many different option for the design of such patterns and only one, indicative example is shown.
- **Incorporation of Planting**
Where space permits, amenity planting between the footpath and barrier is recommended to help soften the structure and create a less intimidating 'corridor' effect for pedestrians. The planting can also reduce the effect of glare from the barrier on sunny days. A raised roadside planter is indicated in the proposed barrier design of approximately 1m width which could accommodate fairly dense shrub planting. If wider planters are feasible then tree planting could be provided which would screen the barrier more effectively. In addition, wire trellises are indicated on the solid decorative panels to support climbing plants.

8.6.3 Footbridges

The footbridges which are proposed will also require attention to minimise visual intrusion and ensure high quality design and materials. The best way to ensure this may be to make the footbridges subject to design review at ACABAS.

8.6.4 Others

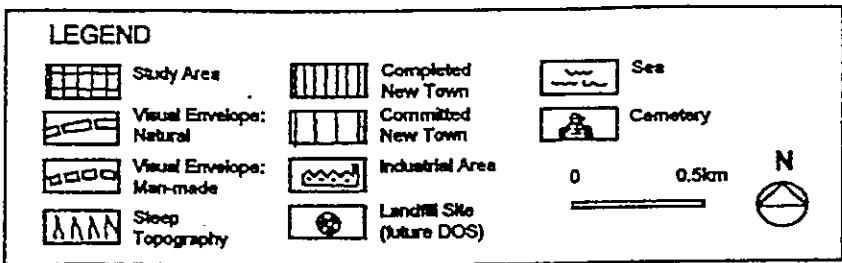
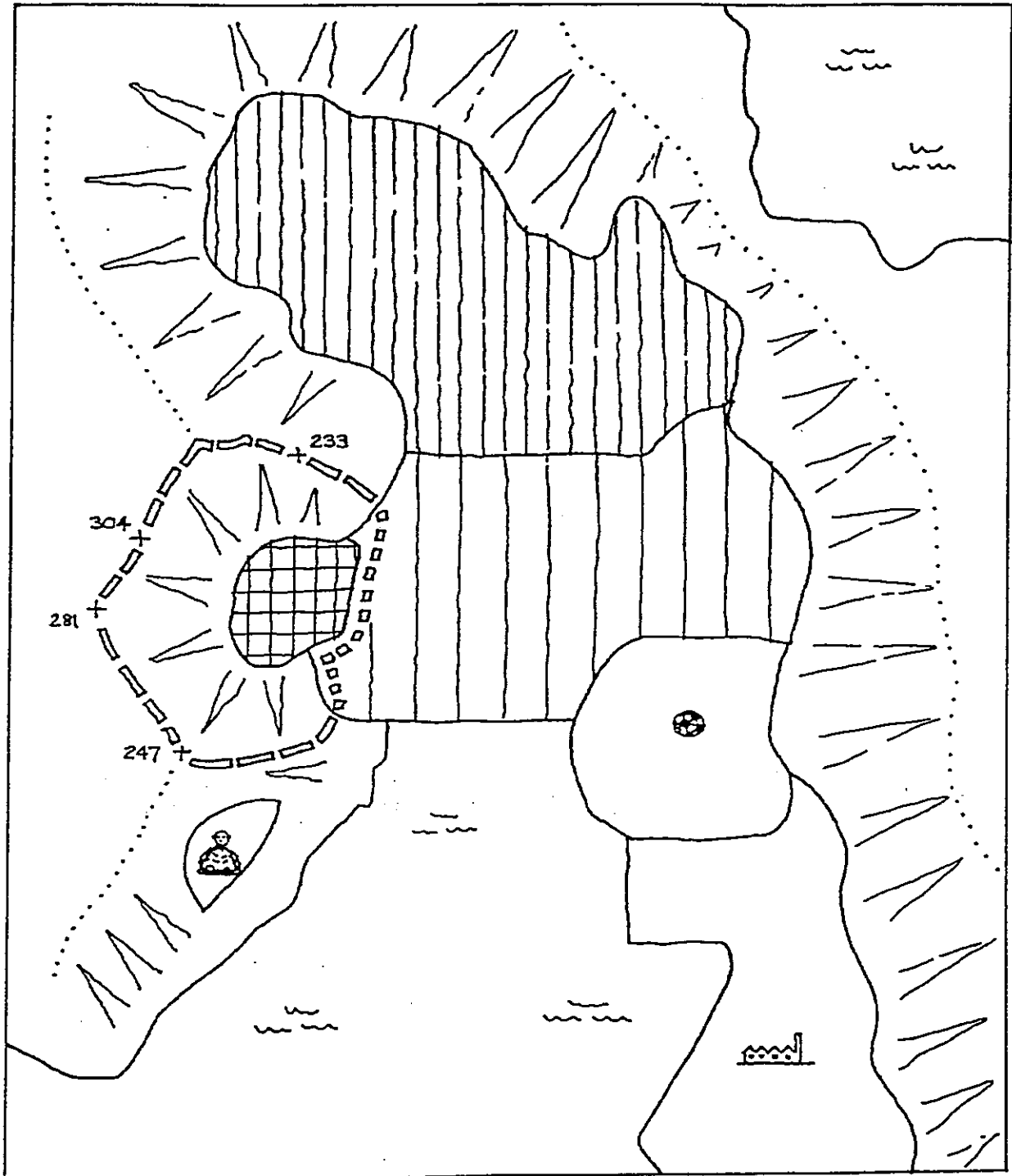
A further source of visual intrusion will be road signage. This should be of standard design, and the size should be appropriate for the relatively slow travel speeds that would be expected on the proposed roads. Superfluous signage should be avoided.

The general visual impact arising from the roads themselves will be mitigated by the comprehensive roadside landscaping strategy that is proposed within the road reserve.

8.6.5 General

The updated Master Landscape Plan for Tseung Kwan O should be the appropriate source of landscape design guidelines for material, species and roadside landscape treatment throughout the New Town once the current review is complete. Accordingly, it would be prudent in the detailed design stage to consider the interface of infrastructure planting design in the study area with that proposed or carried out in adjoining areas to provide continuity or contrast as appropriate. In the meantime, the suggested landscape treatment of the various noise barriers illustrates how the roadside planting can be achieved with the construction of a simple Highways' Standard raised roadside planter, similar to those observed in many completed areas of Tseung Kwan O New Town.

Typical roadside planting details are shown in Figure 8.7. This has been provided for reference purposes only. The actual planting details will be subject to the findings of the Master Landscape Plan review and landscape planning proposed during the detailed design stage. A size B1 drawing of the Landscape Layout Plan is shown as Figure 8.8.

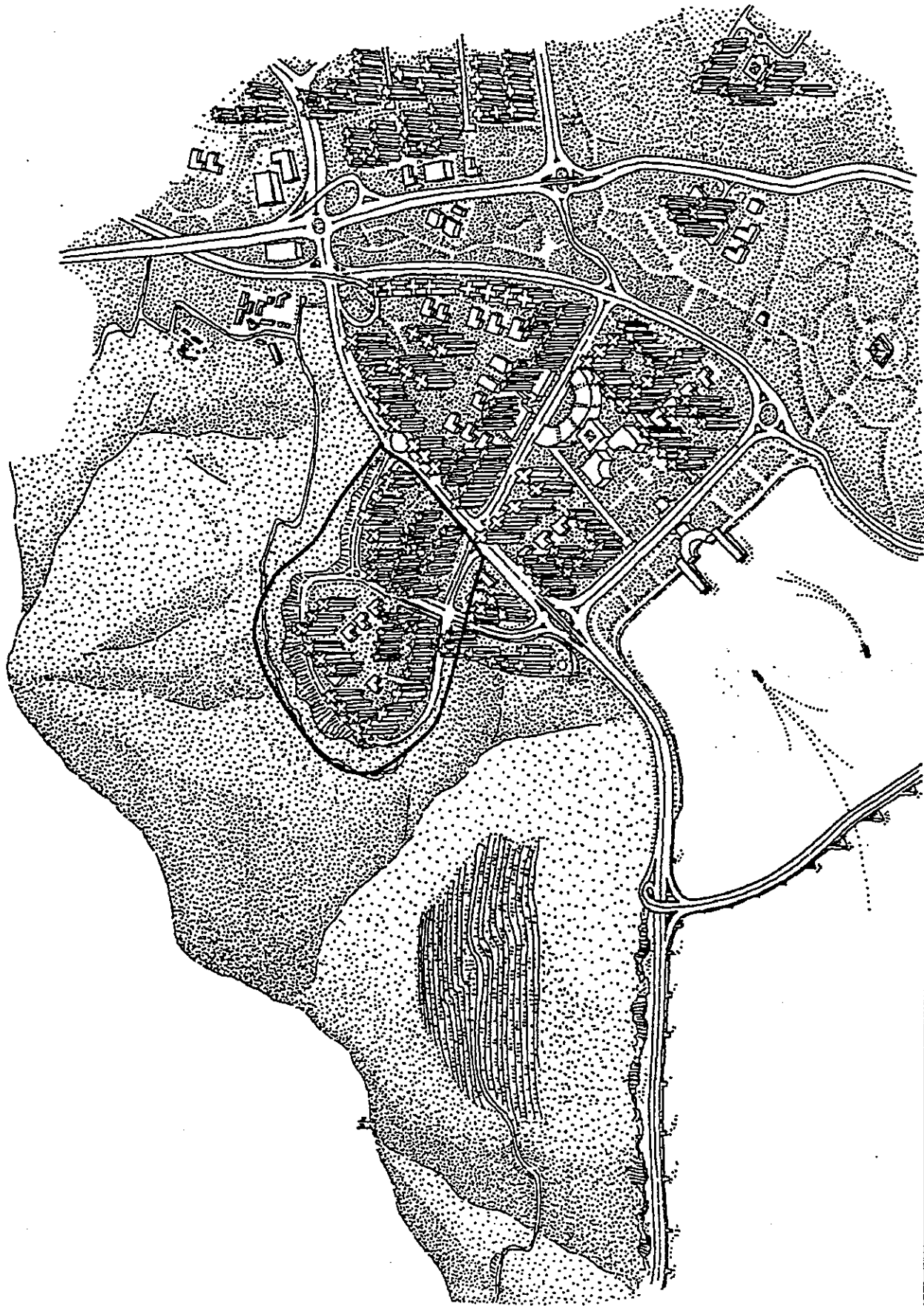


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 Broad Context

CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Figure 8.1



TITLE

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Artists Impression & Proposals in Context

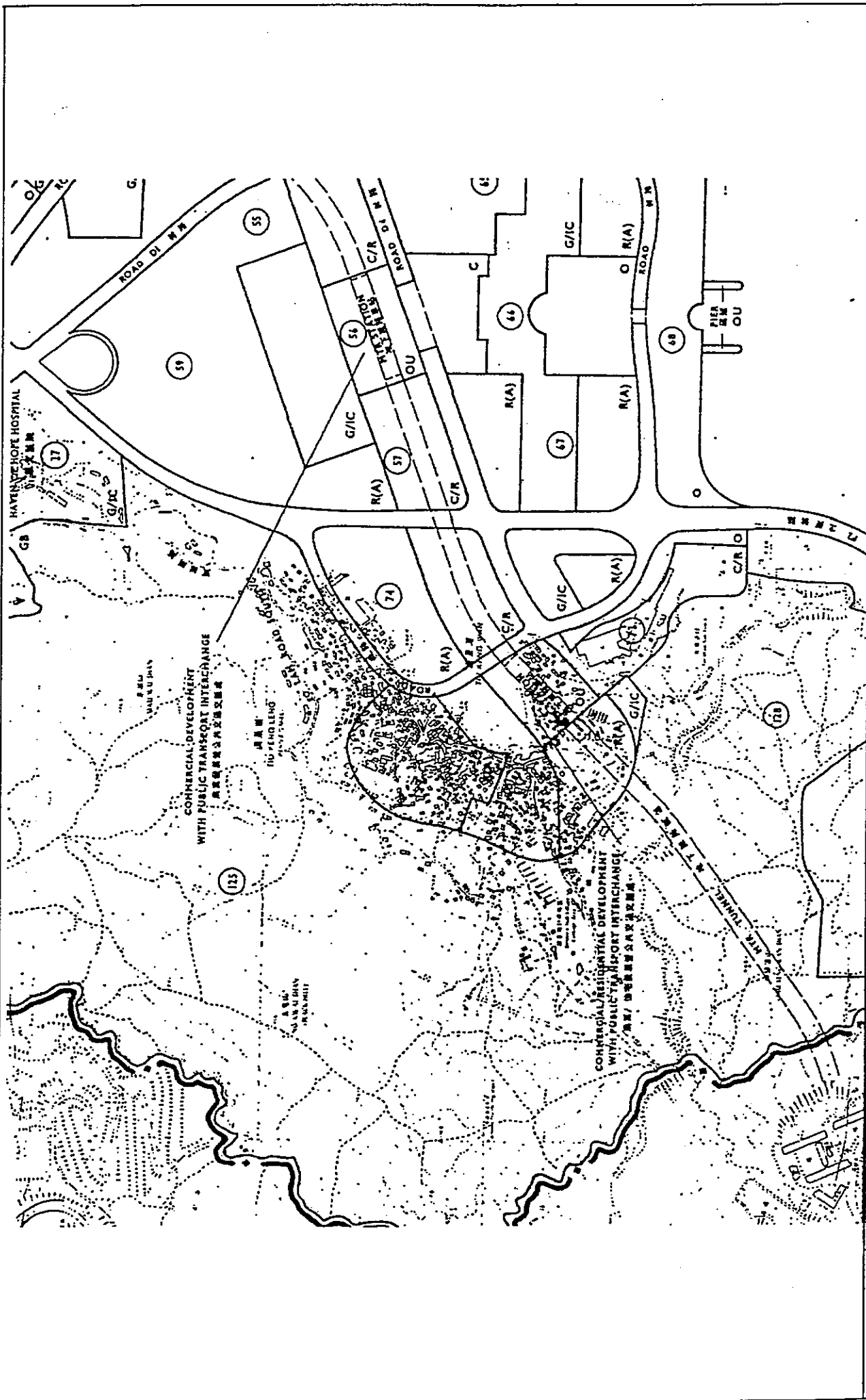
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DESIGNED	Suki Chung

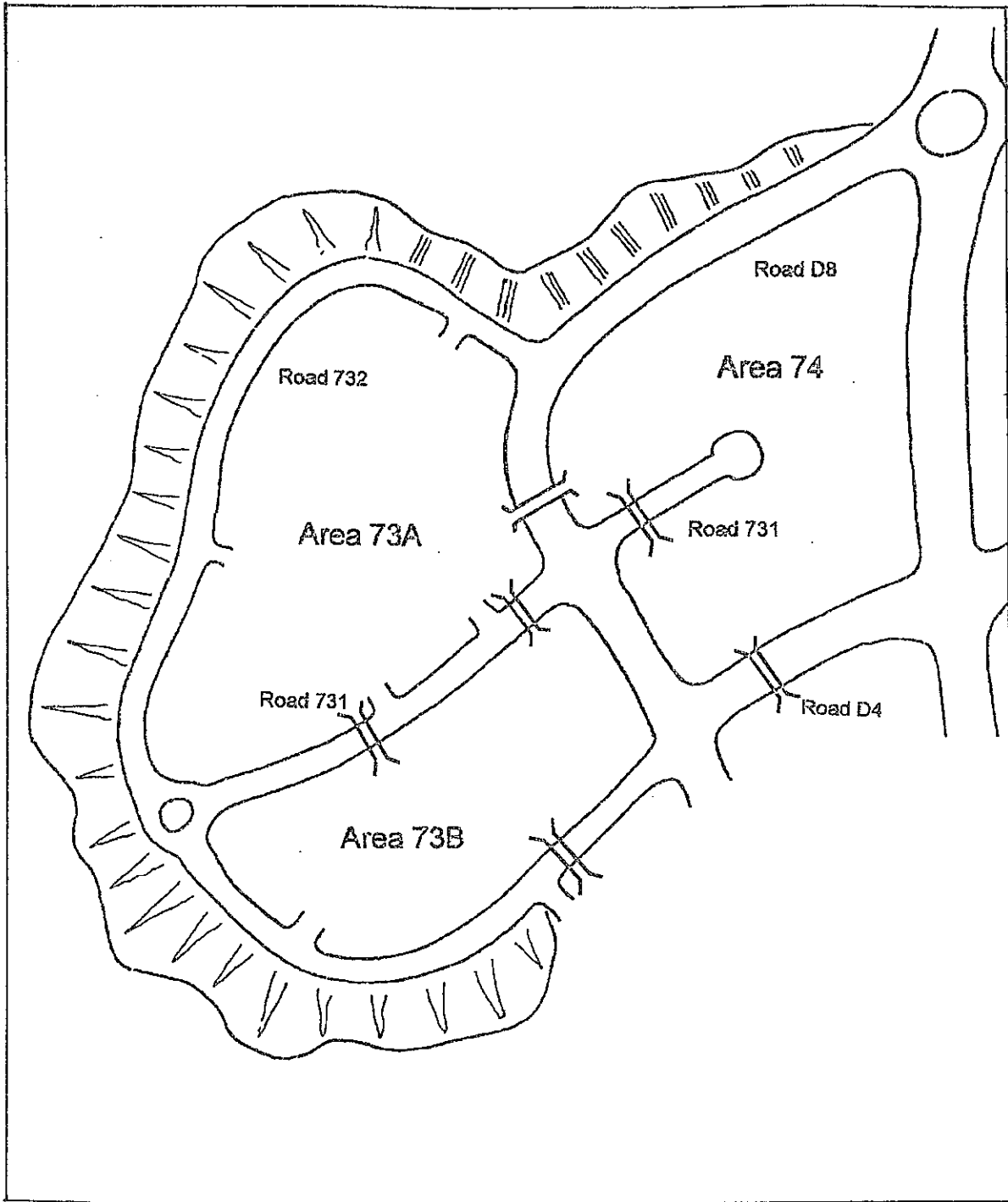
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 November 1997

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Figure 8.2





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	PROJECT NO C230	DATE November 1997	DESIGNED Suki Chung	DRAWING NO Figure 8.3



LEGEND

 Cut Slope	 Cut Slope to 50° with Soil Nail	 Footbridge
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0 100m 

	TITLE	CES (ASIA) LIMITED			
	Proposals	PROJECT NO	C230	DATE	November 1997
		DESIGNED	Suki Chung	DRAWING NO	Figure 8.4



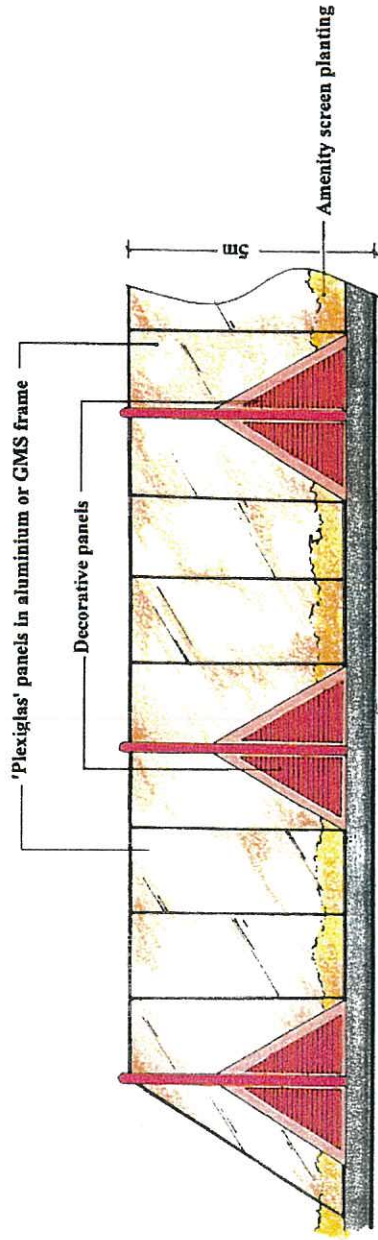
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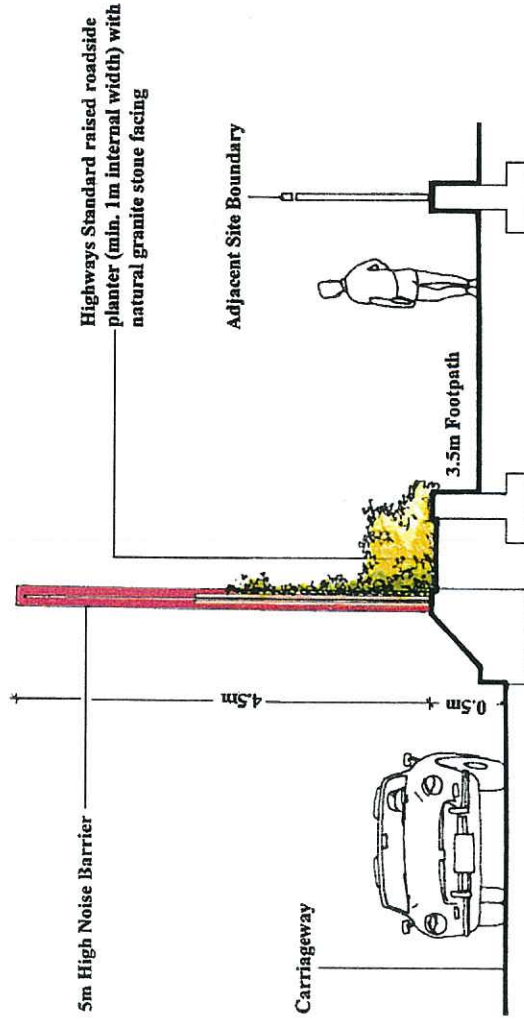
Existing Site

CES (ASIA) LIMITED

PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Figure 8.5



5M HIGH VERTICAL BARRIER - ELEVATION (SCALE 1:100)



TYPICAL SECTION (SCALE 1:50)

Notes:

1. Barrier supports in aluminium or GMS section and painted. P-c. concrete or aluminium/GMS decorative panels with plant trellis on footpath elevation. Coloured tile or aluminium panels on roadside elevation.
2. Tree planting possible if planter greater than 1m width can be provided.

TITLE



Conceptual Design of Proposed Noise Barriers
(5m Vertical Barrier on the roadside)

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PROJECT NO

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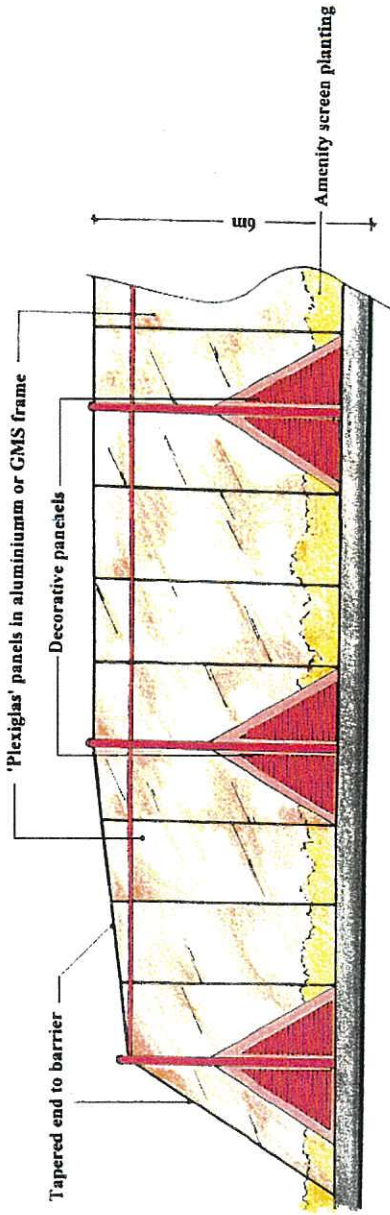
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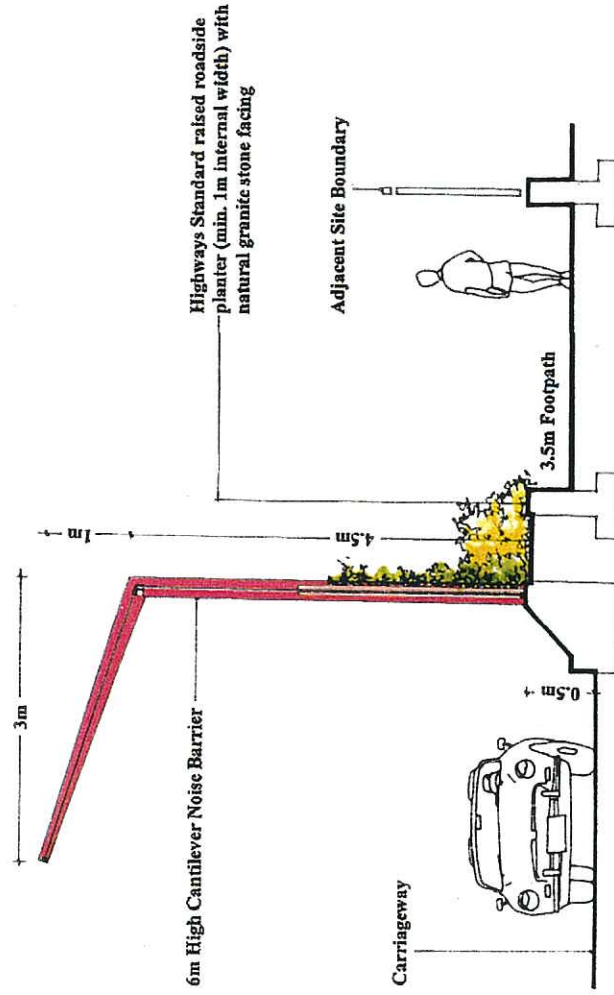
Laura Wong

DRAWING NO

Figure 8.6a



6M HIGH CANTILEVER BARRIER - ELEVATION (SCALE 1:100)



TYPICAL SECTION (SCALE 1:50)

Notes:

1. Barrier supports in aluminium or GMS section and painted. P-c, concrete or aluminium/GMS decorative panels with plant trellis on footpath elevation. Coloured tile or aluminium panels on roadside elevation.
2. Tree planting possible if planter greater than 1m width can be provided.

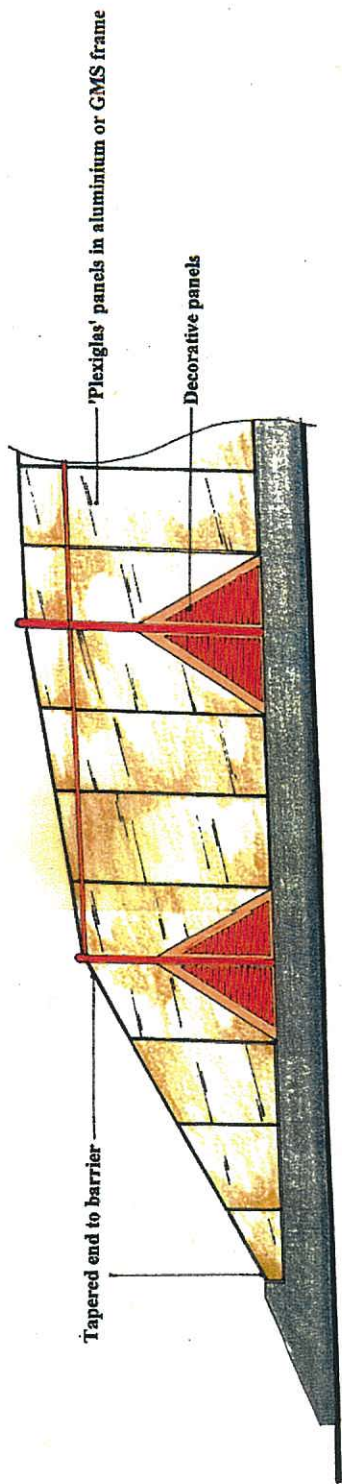
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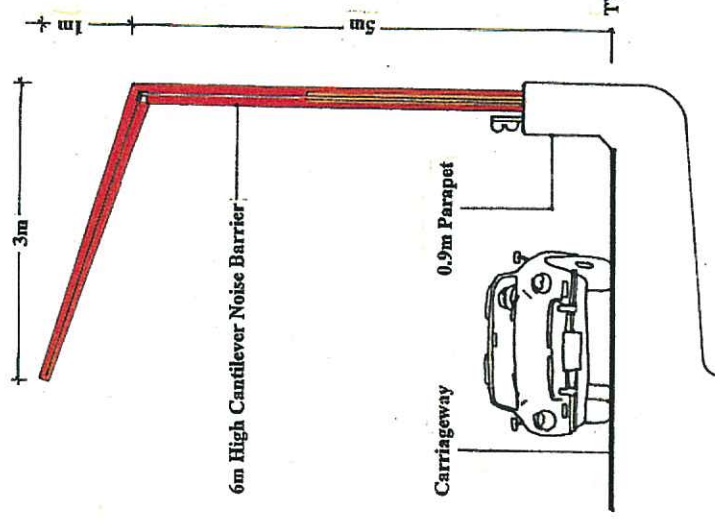
Conceptual Design of Proposed Noise Barriers
(5m Barrier with 3m Cantilever Section on the Roadside)

CES (ASIA) LIMITED

PROJECT NO	C230	DATE	March 1998
DESIGNED	Laura Wong	DRAWING NO	Figure 8.6b



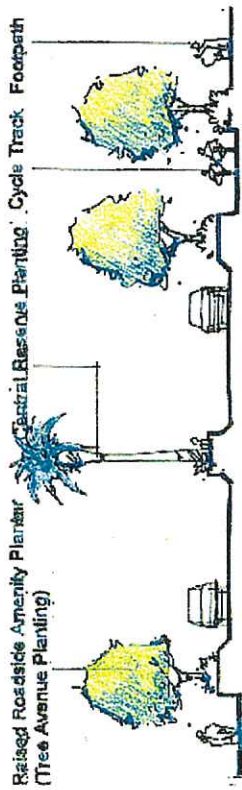
6M HIGH CANTILEVER BARRIER TO FLYOVER - ELEVATION (SCALE 1:100)



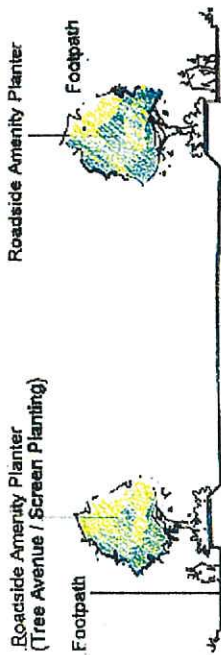
Notes:

1. Barrier supports in aluminium or GMS section and painted. P-c. concrete or aluminium/GMS decorative panels with plant trellis on footpath elevation. Coloured tile or aluminium panels on roadside elevation.
2. Tree planting possible if planter greater than 1m width can be provided.

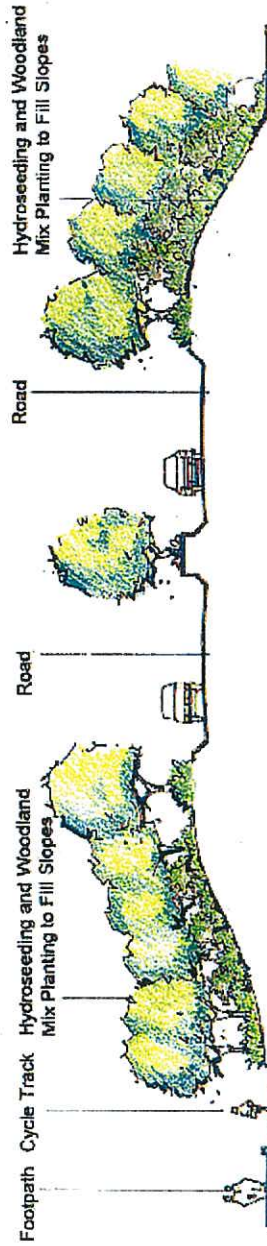
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PROJECT NO	DATE
C230	March 1998
DESIGNED	DRAWING NO
Laura Wong	Figure 8.6c



Detail A Typical Section through Main Road Corridor with Central Reserve Planting.



Detail B Typical Amenity Planting to Secondary Road



Detail C Typical Section through Fill Slopes

9 LAND USE IMPACTS

9.1 Objective

The objective of this section of the Study is to identify and describe the likely impact of the project on the existing and future land use and propose mitigation measures to overcome the likely impacts.

9.2 Existing and Future Land Use

The existing land use is the Tiu Keng Wan embayment that is currently being reclaimed for the development of Tseung Kwan O Phase III. The planned future use for this new town will be residential with supporting commercial areas and a full range of community facilities. The town, however, will not be fully self-contained in employment terms and considerable work-related travel to and from TKO is expected.

9.3 Proposed Project

The scope of the Project includes the construction of new roads, namely Roads D4, D8, L731 and L732, around Areas 74, 73A and 73B and associated, drainage, landscaping and lighting works. The provision of these roads are essential to support the new developments under construction.

9.4 Conclusions

There will be no land use impacts caused by the proposed project as the land is purposely formed for such use as specified in the Outline Development Plan D/TKO/1C.

10 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

10.1 Introduction

The construction phase noise impact assessment predicted that there will be exceedances of the statutory and non-statutory noise levels (as stated in the *Technical Memorandum on Noise From Construction work other than Percussive Piling* and *ProPECC Note PN 2/93* respectively) if no mitigation measures are implemented. These measures include *inter alia*, good site practices, the use of silenced equipment, and screening where possible (see Section 6 of this report for further details). These predicted exceedances occur at the Po Yin Temple (CN1), domestic block on the south western corner of Area 59 (CN2), and the domestic block on the north western corner of Area 67 (CN5).

These receivers represent high rise residential blocks thus there is potential for a large number of residents likely to be affected by noise from the construction activities. Therefore, environmental monitoring and audit is required during to construction phase to ensure compliance with the stipulated standards.

10.2 Objective of this Section

The objective of this section is to outline the environmental monitoring and audit (EM&A) requirements which is necessary for the following purposes:-

- to ensure compliance with the Environmental Impact Assessment (EIA) study recommendations; and
- to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action.

10.3 Background

The present EIA study has identified that the following impacts will require monitoring and audit:

- noise impacts, the construction phase noise sensitive receivers are listed in Table 5.1, (see Section 6 for full details);
- landscape impacts, the sensitive receivers include: vegetation requiring protection landscape; and new planting.

EM& A details of these parameters can be found in the EM&A Manual which is Volume II of this Study.

10.4 Study Parameters

10.4.1 Construction Noise Impact

In this EIA study is was concluded that the construction works will give rise to noise impacts caused by the use of powered mechanical equipment (PME) if mitigation measures are not implemented. These measures have been identified and are listed in Section 6.

A systematic procedure for monitoring, auditing of noise impacts associated with the construction works should therefore be prepared and documented. This documentation is normally referred to as the EM&A Manual, and is included in this series as Volume II.

10.4.2 Construction Dust Impact

Construction dust sampling is currently being undertaken by the Housing Authority under the remit of the land formation contract. A sample of data collected are shown in Table 10.1.

Table 10.1 Sample of Dust Monitoring Results (TSP (μgm^{-3}))

Location/Date	TSP Levels (24-hour) (μgm^{-3})						
	August 1997			September 1997			
	15th	21st	27th	2nd	8th	15th	21st
Po Yin Temple	68	48	43	30	46	82	82
Site Office	92	75	54	73	62	83	104

These results show that the Total Suspended Particulates (24-hour) collected are well within the Air Quality Objective which is a maximum of $260 \mu\text{gm}^{-3}$. As roadworks are not generally a dust generating construction task, and because the roadwork will effectively prevent dust generation from the road base there is no requirement to monitor dust levels.

10.4.3 Operational Phase Visual/Landscape Impact

Subsequent to the completion of the detailed design, landscaping details will be available. Once the detailed designs have been approved by Government Departments they will be implemented by the appointed contractor. A systematic procedure for monitoring and auditing the existing landscape should therefore be documented in the EM&A Manual. These procedures should also include procedures to ensure the viability/maintenance of new mitigation/landscape planting. All such contract requirements have been set out in the EM&A Manual (see Volume II).

10.5 EM&A Manual

10.5.1 General

This Manual defines the monitoring and audit programme to be undertaken for the construction of the new roads.

Hong Kong environmental regulations for noise, the Hong Kong Planning Standards and Guidelines, and recommendations in the EIA study report on the project "Public Roads in Tiu Keng Leng" have served as environmental standards and guidelines in the preparation of this Manual and is provided under separate cover as Volume II of this EIA Study.

This Manual contains the following :

- (a) duties of the Environmental Team (ET) with respect to the environmental monitoring and audit requirements during construction;
- (b) information on project organisation and programming of construction activities for the project;
- (c) requirements with respect to the construction schedule and the necessary environmental monitoring and audit programme to track construction noise impacts;
- (d) definition of the Action and Limit noise levels;
- (e) establishment of event and action plans for noise impact;
- (f) requirements of reviewing pollution sources and working procedures required in the event of non-compliance with environmental criteria;
- (g) requirements of reviewing landscape/visual impacts and action plans required in the event of non-compliance with contract conditions; and
- (h) requirements of presentation of environmental monitoring and audit data and appropriate reporting procedures.

10.5.2 Baseline Monitoring

The Manual shall identify baseline monitoring requirements. Baseline monitoring shall be required prior to the commencement of any works. The Environmental Team Leader shall carry out baseline noise monitoring, at designated sensitive receiver locations prior to the commencement of the construction works relevant to this Contract. The baseline monitoring shall be carried out daily for a period of at least two weeks and a schedule of the baseline monitoring shall be submitted to the Engineering Representative for approval before the monitoring starts.

10.5.3 Impact Monitoring

Noise monitoring shall be carried out when there is ongoing construction activity, at a minimum of two locations. These two locations shall be chosen according to which are closest to ongoing construction activities.

In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Action Plan shall be carried out. This additional monitoring shall continue until the recorded noise levels are rectified or proved to be unrelated to the construction activities.

10.5.4 Event and Action Plan for Noise

The Action and Limit levels for construction noise are defined in the EM&A Manual. Should non-compliance of the criteria occur, the Action Plan, shall be implemented.

10.5.5 Noise Mitigation Measures

The EIA report has recommended construction noise mitigation measures. The Contractor shall be responsible for the design and implementation of the measures recommended in the EIA (see section 6).

10.5.6 Landscape and Visual Impacts

The present EIA report has recommended, roadside planting, design treatment of cut slopes and acoustic barriers, to mitigate against visual impacts. Housing Department shall be responsible for the design and implementation of these measures, which will be defined during the detailed design stage. The finalised design and the implementation of measures should be subject to the approval of relevant Government Departments.

11 CONCLUSIONS

11.1 Operational Phase Traffic Noise

The study has shown that in certain locations the operation of the new proposed public roads will result in traffic noise levels which will be above the HKPSG guidelines. Table 11.1 summarises the impacts and the recommended mitigation, which indicates that the noise impacts arising from the construction of the public roads at Tiu Keng Leng can be mitigated.

Table 11.1 Summary of Operational Phase Noise Impacts

Location	Impacts	Recommendations
Area 74 north	<ul style="list-style-type: none"> Noise levels > 70 dB(A) only at the lower levels of Blocks 2 and 3. 	<ul style="list-style-type: none"> Barriers are ineffective in protecting the residential blocks.
Area 74 south	<ul style="list-style-type: none"> Noise levels > 70 dB(A) at blocks around the perimeter of the site. 	<ul style="list-style-type: none"> construction of 5m cantilever barriers on Road D8 and at-grade of Road D4 Also, suggested that the provision of a 5m cantilever barrier on the Road D4 flyover, or equivalent be considered by the Project Proponent of that road.
Area 73A	<ul style="list-style-type: none"> Noise levels at residential blocks all < 70 dB(A) Noise levels > 65 dB(A) at some classrooms in the schools in Phase 2 and 4 	<ul style="list-style-type: none"> None. Project proponent of the schools to conduct a further traffic noise assessment to determine on-site mitigation and indirect measures.
Area 73B (MTR)	<ul style="list-style-type: none"> Noise levels > 70 dB(A) at some locations particularly those facing Road L731. 	<ul style="list-style-type: none"> None, as barriers and deckover are not feasible.
Area 73B west	<ul style="list-style-type: none"> Noise levels < 70 dB(A) level at all residential receivers. Noise levels < 65 dB(A) at all receiver positions 	<ul style="list-style-type: none"> None. None.
Area 72 (Shiu Wing)	<ul style="list-style-type: none"> Noise levels > 70 dB(A) level 	<ul style="list-style-type: none"> None. Barriers and deckover are not practical or feasible
Area 72 west	<ul style="list-style-type: none"> Noise levels > 65 dB(A) 	<ul style="list-style-type: none"> None, as roadside barriers were not found to be effective
Area 72 east	<ul style="list-style-type: none"> Noise levels > 65 dB(A) at most receiver positions 	<ul style="list-style-type: none"> Suggested that project proponent for Road D8 (south of D4) considers a 5m barrier on Road D8, or equivalent measure. project proponent of the school to conduct a further traffic noise assessment to be carried out to determine on-site mitigation and indirect measures.

Location	Impacts	Recommendations
Area 67	<ul style="list-style-type: none"> Noise levels > 70 dB(A) level at two receiver positions but the dominant noise source is from Road P2. 	<ul style="list-style-type: none"> None.
Area 57 north	<ul style="list-style-type: none"> Noise levels are all < 70dB(A) criteria 	<ul style="list-style-type: none"> None.
Area 57 south	<ul style="list-style-type: none"> Noise levels > 70 dB(A) level in some locations but the dominant noise source is from Road P2. 	<ul style="list-style-type: none"> None.
Area 59	<ul style="list-style-type: none"> Noise levels are not influenced by the proposed new roads 	<ul style="list-style-type: none"> None.
Po Yin Temple	<ul style="list-style-type: none"> Noise Levels < 65 dB(A). 	<ul style="list-style-type: none"> None.

11.2 Construction Phase Noise

The review of noise level monitoring results of the existing environmental condition indicate that noise levels are already dominated by construction activities related to other infrastructure and development construction.

The noise levels predicted to arise from the construction of the public roads have indicated that there will be no exceedances of the non-statutory day-time criteria at any Noise Sensitive Receivers if mitigation measures are adopted. Noise mitigation measures would include the incorporation of good site practices, such as the use of quieter machinery and screening whenever possible, the siting of equipment in locations as far from the sensitive receiver as possible, and, through sensitive construction works programming, noisy works activities should be scheduled to avoid parallel operation. Noise nuisance will be minimised through the implementation of monitoring and audit procedures.

11.3 Landscape and Visual

11.3.1 Landscape Impacts

The landscape impacts are of concern in only one area; the cutting to the west. However, it should be noted that the cut face will extend for about 1.7km. Any measures to reduce the slope gradient for landscape rehabilitation would result in even greater impacts on the natural landform, as the slope would become more extensive. The lower slopes of the headland are not of outstanding significance, but the proposals will result in the loss of some areas which have landscape and visual value. While the proposal is not ideal from a landscape viewpoint, there would seem to be no alternative, without significantly reducing the extent of developable area on the reclamation, which would not be acceptable. The landscape impact therefore is considered to be acceptable, with mitigation wherever possible.

11.3.2 Visual Impact

Visual impacts of the proposed roads will be treated in the review study of the Master Landscape Plan due to be completed in 1998. The proposed roads have to be seen in the context of the much larger development area comprising Area 73, Area 74, and the whole of Tseung Kwan O New Town. This context will significantly minimise the perceived visual impact. Nevertheless, the study area also forms part of the urban/rural interface of Tseung Kwan O, and will include cut faces into natural landscape areas to the west. The visual envelope will be relatively small. It is defined by the Lei Yue Mun headland to the north, west, and south, and will be defined by new development in the east. This will limit the sensitive receivers to residents of Area 73 and Area 74, and people walking in the Lei Yue Mun headland area. Residents of the captioned areas will be the people who are directly served by the roads, and therefore who will be in the least able position to complain. The proposed roads and development also have similar time-frames, so the roads can form part of the baseline conditions for the residents. Nevertheless, various acoustic barriers have been identified as traffic noise mitigation measures, and these measures, together with the cut slopes to the west, could be sources of visual impact on the residents.

This study assessed the visual impacts of the noise barriers proposed to mitigate traffic noise affecting Area 72 east and Area 74 south. It was concluded that through the use of a number of design techniques and considerations, the visual impacts can be reduced and thus impacts mitigated.

11.4 Land use

The land formation programme provides the platform for residential developments to proceed and the future land use includes the proposed public roadworks project as an essential part of the overall plans for the new town development. Therefore, there are no landuse impacts predicted.

11.5 Environmental Monitoring And Audit

There is potential for noise and dust impacts to arise from the construction activities, but the works are not generally dust generating tasks and therefore it was recommended that only noise impact monitoring and audit be undertaken.

Additionally, it was considered prudent to include, in the Environmental Monitoring And Audit Programme, requirements for the monitoring and audit of existing landscape, that requires protection from damage, and also the viability/maintenance of the newly planted mitigation/landscape planting.

All of the above contract requirements are defined in the Environmental Monitoring and Audit Manual, which is in Volume II of this series.

11.6 Schedule of Recommended Mitigation Measures

In summary the schedule of recommended mitigation measures are detailed in Table 11.2 which defines the parties responsible for the implementation of the measures and the estimated completion date of the mitigation measures. All suggested mitigation measures, such as the noise barriers on Road D8, and D4 flyover, are subject to review by the project proponent for those sections of road and hence should not be considered as recommendations of this study.

Table 11.2 Schedule of Recommended Mitigation Measures

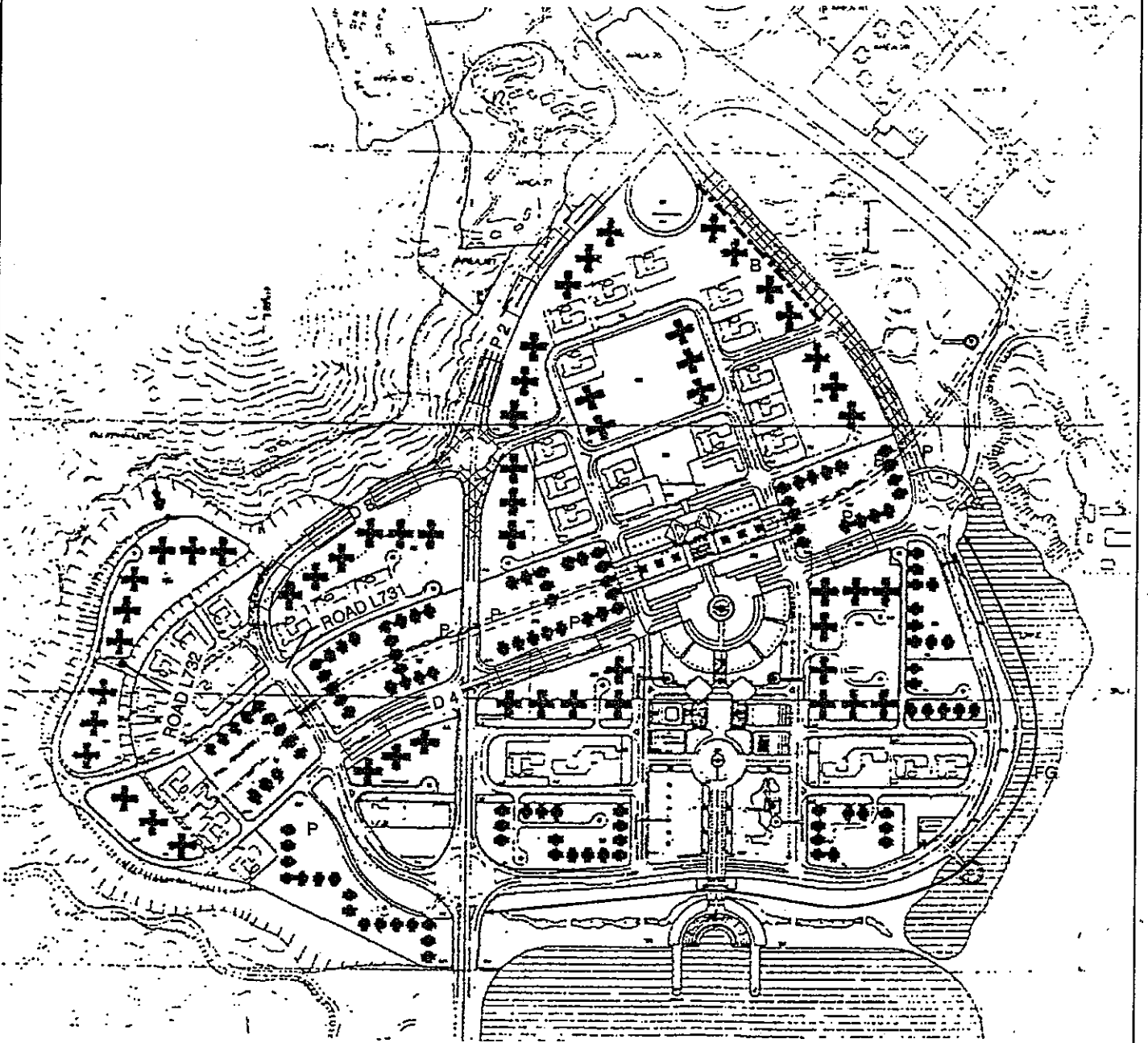
Mitigation Measure	Location	Purpose	Requirements	Responsible Department	Completion
Operational Phase Noise Impact Mitigation Measures					
5m cantilever barrier	Road D4, at-grade section, on the kerbside of the eastbound carriageway	To protect residential receivers in Area 74 south	Height = 5 m with 3m cantilever section, Length = 186m,	Housing Authority	Prior to the population intake of Area 74 south.
	Road D8, on the southbound carriageway		Height = 5 m, with 3m cantilever section, Length = 130m		
On-site mitigation e.g. barriers, setback, change in orientation, insulated glazing. (note 1)	At schools sites: <ul style="list-style-type: none"> Area 73A Phase 1 and 2 Secondary and Primary schools Area 72 west primary school Area 72 east secondary schools 	To protect school users as listed	Subject to further study, to be completed prior to the approval of the Preliminary Project Feasibility Study and Preliminary Environmental Review Study. Recommendations and compliance criteria should be in accordance with the HKPSG	Architectural Services Department	Prior to the operation of the schools
Note: (1) The actual configuration of the mitigation measures package will be defined after the completion of further traffic noise impact assessment.					
Construction Phase Noise Impact Mitigation Measures					
Silenced or Quieter PME	All construction sites	To protect residential sensitive receivers in Area 59, 57 (N), 57 (S), and 67, and the place of worship (Po Yin Temple)	Sound Power levels of PME should be no higher than those specified in Table 6.1 of this final report.	Housing Authority	August 2002 (see Figure 2.1)
Screening of PME	All construction sites	To protect residential sensitive receivers in Area 59, 57 (N), 57 (S), and 67, and the place of worship (Po Yin Temple)	Equipment such as air compressors, and pneumatic breakers should be screened during operation whenever possible	Housing Authority	August 2002 (see Figure 2.1)

Mitigation Measure	Location	Purpose	Requirements	Responsible Department	Completion
Monitoring & Audit	At sensitive receiver positions as identified in Table 5.1.	To protect residential sensitive receivers in Area 59, 57 (N), 57 (S), and 67, and the place of worship (Po Yin Temple)	Noise Levels must comply with Technical Memoranda issued under the Noise Control Ordinance and <i>ProPECC note PN 2/93</i>	Housing Authority	August 2002 (see Figure 2.1)
Landscape and Visual Impact Mitigation Measures					
Treatment of Acoustic Structures	Road D8 (south of Road D4) and Road D4 flyover	To reduce visual impacts at the secondary school in Area 72 east and at the Road D8 roadside	To follow design guidelines as stated in this Report	Territory Development Department	Immediately after the completion of the barrier construction
	Road D8, and D4			Housing Authority	
Roadside Landscaping	To be implemented throughout the new town development,	To reduce visual impacts of the roads throughout the new town	Details will be defined in the Master Landscape Plan (MLP) for Tseung Kwan O	Housing Authority	August 2002
Monitoring & Audit	All areas where there is vegetation to be protected or where new planting is located	To protect existing vegetation in and around the construction site area and also the ensure the viability/maintenance of future planting	To follow the Contract Requirements stipulated by the Housing Authority	Housing Authority	August 2002






Appendix A

Appendix A Noise Mitigation Measures
Identified in Previous Studies
(Figures)

Notes of Other Recommended Mitigation Measures
 1. Building Setback



LEGEND

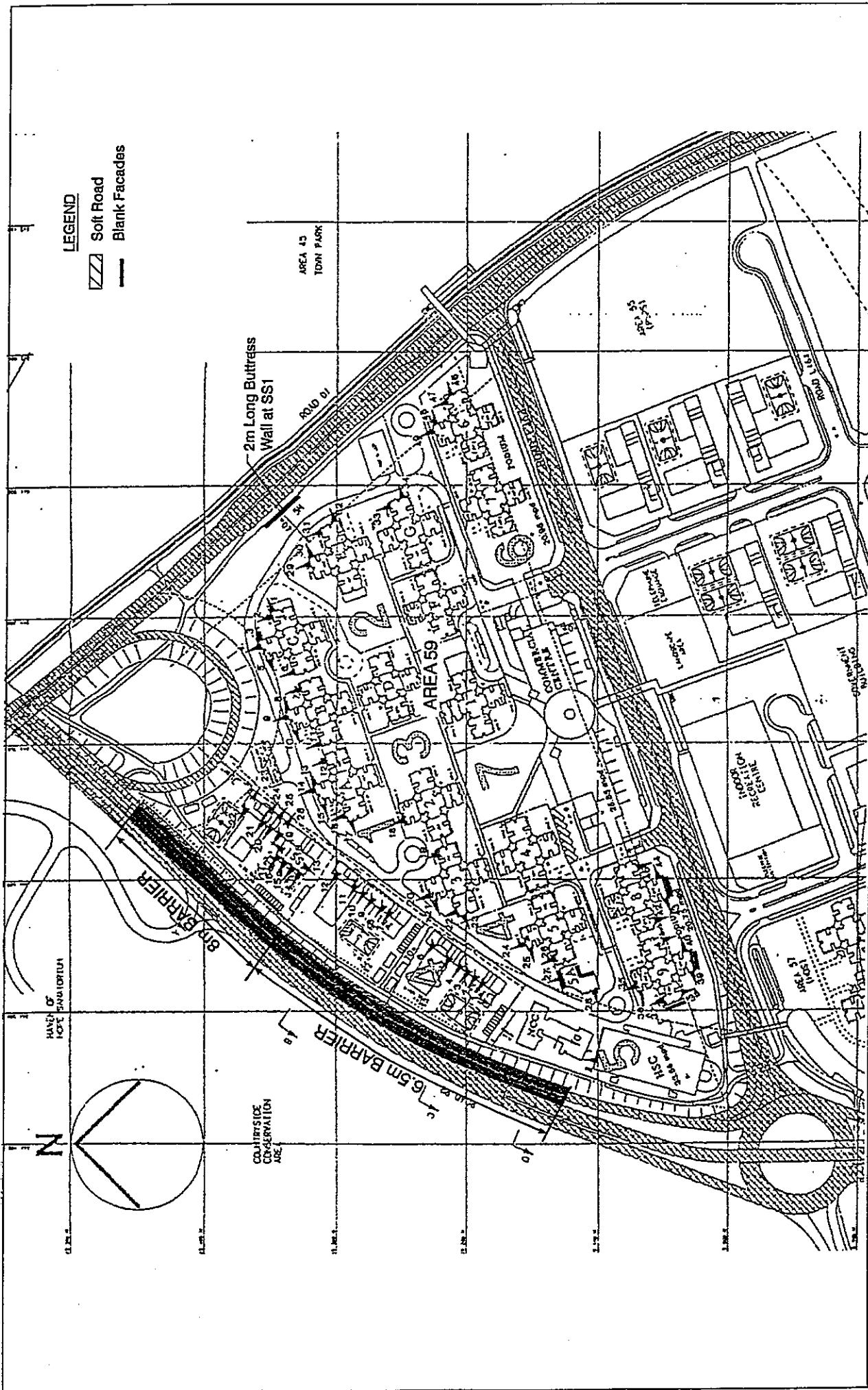
-  Noise mitigation
-  Barrier
-  Pervious Macadam
-  Fixed Glazing
-  Protection give by podium



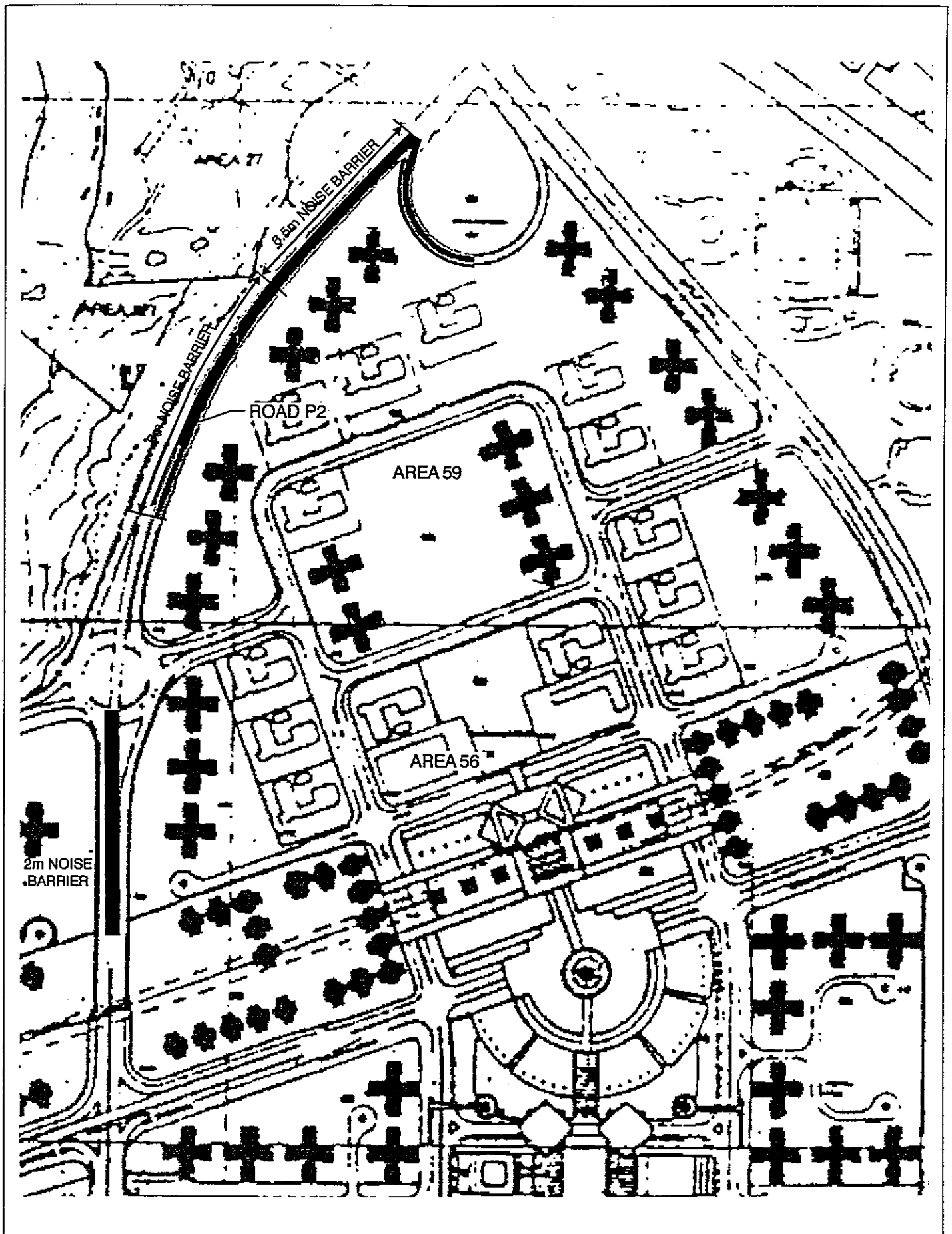
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 Further Development - May 1990


CES (ASIA) LIMITED

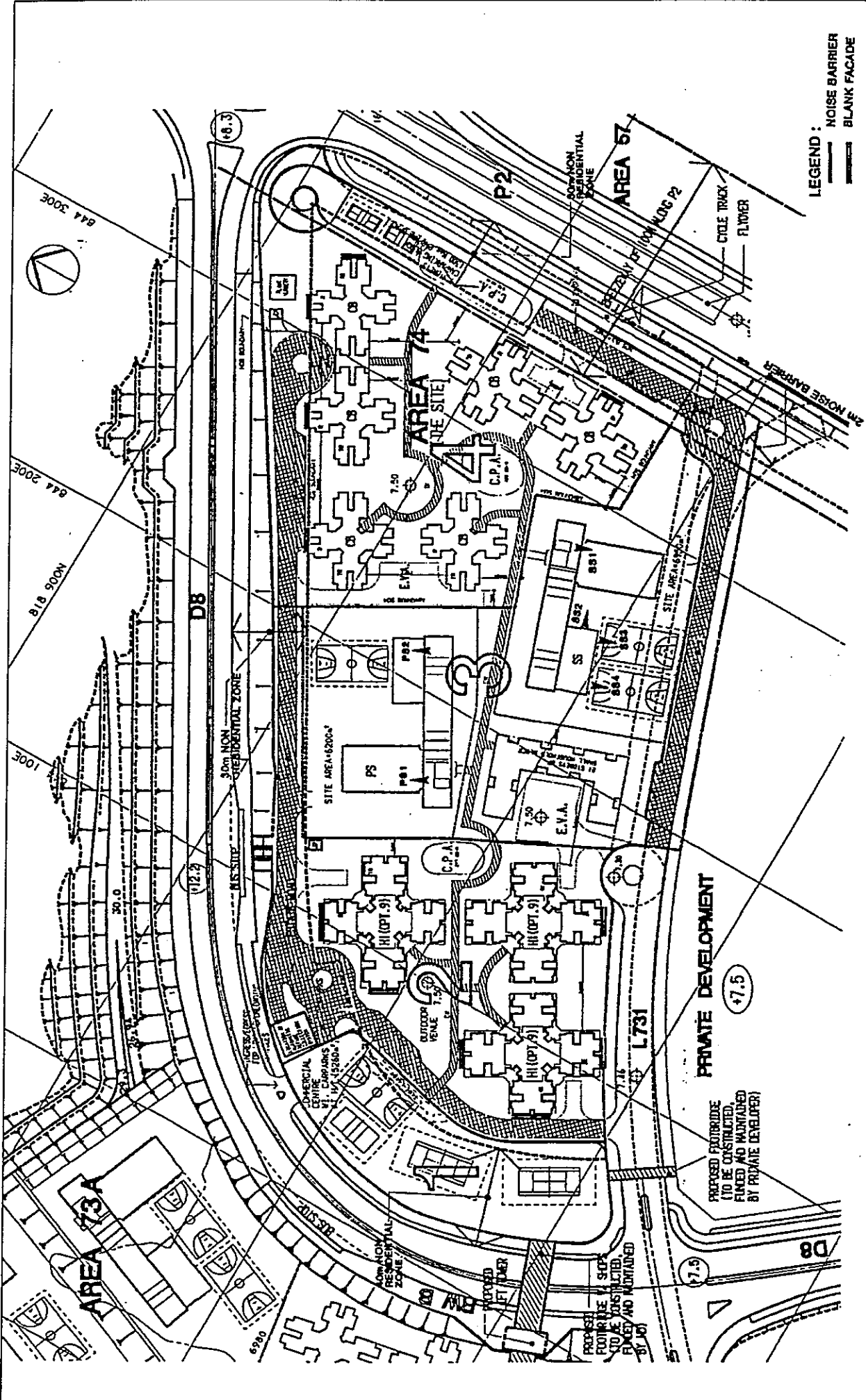
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Appendix A1



CES 環 科	TITLE Noise Mitigation Measures Identified in TKO: Area 59 Noise Assessment Study - September 1994		CES (ASIA) LIMITED	
	PROJECT NO C230	DATE November 1997	DESIGNED Suki Chung	DRAWING NO Appendix A2



環 科  CES	TITLE	CES (ASIA) LIMITED			
	Noise Mitigation Measures Identified in TKO: Town Centre North Roads Bridges Subways Study - May 1995	PROJECT NO	C230	DATE	November 1997
		DESIGNED	Suki Chung	DRAWING NO	Appendix A3



LEGEND :
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 — BLANK FACADE

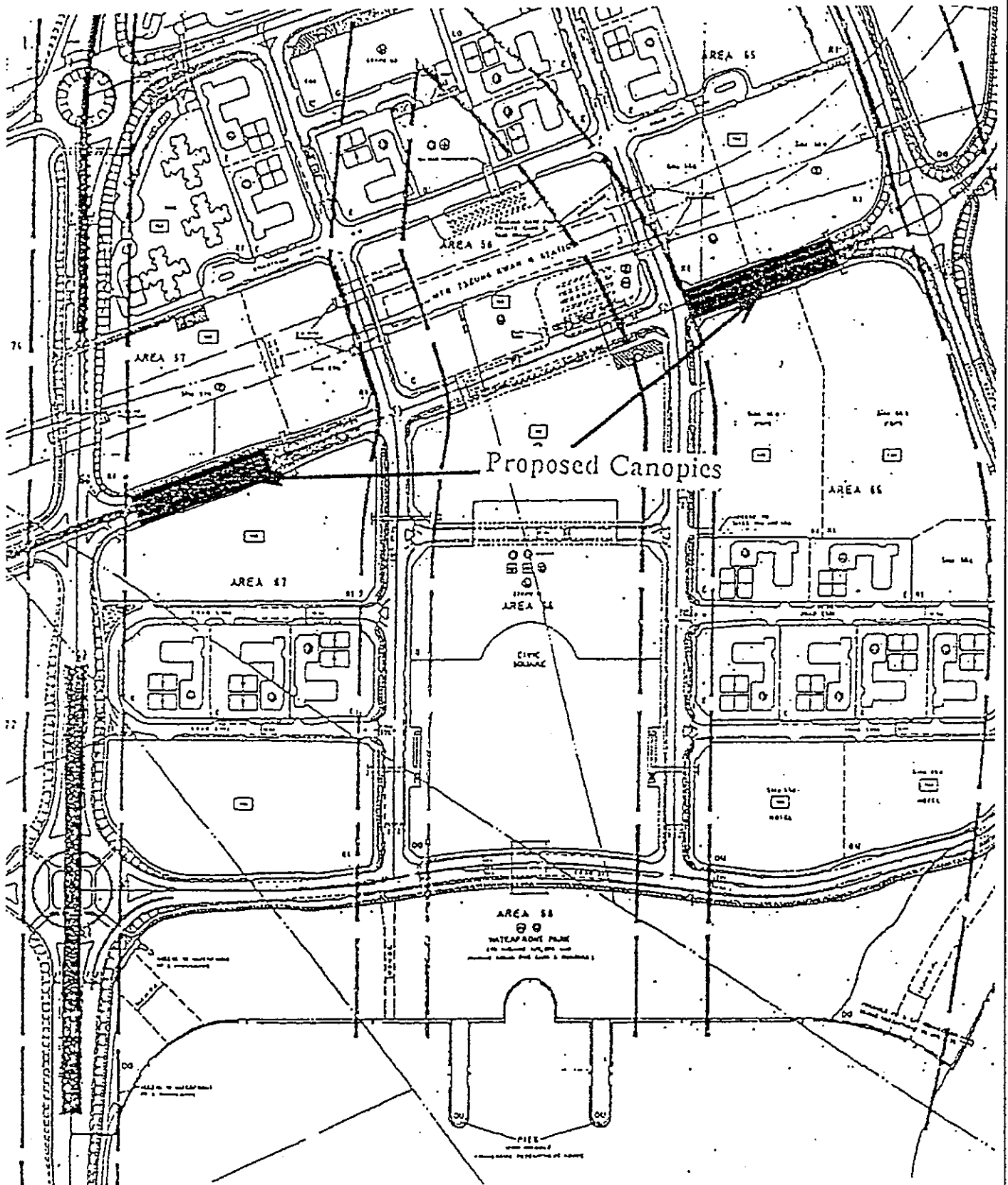
TITLE

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 CES

Noise Mitigation Measures Identified in TKO: Area 74N Environmental Assessment Study - July 1996

CES (ASIA) LIMITED

PROJECT NO	DATE	January 1998
DESIGNED	DRAWING NO	Appendix A4
	DESIGNED BY	Suki Chung
	PROJECT NO	C230

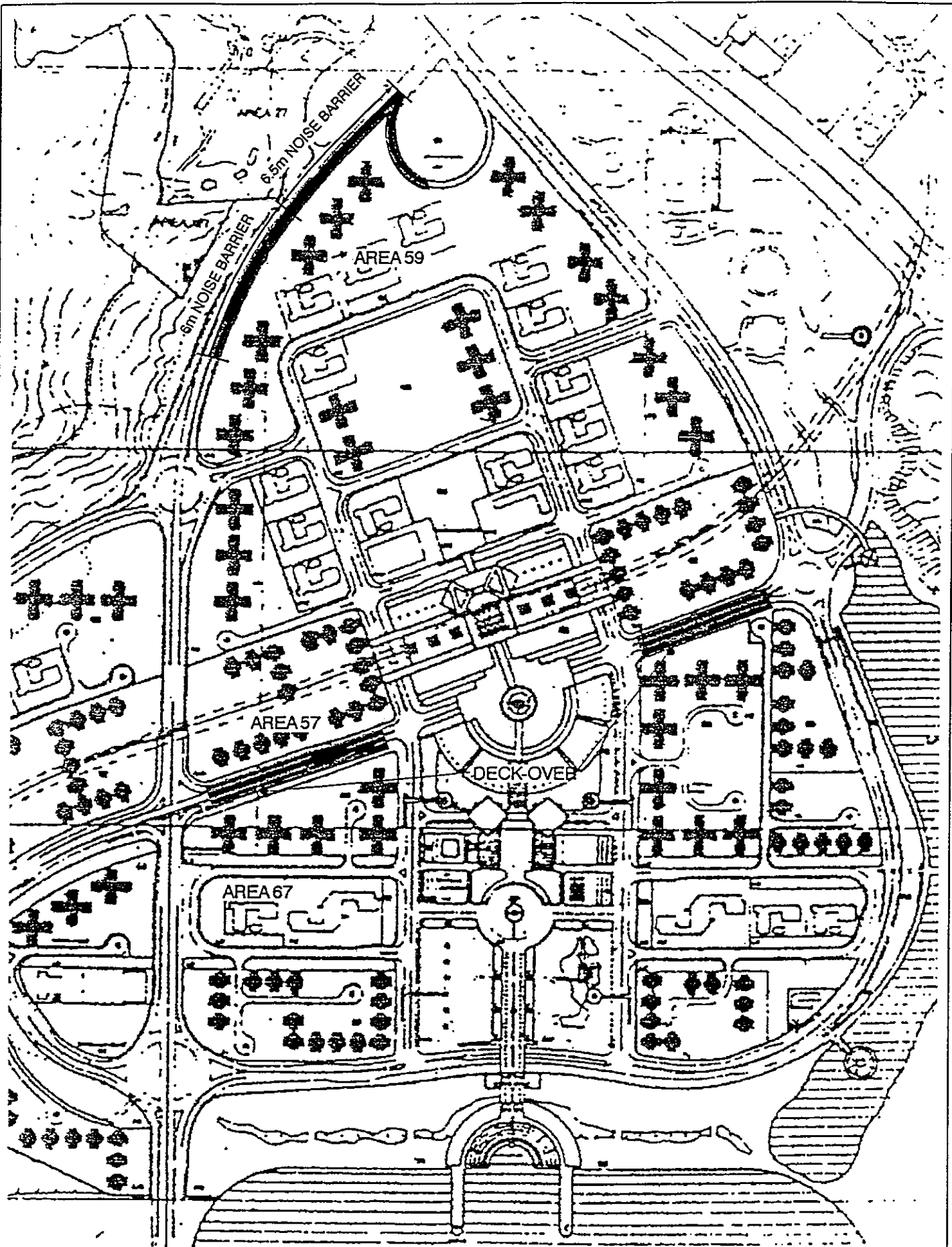


Proposed Canopies



TITLE
 Noise Mitigation Measures Identified in
 TKO: Environmental Noise and Vehicular Emissions Impact
 Assessment for the Proposed Development at
 Tseung Kwan O September 1997

CES (ASIA) LIMITED			
PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Appendix A5



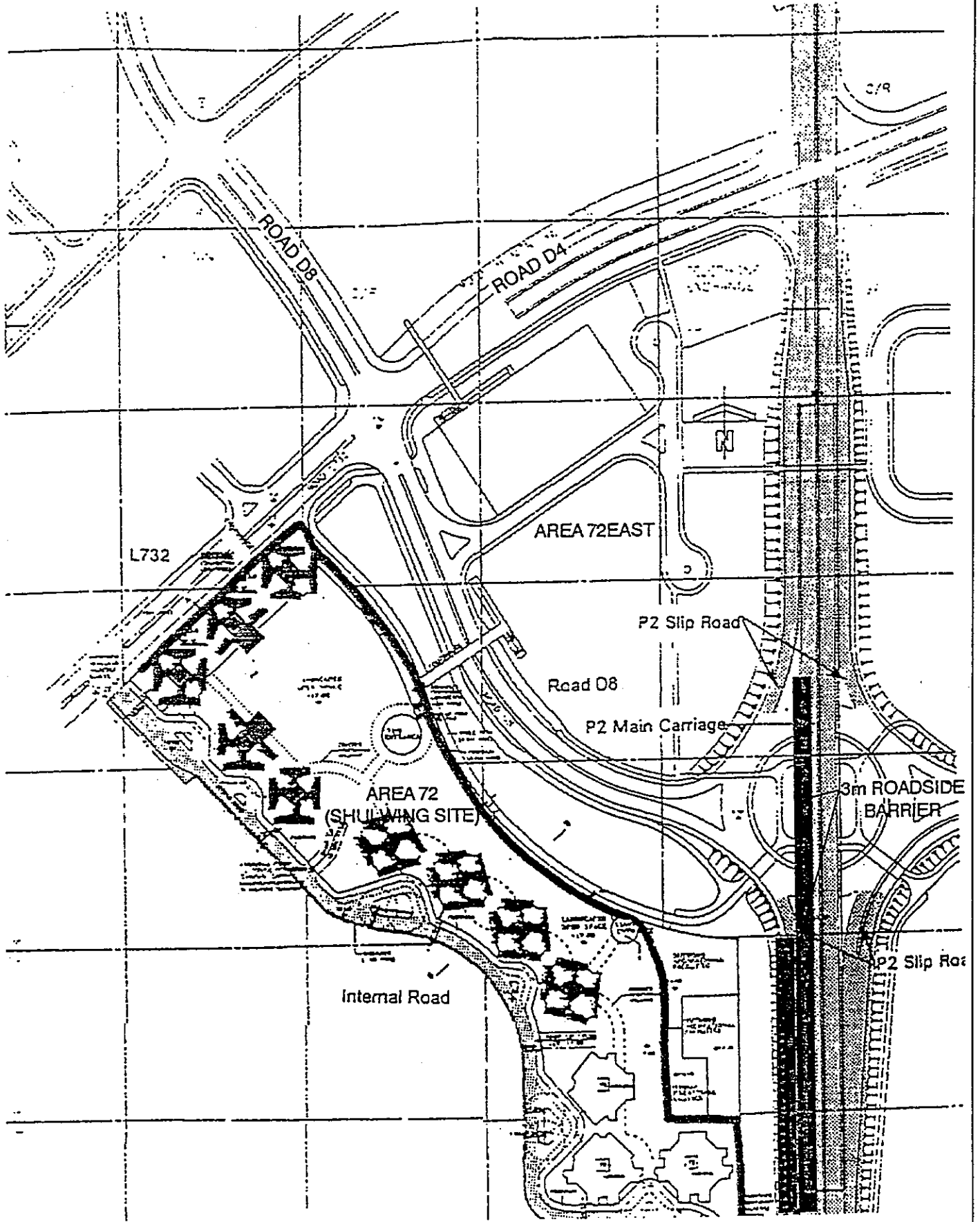
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TITLE

Noise Mitigation Measures Identified in
TKO: EIA of Engineering Infrastructure in TKO Town
Centre Central - September 1997

CES (ASIA) LIMITED

PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Appendix A6



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TITLE

Noise Mitigation Measures Identified in
TKO: EIA of Residential/Commercial Redevelopment of
TKO Area 72 - September 1997

CES (ASIA) LIMITED

PROJECT NO

C230

DATE

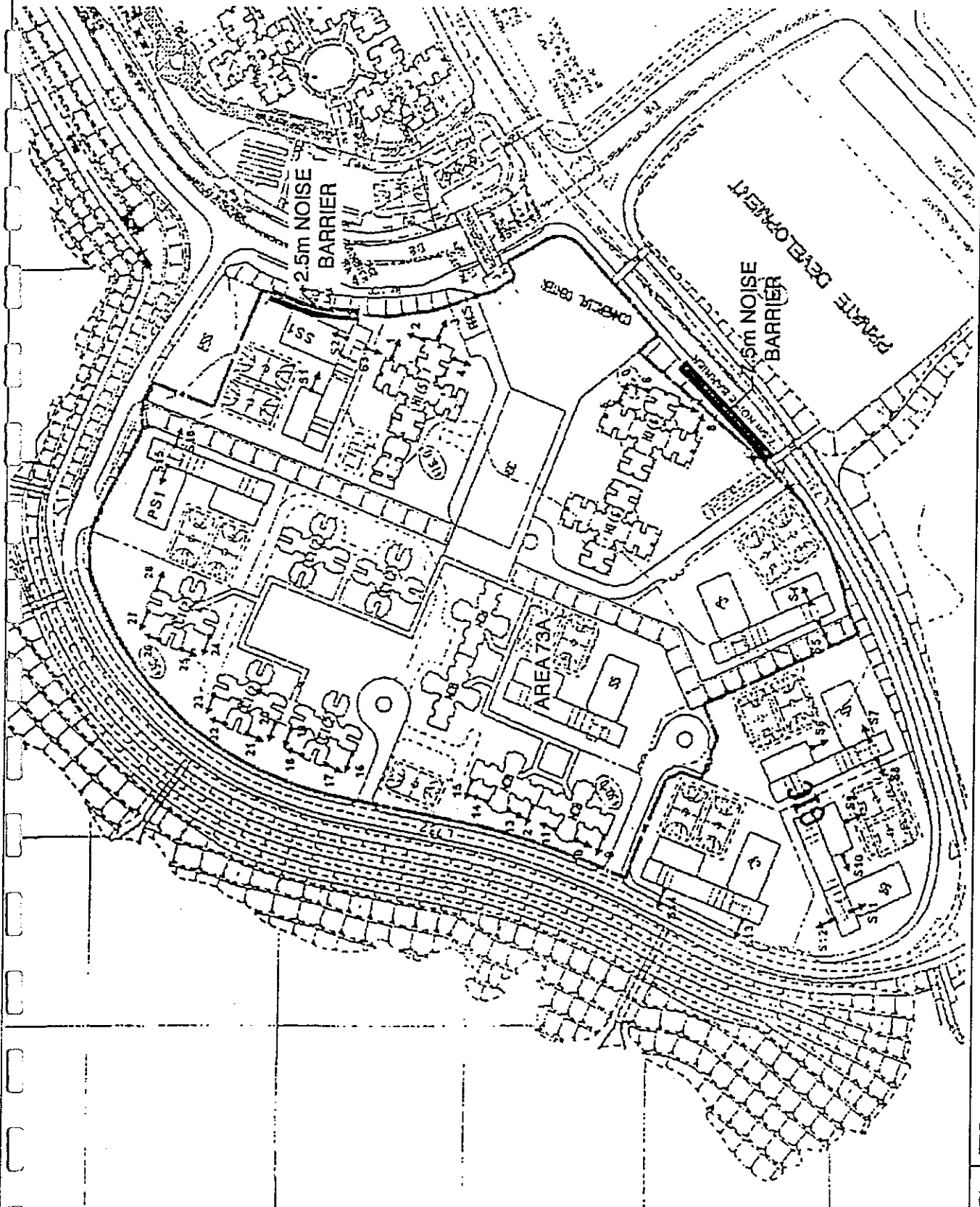
November 1997

DESIGNED

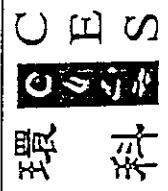
Suki Chung

DRAWING NO

Appendix A7



TITLE



Noise Mitigation Measures Identified in TKO: Tiu Keng Leng Public Housing Development Area 73A -
Environmental Assessment Study - September 1997

CES (ASIA) LIMITED

PROJECT NO	C230	DATE	November 1997
DESIGNED	Suki Chung	DRAWING NO	Appendix A8

Appendix B

**Appendix B Operational Phase Noise
Assessment Results**

Area 74(N)

Project: ELA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)
SoundPlan run98

Notes: H1 (5) - Harmony 1 (Option 5)
H1 (6) - Harmony 1 (Option 6)
CC1 - Concord 1 (Option 2)

Unmitigated Scenario - Area 74 (North)

Phase	NSRs	Block Type	Floors																																	
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40														
2	1	H1(5)	67.1	67.2	67.1	66.9	66.8	66.7	66.6	66.4	66.2	66.1	66.0	65.8	65.7	66.2	66.2	66.1	66.0	65.9	65.9	65.9	65.8	65.7	65.6	65.5	65.4	65.3	65.3	65.2	65.2	65.0	64.8			
2	2	H1(5)	67.5	67.5	67.4	67.3	67.2	67.1	66.9	66.6	66.4	66.2	66.0	65.8	65.6	65.5	65.4	65.3	65.2	65.1	65.0	64.9	64.8	64.6	64.4	64.2	64.0	63.8	63.7	63.6	63.4	63.2	62.8			
2	3	H1(5)	67.7	67.7	67.6	67.4	67.3	67.1	66.9	66.6	66.3	66.1	65.9	65.7	65.5	65.4	65.3	65.2	65.1	65.0	64.9	64.7	64.5	64.3	64.1	63.9	63.7	63.6	63.4	63.2	62.9	62.6	62.4			
2	4	H1(5)	66.5	66.4	66.3	66.2	66.0	65.8	65.6	65.3	65.1	64.9	64.6	64.4	64.2	64.0	63.8	63.6	63.4	63.2	63.0	62.8	62.6	62.4	62.2	62.0	61.8	61.6	61.4	61.2	61.0	60.8	60.6			
2	5	H1(5)	65.8	65.8	65.7	65.6	65.5	65.4	65.3	65.1	64.9	64.7	64.5	64.3	64.1	63.9	63.7	63.6	63.4	63.2	63.0	62.8	62.6	62.4	62.2	62.0	61.8	61.6	61.4	61.2	61.0	60.8	60.6			
2	6	H1(5)	63.4	63.4	63.3	63.2	63.1	63.0	62.9	62.8	62.7	62.6	62.5	62.4	62.3	62.2	62.1	62.0	61.9	61.8	61.7	61.6	61.5	61.4	61.3	61.2	61.1	61.0	60.9	60.8	60.7	60.6	60.5			
2	7	H1(5)	39.2	39.3	39.5	39.7	40.2	40.8	41.9	43.8	46.4	48.4	49.2	49.5	49.7	49.9	52.8	53.9	54.0	53.9	54.0	53.9	53.9	54.0	53.9	52.8	49.9	49.7	49.5	49.2	49.1	49.0	48.9			
2	8	H1(5)	33.5	33.5	33.5	33.6	33.7	33.9	34.3	34.9	35.6	36.5	37.4	39.2	41.4	44.1	51.4	53.7	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2		
2	9	H1(5)	59.6	59.8	59.8	59.8	59.7	59.6	59.6	59.4	59.3	59.3	59.2	59.2	59.1	58.9	58.8	58.7	58.6	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5		
2	10	H1(5)	39.6	39.7	39.8	39.9	40.1	40.1	40.1	40.1	40.1	40.0	43.5	45.9	46.0	47.4	47.3	48.3	48.2	49.8	50.8	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4		
2	11	H1(6)	63.5	63.6	63.5	63.5	63.4	63.4	63.4	63.3	63.3	63.2	63.4	64.3	65.0	65.2	65.3	65.4	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5	65.5		
2	12	H1(6)	64.7	64.7	64.6	64.6	64.5	64.6	64.7	64.7	64.8	64.8	64.7	64.8	65.6	66.2	66.4	66.5	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	
2	13	H1(6)	58.0	58.1	58.0	58.0	57.9	57.8	57.7	57.6	57.5	57.4	57.3	57.1	57.0	56.9	56.9	56.9	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	56.8	
2	14	H1(6)	61.4	61.5	61.5	61.4	61.3	61.3	61.2	61.1	61.0	60.9	60.8	60.7	60.6	60.5	60.4	60.3	60.2	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	
2	15	H1(6)	69.2	69.4	69.1	68.7	68.3	68.0	67.6	67.2	66.9	66.6	66.3	66.0	65.7	65.4	65.2	64.9	64.7	64.5	64.3	64.1	63.9	63.7	63.4	63.2	63.0	62.8	62.6	62.4	62.2	62.0	61.8	61.6	61.4	
2	16	H1(6)	70.5	70.0	69.3	68.7	68.1	67.5	67.0	66.5	66.1	65.7	65.3	65.0	64.7	64.4	64.1	63.9	63.7	63.4	63.2	63.0	62.8	62.6	62.4	62.2	62.0	61.8	61.6	61.4	61.2	61.0	60.8	60.6	60.4	
2	17	H1(6)	72.5	72.0	71.4	70.8	70.3	69.8	69.3	69.0	68.6	68.3	68.0	67.7	67.5	67.3	67.4	67.1	67.0	66.8	66.6	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	66.5	
2	18	H1(6)	71.3	71.3	71.0	70.7	70.4	70.0	69.7	69.4	69.1	68.9	68.6	68.4	68.2	67.9	67.7	67.5	67.3	67.1	66.9	66.7	66.5	66.3	66.1	65.9	65.7	65.5	65.3	65.1	64.9	64.7	64.5	64.3	64.1	
2	19	H1(6)	62.1	62.2	62.2	62.1	62.1	62.0	61.9	61.8	61.7	61.7	61.6	61.5	61.4	61.3	61.2	61.1	61.0	60.9	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8
2	20	H1(6)	61.6	61.8	61.8	61.7	61.6	61.5	61.4	61.3	61.3	61.2	61.1	61.0	60.9	60.8	60.7	60.6	60.5	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4
2	21	H1(6)	52.0	52.1	52.2	52.0	51.9	51.8	51.7	51.6	51.5	51.4	51.3	51.2	51.1	51.0	50.9	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	
2	22	H1(6)	55.1	55.1	55.2	55.2	55.2	55.1	55.0	54.9	54.8	54.7	54.6	54.5	54.4	54.3	54.2	54.1	54.0	53.9	53.8	53.7	53.6	53.5	53.4	53.3	53.2	53.1	53.0	52.9	52.8	52.7	52.6	52.5	52.4	
2	23	H1(6)	63.1	63.2	62.9	62.5	62.2	61.9	61.6	61.2	60.9	60.6	60.3	60.0	59.8	59.6	59.4	59.2	59.0	58.8	58.6	58.4	58.2	58.0	57.8	57.6	57.4	57.2	57.0	56.8	56.6	56.4	56.2	56.0	55.8	55.6
2	24	H1(6)	61.0	60.5	60.0	59.6	59.1	58.6	58.2	57.8	57.5	57.4	57.2	57.0	56.8	56.6	56.4	56.2	56.0	55.8	55.6	55.4	55.2	55.0	54.8	54.6	54.4	54.2	54.0	53.8	53.6	53.4	53.2	53.0	52.8	52.6
2	25	H1(6)	71.6	71.2	70.7	70.1	69.5	69.0	68.6	68.1	67.8	67.4	67.1	66.7	66.4	66.2	65.9	65.7	65.4	65.2	65.0	64.8	64.6	64.4	64.2	64.0	63.8	63.6	63.4	63.2	63.0	62.8	62.6	62.4	62.2	62.0
2	26	H1(6)	69.1	69.2	68.9	68.6	68.2	67.8	67.5	67.1	66.8	66.4	66.1	65.8	65.5	65.3	65.0	64.8	64.5	64.3	64.1	63.9	63.7	63.5	63.3	63.1	62.9	62.7	62.5	62.3	62.1	61.9	61.7	61.5	61.3	61.1
4	27	CC1	66.8	66.8	66.7	66.5	66.3	66.1	65.9	65.6	65.4	65.1	64.9	64.7	64.4	64.2	64.0	63.7	63.5	63.3	63.1	62.9	62.7	62.5	62.3	62.1	61.9	61.7	61.5	61.3	61.1	60.9	60.7	60.5	60.3	
4	28	CC1	66.7	66.6	66.4	66.3	66.0	65.7	65.4	65.1	64.9	64.6	64.3	64.0	63.8	63.5	63.3	63.1	62.9	62.7	62.5	62.3	62.1	61.9	61.7	61.5	61.3	61.1	60.9	60.7	60.5	60.3	60.1	59.9	59.7	59.5
4	29	CC1	64.9	64.8	64.6	64.4	64.1	63.8	63.5	63.6	63.7	63.9	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2	64.2

Area 74(N)

Project: ELA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

SoundPlan run98

Notes: H1 (5) -

Harmony 1 (Option 5)

H1 (6) -

Harmony 1 (Option 6)

CC1 -

Concord 1 (Option 2)

Unmitigated Scenario - Area 74 (North)

Phase	NSRs	Block Type	Floors																				
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40	
4	59	CC1	52.9	53.0	53.0	52.9	52.9	52.8	52.7	52.7	52.7	52.6	52.5	52.5	52.4	52.2	52.1	52.0	51.9	51.8	51.7	51.6	51.6
4	60	CC1	38.2	38.5	38.9	38.9	44.4	47.1	47.1	47.0	47.0	47.0	46.9	46.9	46.9	46.9	46.8	46.8	46.8	46.7	46.7	46.6	46.6
4	61	CC1	39.9	39.9	39.9	40.7	42.1	42.8	43.5	51.5	54.0	56.3	57.7	58.6	61.1	63.6	65.2	65.1	65.0	65.0	65.2	65.1	65.4
4	62	CC1	49.2	49.4	49.5	49.6	49.8	49.7	49.7	53.8	56.3	57.6	59.5	62.7	63.9	63.8	63.8	64.0	64.0	63.8	64.0	63.8	63.6
4	63	CC1	48.9	55.9	59.2	59.0	58.9	58.8	58.6	59.3	60.5	61.5	62.9	63.8	65.0	64.9	64.9	64.9	65.0	64.8	64.8	64.6	64.5
4	64	CC1	60.2	60.2	60.1	60.0	60.0	59.8	59.7	59.8	60.6	61.5	62.5	63.7	64.4	66.2	66.1	66.0	66.0	66.3	66.2	66.2	66.0
4	65	CC1	47.7	47.7	47.8	47.7	47.7	47.6	47.5	47.5	47.4	47.4	47.3	47.3	47.2	47.1	47.4	48.8	50.1	51.1	51.1	51.9	52.1
4	66	CC1	39.0	39.0	39.0	38.9	38.9	38.8	38.7	38.6	38.6	38.5	38.4	38.3	38.2	38.1	38.0	37.9	37.8	37.8	37.8	37.8	38.5
4	67	CC1	51.1	51.2	51.3	51.3	51.3	51.2	51.1	51.1	51.0	50.9	50.9	50.9	50.8	50.7	50.7	50.6	50.5	50.4	50.4	50.3	50.3
4	68	CC1	50.7	50.9	50.9	50.9	50.9	50.8	50.8	50.7	50.6	50.6	50.5	50.5	50.4	50.4	50.6	51.1	51.7	52.4	53.0	53.5	53.7
4	69	CC1	59.7	59.7	59.6	59.5	59.5	59.4	59.2	59.4	60.1	60.9	62.7	63.9	66.0	65.9	65.8	65.8	65.8	65.8	66.0	65.9	65.7
4	70	CC1	38.5	38.5	38.4	38.9	41.1	41.6	42.4	50.5	53.8	59.4	61.7	64.3	64.1	64.2	64.7	64.5	64.5	64.3	64.2	64.0	63.8
4	71	CC1	67.0	68.3	68.8	68.6	68.4	68.2	68.0	67.8	67.5	67.3	67.0	66.8	66.5	66.3	66.1	65.9	65.7	65.7	65.5	65.3	65.1
4	72	CC1	68.0	68.9	69.7	69.6	69.4	69.2	69.0	68.8	68.6	68.4	68.3	68.2	68.0	67.8	67.6	67.4	67.2	67.2	67.1	66.9	66.7
4	73	CC1	38.5	41.9	52.7	58.5	58.3	58.2	58.0	58.1	58.5	58.4	58.2	58.0	57.9	57.7	57.6	57.4	57.3	57.2	57.2	57.1	57.0
4	74	CC1	50.4	56.9	59.6	60.7	60.6	60.4	60.4	60.2	60.1	59.9	59.8	59.6	59.6	59.4	59.3	59.4	59.3	59.3	59.4	59.3	59.3
3	170	SHB	66.7	66.2	65.6	65.1	64.6	64.1	63.8	63.4	63.2	62.9	62.7	63.0	62.8	/	/	/	/	/	/	/	/
3	171	SHB	65.4	65.0	64.4	63.9	63.4	62.9	62.5	62.2	61.9	61.6	61.4	62.4	62.3	/	/	/	/	/	/	/	/
3	172	SHB	50.9	51.6	52.9	53.6	56.5	57.1	57.3	58.6	59.5	59.5	59.5	59.5	59.5	/	/	/	/	/	/	/	/
3	173	SHB	47.0	48.2	49.7	51.5	55.4	56.6	56.9	59.2	59.4	59.5	59.5	59.5	59.5	/	/	/	/	/	/	/	/
3	174	SHB	45.8	47.0	48.4	51.0	54.4	56.0	57.9	59.5	59.6	59.6	59.6	59.7	60.0	/	/	/	/	/	/	/	/
3	175	SHB	41.6	44.1	46.1	49.6	52.0	54.8	59.7	60.1	60.4	60.4	60.3	60.3	60.3	/	/	/	/	/	/	/	/
3	176	SHB	37.2	38.8	41.3	44.7	48.1	57.0	61.6	61.6	61.5	61.4	61.3	61.3	61.2	/	/	/	/	/	/	/	/
3	177	SHB	46.4	46.6	47.1	48.2	50.1	58.8	61.5	61.5	61.4	61.4	61.3	61.2	61.1	/	/	/	/	/	/	/	/

Area 73B

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment
SoundPlan run98

Notes: CC1 - Concord 1 (Option 2)

Unmitigated Scenario - Area 73B, Hypothetical Layout

Area	NSRs	Block Type	Floors																							
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40				
73B	H1	CC1	65.1	65.7	65.6	65.4	65.2	65.0	64.8	64.5	64.3	64.1	63.8	63.6	63.4	63.2	63.0	62.8	62.6	62.4	62.2	62.0				
73B	H2	CC1	64.4	64.8	64.7	64.6	64.4	64.2	64.0	63.7	63.5	63.3	63.1	62.8	62.6	62.4	62.2	62.0	61.8	61.6	61.5	61.3				
73B	H3	CC1	37.1	37.1	37.0	37.0	36.9	36.8	36.8	36.7	36.6	36.5	36.4	42.2	43.4	43.3	43.2	43.1	43.0	42.9	42.8	42.7				
73B	H4	CC1	37.0	37.0	37.0	36.9	36.8	36.8	36.7	36.6	36.6	36.5	41.9	41.8	41.7	41.6	41.5	41.4	41.3	41.3	41.2	41.1				
73B	H5	CC1	62.6	62.2	61.8	61.3	60.8	60.3	59.8	59.3	58.9	58.5	58.1	57.8	57.5	57.2	56.9	56.6	56.4	56.1	55.9	55.7				
73B	H6	CC1	65.1	64.6	64.0	63.3	62.6	61.9	61.4	60.9	60.4	60.0	59.6	59.2	58.9	58.6	58.3	58.0	57.7	57.5	57.3	57.0				
73B	H7	CC1	68.2	67.3	66.3	65.4	64.7	64.0	63.5	63.0	62.6	62.2	61.8	61.5	61.2	61.0	60.7	60.4	60.2	60.0	59.8	59.6				
73B	H8	CC1	67.1	66.7	66.0	65.2	64.6	64.0	63.5	63.0	62.6	62.3	61.9	61.6	61.3	61.1	60.8	60.6	60.3	60.1	59.9	59.7				
73B	H9	CC1	67.2	67.3	67.1	66.8	66.5	66.2	65.9	65.6	65.3	65.1	64.8	64.5	64.3	64.0	63.8	63.6	63.4	63.2	63.0	62.8				
73B	H10	CC1	67.2	67.3	67.1	66.8	66.5	66.2	65.9	65.6	65.3	65.0	64.8	64.5	64.2	64.0	63.8	63.6	63.4	63.2	63.0	62.8				
73B	H11	CC1	51.2	61.0	61.0	60.9	60.7	60.5	60.3	60.1	59.9	59.7	59.4	59.2	59.0	58.8	58.6	58.4	58.2	58.1	57.9	57.7				
73B	H12	CC1	49.5	58.2	58.4	58.3	58.2	58.0	57.8	57.7	57.5	57.3	57.1	57.0	56.8	56.6	56.4	56.3	56.1	55.9	55.7	55.6				
73B	H13	CC1	34.8	34.8	34.7	34.7	34.6	34.6	34.5	34.4	34.4	34.3	34.2	34.1	34.1	34.0	33.9	33.8	33.8	33.7	33.6	33.6				
73B	H14	CC1	40.4	40.4	40.4	40.3	40.1	40.0	39.8	39.6	39.5	39.3	39.1	39.0	38.8	41.2	41.1	41.0	40.8	40.7	40.6	40.4				
73B	H15	CC1	60.2	60.8	60.8	60.7	60.6	60.4	60.2	60.1	59.9	59.7	59.5	59.3	59.1	58.9	58.8	58.6	58.4	58.2	58.1	57.9				
73B	H16	CC1	61.8	62.2	62.2	62.0	61.9	61.7	61.5	61.3	61.1	60.9	60.7	60.4	60.2	60.0	59.9	59.7	59.5	59.3	59.1	59.0				
73B	H17	CC1	36.0	36.0	35.9	35.9	35.8	35.7	35.6	35.4	35.3	35.2	35.1	35.0	34.9	34.8	34.7	34.6	34.5	34.3	34.3	34.2				
73B	H18	CC1	36.0	36.0	35.9	35.8	35.8	35.7	35.6	35.5	35.4	35.2	35.1	35.0	34.9	34.8	34.7	34.6	34.5	34.4	34.3	34.2				
73B	H19	CC1	48.6	52.1	52.2	52.1	51.9	51.7	51.6	52.8	54.9	55.8	56.2	56.2	56.0	55.8	55.7	55.5	55.4	55.2	55.1	54.9				
73B	H20	CC1	51.0	53.8	53.8	53.6	53.5	54.3	54.2	55.8	57.5	58.2	58.2	58.2	58.2	58.3	58.4	58.7	58.7	58.6	58.5	58.4				
73B	H21	CC1	66.3	66.1	65.6	65.1	64.7	64.2	63.8	63.4	63.1	62.8	62.4	62.1	61.9	61.7	61.7	61.5	61.3	61.1	60.9	60.7				
73B	H22	CC1	67.3	66.9	66.3	65.6	65.1	64.5	64.0	63.6	63.2	62.8	62.5	62.2	61.9	61.7	61.6	61.4	61.3	61.0	60.8	60.7				
73B	H23	CC1	66.9	66.3	65.4	64.5	63.7	63.0	62.4	61.8	61.3	60.9	60.5	60.1	59.7	59.4	59.1	58.8	58.6	58.3	58.1	57.9				
73B	H24	CC1	65.6	65.1	64.5	63.8	63.1	62.5	61.9	61.4	60.9	60.5	60.1	59.8	59.4	59.1	58.8	58.5	58.3	58.0	57.8	57.6				
73B	H25	CC1	49.7	56.3	56.8	56.9	56.8	56.7	56.5	56.4	56.2	56.1	55.9	55.7	55.6	55.4	55.2	55.1	54.9	54.7	54.6	54.4				

Area 73B

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment
SoundPlan run98

Notes: CCI - Concord 1 (Option 2)

Unmitigated Scenario - Area 73B, Hypothetical Layout

Area	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
73B	H26	CCI	50.0	51.7	52.2	52.3	52.2	52.1	51.9	51.7	51.6	51.4	51.3	51.1	51.0	50.8	50.7	50.5	50.3	50.2	50.0	49.9
73B	H27	CCI	41.1	42.7	44.1	51.7	52.8	53.5	53.8	54.7	58.1	58.9	59.1	59.2	59.2	59.4	59.6	59.9	59.9	60.0	59.9	59.9
73B	H28	CCI	41.4	43.3	45.1	52.5	53.8	54.4	54.6	57.7	59.0	59.5	59.5	59.6	59.7	60.0	60.2	60.3	60.3	60.3	60.2	60.2
73B	H29	CCI	57.4	57.5	57.5	57.4	57.3	57.2	58.0	59.4	60.0	60.4	60.6	60.5	60.6	60.6	60.7	60.7	60.5	60.4	60.2	60.1
73B	H30	CCI	58.6	58.7	58.7	58.6	58.4	58.3	58.4	59.6	60.1	60.5	60.6	60.5	60.4	60.5	60.6	60.5	60.4	60.2	60.1	60.0
73B	H31	CCI	45.9	46.2	46.2	46.1	46.0	45.9	45.9	45.8	45.7	45.6	45.5	45.7	45.6	45.8	45.7	45.5	45.7	45.6	45.5	45.4
73B	H32	CCI	33.1	33.0	33.0	32.9	32.8	32.7	32.5	32.4	32.2	32.1	31.9	31.7	31.6	31.4	31.3	31.1	30.9	30.8	30.6	30.5
73B	H33	CCI	65.3	66.1	65.9	65.7	65.5	65.2	64.9	64.7	64.4	64.1	63.9	63.6	63.4	63.2	63.0	62.7	62.5	62.3	62.1	62.0
73B	H34	CCI	64.8	65.9	65.7	65.5	65.3	65.1	64.8	64.5	64.3	64.0	63.8	63.6	63.3	63.1	62.9	62.7	62.5	62.3	62.1	61.9
73B	H35	CCI	39.8	40.1	40.5	40.9	41.3	41.9	42.3	42.8	43.2	46.1	48.9	50.6	51.7	52.0	52.3	52.7	53.4	53.3	53.2	53.1
73B	H36	CCI	40.1	40.8	41.7	42.9	44.0	45.6	44.8	45.1	51.3	54.9	55.4	56.0	56.4	56.5	56.8	57.1	57.6	57.9	58.0	58.0
73B	H37	CCI	39.0	40.2	41.7	43.7	45.3	52.8	53.8	53.8	57.4	58.7	59.1	59.4	59.5	59.5	59.8	59.9	60.3	60.3	60.3	60.3
73B	H38	CCI	38.5	39.7	41.0	43.0	44.5	51.9	53.5	53.5	55.4	56.9	57.5	57.6	57.8	58.0	58.0	58.5	58.7	59.0	59.0	59.0
73B	H39	CCI	55.1	57.2	57.8	57.9	57.8	57.6	57.5	57.3	57.1	56.9	56.7	56.5	56.4	56.2	56.0	55.8	55.7	55.5	55.4	55.2
73B	H40	CCI	58.5	59.9	60.1	60.0	59.9	59.7	59.5	59.3	59.1	58.9	58.7	58.5	58.3	58.1	57.9	57.7	57.5	57.3	57.2	57.0
73B	H41	CCI	66.5	66.6	66.4	66.1	65.8	65.6	65.3	65.0	64.8	64.5	64.2	64.0	63.7	63.5	63.3	63.0	62.8	62.6	62.4	62.3
73B	H42	CCI	66.1	66.3	66.1	65.9	65.6	65.4	65.1	64.9	64.6	64.4	64.1	63.9	63.6	63.4	63.2	63.0	62.8	62.6	62.4	62.2
73B	H43	CCI	38.8	38.9	39.2	39.7	40.4	41.4	41.7	42.0	42.2	42.4	45.5	47.7	49.2	49.7	50.6	51.6	51.6	51.6	51.6	51.6
73B	H44	CCI	38.7	39.1	40.1	42.3	44.1	46.7	47.2	48.1	54.3	54.6	55.3	55.7	55.8	56.1	56.6	57.3	58.0	58.0	58.0	57.9
73B	H45	CCI	47.6	47.7	47.9	48.7	49.7	51.5	51.8	54.7	57.7	58.3	58.8	58.9	59.2	59.6	59.9	60.2	60.4	60.3	60.3	60.3
73B	H46	CCI	47.8	48.0	48.3	49.0	49.7	50.7	51.0	52.4	57.2	57.7	58.5	58.8	59.0	59.2	59.7	59.9	60.1	60.2	60.2	60.1
73B	H47	CCI	57.4	59.2	59.6	59.6	59.4	59.2	59.1	58.9	58.7	58.5	58.3	58.1	57.9	57.7	57.6	57.4	57.2	57.0	56.8	56.7
73B	H48	CCI	61.2	62.2	62.3	62.1	61.9	61.7	61.5	61.3	61.1	60.9	60.7	60.4	60.2	60.0	59.8	59.6	59.4	59.2	59.1	58.9
73B	H49	CCI	66.6	66.7	66.4	66.1	65.8	65.5	65.2	64.9	64.9	64.6	64.3	64.0	63.8	63.5	63.3	63.1	62.9	62.7	62.5	62.3
73B	H50	CCI	65.8	66.1	65.8	65.6	65.3	65.0	64.8	64.8	64.5	64.2	63.9	63.7	63.4	63.2	63.0	62.8	62.5	62.3	62.2	62.0

Area 73B

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment

SoundPlan run98

Notes: CC1 -

Concord 1 (Option 2)

Unmitigated Scenario - Area 73B, Hypothetical Layout

Area	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
73B	H51	CC1	43.2	44.6	47.1	49.1	51.2	53.1	53.6	55.6	56.6	57.3	57.2	57.1	57.1	57.3	57.7	58.3	58.6	58.7	58.7	58.6
73B	H52	CC1	42.0	42.6	52.4	52.8	53.1	53.3	53.6	57.0	57.2	57.4	57.3	57.5	57.9	58.3	58.8	59.1	59.0	59.0	58.9	58.8
73B	H53	CC1	41.3	41.3	41.8	43.9	47.8	49.2	50.6	56.4	57.2	58.4	58.7	58.9	59.4	59.9	60.1	60.1	60.0	60.0	59.9	59.9
73B	H54	CC1	45.7	45.8	46.0	47.2	50.1	51.2	51.5	56.3	56.9	57.8	58.5	58.8	59.0	59.5	59.9	60.0	60.0	60.0	59.9	59.8
73B	H55	CC1	58.1	60.2	60.3	60.2	60.0	59.8	59.6	59.4	59.2	59.0	58.8	58.4	58.2	58.0	57.8	57.6	57.6	57.4	57.2	57.0
73B	H56	CC1	62.5	63.3	63.2	63.0	62.7	62.5	62.3	62.0	61.8	61.6	61.3	61.1	60.9	60.7	60.4	60.2	60.0	59.8	59.7	59.5

Area 73A

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

SoundPlan run98

Notes: H1 (5) -
H1 (6) -
CCI -

Harmony 1 (Option 5)
Harmony 1 (Option 6)
Concord 1 (Option 2)

NHA 1 -

New Harmony Annex 1
(Option 2)

Unmitigated Scenario 1 - Area 73A

Phase	NSRs	Block-Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
1	75	HNA (2)	37.3	37.9	39.3	41.9	41.4	55.2	56.8	58.3	59.5	60.2	60.5	61.0	61.2	62.0	61.9	61.8	61.6	61.5	61.3	61.2
1	76	HNA (2)	37.4	37.5	37.7	37.9	38.3	38.6	39.1	39.6	39.7	40.7	49.5	50.3	51.0	51.0	50.9	51.5	51.4	51.4	51.9	51.8
1	77	H1 (5)	37.8	38.2	39.4	42.0	41.3	55.5	57.1	58.6	60.0	60.6	60.9	61.1	61.3	61.2	61.1	60.9	60.8	60.6	60.5	60.3
1	78	H1 (5)	28.0	28.6	30.1	32.5	35.2	39.4	48.5	48.9	48.8	48.9	48.8	49.1	49.4	49.3	49.2	49.1	49.0	48.9	48.8	48.7
1	79	H1 (5)	68.5	71.0	70.9	70.7	70.4	70.2	69.9	69.7	69.4	69.2	69.0	68.8	68.6	68.5	68.3	68.2	68.0	67.9	67.7	67.6
1	80	H1 (5)	69.7	70.3	70.0	69.6	69.3	69.0	68.7	68.4	68.2	67.9	67.6	67.4	67.2	66.9	66.7	66.5	66.3	66.1	65.9	65.7
1	81	H1 (5)	71.0	71.1	70.8	70.5	70.2	70.0	69.8	69.6	69.3	69.1	68.9	68.8	68.6	68.5	68.3	68.2	68.0	67.9	67.8	67.6
1	82	H1 (5)	53.6	56.5	56.4	56.3	56.2	56.9	59.1	60.3	61.1	62.0	62.2	62.3	62.3	62.4	62.6	62.6	62.7	62.8	62.8	62.8
1	83	H1 (5)	49.5	55.2	58.7	58.8	58.7	58.5	59.9	60.6	61.1	62.0	62.3	63.4	63.6	63.8	63.8	63.7	63.7	63.6	63.5	63.5
1	84	H1 (5)	27.9	28.1	28.5	29.5	31.4	30.2	43.5	43.4	43.4	43.4	43.3	43.3	43.2	43.2	43.1	43.0	43.0	42.9	42.8	42.8
1	85	H1 (5)	37.7	37.8	38.0	38.3	38.8	39.1	39.5	43.2	42.9	49.3	50.2	51.0	50.9	51.5	51.5	52.0	52.0	51.9	52.3	52.3
2	86	H1 (6)	36.1	36.1	36.2	36.2	36.4	36.5	36.9	39.5	39.9	42.1	42.0	46.3	46.2	46.2	46.1	46.1	46.0	45.9	45.9	46.1
2	87	H1 (6)	28.3	28.3	28.4	28.5	28.6	28.6	28.8	28.8	28.9	29.1	29.2	29.3	29.4	29.2	28.9	35.3	35.2	35.3	35.6	36.2
2	88	H1 (6)	39.9	40.1	40.6	41.3	42.7	46.9	47.2	48.8	51.7	56.1	57.3	57.5	57.8	58.0	58.3	58.2	58.5	58.6	58.6	58.8
2	89	H1 (6)	37.6	38.1	39.1	40.1	41.8	45.5	51.4	53.2	54.0	56.7	58.0	58.3	58.4	58.3	58.3	58.2	58.1	58.0	57.9	57.9
2	90	H1 (6)	60.6	61.3	61.4	61.4	61.3	61.3	61.3	61.2	61.0	60.9	60.8	60.9	60.8	60.7	60.5	60.4	60.4	60.4	60.3	60.1
2	91	H1 (6)	61.9	62.7	62.9	62.9	62.8	62.7	62.6	62.4	62.3	62.2	62.0	61.9	61.8	61.6	61.5	61.3	61.2	61.0	60.9	60.7
2	92	H1 (6)	31.0	31.9	33.0	34.2	35.5	37.7	39.0	41.3	42.8	43.9	43.9	43.8	50.9	51.2	51.1	51.8	52.2	52.3	52.9	53.5
2	93	H1 (6)	54.1	54.2	54.2	54.1	54.1	54.0	54.0	54.1	54.8	54.8	54.7	54.7	54.6	54.6	55.6	55.8	55.8	55.9	55.9	55.8
2	94	H1 (6)	37.7	38.0	38.6	39.8	42.1	48.8	52.7	54.3	57.4	57.8	57.9	58.1	58.2	58.1	58.0	58.0	57.9	57.8	57.9	57.9
2	95	H1 (6)	29.5	29.4	29.4	29.4	29.4	29.3	29.3	29.2	29.1	29.0	29.0	28.9	28.8	28.7	28.7	28.6	28.5	28.7	29.6	32.0
2	96	H1 (6)	62.1	63.2	63.2	63.0	62.9	63.2	63.7	64.0	64.1	64.4	64.4	64.4	64.3	64.4	65.5	66.3	66.2	66.1	65.9	65.9
2	97	H1 (6)	55.5	55.4	55.3	55.1	55.3	56.1	58.7	60.5	60.8	61.2	64.8	64.8	64.6	64.5	64.5	64.4	64.2	64.2	64.0	63.9
2	98	H1 (6)	70.0	69.7	69.5	69.1	68.8	68.4	68.0	67.7	67.3	67.0	66.7	66.4	66.2	65.9	65.7	65.4	65.2	65.0	64.8	64.6
2	99	H1 (6)	70.2	69.9	69.7	69.4	69.0	68.7	68.3	68.0	67.9	67.5	67.2	67.0	66.7	66.4	66.2	66.0	65.8	65.6	65.4	65.3
2	100	H1 (6)	58.0	58.0	57.9	57.8	58.1	57.9	57.8	57.7	57.6	57.6	57.7	57.6	57.7	57.6	57.4	57.2	57.1	57.0	56.8	56.7
2	101	H1 (6)	60.6	61.0	61.0	60.9	60.8	60.9	60.8	60.6	60.5	60.4	60.3	60.3	60.2	60.1	59.9	59.9	59.9	59.8	59.6	59.5
3	102	NCB	55.1	56.8	57.1	58.2	58.7	59.1	59.8	59.8	59.4	59.5	59.2	59.0	58.7	58.5	58.3	58.1	57.9	57.6	57.4	57.3

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)
SoundPlan run98

Notes: H1 (5) -
H1 (6) -
CC1 -

Harmony 1 (Option 5)
Harmony 1 (Option 6)
Concord 1 (Option 2)

NHA 1 -

New Harmony Annex 1
(Option 2)

Unmitigated Scenario 1 - Area 73A

Phase	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
3	103	NCB	57.4	62.8	64.3	63.7	63.1	62.5	62.0	61.6	61.2	60.8	60.5	60.2	60.0	59.7	59.5	59.2	59.0	58.8	58.6	58.4
3	104	NCB	43.3	44.2	51.8	56.2	58.1	58.6	59.7	59.3	59.0	58.7	58.4	58.1	57.8	57.5	57.3	57.0	56.8	56.6	56.4	56.2
3	105	NCB	43.8	45.1	46.0	56.5	58.1	59.1	59.4	59.0	58.6	58.3	58.0	57.7	57.4	57.2	56.9	56.7	56.4	56.2	56.0	55.8
3	106	NCB	63.2	64.7	64.0	63.4	62.8	62.3	61.8	61.4	61.0	60.6	60.3	60.1	59.8	59.5	59.3	59.1	58.9	58.6	58.5	58.3
3	107	NCB	44.5	46.2	52.8	59.6	59.9	60.1	59.8	59.4	59.1	58.8	58.5	58.3	58.0	57.8	57.6	57.4	57.2	57.0	56.8	56.6
3	108	NCB	36.6	37.1	37.9	39.1	41.1	43.8	51.6	52.8	53.0	53.1	53.1	53.1	53.1	53.2	53.2	53.2	53.2	53.2	53.2	53.2
3	109	NCB	36.9	37.6	38.9	40.7	43.0	48.1	54.0	54.3	54.4	54.4	54.6	54.7	54.8	54.8	55.0	55.1	55.1	55.2	55.4	55.4
3	110	NCB	37.1	37.8	39.0	40.4	42.1	44.0	54.0	54.5	54.5	54.6	54.6	54.6	54.9	54.9	55.1	55.4	55.4	55.3	55.5	55.5
3	111	NCB	36.6	37.3	38.4	39.9	41.1	42.5	54.2	54.3	54.4	54.5	54.5	54.6	54.9	54.9	55.0	55.1	55.1	55.5	55.5	55.5
3	112	NCB	41.1	44.1	45.7	46.7	48.0	53.4	55.4	55.6	55.9	56.0	56.1	56.2	56.4	56.7	56.7	57.0	57.0	57.0	57.4	57.4
3	113	NCB	42.7	50.9	51.2	51.5	53.0	54.3	54.3	54.9	55.2	55.5	55.7	55.9	56.0	56.3	56.6	56.7	56.7	56.8	57.0	57.1
3	114	NCB	36.5	36.8	37.1	37.3	37.4	37.4	37.4	37.3	37.2	37.0	36.8	37.9	52.3	52.6	52.7	52.8	52.8	52.7	52.5	52.4
3	115	NCB	34.7	35.3	35.9	36.5	36.9	37.3	37.7	38.0	38.3	38.5	38.7	38.9	39.0	40.9	44.5	50.3	52.6	52.6	52.6	52.5
3	116	NCB	37.2	37.2	37.3	37.2	37.2	37.1	37.1	37.0	37.0	36.9	36.8	42.8	45.2	46.7	46.6	46.6	46.6	47.7	47.8	48.5
3	117	NCB	34.3	34.2	34.2	34.2	34.1	34.1	34.0	34.0	33.9	33.9	33.8	33.8	33.7	33.7	33.6	33.6	33.9	35.0	35.7	37.8
3	118	NCB	34.4	34.4	34.3	34.3	34.3	34.2	34.2	34.1	34.0	34.0	33.9	33.9	33.8	33.7	33.7	33.6	33.9	35.6	37.1	40.2
3	119	NCB	29.6	29.7	29.8	29.9	30.0	30.0	30.1	30.0	30.0	29.9	29.8	29.7	29.5	29.4	29.2	29.0	29.3	30.9	31.9	34.5
3	120	NCB	38.7	39.1	39.4	41.6	43.2	44.2	44.1	44.1	44.1	47.7	48.8	49.6	49.8	50.2	50.7	51.6	52.0	52.6	52.6	53.3
3	121	NCB	38.6	42.0	43.1	43.6	43.5	47.2	47.8	47.8	50.0	50.7	52.0	51.9	52.4	52.8	53.5	53.4	53.6	53.9	54.1	54.0
3	122	NCB	45.5	45.5	45.5	46.2	46.2	46.2	46.2	46.1	46.2	48.3	48.2	48.2	48.1	48.3	49.1	49.7	49.7	50.4	51.4	51.6
3	123	NCB	50.9	51.1	51.1	52.0	52.1	52.0	52.0	52.5	53.4	53.7	54.4	54.4	54.3	55.0	55.2	55.4	55.7	55.8	56.1	56.5
3	124	NCB	30.4	30.8	31.2	31.7	32.1	32.5	33.0	33.4	33.8	34.2	34.6	34.9	39.9	42.9	44.8	45.8	45.9	45.8	46.8	46.8
3	125	NCB	48.4	50.2	50.4	50.4	51.6	51.7	51.7	51.7	51.7	51.8	51.8	52.2	52.2	52.5	52.7	52.9	53.1	53.1	53.0	53.1
3	126	NCB	47.5	49.9	50.2	50.3	51.3	51.6	51.6	51.6	51.6	51.6	51.6	52.1	52.4	52.6	52.8	52.8	53.0	53.1	53.1	53.2
3	127	NCB	39.2	41.8	48.8	50.9	51.6	52.3	52.3	52.4	52.4	52.4	52.5	52.7	53.1	53.1	53.1	53.1	53.0	53.1	53.1	53.1
3	128	NCB	35.6	36.4	37.1	37.7	38.2	38.7	39.0	39.3	39.4	44.6	48.4	49.0	50.0	50.6	51.6	53.3	53.1	53.3	53.1	53.0
3	129	NCB	38.1	38.8	39.5	40.3	41.4	43.1	48.4	52.3	53.6	54.2	54.3	54.3	54.4	54.5	54.4	54.3	54.2	54.1	54.3	54.2
4	130	CC1 (2)	49.3	51.1	52.2	53.1	53.5	60.0	60.3	60.0	59.7	59.4	59.1	58.8	58.6	58.3	58.1	57.9	57.6	57.5	57.3	57.1

Area 73A

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

SoundPlan run98

Notes: H1 (5) -
H1 (6) -
CCI -

Harmony 1 (Option 5)
Harmony 1 (Option 6)
Concord 1 (Option 2)

NHA 1 -

New Harmony Annex 1
(Option 2)

Unmitigated Scenario 1 - Area 73A

Phase	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
4	131	CC1 (2)	49.7	51.9	59.3	60.3	59.9	59.4	59.0	58.6	58.2	57.9	57.6	57.3	57.1	56.8	56.6	56.4	56.2	56.0	55.8	55.6
4	132	CC1 (2)	43.1	44.6	45.4	57.9	58.6	58.6	58.9	58.6	58.3	58.0	57.7	57.4	57.1	56.9	56.6	56.4	56.2	56.0	55.8	55.6
4	133	CC1 (2)	41.0	42.6	44.0	45.3	46.3	50.6	55.6	57.2	57.6	58.0	57.7	57.5	57.2	57.0	56.8	56.5	56.3	56.1	55.9	55.8
4	134	CC1 (2)	36.5	36.7	37.3	38.2	37.5	37.7	49.7	52.2	53.3	54.2	54.7	54.6	54.5	54.4	54.3	54.3	54.3	54.2	54.2	54.2
4	135	CC1 (2)	34.2	34.6	35.2	36.3	35.7	35.8	48.7	51.5	51.8	51.7	51.6	51.5	51.5	51.4	51.3	51.2	51.1	51.1	51.8	51.8
4	136	CC1 (2)	36.3	36.1	35.9	35.8	35.7	35.7	42.4	46.8	48.1	49.1	49.8	50.2	51.1	50.9	50.8	50.6	50.4	50.3	50.1	50.0
4	137	CC1 (2)	36.2	36.2	36.2	36.3	36.3	36.2	36.2	36.2	36.1	36.1	36.1	36.1	36.1	37.4	39.2	39.9	39.9	40.1	40.3	40.8
4	138	CC1 (2)	40.7	41.9	42.7	43.2	43.6	51.1	55.7	57.3	57.9	58.0	57.7	57.5	57.2	57.0	56.8	56.5	56.3	56.1	55.9	55.8
4	139	CC1 (2)	40.8	40.2	39.5	58.0	58.7	58.7	58.3	57.9	57.6	57.2	56.9	56.6	56.4	56.1	55.9	55.6	55.4	55.2	55.0	54.8
4	140	CC1 (2)	46.0	48.4	60.3	60.4	60.4	60.3	60.0	59.7	59.5	59.2	58.9	58.6	58.3	58.1	57.8	57.6	57.4	57.2	57.0	56.8
4	141	CC1 (2)	42.7	44.1	45.0	45.5	55.2	59.2	60.0	59.7	59.4	59.1	58.8	58.5	58.2	58.0	57.7	57.5	57.3	57.1	56.9	56.7
4	142	CC1 (2)	37.8	38.2	38.7	39.3	39.9	40.7	41.9	42.7	45.5	46.0	51.6	56.2	56.4	56.4	56.4	56.4	56.5	56.4	56.4	56.7
4	143	CC1 (2)	37.8	38.7	39.8	42.4	42.5	42.9	51.1	54.4	55.5	56.4	58.3	58.3	58.4	58.5	58.7	58.9	58.8	58.8	58.7	58.7
4	144	CC1 (2)	35.3	35.2	35.2	35.1	35.1	35.0	35.0	34.9	34.8	34.8	34.7	34.7	34.6	34.6	34.5	34.5	34.6	34.8	35.1	35.8
4	145	CC1 (2)	36.2	36.3	36.5	36.8	36.4	36.5	36.5	36.5	44.7	48.9	51.7	52.6	52.5	52.4	52.7	52.6	52.6	52.6	52.6	52.6
4	146	CC1 (2)	36.4	37.3	38.1	38.9	39.5	40.0	40.4	40.8	41.1	41.3	42.9	49.6	53.6	55.1	54.9	54.7	54.5	54.4	54.2	54.0
4	147	CC1 (2)	37.3	37.2	36.9	36.5	36.1	35.8	35.6	46.1	52.4	53.9	53.9	53.9	53.6	53.4	53.2	53.0	52.8	52.6	52.4	52.3
4	148	CC1 (2)	43.7	45.4	46.4	59.4	60.7	60.5	60.2	59.9	59.6	59.3	59.1	58.8	58.6	58.3	58.1	57.9	57.7	57.5	57.3	57.1
4	149	CC1 (2)	43.2	45.0	46.1	58.3	60.1	60.3	60.0	59.7	59.4	59.1	58.8	58.6	58.3	58.1	57.8	57.6	57.4	57.2	57.0	56.8
4	150	CC1 (2)	46.5	47.1	47.1	55.0	55.2	55.2	57.0	57.8	59.0	60.9	61.5	61.8	61.8	61.8	61.8	61.8	61.9	61.8	61.8	61.7
4	151	CC1 (2)	37.6	39.7	40.7	51.6	51.6	52.0	54.3	56.2	57.8	59.3	59.8	59.8	59.7	60.2	60.2	60.2	60.1	60.0	59.9	59.8
4	152	CC1 (2)	36.9	37.7	38.4	39.4	40.6	45.7	47.1	49.6	53.4	55.0	55.6	55.6	55.9	56.0	56.2	56.7	57.0	57.0	57.0	57.0
4	153	CC1 (2)	38.1	38.8	39.5	40.7	41.3	42.6	44.9	50.8	54.7	58.6	59.1	59.2	59.3	59.3	59.4	59.4	59.6	59.6	59.6	59.6
4	154	CC1 (2)	30.8	31.0	31.3	31.6	31.9	32.2	32.6	32.9	33.2	33.5	33.7	34.0	34.3	34.5	34.7	35.0	35.3	35.7	35.9	36.5
4	155	CC1 (2)	36.2	36.2	36.3	36.4	36.5	36.5	36.6	36.6	36.6	36.7	36.7	36.8	36.8	36.8	36.9	36.9	37.1	40.7	41.9	43.1
4	156	CC1 (2)	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.2	34.2	34.2	34.1	34.1	34.1	34.0	34.0	34.1	35.0	37.1
4	157	CC1 (2)	30.2	30.4	30.5	30.7	30.8	30.9	31.0	31.1	31.2	31.2	31.2	31.3	31.3	31.3	31.3	31.3	31.3	31.4	31.9	32.9
4	158	CC1 (2)	46.8	47.7	49.8	54.5	55.9	56.6	57.3	58.1	58.5	58.9	59.2	59.5	59.6	59.8	59.8	59.9	60.0	60.1	60.0	60.1

Area 73A

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)
SoundPlan run98

Notes: H1 (5) -
H1 (6) -
CC1 -

Harmony 1 (Option 5)
Harmony 1 (Option 6)
Concord 1 (Option 2)

NHA 1 -
(Option 2)
New Harmony Annex 1

Unmitigated Scenario 1 - Area 73A

Phase	NSRs	Block Type	Floors																				
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40	
4	159	CC1 (2)	41.7	45.9	49.2	54.4	55.4	56.0	56.3	57.2	57.7	57.9	58.3	58.4	58.4	58.4	58.4	58.4	58.4	58.3	58.3	58.2	58.1
4	160	CC1 (2)	37.7	38.2	38.7	43.5	43.6	43.9	44.2	45.4	48.0	49.4	49.9	50.0	50.7	50.7	51.2	51.8	52.7	52.7	52.7	52.9	53.2
4	161	CC1 (2)	38.5	38.6	39.0	39.3	39.5	40.3	41.6	44.2	46.7	47.4	48.6	49.5	50.1	50.1	50.6	51.1	51.5	51.9	52.3	52.8	52.8
4	162	CC1 (2)	30.8	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	30.9	30.9	31.0	31.0	31.0	31.1	31.2	31.2	31.5	36.5	41.1	41.1
4	163	CC1 (2)	36.1	36.1	36.0	36.0	35.9	35.8	35.7	35.7	35.6	35.5	35.5	35.4	35.4	35.3	35.3	35.3	38.1	39.8	42.8	43.7	43.7
4	164	CC1 (2)	34.6	34.9	35.4	36.5	36.3	46.2	46.2	46.2	46.2	46.3	46.3	47.0	47.7	47.9	48.3	48.5	48.7	48.7	48.9	49.2	49.2
4	165	CC1 (2)	30.7	31.0	31.3	31.7	32.0	32.4	32.8	33.1	33.5	33.8	34.1	34.4	34.6	34.9	35.1	35.3	35.4	35.6	35.8	36.1	36.1
4	166	CC1 (2)	48.4	54.1	56.8	59.8	61.0	61.7	61.8	62.0	62.1	62.1	62.5	62.4	62.4	62.3	62.3	62.3	62.3	62.2	62.2	62.2	62.2
4	167	CC1 (2)	51.9	56.5	58.6	59.0	60.3	60.7	60.7	60.8	60.8	61.3	61.3	61.3	61.3	61.2	61.3	61.2	61.2	61.1	61.1	61.0	61.1
4	168	CC1 (2)	36.8	36.9	37.0	37.2	37.4	37.7	37.9	38.2	38.5	38.7	43.8	48.3	48.3	48.2	48.1	48.1	48.9	48.9	48.9	48.9	48.8
4	169	CC1 (2)	42.8	45.2	45.8	46.1	50.3	51.3	54.4	55.5	56.2	56.8	57.2	57.5	57.6	57.8	58.0	58.1	58.2	58.2	58.1	58.1	58.2

Other Areas

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

SoundPlan run98

Notes: Sof74 - South of Area 74

72 - Area 72

MTR -

Site for the MTR Station

73 -

Area 73B

Unmitigated Scenario - Other Areas

Area	NSRs	Floors																			
		1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
MTR	O14	58.4	67.5	67.9	69.5	69.6	69.3	69.1	68.9	68.7	68.5	68.3	68.1	67.9	67.7	67.5	67.4	67.2	67.0	66.9	66.7
MTR	O15	66.5	71.5	71.5	72.9	72.8	72.6	72.4	72.2	71.9	71.7	71.5	71.3	71.1	70.9	70.8	70.6	70.4	70.3	70.1	70.0
MTR	O16	65.6	68.0	68.8	69.1	69.6	69.7	69.7	69.7	69.6	69.6	69.5	69.4	69.3	69.2	69.0	68.9	68.8	68.7	68.6	68.5
MTR	O17	65.1	68.1	67.9	67.7	67.6	67.5	67.4	67.3	67.2	67.1	67.0	66.8	66.7	66.6	66.5	66.4	66.3	66.1	66.0	65.9
MTR	O18	62.9	68.3	68.4	68.3	68.1	67.9	67.8	67.6	67.5	67.4	67.3	67.2	67.1	67.0	66.9	66.8	66.6	66.5	66.4	66.3
MTR	O19	61.7	65.7	65.7	65.8	66.2	65.9	65.7	65.5	65.4	65.2	65.0	64.9	64.7	64.5	64.4	64.2	64.1	63.9	63.8	63.7
MTR	O20	69.2	68.5	67.9	67.3	66.8	66.3	65.9	65.5	65.1	64.8	64.5	64.2	63.9	63.6	63.4	63.2	63.0	62.8	62.6	62.4
MTR	O21	71.1	70.4	69.7	69.2	68.7	68.2	67.9	67.5	67.2	66.9	66.6	66.3	66.1	65.8	65.6	65.4	65.2	65.0	64.9	64.7
MTR	O22	59.8	69.3	68.8	68.3	67.8	67.3	66.9	66.5	66.2	65.9	65.6	65.3	65.0	64.8	64.5	64.3	64.1	63.9	63.7	63.5
MTR	O23	58.2	71.4	70.9	70.4	69.9	69.5	69.2	68.8	68.5	68.2	67.9	67.7	67.4	67.2	67.0	66.8	66.6	66.4	66.2	66.1
MTR	O24	60.1	71.4	71.0	70.5	70.1	69.7	69.4	69.1	68.8	68.5	68.2	68.0	67.8	67.6	67.4	67.2	67.0	66.8	66.7	66.5
MTR	O25	64.9	71.4	71.7	71.4	71.1	71.1	70.7	70.4	70.2	69.9	69.6	69.4	69.2	69.0	68.8	68.6	68.4	68.2	68.1	67.9
MTR	O26	57.7	61.9	63.1	64.3	68.4	68.2	68.0	67.8	67.6	67.7	67.8	67.7	67.6	67.5	67.5	67.4	67.3	67.2	67.2	67.1

Other Areas

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

SoundPlan run98

Notes: Sol74 - South of Area 74

72 - Area 72

MTR - Site for the MTR Station

73 - Area 73B

Unmitigated Scenario - Other Areas

Area	NSRs	Floors																			
		1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
73	O27	66.5	66.0	65.4	64.7	64.0	63.4	62.9	62.3	61.9	61.5	61.1	60.7	60.4	60.1	59.8	59.5	59.2	59.0	58.8	58.5
73	O28	37.2	36.7	35.9	35.2	34.5	33.8	33.3	32.8	32.3	31.9	31.5	31.1	30.8	30.5	30.2	29.9	29.6	29.4	29.2	29.0
73	O29	66.8	66.4	65.7	64.9	64.2	63.5	63.0	62.4	62.0	61.5	61.1	60.8	60.4	60.1	59.8	59.5	59.3	59.0	58.8	58.6
73	O30	70.8	70.4	69.7	69.1	68.5	67.9	67.4	66.9	66.5	66.2	65.8	65.5	65.2	64.9	64.6	64.4	64.2	63.9	63.7	63.5
73	O31	69.9	69.4	68.9	68.4	67.9	67.4	67.0	66.5	66.2	65.8	65.5	65.2	64.9	64.6	64.4	64.1	63.9	63.7	63.5	63.3
73	O32	69.7	69.3	68.9	68.4	68.0	67.5	67.1	66.7	66.4	66.0	65.7	65.4	65.1	64.9	64.6	64.4	64.2	63.9	63.7	63.5
72	O33	75.3	74.6	74.0	73.5	73.1	72.7	72.4	72.1	71.9	71.6	71.4	71.1	70.9	70.7	70.5	70.4	70.2	70.1	69.9	69.8
72	O34	75.6	74.6	73.8	73.0	72.4	71.9	71.4	71.0	70.6	70.2	69.9	69.5	69.3	69.0	68.7	68.5	68.3	68.0	67.8	67.6
72	O35	76.2	75.3	74.5	73.9	73.3	72.8	72.4	72.0	71.6	71.3	71.0	70.7	70.4	70.1	69.9	69.7	69.4	69.2	69.0	68.8
72	O36	75.8	74.7	73.9	73.1	72.5	72.0	71.5	71.0	70.6	70.2	69.9	69.6	69.3	69.0	68.8	68.5	68.3	68.1	67.9	67.7
72	O37	76.9	76.0	75.2	74.5	73.9	73.4	73.0	72.6	72.2	71.8	71.5	71.2	70.9	70.7	70.4	70.2	70.0	69.7	69.5	69.3
72	O38	75.9	74.7	73.8	73.1	72.4	71.9	71.4	70.9	70.5	70.1	69.8	69.5	69.2	68.9	68.6	68.4	68.2	67.9	67.7	67.5
72	O39	65.6	65.6	65.8	66.1	66.2	66.2	66.2	66.2	66.2	66.2	66.1	66.3	66.3	66.2	66.2	66.1	66.0	66.0	65.9	65.8
72	O40	68.4	68.4	68.6	68.9	68.8	68.8	68.7	68.7	68.7	68.6	68.5	68.5	68.4	68.4	68.3	68.3	68.2	68.1	68.0	67.9
72	O41	68.4	68.4	68.6	68.8	68.8	68.8	68.8	68.7	68.7	68.6	68.6	68.5	68.4	68.4	68.3	68.3	68.2	68.1	68.0	67.9
72	O42	67.8	67.8	68.0	68.2	68.3	68.2	68.2	68.2	68.1	68.1	68.0	67.9	67.9	67.8	67.7	67.6	67.5	67.5	67.4	67.3
72	O43	69.3	69.3	69.4	69.5	69.5	69.4	69.4	69.4	69.3	69.2	69.1	69.1	69.0	68.9	68.8	68.7	68.6	68.6	68.5	68.4
72	O44	68.1	68.2	68.3	68.3	68.2	68.2	68.2	68.2	68.1	68.1	68.0	67.9	67.8	67.7	67.6	67.5	67.4	67.3	67.2	67.1
72	O45	71.1	71.0	71.1	71.0	70.9	70.8	70.7	70.7	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9	69.8	69.7	69.6	69.5
72	O46	70.9	70.9	70.8	70.7	70.6	70.5	70.4	70.3	70.2	70.1	69.9	69.8	69.7	69.6	69.4	69.3	69.2	69.1	69.0	68.8
72	O47	72.0	71.9	71.8	71.7	71.6	71.5	71.4	71.2	71.1	71.0	70.9	70.8	70.7	70.5	70.4	70.3	70.2	70.1	70.0	69.9
72	O48	71.3	71.3	71.2	71.1	71.0	70.9	70.8	70.6	70.5	70.4	70.3	70.2	70.1	69.9	69.8	69.7	69.6	69.5	69.4	69.3
72	O49	71.5	71.5	71.4	71.3	71.3	71.2	71.1	71.0	70.9	70.8	70.7	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9	69.8
72	O50	71.6	71.6	71.5	71.5	71.4	71.3	71.2	71.1	71.0	70.9	70.8	70.7	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9
72	O51	70.9	70.9	70.8	70.8	70.7	70.6	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9	69.8	69.7	69.6	69.5	69.4	69.3

Project: EIA for the Construction of Roads in tui Keng Leng Tseung Kwan O

Unmitigated Scenario - South of Area 74 Revised Hypothetical Layout
 Soundplan run 98
 Noise Impact Assessment Final

Area	NSRs	1-5	6-10	11-15	16-20	21-25	25-30	31-35	36-40	41
S of 74	R1	67.7	71.7	71.2	70.7	70.1	69.6	69.0	68.6	68.1
S of 74	R2	67.7	71.8	71.3	70.7	70.2	69.6	69.1	68.6	68.2
S of 74	R3	69.8	72.2	71.6	71.0	70.4	69.8	69.3	68.8	68.4
S of 74	R4	70.1	72.2	71.7	71.1	70.5	69.9	69.4	68.9	68.4
S of 74	R5	72.1	72.7	72.1	71.5	70.9	70.3	69.8	69.3	68.8
S of 74	R6	72.6	72.9	72.4	71.7	71.1	70.4	69.9	69.4	69.0
S of 74	R7	74.0	73.5	72.7	72.0	71.4	70.8	70.3	69.9	69.6
S of 74	R8	74.0	73.4	72.7	72.0	71.4	70.8	70.4	70.0	69.6
S of 74	R9	73.4	72.9	72.3	71.7	71.1	70.7	70.3	70.0	69.7
S of 74	R10	73.4	72.9	72.3	71.7	71.1	70.7	70.3	70.0	69.7
S of 74	R11	73.6	73.0	72.2	71.6	71.1	70.7	70.4	70.1	69.9
S of 74	R12	73.7	73.0	72.2	71.6	71.1	70.7	70.4	70.1	69.9
S of 74	R13	73.7	73.0	72.2	71.6	71.1	70.8	70.5	70.2	69.9
S of 74	R14	73.8	73.1	72.2	71.6	71.2	70.9	70.6	70.2	69.9
S of 74	R15	74.8	74.1	73.1	72.4	72.0	71.5	71.1	70.7	70.3
S of 74	R16	75.1	74.3	73.4	72.7	72.2	71.7	71.3	70.8	70.5
S of 74	R17	73.0	72.0	70.9	69.9	69.1	68.5	67.9	67.4	66.9
S of 74	R18	72.8	71.8	70.6	69.7	69.0	68.3	67.8	67.2	66.8
S of 74	R19	72.5	71.5	70.3	69.3	68.6	68.0	67.5	67.0	66.5
S of 74	R20	72.5	71.5	70.3	69.3	68.6	67.9	67.4	66.9	66.5
S of 74	R21	72.7	71.8	70.6	69.6	68.8	68.1	67.7	67.2	66.7
S of 74	R22	72.9	72.0	70.8	69.7	68.9	68.3	67.7	67.2	66.8
S of 74	R23	72.1	71.1	69.9	68.9	68.2	67.5	67.0	66.5	66.0
S of 74	R24	72.0	70.9	69.7	68.8	68.0	67.4	66.9	66.4	65.9
S of 74	R25	71.1	70.0	68.7	67.6	66.7	66.0	65.4	65.0	64.7
S of 74	R26	71.0	69.9	68.6	67.5	66.6	65.8	65.2	64.8	64.5
S of 74	R27	69.9	68.6	67.2	66.1	65.2	64.5	63.8	63.4	63.0
S of 74	R28	69.3	68.0	66.7	65.6	64.7	64.0	63.4	63.0	62.6
S of 74	R29	65.0	64.3	63.6	62.8	62.5	62.1	61.7	61.9	61.7
S of 74	R30	64.3	63.8	63.0	62.4	62.2	61.8	61.4	61.6	61.5
S of 74	R31	62.4	62.3	61.8	61.6	61.8	61.6	61.3	61.1	61.0
S of 74	R32	62.5	62.4	62.0	61.8	62.1	61.8	61.5	61.3	61.2
S of 74	R33	63.5	65.3	65.1	64.7	64.7	64.6	64.2	63.9	63.6
S of 74	R34	64.0	66.1	65.7	65.3	65.1	65.0	64.6	64.3	63.9

Project: EIA for the Construction of Roads in Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

NSRs	Floor						
	1	2	3	4	5	6	7
S1	56.8	57.3	57.6	57.7	57.7	57.7	57.7
S2	41.1	41.9	42.6	43.8	43.9	47.2	47.6
S3	46.0	46.4	46.6	47.1	46.6	53.0	53.2
S4	57.9	58.5	58.9	59.2	59.5	60.0	60.0
S5	60.0	60.6	60.9	61.1	61.4	61.4	61.5
S6	60.2	60.7	60.9	61.5	61.6	61.6	61.7
S7	59.8	60.3	60.6	60.9	61.0	61.1	61.2
S8	59.5	59.5	59.6	59.5	59.5	59.5	59.5
S9	65.3	65.3	65.3	65.3	65.2	65.5	65.4
S10	65.3	65.3	65.3	65.2	65.4	65.8	65.8
S11	59.3	59.4	59.4	59.5	60.3	62.5	62.7
S12	60.6	60.7	60.9	62.9	63.5	64.7	64.7
S13	61.5	61.6	61.7	62.6	63.4	64.7	64.7
S14	44.7	46.9	49.9	54.4	63.1	64.2	64.6
S15	44.5	46.7	49.8	55.2	62.9	64.0	64.5
S16	61.2	61.3	61.3	61.4	62.7	63.9	64.4
S17	36.5	36.6	36.9	37.2	37.6	38.1	38.9
S18	36.6	36.9	37.3	37.9	38.6	39.6	40.8
S19	37.2	37.8	38.6	39.3	43.7	44.3	44.9
S20	38.9	39.9	41.3	42.1	49.0	49.5	49.9
S21	52.4	52.5	52.6	52.7	53.9	54.1	54.2
S22	54.1	54.1	54.2	54.3	55.0	55.1	55.3
S23	54.1	54.1	54.2	54.3	54.6	54.7	54.9
S24	53.1	53.2	53.3	53.3	53.4	53.5	53.7
S25	61.5	62.0	62.3	62.4	62.5	62.5	62.6
S26	64.3	64.8	65.1	65.7	65.8	66.1	66.5
S27	64.3	64.8	65.1	65.7	65.9	66.4	66.8
S28	57.5	58.0	58.5	60.1	61.1	62.9	63.7
S29	61.9	62.5	64.2	64.8	65.3	66.2	66.6
S30	62.6	63.1	64.1	64.6	65.5	66.4	66.7
S31	62.4	62.9	63.2	63.9	66.0	66.6	66.9
S32	46.6	49.1	52.6	60.4	66.3	66.8	67.1
S33	45.5	47.9	51.4	62.5	66.6	67.1	67.4
S34	45.1	45.6	49.4	52.6	52.7	56.3	57.8
S35	49.8	50.6	55.1	55.1	56.5	59.1	59.3
S36	53.2	54.8	57.3	58.0	59.8	60.6	60.7
S37	54.1	58.2	58.6	59.5	60.8	61.4	61.5
S38	56.2	59.4	60.3	61.5	61.9	62.2	62.3
S39	61.5	63.1	63.7	64.1	64.4	64.5	64.4
S40	62.8	63.9	64.7	64.7	65.0	65.0	64.9
S41	64.6	65.6	65.6	65.4	65.7	65.7	65.6
S42	70.4	70.3	70.1	70.0	69.9	69.7	69.6
S43	65.9	66.0	65.9	65.8	65.6	65.5	65.3
S44	63.1	64.9	64.9	64.9	64.8	64.7	64.6
S45	48.6	48.6	48.5	48.5	49.2	49.4	51.2
S46	47.8	48.9	52.4	60.8	62.1	62.7	63.2
S47	47.0	48.5	51.4	60.6	61.9	62.3	62.9

Project: EIA for the Construction of Roads in Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

S48	58.7	59.0	59.1	60.5	61.7	62.1	62.3
S49	58.7	59.8	60.0	60.4	61.3	61.7	61.9
S50	39.1	41.3	44.3	50.6	61.1	61.4	61.7
S51	53.1	53.2	53.2	53.3	53.9	54.1	54.1
S52	54.2	54.2	54.2	54.3	54.8	54.9	54.9
S53	55.2	55.2	55.2	55.3	55.8	55.9	55.9
S54	56.4	56.4	56.4	56.6	56.9	57.0	57.0
S55	57.6	57.6	57.6	57.8	58.0	58.0	58.0
S56	59.6	59.6	59.6	59.8	59.9	59.8	59.7
S57	61.6	61.6	61.6	61.6	61.6	61.5	61.4
S58	71.3	71.2	71.0	70.7	70.4	70.1	69.8
S59	68.9	68.8	68.6	68.4	68.2	68.0	67.8
S60	66.8	67.1	67.0	66.9	66.7	66.6	66.5
S61	38.6	40.1	48.4	48.5	48.5	48.5	48.5
S62	57.5	59.6	60.3	63.1	64.0	64.2	64.7
S63	60.1	61.5	61.9	62.7	63.4	63.6	63.7
S64	40.0	41.5	44.8	56.2	62.7	62.9	63.0
S65	42.3	44.2	46.9	49.9	61.2	62.3	62.4
S66	42.8	44.5	46.7	49.0	55.3	61.7	61.8
S67	58.0	59.2	66.0	65.9	65.6	65.4	65.1
S68	55.8	57.0	57.9	58.8	59.8	63.9	63.8
S69	55.3	55.7	57.1	57.8	58.3	58.6	62.0
S70	54.8	55.4	56.4	57.1	57.6	58.0	58.5
S71	54.5	55.0	55.7	56.4	57.2	57.6	57.9
S72	54.0	54.7	55.3	56.0	56.5	56.9	57.1
S73	53.3	54.2	54.5	55.4	55.7	56.1	56.5
S74	51.4	51.9	52.2	53.4	54.7	55.2	55.4
S75	33.2	33.5	33.7	33.9	34.2	34.6	38.9
S76	42.1	42.5	44.9	49.6	50.7	51.2	54.6
S77	41.8	42.3	48.2	50.7	51.7	52.6	55.9
S78	41.2	42.1	47.8	47.9	48.4	49.6	54.0
S79	40.2	41.3	41.5	41.8	42.2	42.2	49.3
S80	40.1	41.5	42.3	42.9	43.1	44.1	51.4
S81	39.9	41.0	42.6	44.3	43.6	44.5	53.2
S82	40.1	41.4	43.2	45.1	44.9	46.6	61.3
S83	49.6	64.5	65.0	64.8	64.5	64.2	64.3
S84	48.5	49.2	55.7	59.5	61.0	61.1	61.4
S85	44.3	45.0	45.5	45.9	46.1	50.3	52.4
S86	43.1	43.7	44.2	44.6	44.9	45.1	47.9
S87	41.9	42.4	43.0	43.5	43.9	44.2	44.4
S88	40.9	41.4	42.0	42.5	43.0	43.4	43.8
S89	39.9	40.4	41.0	41.5	42.0	42.4	42.8
S90	39.0	39.5	40.0	40.5	41.0	41.4	41.8
S91	37.5	37.9	38.3	38.7	39.1	39.4	39.8
S92	39.8	40.1	40.5	41.1	41.8	42.9	44.4
S93	55.2	55.8	56.6	57.3	57.8	58.2	58.6
S94	56.0	56.5	57.5	58.1	58.5	59.0	59.4
S95	55.0	55.7	56.8	57.5	58.0	58.5	58.9
S96	53.7	53.9	54.0	54.3	55.1	55.8	56.4
S97	52.7	52.9	53.1	53.2	53.4	54.1	55.4
S98	50.8	51.0	51.2	51.3	51.6	53.1	54.5
S99	40.4	41.9	44.0	46.2	50.4	53.0	58.2

Project: EIA for the Construction of Roads in Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

S100	58.7	60.8	60.7	60.6	60.7	60.7	60.5
S101	50.2	55.7	63.9	64.0	63.9	63.8	63.4
S102	50.6	61.5	64.2	64.0	63.7	63.6	63.4
S103	51.6	62.4	64.3	64.0	63.7	63.4	63.2
S104	52.3	63.7	64.5	64.2	63.8	63.5	63.2
S105	52.4	64.3	64.7	64.3	63.9	63.5	63.2
S106	52.8	64.7	64.8	64.4	64.0	63.6	63.2
S107	59.0	65.5	65.1	64.6	64.2	63.8	63.4
S108	51.7	54.4	54.9	55.2	55.8	56.2	56.5
S109	44.8	48.4	48.5	48.5	48.5	50.8	52.2
S110	44.8	45.2	45.4	45.5	46.1	50.0	51.0
S111	37.6	38.4	39.0	39.8	43.3	43.6	45.4
S112	38.9	39.8	40.5	40.4	41.0	41.7	47.0
S113	38.5	39.0	39.2	39.8	40.4	41.2	45.4
S114	37.1	37.9	39.0	39.2	39.7	40.4	41.2
S115	37.4	38.1	38.9	39.6	39.7	40.5	41.4
S116	37.3	38.0	38.8	39.7	39.8	40.7	41.8
S117	34.2	34.2	41.9	44.4	45.3	45.2	45.1
S118	31.1	31.2	31.3	31.4	31.7	32.2	32.7
S119	31.1	31.1	31.2	31.4	31.7	32.1	32.5
S120	31.3	31.3	31.4	31.5	31.8	32.2	32.5
S121	31.3	31.4	31.4	31.5	31.7	32.1	32.4
S122	31.6	31.6	31.6	31.6	31.8	32.1	32.4
S123	31.9	31.9	31.9	31.9	32.0	32.3	32.5
S124	32.5	32.5	32.5	32.6	32.7	32.8	32.8
S125	40.3	41.2	42.2	43.2	44.4	47.3	50.4
S126	51.8	52.7	53.0	53.2	53.4	54.2	55.4
S127	53.0	53.6	53.8	54.0	54.4	55.3	55.6
S128	52.7	53.3	53.6	53.8	54.3	55.1	55.5
S129	51.0	51.7	51.9	52.2	52.7	54.1	55.3
S130	49.2	49.6	49.9	50.4	51.2	54.9	56.0
S131	37.9	38.7	40.6	45.1	47.9	55.7	56.7
S132	40.1	41.4	43.2	45.3	49.3	56.3	57.0
S133	38.0	39.1	41.5	51.1	54.3	57.2	57.4
S134	64.1	64.5	65.0	65.3	65.3	65.2	65.2
S135	63.6	63.9	64.2	64.6	64.6	64.8	64.9
S136	62.9	63.3	63.6	63.9	64.0	64.1	64.4
S137	62.3	62.6	63.0	63.5	63.7	63.7	64.0
S138	61.8	62.2	62.6	62.9	63.3	63.6	63.8
S139	61.3	61.7	62.1	62.6	62.9	63.5	63.9
S140	60.3	61.0	61.4	62.0	62.5	62.8	63.0
S141	41.2	42.6	42.9	45.7	51.2	54.6	55.2
S142	31.5	31.8	32.2	32.5	32.9	33.3	33.7
S143	32.2	32.6	33.1	33.5	34.0	34.6	35.1
S144	34.8	35.2	35.9	37.0	38.8	41.3	44.9
S145	31.4	32.2	32.9	33.6	34.4	35.3	36.2
S146	31.6	32.4	33.5	34.4	35.5	36.6	37.8
S147	32.0	33.2	34.8	36.4	38.2	40.0	41.6
S148	32.3	33.9	36.1	38.7	41.4	44.2	54.4
S149	39.8	40.2	40.0	57.6	58.1	57.9	57.8
S150	57.6	58.9	60.4	61.6	62.1	62.2	62.2
S151	57.4	59.6	60.6	61.9	62.2	62.3	62.3

Project: EIA for the Construction of Roads in Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

S152	57.3	59.7	60.8	62.1	62.2	62.3	62.3
S153	57.3	59.7	60.9	62.1	62.2	62.2	62.2
S154	57.1	59.7	61.0	61.9	62.1	62.2	62.2
S155	57.2	59.9	61.3	62.0	62.2	62.2	62.2
S156	57.3	60.2	61.3	61.8	62.0	62.1	62.1
S157	57.6	60.5	61.3	61.7	61.9	61.9	61.9
S158	52.1	53.0	53.2	53.3	53.9	54.1	54.2
S159	48.4	50.7	51.2	51.7	52.4	52.8	53.0
S160	47.6	49.5	50.3	52.2	53.1	53.8	54.0
S161	39.5	40.5	41.8	43.1	47.3	48.2	48.9
S162	43.8	45.7	46.9	47.8	49.7	51.5	51.7
S163	45.7	48.1	51.7	53.7	54.8	55.5	55.6
S164	39.8	41.2	43.7	51.4	52.7	54.0	54.2
S165	38.5	40.0	43.0	53.6	54.1	55.5	55.7
S166	41.3	43.0	45.4	49.2	54.6	55.5	55.9
S167	58.0	58.5	59.0	59.9	60.5	61.0	61.3
S168	58.3	58.7	59.2	60.0	60.5	61.0	61.3
S169	58.7	59.0	59.4	60.2	60.6	61.0	61.4
S170	58.9	59.2	59.5	60.3	60.7	61.0	61.4
S171	59.2	59.5	59.7	60.4	60.8	61.2	61.3
S172	59.9	60.1	60.2	60.5	61.2	61.4	61.6
S173	60.8	60.9	61.0	61.0	61.7	61.8	62.0
S174	67.3	67.1	66.8	66.5	66.2	65.9	65.6
S175	64.4	64.9	64.8	64.6	64.6	64.6	64.5
S176	60.4	63.3	63.7	63.7	64.0	64.0	64.1
S177	39.6	42.2	46.1	52.3	56.8	57.9	58.7
S178	45.8	46.8	48.8	55.9	59.8	60.6	61.5
S179	47.6	48.7	50.3	55.0	59.0	60.2	61.0
S180	41.3	43.4	46.7	52.0	58.6	59.8	60.5
S181	38.7	40.6	44.4	51.9	54.9	57.9	59.2
S182	40.3	42.1	45.2	51.5	54.2	56.6	58.6
S183	66.4	66.2	66.0	65.8	65.5	65.6	65.4
S184	66.5	66.4	66.2	65.9	65.6	65.6	65.6
S185	66.6	66.4	66.2	65.9	65.7	65.5	65.8
S186	66.6	66.5	66.3	66.0	65.7	65.5	65.8
S187	66.6	66.4	66.2	65.9	65.6	65.3	65.9
S188	66.4	66.2	66.0	65.7	65.4	65.1	66.0
S189	65.7	65.5	65.3	65.0	64.8	64.5	64.8
S190	55.8	56.6	57.8	58.7	58.9	59.0	59.0
S191	45.8	51.7	54.1	56.2	56.7	56.8	56.9
S192	45.0	50.7	51.8	55.4	55.8	56.1	56.2
S193	31.1	31.2	31.6	33.0	35.4	38.5	39.8
S194	37.9	40.8	44.0	49.5	51.9	52.7	53.0
S195	38.7	41.4	43.8	47.8	51.7	52.5	52.9
S196	35.8	36.7	39.2	48.5	51.9	52.6	53.0
S197	36.5	38.0	40.8	48.6	51.5	52.6	53.0
S198	36.8	38.3	40.5	47.4	50.2	51.9	52.2
S199	72.7	72.7	72.6	72.6	72.5	72.4	72.4
S200	72.0	72.0	72.0	72.0	71.9	71.9	71.8
S201	71.6	71.6	71.6	71.6	71.6	71.5	71.5
S202	71.4	71.4	71.4	71.4	71.3	71.3	71.3

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Noise Impact Assessment (Final)

S203	71.1	71.2	71.2	71.1	71.1	71.1	71.1
S204	70.9	71.0	70.9	70.9	70.9	70.9	70.9
S205	70.7	70.7	70.7	70.7	70.7	70.7	70.7
S206	70.4	70.4	70.4	70.4	70.4	70.4	70.4
S207	70.2	70.2	70.2	70.3	70.3	70.2	70.2
S208	68.9	68.9	68.9	68.9	68.9	68.9	69.0
S209	67.7	67.7	67.7	67.8	67.8	68.1	68.5
S210	46.7	48.8	50.9	53.1	54.9	59.8	65.8
S211	48.7	53.0	60.4	66.1	66.6	67.7	69.0
S212	59.2	59.7	61.0	65.7	66.2	69.1	69.1
S213	60.3	60.6	61.4	65.2	65.8	69.3	69.3
S214	48.2	50.9	54.5	63.0	69.5	69.6	69.6
S215	48.0	50.9	54.8	60.5	70.0	70.0	70.0
S216	71.7	71.7	71.6	71.6	71.6	71.5	71.4
S217	70.8	70.7	70.7	70.7	70.7	70.7	70.6
S218	69.4	69.4	69.4	69.4	69.7	69.9	69.9
S219	68.3	68.3	68.4	68.4	68.6	69.3	69.4
S220	67.8	67.8	67.9	67.9	68.1	68.3	69.0
S221	67.4	67.5	67.5	67.6	67.7	67.7	68.6
S222	67.2	67.2	67.3	67.4	67.4	67.5	67.7
S223	67.1	67.1	67.2	67.3	67.3	67.3	67.3
S224	71.3	71.3	71.3	71.3	71.3	71.2	71.2
S225	71.9	71.8	71.8	71.8	71.8	71.8	71.8
S226	71.5	71.5	71.5	71.5	71.5	71.5	71.6
S227	67.0	67.0	67.1	67.1	67.2	67.8	68.7
S228	66.8	67.0	67.9	70.0	70.3	70.5	71.1
S229	67.7	67.8	68.0	69.4	69.9	70.5	71.6
S230	67.6	67.7	67.8	68.7	69.5	71.2	72.0
S231	51.1	53.9	57.3	62.2	71.1	72.3	72.2
S232	50.8	53.6	57.1	68.7	72.2	72.5	72.5

Project: EIA for the Construction of Roads at Tin Keng Leng Tseung Kwan O

Noise Impact Assessment (Final)

Notes: H1 (5) - Harmony1 (Option 5) NHA1 - New Harmony Annex 1
 H1 (6) - Harmony1 (Option 6) (Option 2)
 CCI - Concord 1 (Option 2)

Mitigated Scenario 4 - Area 73A

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers surrounding Area 74(S) on Roads D8 and D4

Phase	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
1	75	HNA (2)	37.3	37.9	39.3	41.9	41.4	55.2	56.8	58.3	59.5	60.2	60.5	61.0	61.2	62.0	61.9	61.8	61.6	61.5	61.3	61.2
1	76	HNA (2)	37.3	37.5	37.6	37.9	38.2	38.6	39.1	39.6	39.7	40.7	49.5	50.3	51.0	51.0	50.9	51.5	51.4	51.4	51.9	51.8
1	77	H1 (5)	37.8	38.2	39.4	42.0	41.3	55.5	57.1	58.6	60.0	60.6	60.9	61.1	61.3	61.2	61.1	60.9	60.8	60.6	60.5	60.3
1	78	H1 (5)	28.0	28.6	30.1	32.5	35.2	39.4	48.5	48.9	48.8	48.9	48.8	49.1	49.4	49.3	49.2	49.1	49.0	48.9	48.8	48.7
1	79	H1 (5)	68.5	71.0	70.9	70.7	70.4	70.2	69.9	69.6	69.4	69.2	69.0	68.8	68.6	68.4	68.3	68.1	68.0	67.8	67.7	67.5
1	80	H1 (5)	69.7	70.3	70.0	69.6	69.3	69.0	68.7	68.4	68.2	67.9	67.6	67.4	67.2	66.9	66.7	66.5	66.3	66.1	65.9	65.7
1	81	H1 (5)	71.0	71.1	70.8	70.5	70.2	70.0	69.7	69.6	69.3	69.1	68.9	68.8	68.6	68.5	68.3	68.2	68.0	67.9	67.7	67.6
1	82	H1 (5)	53.6	56.5	56.4	56.3	56.2	56.7	58.9	60.2	60.9	61.9	62.0	62.2	62.2	62.3	62.4	62.5	62.6	62.6	62.7	62.7
1	83	H1 (5)	49.5	55.2	58.7	58.7	58.6	58.5	59.8	60.5	61.0	61.9	62.2	63.3	63.5	63.7	63.7	63.6	63.6	63.5	63.5	63.4
1	84	H1 (5)	27.9	28.1	28.5	29.5	31.4	30.2	43.5	43.4	43.4	43.4	43.3	43.3	43.2	43.2	43.1	43.0	42.9	42.8	42.8	42.8
1	85	H1 (5)	37.6	37.8	37.9	38.2	38.7	39.0	39.5	43.2	42.9	49.3	50.2	51.0	50.9	51.5	51.5	52.0	52.0	51.9	52.3	52.3
2	86	H1 (6)	36.1	36.1	36.2	36.2	36.4	36.5	36.9	39.5	39.9	42.1	42.0	46.3	46.2	46.2	46.1	46.1	46.0	45.9	45.9	46.1
2	87	H1 (6)	28.3	28.3	28.4	28.5	28.6	28.6	28.8	28.8	28.9	29.1	29.2	29.3	29.4	29.2	28.9	35.3	35.2	35.3	35.6	36.2
2	88	H1 (6)	39.8	40.1	40.6	41.3	42.7	46.9	47.2	48.8	51.7	56.1	57.3	57.5	57.8	58.0	58.3	58.2	58.5	58.6	58.6	58.8
2	89	H1 (6)	37.6	38.1	39.1	40.1	41.8	45.5	51.4	53.2	54.0	56.7	58.0	58.3	58.4	58.3	58.3	58.2	58.1	58.0	57.9	57.9
2	90	H1 (6)	60.6	61.3	61.4	61.4	61.3	61.3	61.3	61.2	61.0	60.9	60.8	60.9	60.8	60.7	60.5	60.4	60.4	60.4	60.3	60.1
2	91	H1 (6)	61.9	62.7	62.9	62.9	62.8	62.7	62.6	62.4	62.3	62.2	62.0	61.9	61.8	61.6	61.5	61.3	61.2	61.0	60.9	60.7
2	92	H1 (6)	31.0	31.9	33.0	34.2	35.5	37.7	39.0	41.3	42.8	43.9	43.9	43.8	50.9	51.2	51.1	51.8	52.2	52.3	52.9	53.5
2	93	H1 (6)	54.1	54.2	54.2	54.1	54.1	54.0	54.0	54.1	54.8	54.8	54.7	54.6	54.6	54.6	55.6	55.8	55.8	55.9	55.9	55.8
2	94	H1 (6)	37.7	38.0	38.6	39.8	42.1	48.8	52.7	54.3	57.4	57.8	57.9	58.1	58.2	58.1	58.0	58.0	57.9	57.8	57.9	57.9
2	95	H1 (6)	29.5	29.4	29.4	29.4	29.4	29.3	29.3	29.2	29.1	29.0	29.0	28.9	28.8	28.7	28.7	28.6	28.5	28.7	29.6	32.0
2	96	H1 (6)	62.1	63.2	63.2	63.0	62.9	63.2	63.7	64.0	64.1	64.4	64.4	64.4	64.3	64.4	65.5	66.3	66.2	66.1	65.9	65.9
2	97	H1 (6)	55.5	55.4	55.3	55.1	55.3	56.1	58.7	60.5	60.8	61.2	64.8	64.8	64.6	64.5	64.5	64.4	64.2	64.2	64.0	63.9
2	98	H1 (6)	70.0	69.7	69.5	69.1	68.8	68.4	68.0	67.7	67.3	67.0	66.7	66.4	66.2	65.9	65.7	65.4	65.2	65.0	64.8	64.6
2	99	H1 (6)	70.2	69.9	69.7	69.4	69.0	68.7	68.3	68.0	67.9	67.5	67.2	67.0	66.7	66.4	66.2	66.0	65.8	65.6	65.4	65.3
2	100	H1 (6)	58.0	58.0	57.9	57.8	58.1	57.9	57.8	57.7	57.6	57.6	57.7	57.6	57.7	57.6	57.4	57.2	57.1	57.0	56.8	56.7
2	101	H1 (6)	60.6	61.0	61.0	60.9	60.8	60.9	60.8	60.6	60.5	60.4	60.3	60.3	60.2	60.1	59.9	59.9	59.9	59.8	59.6	59.5
3	102	NCB	55.1	56.8	57.1	58.2	58.7	59.1	59.8	59.8	59.4	59.5	59.2	59.0	58.7	58.5	58.3	58.1	57.9	57.6	57.4	57.3

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Notes: H1 (5) - Harmony 1 (Option 5) NHA 1 - New Harmony Annex 1
 H1 (6) - Harmony 1 (Option 6) (Option 2)
 CC1 - Concord 1 (Option 2)

Mitigated Scenario 4 - Area 73A

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers surrounding Are 74(S) on Roads D8 and D4

Phase	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
4	131	CC1 (2)	49.7	51.9	59.3	60.3	59.9	59.4	59.0	58.6	58.2	57.9	57.6	57.3	57.1	56.8	56.6	56.4	56.2	56.0	55.8	55.6
4	132	CC1 (2)	43.1	44.6	45.4	47.9	58.6	58.6	58.9	58.6	58.3	58.0	57.7	57.4	57.1	56.9	56.6	56.4	56.2	56.0	55.8	55.6
4	133	CC1 (2)	41.0	42.6	44.0	45.3	46.3	50.6	55.6	57.2	57.6	58.0	57.7	57.5	57.2	57.0	56.8	56.5	56.3	56.1	55.9	55.8
4	134	CC1 (2)	36.4	36.7	37.3	38.2	37.5	37.7	49.7	52.2	53.3	54.2	54.7	54.6	54.5	54.4	54.3	54.3	54.3	54.2	54.2	54.2
4	135	CC1 (2)	34.2	34.6	35.2	36.3	35.7	35.8	48.7	51.5	51.8	51.7	51.6	51.5	51.5	51.4	51.3	51.2	51.1	51.1	51.1	51.8
4	136	CC1 (2)	36.3	36.1	35.9	35.7	35.6	35.7	42.4	46.8	48.1	49.1	49.8	50.2	51.1	50.9	50.8	50.6	50.4	50.3	50.1	50.0
4	137	CC1 (2)	36.1	36.2	36.2	36.3	36.3	36.2	36.1	36.1	36.1	36.1	36.1	36.1	36.1	37.4	39.2	39.9	39.9	40.1	40.3	40.8
4	138	CC1 (2)	40.7	41.9	42.7	43.2	43.6	51.1	55.7	57.3	57.9	58.0	57.7	57.5	57.2	57.0	56.8	56.5	56.3	56.1	55.9	55.8
4	139	CC1 (2)	40.7	40.2	39.5	58.0	58.7	58.7	58.3	57.9	57.6	57.2	56.9	56.6	56.4	56.1	55.9	55.6	55.4	55.2	55.0	54.8
4	140	CC1 (2)	46.0	48.4	60.3	60.4	60.4	60.3	60.0	59.7	59.5	59.2	58.9	58.6	58.3	58.1	57.8	57.6	57.4	57.2	57.0	56.8
4	141	CC1 (2)	42.7	44.1	45.0	45.5	55.2	59.2	60.0	59.7	59.4	59.1	58.8	58.5	58.2	58.0	57.7	57.5	57.3	57.1	56.9	56.7
4	142	CC1 (2)	37.8	38.2	38.7	39.3	39.9	40.7	41.9	42.7	45.5	46.0	51.6	56.2	56.4	56.4	56.4	56.4	56.5	56.4	56.4	56.7
4	143	CC1 (2)	37.8	38.7	39.8	42.4	42.5	42.9	51.1	54.4	55.5	56.4	58.3	58.3	58.4	58.5	58.7	58.9	58.9	58.8	58.7	58.7
4	144	CC1 (2)	35.2	35.2	35.1	35.1	35.0	35.0	34.9	34.8	34.8	34.7	34.7	34.6	34.6	34.5	34.5	34.5	34.5	34.7	35.0	35.7
4	145	CC1 (2)	36.2	36.3	36.5	36.8	36.4	36.4	36.4	36.5	44.7	48.9	51.7	52.6	52.5	52.4	52.7	52.6	52.6	52.6	52.6	52.6
4	146	CC1 (2)	36.4	37.3	38.1	38.9	39.5	40.0	40.4	40.8	41.1	41.3	42.9	49.6	53.6	55.1	54.9	54.7	54.5	54.4	54.2	54.0
4	147	CC1 (2)	37.2	37.2	36.8	36.5	36.1	35.8	35.5	46.1	52.4	53.9	53.9	53.9	53.6	53.4	53.2	53.0	52.8	52.6	52.4	52.3
4	148	CC1 (2)	43.7	45.4	46.4	49.4	60.7	60.5	60.2	59.9	59.6	59.3	59.1	58.8	58.6	58.3	58.1	57.9	57.7	57.5	57.3	57.1
4	149	CC1 (2)	43.2	45.0	46.1	48.3	60.1	60.3	60.0	59.7	59.4	59.1	58.8	58.6	58.3	58.1	57.8	57.6	57.4	57.2	57.0	56.8
4	150	CC1 (2)	46.5	47.1	47.1	55.0	55.2	55.2	57.0	57.8	59.0	60.9	61.5	61.8	61.8	61.8	61.8	61.8	61.9	61.8	61.8	61.7
4	151	CC1 (2)	37.6	39.7	40.7	51.6	51.6	52.0	54.3	56.2	57.8	59.3	59.8	59.8	59.7	60.2	60.2	60.2	60.1	60.0	59.9	59.8
4	152	CC1 (2)	36.9	37.6	38.4	39.4	40.6	45.7	47.1	49.6	53.4	55.0	55.6	55.6	55.9	56.0	56.2	56.7	57.0	57.0	57.0	57.0
4	153	CC1 (2)	38.1	38.8	39.5	40.6	41.3	42.6	44.9	50.8	54.7	58.6	59.1	59.2	59.3	59.3	59.4	59.4	59.6	59.6	59.6	59.6
4	154	CC1 (2)	30.8	31.0	31.3	31.6	31.9	32.2	32.6	32.9	33.2	33.5	33.7	34.0	34.3	34.5	34.7	35.0	35.3	35.7	35.9	36.5
4	155	CC1 (2)	36.1	36.2	36.3	36.3	36.4	36.5	36.5	36.6	36.6	36.6	36.7	36.7	36.7	36.8	36.8	36.9	37.0	40.7	41.9	43.1
4	156	CC1 (2)	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.2	34.2	34.2	34.1	34.1	34.1	34.0	34.0	34.1	35.0	37.1
4	157	CC1 (2)	30.2	30.4	30.5	30.7	30.8	30.9	31.0	31.1	31.2	31.2	31.2	31.2	31.3	31.3	31.3	31.3	31.3	31.4	31.9	32.9
4	158	CC1 (2)	46.7	47.7	49.8	54.5	55.9	56.6	57.3	58.0	58.5	58.8	59.1	59.4	59.5	59.7	59.7	59.9	59.9	60.0	60.0	60.0

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Notes: H1 (5) - Harmony 1 (Option 5) NHA 1 - New Harmony Annex 1
 H1 (6) - Harmony 1 (Option 6) (Option 2)
 CC1 - Concord 1 (Option 2)

Mitigated Scenario 4 - Area 73A

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers surrounding Are 74(S) on Roads D8 and D4

Phase	NSRs	Block Type	Floors																			
			1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
4	159	CC1 (2)	41.7	45.9	49.2	54.4	55.4	56.0	56.3	57.2	57.7	57.9	58.3	58.4	58.4	58.4	58.4	58.4	58.4	58.3	58.2	58.1
4	160	CC1 (2)	37.5	38.0	38.5	43.3	43.5	43.8	44.2	44.6	47.4	48.8	49.3	49.5	50.3	50.2	50.8	51.5	52.5	52.5	52.7	53.0
4	161	CC1 (2)	38.5	38.6	38.9	39.3	39.5	40.2	41.6	44.2	46.7	47.4	48.6	49.5	50.1	50.1	50.6	51.1	51.5	51.9	52.3	52.8
4	162	CC1 (2)	30.8	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	30.9	30.9	31.0	31.0	31.0	31.1	31.2	31.2	31.5	36.5	41.1
4	163	CC1 (2)	36.0	36.0	36.0	35.9	35.8	35.8	35.7	35.6	35.6	35.5	35.4	35.4	35.3	35.3	35.2	35.2	38.1	39.8	42.8	43.7
4	164	CC1 (2)	34.6	34.9	35.4	36.5	36.3	46.2	46.2	46.2	46.2	46.3	46.3	47.0	47.7	47.9	48.3	48.5	48.7	48.7	48.9	49.2
4	165	CC1 (2)	30.7	31.0	31.3	31.7	32.0	32.4	32.8	33.1	33.5	33.8	34.1	34.4	34.6	34.9	35.1	35.3	35.4	35.6	35.8	36.1
4	166	CC1 (2)	48.4	54.1	56.8	59.8	61.0	61.7	61.8	62.0	62.1	62.1	62.5	62.4	62.4	62.3	62.3	62.3	62.3	62.2	62.2	62.2
4	167	CC1 (2)	51.9	56.5	58.6	59.0	60.3	60.7	60.7	60.8	60.8	61.3	61.3	61.3	61.3	61.2	61.3	61.2	61.2	61.1	61.0	61.1
4	168	CC1 (2)	36.7	36.8	37.0	37.2	37.4	37.6	37.9	38.1	38.4	38.7	43.8	48.3	48.3	48.2	48.1	48.1	48.9	48.9	48.9	48.8
4	169	CC1 (2)	42.8	45.2	45.7	46.1	50.3	51.2	54.4	55.5	56.2	56.8	57.2	57.5	57.6	57.8	58.0	58.1	58.2	58.2	58.1	58.2

Project: EIA for the Construction of Roads in tiu Keng LengTseung Kwan O

5m cantilever barriers on Road D8, at-grade of Road D4 and Road D4 flyover

Noise Impact Assessment Final

Soundplan run 126

5m cantilever barrier on Road D8, D4 and D4 flyover and 3m barrier on Road L731

Area	NSRs	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41
S of 74	R1	66.3	71.5	71.2	70.6	70.1	69.5	69.0	68.5	68.1
S of 74	R2	66.3	71.6	71.3	70.7	70.1	69.6	69.1	68.6	68.1
S of 74	R3	68.5	71.9	71.5	70.9	70.3	69.8	69.2	68.7	68.3
S of 74	R4	68.6	71.9	71.6	71.0	70.4	69.8	69.3	68.8	68.3
S of 74	R5	70.1	72.1	71.9	71.3	70.7	70.1	69.6	69.1	68.7
S of 74	R6	70.5	72.3	72.1	71.5	70.8	70.2	69.7	69.2	68.7
S of 74	R7	67.0	70.9	71.4	71.0	70.5	70.1	69.8	69.5	69.2
S of 74	R8	65.9	70.6	71.3	70.9	70.5	70.1	69.8	69.5	69.2
S of 74	R9	63.8	69.7	70.7	70.5	70.2	69.9	69.7	69.4	69.2
S of 74	R10	63.5	69.7	70.6	70.4	70.2	69.9	69.7	69.4	69.2
S of 74	R11	62.8	69.9	70.5	70.4	70.2	70.0	69.9	69.7	69.5
S of 74	R12	63.4	70.2	70.6	70.4	70.2	70.1	70.0	69.8	69.7
S of 74	R13	66.1	71.1	71.0	70.7	70.5	70.3	70.2	69.9	69.7
S of 74	R14	66.3	71.1	71.1	70.9	70.6	70.5	70.2	70.0	69.8
S of 74	R15	71.1	72.9	72.8	72.2	71.8	71.3	70.9	70.5	70.2
S of 74	R16	72.5	73.4	73.0	72.5	72.1	71.6	71.1	70.7	70.4
S of 74	R17	69.5	70.6	70.8	69.9	69.1	68.5	67.9	67.4	66.9
S of 74	R18	68.2	70.0	70.6	69.7	69.0	68.3	67.8	67.2	66.8
S of 74	R19	61.0	68.7	70.3	69.3	68.6	68.0	67.5	67.0	66.5
S of 74	R20	61.1	68.7	70.3	69.3	68.6	67.9	67.4	66.9	66.5
S of 74	R21	66.0	69.7	70.6	69.6	68.8	68.1	67.7	67.1	66.7
S of 74	R22	67.6	70.2	70.7	69.7	68.9	68.3	67.7	67.2	66.8
S of 74	R23	72.0	71.1	69.9	68.9	68.2	67.5	67.0	66.5	66.0
S of 74	R24	71.7	70.9	69.7	68.8	68.0	67.4	66.9	66.4	65.9
S of 74	R25	70.2	70.0	68.7	67.6	66.7	66.0	65.4	65.0	64.7
S of 74	R26	70.0	69.9	68.6	67.5	66.6	65.8	65.2	64.8	64.5
S of 74	R27	68.6	68.6	67.2	66.1	65.2	64.5	63.8	63.4	63.0
S of 74	R28	67.9	68.0	66.7	65.6	64.7	64.0	63.4	63.0	62.6
S of 74	R29	65.0	64.3	63.6	62.8	62.5	62.1	61.7	61.9	61.7
S of 74	R30	64.3	63.8	63.0	62.4	62.3	61.8	61.4	61.6	61.5
S of 74	R31	62.4	62.3	61.8	61.6	61.8	61.6	61.3	61.1	61.0
S of 74	R32	62.5	62.4	62.0	61.8	62.1	61.8	61.5	61.3	61.2
S of 74	R33	63.5	65.3	65.1	64.7	64.7	64.6	64.2	63.9	63.6
S of 74	R34	64.0	66.1	65.7	65.3	65.1	65.0	64.6	64.3	63.9

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers

surrounding Area 74(S) on Roads D8 and D4

Mitigated Scenario 4 - School

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
74	3	S1	PS	52.9	53.4	53.6	53.7	53.7	53.7	53.7
74	3	S2	PS	40.5	41.0	41.6	42.6	42.9	45.3	45.9
74	3	S3	PS	39.7	40.2	40.7	41.5	41.9	44.0	44.8
74	3	S4	PS	39.3	39.6	40.0	40.6	41.3	42.1	43.3
74	3	S5	PS	39.2	39.5	39.9	40.5	41.2	42.1	43.3
74	3	S6	PS	39.2	39.5	39.9	40.6	41.3	42.2	43.4
74	3	S7	PS	39.1	39.5	39.9	40.5	41.3	42.2	43.4
74	3	S8	PS	59.5	59.5	59.5	59.5	59.5	59.4	59.3
74	3	S9	PS	65.3	65.3	65.3	65.3	65.2	65.5	65.4
74	3	S10	PS	65.3	65.3	65.3	65.2	65.4	65.8	65.8
74	3	S11	PS	59.3	59.4	59.4	59.4	60.3	62.5	62.4
74	3	S12	PS	60.6	60.7	60.9	62.9	63.5	64.7	64.7
74	3	S13	PS	61.5	61.6	61.7	62.6	63.4	64.7	64.7
74	3	S14	PS	44.7	46.9	49.9	54.4	63.1	64.2	64.6
74	3	S15	PS	44.5	46.7	49.8	55.2	62.9	64.0	64.5
74	3	S16	PS	61.2	61.3	61.3	61.4	62.7	63.9	64.4
74	3	S17	SS	36.5	36.6	36.9	37.2	37.6	38.1	38.9
74	3	S18	SS	36.6	36.9	37.3	37.9	38.6	39.6	40.8
74	3	S19	SS	37.2	37.8	38.6	39.3	43.7	44.3	44.9
74	3	S20	SS	38.9	39.9	41.3	42.1	49.0	49.5	49.9
74	3	S21	SS	52.4	52.5	52.6	52.7	53.9	54.1	54.2
74	3	S22	SS	54.1	54.1	54.2	54.3	55.0	55.1	55.3
74	3	S23	SS	54.1	54.1	54.2	54.3	54.6	54.7	54.9
74	3	S24	SS	53.1	53.2	53.3	53.3	53.4	53.5	53.7
74	3	S25	SS	38.8	39.2	39.8	40.5	41.3	42.3	43.5
74	3	S26	SS	47.2	48.0	48.9	51.9	53.2	56.6	58.3
74	3	S27	SS	45.5	46.6	48.2	51.5	54.0	58.7	59.6
74	3	S28	SS	42.8	44.8	47.6	50.7	54.1	59.4	60.1
74	3	S29	SS	42.6	44.5	47.5	50.7	54.0	59.4	59.9
74	3	S30	SS	41.6	43.5	47.1	51.2	56.2	59.9	60.4
74	3	S31	SS	40.0	41.2	44.2	52.0	59.2	60.4	61.2
74	3	S32	SS	43.4	45.5	48.7	53.2	60.5	61.0	62.1
74	3	S33	SS	40.6	41.9	45.2	60.6	61.0	62.2	63.2
73A	1	S34	SS	43.3	43.2	48.4	52.1	52.1	52.8	55.1
73A	1	S35	SS	46.3	47.4	54.1	54.1	55.2	56.9	56.8
73A	1	S36	SS	49.7	52.4	56.0	56.9	58.6	58.6	58.5
73A	1	S37	SS	50.5	57.0	57.5	58.6	59.6	59.5	59.4
73A	1	S38	SS	54.0	58.4	59.5	60.8	60.8	60.7	60.6
73A	1	S39	SS	60.9	62.7	63.2	63.7	63.6	63.5	63.3
73A	1	S40	SS	62.4	63.6	64.4	64.3	64.2	64.0	63.9
73A	1	S41	SS	64.3	65.4	65.3	65.2	65.0	64.8	64.7

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers

surrounding Area 74(S) on Roads D8 and D4

Mitigated Scenario 4 - School

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73A	1	S42	SS	70.3	70.2	70.0	69.8	69.6	69.4	69.2
73A	1	S43	SS	65.9	66.0	65.9	65.8	65.6	65.5	65.3
73A	1	S44	SS	63.1	64.9	64.9	64.9	64.8	64.7	64.6
73A	1	S45	SS	48.6	48.6	48.5	48.5	49.2	49.4	51.2
73A	1	S46	SS	47.8	48.9	52.4	60.8	62.1	62.7	63.2
73A	1	S47	SS	47.0	48.5	51.4	60.6	61.9	62.3	62.9
73A	1	S48	SS	58.7	59.0	59.1	60.5	61.7	62.1	62.3
73A	1	S49	SS	58.7	59.8	60.0	60.4	61.3	61.7	61.9
73A	1	S50	SS	39.1	41.3	44.3	50.6	61.1	61.4	61.7
73A	2	S51	PS	53.1	53.1	53.1	53.2	53.3	53.3	53.3
73A	2	S52	PS	54.1	54.1	54.1	54.1	54.2	54.2	54.2
73A	2	S53	PS	55.1	55.1	55.1	55.1	55.2	55.2	55.1
73A	2	S54	PS	56.4	56.4	56.4	56.3	56.3	56.3	56.3
73A	2	S55	PS	57.5	57.5	57.5	57.5	57.5	57.4	57.3
73A	2	S56	PS	59.6	59.6	59.5	59.5	59.5	59.4	59.3
73A	2	S57	PS	61.5	61.5	61.4	61.4	61.3	61.2	61.1
73A	2	S58	PS	71.3	71.2	70.9	70.7	70.3	70.1	69.8
73A	2	S59	PS	68.9	68.8	68.6	68.4	68.2	68.0	67.8
73A	2	S60	PS	66.8	67.1	67.0	66.8	66.7	66.6	66.4
73A	2	S61	PS	38.0	39.7	48.4	48.4	48.5	48.5	48.4
73A	2	S62	PS	57.5	59.6	60.2	63.1	63.9	64.2	64.7
73A	2	S63	PS	60.1	61.5	61.9	62.7	63.4	63.6	63.7
73A	2	S64	PS	39.9	41.4	44.8	56.2	62.7	62.9	63.0
73A	2	S65	PS	42.2	44.1	46.9	49.9	61.2	62.3	62.4
73A	2	S66	PS	42.8	44.5	46.7	49.0	55.3	61.7	61.8
73A	GIC	S67	SS	56.7	58.3	65.8	65.7	65.4	65.2	64.9
73A	GIC	S68	SS	54.0	55.6	56.8	57.9	59.1	63.6	63.5
73A	GIC	S69	SS	53.3	54.0	55.9	56.8	57.3	57.7	61.6
73A	GIC	S70	SS	52.8	53.6	55.0	55.9	56.5	57.0	57.6
73A	GIC	S71	SS	52.4	53.2	54.2	55.1	56.1	56.6	56.9
73A	GIC	S72	SS	51.8	52.8	53.7	54.6	55.3	55.8	56.0
73A	GIC	S73	SS	50.9	52.2	52.6	53.9	54.3	54.9	55.4
73A	GIC	S74	SS	47.7	48.4	48.9	51.2	53.1	53.8	54.0
73A	GIC	S75	SS	33.2	33.5	33.7	33.9	34.2	34.6	38.9
73A	GIC	S76	SS	41.7	42.2	44.7	49.5	50.7	51.1	54.5
73A	GIC	S77	SS	41.6	42.1	48.2	50.6	51.7	52.5	55.8
73A	GIC	S78	SS	40.8	41.6	47.6	47.7	47.8	48.1	53.4
73A	GIC	S79	SS	39.7	40.7	40.8	40.9	41.1	41.4	49.2
73A	GIC	S80	SS	39.6	40.9	41.6	42.0	42.0	43.4	51.3
73A	GIC	S81	SS	39.4	40.5	42.1	43.6	42.7	43.9	53.1
73A	GIC	S82	SS	39.6	40.9	42.6	44.5	44.1	46.1	61.3

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Noise Impact Assessment (Final)

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers

surrounding Area 74(S) on Roads D8 and D4

Mitigated Scenario 4 - School

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73A	GIC	S83	SS	49.6	64.5	65.0	64.7	64.5	64.2	64.3
73A	GIC	S84	SS	48.5	49.2	55.7	59.5	61.0	61.1	61.4
73A	GIC	S85	SS	44.3	45.0	45.5	45.9	46.1	50.3	52.4
73A	GIC	S86	SS	43.1	43.7	44.2	44.6	44.9	45.1	47.9
73A	GIC	S87	SS	41.9	42.4	43.0	43.5	43.9	44.2	44.4
73A	GIC	S88	SS	40.9	41.4	42.0	42.5	43.0	43.4	43.8
73A	GIC	S89	SS	39.9	40.4	41.0	41.5	42.0	42.4	42.8
73A	GIC	S90	SS	39.0	39.5	40.0	40.5	41.0	41.4	41.8
73A	GIC	S91	SS	37.5	37.9	38.3	38.7	39.1	39.4	39.8
73A	GIC	S92	SS	39.7	40.0	40.4	40.9	41.5	42.6	44.1
73A	GIC	S93	SS	53.6	54.4	55.5	56.3	56.9	57.5	57.9
73A	GIC	S94	SS	54.7	55.3	56.6	57.4	57.9	58.4	58.8
73A	GIC	S95	SS	53.9	54.8	56.1	56.9	57.4	58.0	58.5
73A	GIC	S96	SS	51.8	52.1	52.3	52.7	53.8	54.7	55.4
73A	GIC	S97	SS	50.3	50.6	50.8	51.0	51.2	52.4	54.2
73A	GIC	S98	SS	46.1	46.4	46.9	47.4	47.8	50.9	52.9
73A	GIC	S99	SS	40.0	41.4	43.4	45.7	46.1	50.8	57.6
73A	GIC	S100	SS	58.7	60.8	60.7	60.6	60.4	60.5	60.3
73A	GIC	S101	PS	50.2	55.7	63.9	64.0	63.9	63.8	63.4
73A	GIC	S102	PS	50.6	61.5	64.2	64.0	63.7	63.6	63.4
73A	GIC	S103	PS	51.6	62.4	64.3	64.0	63.7	63.4	63.2
73A	GIC	S104	PS	52.3	63.7	64.5	64.2	63.8	63.5	63.2
73A	GIC	S105	PS	52.4	64.3	64.7	64.3	63.9	63.5	63.2
73A	GIC	S106	PS	52.8	64.7	64.8	64.4	64.0	63.6	63.2
73A	GIC	S107	PS	59.0	65.5	65.1	64.6	64.2	63.8	63.4
73A	GIC	S108	PS	51.7	54.4	54.9	55.2	55.8	56.2	56.5
73A	GIC	S109	PS	41.1	46.9	47.0	47.0	47.0	49.8	51.4
73A	GIC	S110	PS	40.4	40.7	40.7	40.9	41.1	48.4	49.9
73A	GIC	S111	PS	37.2	37.9	38.2	38.9	39.8	40.4	42.8
73A	GIC	S112	PS	38.4	39.3	39.9	39.7	40.3	40.9	46.7
73A	GIC	S113	PS	38.3	38.8	38.9	39.4	39.9	40.6	45.2
73A	GIC	S114	PS	36.9	37.6	38.7	38.7	39.2	39.7	40.3
73A	GIC	S115	PS	37.2	37.8	38.6	39.2	39.1	39.7	40.5
73A	GIC	S116	PS	37.1	37.7	38.5	39.3	39.2	40.0	40.8
73A	3	S117	SS	34.2	34.2	41.9	44.4	45.3	45.2	45.1
73A	3	S118	SS	31.1	31.2	31.3	31.4	31.7	32.2	32.7
73A	3	S119	SS	31.1	31.1	31.2	31.4	31.7	32.1	32.5
73A	3	S120	SS	31.3	31.3	31.4	31.5	31.8	32.2	32.5
73A	3	S121	SS	31.3	31.4	31.4	31.5	31.7	32.1	32.4
73A	3	S122	SS	31.6	31.6	31.6	31.6	31.8	32.1	32.4
73A	3	S123	SS	31.9	31.9	31.9	31.9	32.0	32.3	32.5

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

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3m barrier on road between Areas 74(N) and 74(S) and 5m barriers

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Mitigated Scenario 4 - School

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73A	3	S124	SS	32.5	32.5	32.5	32.6	32.7	32.8	32.8
73A	3	S125	SS	35.8	36.0	36.3	36.6	36.9	37.3	37.6
73A	3	S126	SS	51.6	52.6	52.8	52.9	52.9	53.4	53.9
73A	3	S127	SS	52.9	53.5	53.7	53.9	54.1	55.0	55.2
73A	3	S128	SS	52.7	53.3	53.5	53.7	54.1	55.0	55.3
73A	3	S129	SS	50.9	51.6	51.8	52.1	52.4	53.9	55.1
73A	3	S130	SS	49.2	49.5	49.8	50.2	50.8	54.8	55.8
73A	3	S131	SS	37.4	38.1	40.1	44.6	47.2	55.6	56.6
73A	3	S132	SS	39.9	41.1	42.8	44.9	48.9	56.3	56.9
73A	3	S133	SS	37.9	39.0	41.2	51.0	54.3	57.2	57.4
73A	4	S134	PS	63.8	64.2	64.8	65.0	65.0	65.0	64.9
73A	4	S135	PS	63.3	63.6	63.8	64.2	64.3	64.4	64.5
73A	4	S136	PS	62.5	62.9	63.1	63.4	63.5	63.6	64.0
73A	4	S137	PS	62.0	62.2	62.4	63.0	63.1	63.2	63.5
73A	4	S138	PS	61.5	61.6	62.0	62.3	62.7	63.0	63.2
73A	4	S139	PS	61.0	61.2	61.5	62.0	62.2	62.7	63.2
73A	4	S140	PS	60.2	60.5	60.8	61.6	61.7	61.9	62.1
73A	4	S141	PS	37.9	38.3	38.5	39.0	39.6	40.2	45.6
73A	4	S142	PS	31.5	31.8	32.2	32.5	32.9	33.3	33.7
73A	4	S143	PS	32.2	32.6	33.1	33.5	34.0	34.6	35.1
73A	4	S144	PS	34.8	35.2	35.9	37.0	38.8	41.3	44.9
73A	4	S145	PS	31.4	32.2	32.9	33.6	34.4	35.3	36.2
73A	4	S146	PS	31.6	32.4	33.5	34.4	35.5	36.6	37.8
73A	4	S147	PS	32.0	33.2	34.8	36.4	38.2	40.0	41.5
73A	4	S148	PS	32.3	33.9	36.1	38.7	41.4	44.2	54.4
73A	4	S149	PS	39.8	40.2	40.0	57.6	58.1	57.9	57.8
73B	PSPS	S150	SS	41.8	41.8	41.8	41.8	41.8	41.7	41.7
73B	PSPS	S151	SS	41.6	41.6	41.6	41.6	41.6	41.5	41.5
73B	PSPS	S152	SS	41.5	41.5	41.5	41.5	41.5	41.4	41.4
73B	PSPS	S153	SS	39.6	39.5	39.5	39.5	39.5	39.5	39.5
73B	PSPS	S154	SS	36.2	36.2	36.2	36.2	36.2	36.2	36.4
73B	PSPS	S155	SS	39.5	39.5	39.5	39.5	39.5	39.5	39.5
73B	PSPS	S156	SS	39.5	39.5	39.5	39.5	39.4	39.4	39.4
73B	PSPS	S157	SS	36.7	36.7	36.6	36.6	36.6	36.6	36.7
73B	PSPS	S158	SS	52.1	52.9	53.1	53.2	53.3	53.4	53.5
73B	PSPS	S159	SS	48.3	50.6	51.2	51.7	52.1	52.3	52.5
73B	PSPS	S160	SS	47.5	49.5	50.3	52.1	53.1	53.4	53.7
73B	PSPS	S161	SS	39.4	40.4	41.6	42.7	46.6	47.2	47.0
73B	PSPS	S162	SS	43.6	45.5	46.6	47.6	49.6	50.1	50.4
73B	PSPS	S163	SS	45.6	48.0	51.6	53.7	54.7	55.0	55.1
73B	PSPS	S164	SS	39.7	41.1	43.6	51.4	52.6	53.5	53.7

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3m barrier on road between Areas 74(N) and 74(S) and 5m barriers

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Mitigated Scenario 4 - School

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73B	PSPS	S165	SS	38.2	39.7	42.8	53.5	54.1	55.1	55.4
73B	PSPS	S166	SS	41.2	42.9	45.2	49.1	54.6	55.2	55.6
73B	PSPS	S167	PS	51.6	51.6	51.6	51.6	51.5	51.5	51.5
73B	PSPS	S168	PS	52.3	52.3	52.3	52.3	52.3	52.2	52.2
73B	PSPS	S169	PS	53.4	53.4	53.4	53.3	53.3	53.2	53.2
73B	PSPS	S170	PS	54.0	54.0	54.0	53.9	53.9	53.8	53.8
73B	PSPS	S171	PS	54.7	54.7	54.6	54.6	54.5	54.5	54.4
73B	PSPS	S172	PS	56.2	56.2	56.2	56.1	56.0	56.0	55.9
73B	PSPS	S173	PS	58.0	58.0	57.9	57.8	57.7	57.6	57.5
73B	PSPS	S174	PS	67.2	67.0	66.6	66.3	66.0	65.7	65.3
73B	PSPS	S175	PS	64.4	64.9	64.8	64.6	64.5	64.4	64.4
73B	PSPS	S176	PS	60.4	63.3	63.7	63.7	63.9	63.8	63.9
73B	PSPS	S177	PS	39.5	42.0	45.7	52.1	56.2	57.2	58.0
73B	PSPS	S178	PS	45.8	46.8	48.7	55.9	59.5	60.4	61.2
73B	PSPS	S179	PS	47.6	48.7	50.2	54.9	58.9	60.1	60.7
73B	PSPS	S180	PS	41.2	43.3	46.5	51.9	58.4	59.6	60.2
73B	PSPS	S181	PS	38.5	40.4	44.2	51.8	54.6	57.7	58.8
73B	PSPS	S182	PS	40.3	42.1	45.1	51.4	53.7	56.5	58.2
72	/	S183	PS	66.3	66.2	66.0	65.7	65.5	65.5	65.3
72	/	S184	PS	66.5	66.3	66.1	65.9	65.6	65.5	65.5
72	/	S185	PS	66.5	66.3	66.1	65.9	65.6	65.4	65.7
72	/	S186	PS	66.6	66.4	66.2	66.0	65.7	65.4	65.8
72	/	S187	PS	66.6	66.3	66.1	65.9	65.6	65.3	65.9
72	/	S188	PS	66.4	66.2	65.9	65.7	65.4	65.1	65.9
72	/	S189	PS	65.6	65.4	65.2	65.0	64.7	64.4	64.7
72	/	S190	PS	55.7	56.5	57.6	58.3	58.5	58.6	58.6
72	/	S191	PS	45.5	51.1	53.4	55.6	56.2	56.4	56.4
72	/	S192	PS	44.6	50.1	50.8	54.7	55.2	55.6	55.6
72	/	S193	PS	31.1	31.1	31.1	32.0	33.8	36.5	36.0
72	/	S194	PS	37.7	40.4	43.2	48.5	51.0	51.7	52.0
72	/	S195	PS	38.4	41.0	43.2	47.0	50.8	51.5	52.0
72	/	S196	PS	35.8	36.6	38.9	48.1	51.3	51.8	52.2
72	/	S197	PS	36.5	37.8	40.5	48.3	51.0	52.1	52.5
72	/	S198	PS	36.8	38.1	40.3	47.3	49.8	51.6	51.9
72	GIC	S199	SS	66.9	67.3	67.5	67.6	68.7	69.7	69.8
72	GIC	S200	SS	67.0	67.3	67.5	67.5	67.6	68.3	69.2
72	GIC	S201	SS	67.0	67.3	67.4	67.5	67.5	67.6	68.4
72	GIC	S202	SS	67.0	67.2	67.3	67.4	67.4	67.5	67.5
72	GIC	S203	SS	67.0	67.2	67.3	67.4	67.4	67.5	67.4
72	GIC	S204	SS	66.8	67.0	67.1	67.2	67.3	67.3	67.3
72	GIC	S205	SS	66.7	66.8	67.0	67.0	67.1	67.1	67.1

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

3m barrier on road between Areas 74(N) and 74(S) and 5m barriers surrounding Area 74(S) on Roads D8 and D4

Mitigated Scenario 4 - School

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
72	GIC	S206	SS	66.6	66.7	66.8	66.9	67.0	67.0	67.0
72	GIC	S207	SS	69.6	69.5	69.5	69.5	69.5	69.5	69.5
72	GIC	S208	SS	68.7	68.7	68.7	68.7	68.7	68.7	68.7
72	GIC	S209	SS	67.7	67.7	67.7	67.8	67.8	67.8	67.8
72	GIC	S210	SS	46.6	48.8	50.7	52.5	54.6	56.2	60.2
72	GIC	S211	SS	48.7	53.0	60.4	66.1	66.6	66.7	67.2
72	GIC	S212	SS	59.2	59.7	61.0	65.7	66.3	66.8	67.2
72	GIC	S213	SS	60.3	60.6	61.4	65.2	66.0	66.7	67.1
72	GIC	S214	SS	47.9	50.6	54.3	63.0	66.0	66.9	67.2
72	GIC	S215	SS	47.9	50.8	54.7	61.1	66.2	67.0	68.2
72	GIC	S216	SS	64.8	65.1	65.4	66.3	67.1	68.5	69.6
72	GIC	S217	SS	63.3	63.6	63.9	64.5	65.1	65.9	67.3
72	GIC	S218	SS	62.7	63.0	63.3	63.5	64.3	64.7	65.3
72	GIC	S219	SS	62.8	62.9	63.0	63.2	64.0	64.3	64.6
72	GIC	S220	SS	63.0	63.1	63.2	63.3	63.8	64.3	64.5
72	GIC	S221	SS	63.3	63.4	63.4	63.5	63.9	64.4	64.5
72	GIC	S222	SS	63.7	63.7	63.7	63.8	64.0	64.3	64.6
72	GIC	S223	SS	64.1	64.2	64.2	64.2	64.3	64.5	64.8
72	GIC	S224	SS	71.0	71.0	71.0	71.0	71.0	70.9	70.9
72	GIC	S225	SS	71.9	71.8	71.8	71.8	71.8	71.8	71.8
72	GIC	S226	SS	71.5	71.5	71.5	71.5	71.5	71.5	71.6
72	GIC	S227	SS	67.0	67.0	67.1	67.1	67.2	67.7	68.7
72	GIC	S228	SS	66.8	67.0	67.9	70.0	70.3	70.5	71.0
72	GIC	S229	SS	67.7	67.8	68.0	69.4	69.9	70.5	71.2
72	GIC	S230	SS	67.6	67.7	67.8	68.7	69.5	70.9	71.5
72	GIC	S231	SS	51.1	53.9	57.2	62.2	70.3	71.6	72.1
72	GIC	S232	SS	50.8	53.6	57.1	66.7	71.3	72.2	72.5

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Mitigated Scenario 2 - School

3m barrier on road between Areas 74(N) and 74(S), 5m barriers surrounding Area 74(S) site on Road D8 and D4

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
74	3	S1	PS	52.9	53.4	53.6	53.7	53.7	53.7	53.7
74	3	S2	PS	40.5	41.1	41.7	42.6	43.0	45.4	46.0
74	3	S3	PS	39.8	40.2	40.7	41.6	41.9	44.0	44.8
74	3	S4	PS	39.3	39.6	40.0	40.6	41.3	42.2	43.3
74	3	S5	PS	39.2	39.5	40.0	40.6	41.3	42.2	43.3
74	3	S6	PS	39.2	39.5	40.0	40.6	41.3	42.3	43.4
74	3	S7	PS	39.2	39.5	40.0	40.6	41.3	42.3	43.4
74	3	S8	PS	59.5	59.5	59.5	59.5	59.5	59.4	59.3
74	3	S9	PS	65.3	65.3	65.3	65.3	65.2	65.6	65.5
74	3	S10	PS	65.3	65.3	65.3	65.2	65.5	65.9	65.8
74	3	S11	PS	59.3	59.4	59.4	59.4	60.3	62.5	62.4
74	3	S12	PS	60.6	60.7	60.9	62.9	63.5	64.7	64.7
74	3	S13	PS	61.5	61.6	61.7	62.6	63.4	64.7	64.7
74	3	S14	PS	44.8	46.9	49.9	54.4	63.1	64.2	64.6
74	3	S15	PS	44.6	46.7	49.8	55.2	62.9	64.0	64.5
74	3	S16	PS	61.3	61.3	61.3	61.4	62.7	63.9	64.4
74	3	S17	SS	36.7	36.9	37.1	37.4	37.7	38.3	39.0
74	3	S18	SS	36.8	37.1	37.5	38.1	38.8	39.7	40.9
74	3	S19	SS	37.5	38.0	38.8	39.5	43.7	44.3	45.0
74	3	S20	SS	39.1	40.0	41.4	42.2	49.0	49.5	49.9
74	3	S21	SS	52.4	52.5	52.6	52.7	53.9	54.1	54.2
74	3	S22	SS	54.1	54.2	54.2	54.3	55.0	55.1	55.3
74	3	S23	SS	54.1	54.2	54.2	54.3	54.6	54.7	54.9
74	3	S24	SS	53.2	53.2	53.3	53.4	53.4	53.5	53.7
74	3	S25	SS	39.0	39.4	40.0	40.6	41.4	42.4	43.5
74	3	S26	SS	47.2	48.0	48.9	51.9	53.2	56.6	58.3
74	3	S27	SS	45.5	46.6	48.2	51.5	54.0	58.7	59.6
74	3	S28	SS	42.8	44.8	47.6	50.7	54.1	59.4	60.1
74	3	S29	SS	42.6	44.5	47.5	50.8	54.0	59.4	59.9
74	3	S30	SS	41.6	43.5	47.1	51.2	56.2	59.9	60.4
74	3	S31	SS	40.1	41.2	44.3	52.0	59.2	60.4	61.2
74	3	S32	SS	43.4	45.5	48.7	53.2	60.5	61.0	62.1
74	3	S33	SS	40.6	41.9	45.2	60.6	61.0	62.2	63.2
73A	1	S34	SS	45.3	45.4	49.3	52.6	52.3	53.0	53.3
73A	1	S35	SS	47.7	48.7	54.4	54.4	55.3	55.5	55.4
73A	1	S36	SS	50.6	53.0	56.4	57.0	57.5	57.4	57.3
73A	1	S37	SS	51.4	57.2	57.8	58.6	58.6	58.5	58.4
73A	1	S38	SS	54.5	58.6	59.6	60.0	59.9	59.8	59.6
73A	1	S39	SS	61.1	62.8	63.3	63.2	63.1	63.0	62.8
73A	1	S40	SS	62.6	63.7	63.9	63.8	63.6	63.5	63.4
73A	1	S41	SS	64.5	64.8	64.7	64.5	64.4	64.3	66.2
73A	1	S42	SS	69.0	68.9	70.8	72.7	72.6	72.4	72.2
73A	1	S43	SS	65.5	65.5	65.4	65.3	65.1	68.6	68.4
73A	1	S44	SS	63.3	64.7	64.7	64.6	64.5	64.4	64.3

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Mitigated Scenario 2 - School

3m barrier on road between Areas 74(N) and 74(S), 5m barriers surrounding Area 74(S) site on Road D8 and D4

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73A	1	S45	SS	48.6	48.6	48.5	48.5	49.2	49.4	51.2
73A	1	S46	SS	48.4	49.9	53.5	61.5	62.7	63.0	63.5
73A	1	S47	SS	48.0	49.9	52.7	61.2	62.4	62.6	63.1
73A	1	S48	SS	58.8	59.2	59.3	60.9	62.3	62.4	62.5
73A	1	S49	SS	58.8	59.9	60.2	61.4	61.9	62.1	62.1
73A	1	S50	SS	41.1	43.5	46.7	51.9	61.6	61.7	61.8
73A	2	S51	PS	53.1	53.1	53.1	53.2	53.3	53.3	53.3
73A	2	S52	PS	54.1	54.1	54.1	54.1	54.2	54.2	54.2
73A	2	S53	PS	55.1	55.1	55.1	55.1	55.2	55.2	55.1
73A	2	S54	PS	56.4	56.4	56.4	56.3	56.3	56.3	56.3
73A	2	S55	PS	57.5	57.5	57.5	57.5	57.5	57.4	57.3
73A	2	S56	PS	59.6	59.6	59.5	59.5	59.5	59.4	59.3
73A	2	S57	PS	61.5	61.5	61.4	61.4	61.3	61.2	61.1
73A	2	S58	PS	71.3	71.2	70.9	70.7	70.3	70.1	69.8
73A	2	S59	PS	68.9	68.8	68.6	68.4	68.2	68.0	67.8
73A	2	S60	PS	66.8	67.1	67.0	66.8	66.7	66.6	66.4
73A	2	S61	PS	38.2	39.8	48.4	48.5	48.5	48.5	48.5
73A	2	S62	PS	57.5	59.6	60.2	63.1	63.9	64.2	64.7
73A	2	S63	PS	60.1	61.5	61.9	62.7	63.4	63.6	63.7
73A	2	S64	PS	40.0	41.5	44.8	56.2	62.7	62.9	63.0
73A	2	S65	PS	42.3	44.2	46.9	49.9	61.2	62.3	62.4
73A	2	S66	PS	42.8	44.5	46.7	49.0	55.3	61.7	61.8
73A	GIC	S67	SS	56.7	58.3	65.8	65.7	65.4	65.2	64.9
73A	GIC	S68	SS	54.0	55.6	56.8	57.9	59.1	63.6	63.5
73A	GIC	S69	SS	53.3	54.0	55.9	56.8	57.3	57.7	61.6
73A	GIC	S70	SS	52.8	53.6	55.0	55.9	56.5	57.0	57.6
73A	GIC	S71	SS	52.4	53.2	54.2	55.1	56.1	56.6	56.9
73A	GIC	S72	SS	51.8	52.8	53.7	54.6	55.3	55.8	56.0
73A	GIC	S73	SS	50.9	52.2	52.6	53.9	54.3	54.9	55.4
73A	GIC	S74	SS	47.7	48.4	48.9	51.2	53.1	53.8	54.0
73A	GIC	S75	SS	33.5	33.8	33.9	34.2	34.4	34.8	38.9
73A	GIC	S76	SS	41.8	42.3	44.7	49.5	50.7	51.1	54.5
73A	GIC	S77	SS	41.6	42.1	48.2	50.6	51.7	52.5	55.8
73A	GIC	S78	SS	40.8	41.6	47.6	47.7	47.8	48.1	53.4
73A	GIC	S79	SS	39.8	40.8	40.8	41.0	41.2	41.5	49.2
73A	GIC	S80	SS	39.7	41.0	41.6	42.0	42.1	43.4	51.3
73A	GIC	S81	SS	39.5	40.6	42.1	43.7	42.7	44.0	53.1
73A	GIC	S82	SS	39.7	40.9	42.7	44.5	44.1	46.2	61.3
73A	GIC	S83	SS	49.6	64.5	65.0	64.7	64.5	64.2	64.3
73A	GIC	S84	SS	48.5	49.2	55.7	59.5	61.0	61.1	61.4
73A	GIC	S85	SS	44.4	45.0	45.5	45.9	46.1	50.3	52.4
73A	GIC	S86	SS	43.1	43.7	44.2	44.6	44.9	45.2	47.9
73A	GIC	S87	SS	41.9	42.5	43.0	43.5	43.9	44.2	44.5

Project: ELA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Mitigated Scenario 2 - School

3m barrier on road between Areas 74(N) and 74(S), 5m barriers surrounding Area 74(S) site on Road D8 and D4

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73A	GIC	S88	SS	40.9	41.5	42.0	42.6	43.0	43.4	43.9
73A	GIC	S89	SS	39.9	40.5	41.0	41.5	42.0	42.4	42.8
73A	GIC	S90	SS	39.1	39.5	40.1	40.6	41.0	41.4	41.9
73A	GIC	S91	SS	37.6	38.0	38.4	38.8	39.1	39.5	39.8
73A	GIC	S92	SS	39.8	40.1	40.4	40.9	41.6	42.6	44.1
73A	GIC	S93	SS	53.6	54.4	55.5	56.3	56.9	57.5	57.9
73A	GIC	S94	SS	54.7	55.3	56.6	57.4	57.9	58.4	58.8
73A	GIC	S95	SS	53.9	54.8	56.1	56.9	57.4	58.0	58.5
73A	GIC	S96	SS	51.8	52.1	52.3	52.7	53.8	54.7	55.4
73A	GIC	S97	SS	50.3	50.6	50.8	51.0	51.2	52.4	54.2
73A	GIC	S98	SS	46.1	46.4	46.9	47.4	47.8	50.9	52.9
73A	GIC	S99	SS	40.0	41.4	43.4	45.7	46.1	50.8	57.6
73A	GIC	S100	SS	58.7	60.8	60.7	60.6	60.4	60.5	60.3
73A	GIC	S101	PS	50.2	55.7	63.9	64.0	63.9	63.8	63.4
73A	GIC	S102	PS	50.6	61.5	64.2	64.0	63.7	63.6	63.4
73A	GIC	S103	PS	51.6	62.4	64.3	64.0	63.7	63.4	63.2
73A	GIC	S104	PS	52.3	63.7	64.5	64.2	63.8	63.5	63.2
73A	GIC	S105	PS	52.4	64.3	64.7	64.3	63.9	63.5	63.2
73A	GIC	S106	PS	52.8	64.7	64.8	64.4	64.0	63.6	63.2
73A	GIC	S107	PS	59.0	65.5	65.1	64.6	64.2	63.8	63.4
73A	GIC	S108	PS	51.7	54.4	54.9	55.2	55.8	56.2	56.5
73A	GIC	S109	PS	41.2	47.0	47.0	47.0	47.0	49.8	51.4
73A	GIC	S110	PS	40.5	40.8	40.8	41.0	41.1	48.4	49.9
73A	GIC	S111	PS	37.2	37.9	38.2	38.9	39.8	40.4	42.8
73A	GIC	S112	PS	38.5	39.4	40.0	39.8	40.3	41.0	46.7
73A	GIC	S113	PS	38.4	38.9	39.0	39.4	40.0	40.7	45.2
73A	GIC	S114	PS	37.0	37.7	38.8	38.8	39.3	39.8	40.4
73A	GIC	S115	PS	37.3	38.0	38.7	39.3	39.2	39.8	40.5
73A	GIC	S116	PS	37.2	37.8	38.6	39.4	39.3	40.0	40.9
73A	3	S117	SS	34.2	34.2	41.9	44.4	45.3	45.2	45.1
73A	3	S118	SS	31.1	31.2	31.3	31.4	31.7	32.2	32.7
73A	3	S119	SS	31.1	31.1	31.2	31.4	31.7	32.1	32.5
73A	3	S120	SS	31.3	31.3	31.4	31.5	31.8	32.2	32.5
73A	3	S121	SS	31.3	31.4	31.4	31.5	31.7	32.1	32.4
73A	3	S122	SS	31.6	31.6	31.6	31.6	31.8	32.1	32.4
73A	3	S123	SS	31.9	31.9	31.9	31.9	32.0	32.3	32.5
73A	3	S124	SS	32.5	32.5	32.5	32.6	32.7	32.8	32.8
73A	3	S125	SS	36.2	36.4	36.6	36.9	37.2	37.5	37.8
73A	3	S126	SS	51.6	52.6	52.8	52.9	52.9	53.4	53.9
73A	3	S127	SS	52.9	53.5	53.7	53.9	54.1	55.0	55.2
73A	3	S128	SS	52.7	53.3	53.5	53.7	54.1	55.0	55.3
73A	3	S129	SS	50.9	51.6	51.8	52.1	52.4	53.9	55.1
73A	3	S130	SS	49.2	49.5	49.8	50.3	50.8	54.8	55.8

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Mitigated Scenario 2 - School

3m barrier on road between Areas 74(N) and 74(S), 5m barriers surrounding Area 74(S) site on Road D8 and D4

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73A	3	S131	SS	37.6	38.3	40.2	44.7	47.2	55.6	56.6
73A	3	S132	SS	40.0	41.2	42.9	45.0	48.9	56.3	56.9
73A	3	S133	SS	38.1	39.1	41.3	51.0	54.3	57.2	57.4
73A	4	S134	PS	64.0	64.4	65.0	65.0	65.0	64.9	64.9
73A	4	S135	PS	63.5	63.8	64.0	64.2	64.3	64.4	64.5
73A	4	S136	PS	62.7	63.1	63.4	63.4	63.5	63.6	64.0
73A	4	S137	PS	62.1	62.4	62.7	63.1	63.2	63.2	63.5
73A	4	S138	PS	61.6	61.8	62.3	62.6	62.9	63.2	63.4
73A	4	S139	PS	61.1	61.3	61.8	62.3	62.4	62.9	63.3
73A	4	S140	PS	60.3	60.6	61.1	61.9	61.9	62.1	62.3
73A	4	S141	PS	38.7	39.1	39.5	40.1	40.9	41.8	46.3
73A	4	S142	PS	31.5	31.8	32.2	32.5	32.9	33.3	33.7
73A	4	S143	PS	32.2	32.6	33.1	33.5	34.0	34.6	35.1
73A	4	S144	PS	35.1	35.5	36.2	37.4	39.3	41.9	45.4
73A	4	S145	PS	31.4	32.2	32.9	33.6	34.4	35.3	36.2
73A	4	S146	PS	31.6	32.4	33.5	34.4	35.5	36.6	37.8
73A	4	S147	PS	32.0	33.2	34.8	36.4	38.2	40.0	41.5
73A	4	S148	PS	32.3	33.9	36.1	38.7	41.4	44.2	54.4
73A	4	S149	PS	39.8	40.2	40.0	57.6	58.1	57.9	57.8
73B	PSPS	S150	SS	41.9	41.8	41.8	41.8	41.8	41.8	41.8
73B	PSPS	S151	SS	41.7	41.6	41.6	41.6	41.6	41.6	41.5
73B	PSPS	S152	SS	41.6	41.5	41.5	41.5	41.5	41.5	41.5
73B	PSPS	S153	SS	39.6	39.6	39.6	39.6	39.6	39.6	39.6
73B	PSPS	S154	SS	36.4	36.3	36.3	36.3	36.3	36.4	36.5
73B	PSPS	S155	SS	39.6	39.6	39.6	39.5	39.5	39.5	39.5
73B	PSPS	S156	SS	39.6	39.6	39.5	39.5	39.5	39.5	39.5
73B	PSPS	S157	SS	36.8	36.8	36.8	36.8	36.8	36.8	36.8
73B	PSPS	S158	SS	52.1	52.9	53.1	53.2	53.3	53.4	53.5
73B	PSPS	S159	SS	48.3	50.6	51.2	51.7	52.1	52.3	52.5
73B	PSPS	S160	SS	47.5	49.5	50.3	52.1	53.1	53.4	53.7
73B	PSPS	S161	SS	39.4	40.4	41.6	42.7	46.6	47.2	47.0
73B	PSPS	S162	SS	43.6	45.5	46.7	47.6	49.6	50.1	50.4
73B	PSPS	S163	SS	45.6	48.0	51.6	53.6	54.6	54.9	55.0
73B	PSPS	S164	SS	39.7	41.1	43.6	51.3	52.4	53.3	53.4
73B	PSPS	S165	SS	38.2	39.7	42.7	53.5	54.0	54.7	54.9
73B	PSPS	S166	SS	41.1	42.7	45.0	48.8	54.3	54.7	55.1
73B	PSPS	S167	PS	51.6	51.6	51.6	51.6	51.5	51.5	51.5
73B	PSPS	S168	PS	52.3	52.3	52.3	52.3	52.3	52.2	52.2
73B	PSPS	S169	PS	53.4	53.4	53.4	53.3	53.3	53.2	53.2
73B	PSPS	S170	PS	54.0	54.0	54.0	53.9	53.9	53.8	53.8
73B	PSPS	S171	PS	54.7	54.7	54.6	54.6	54.5	54.5	54.4
73B	PSPS	S172	PS	56.2	56.2	56.2	56.1	56.0	56.0	55.9
73B	PSPS	S173	PS	58.0	58.0	57.9	57.8	57.7	57.6	57.5

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Mitigated Scenario 2 - School

3m barrier on road between Areas 74(N) and 74(S), 5m barriers surrounding Area 74(S) site on Road D8 and D4

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
73B	PSPS	S174	PS	67.2	67.0	66.6	66.3	66.0	65.7	65.3
73B	PSPS	S175	PS	64.4	64.9	64.8	64.6	64.6	64.5	64.5
73B	PSPS	S176	PS	60.4	63.3	63.7	63.7	64.0	63.9	64.1
73B	PSPS	S177	PS	39.6	42.1	45.8	52.2	56.5	57.6	58.3
73B	PSPS	S178	PS	45.8	46.8	48.7	55.9	59.7	60.6	61.3
73B	PSPS	S179	PS	47.6	48.7	50.2	54.9	58.9	60.2	60.8
73B	PSPS	S180	PS	41.2	43.3	46.5	51.9	58.5	59.7	60.4
73B	PSPS	S181	PS	38.5	40.4	44.2	51.7	54.9	57.8	59.0
73B	PSPS	S182	PS	40.3	42.1	45.1	51.2	54.0	56.5	58.3
72	/	S183	PS	64.4	65.0	65.3	65.6	65.4	65.5	65.3
72	/	S184	PS	64.8	65.3	65.6	65.8	65.6	65.5	65.5
72	/	S185	PS	65.3	65.6	66.1	65.9	65.6	65.4	65.7
72	/	S186	PS	65.7	65.9	66.2	65.9	65.7	65.4	65.8
72	/	S187	PS	65.9	66.1	66.1	65.8	65.6	65.3	65.9
72	/	S188	PS	66.1	66.2	65.9	65.7	65.4	65.1	65.9
72	/	S189	PS	65.4	65.4	65.2	65.0	64.7	64.4	64.7
72	/	S190	PS	55.7	56.5	57.6	58.3	58.5	58.6	58.6
72	/	S191	PS	45.8	51.9	54.2	56.2	56.7	56.9	56.9
72	/	S192	PS	45.0	50.8	52.1	55.4	55.8	56.1	56.2
72	/	S193	PS	31.1	31.1	31.1	32.0	33.8	36.5	36.0
72	/	S194	PS	37.7	40.4	43.2	48.5	51.0	51.7	52.0
72	/	S195	PS	38.4	41.0	43.2	47.0	50.8	51.5	52.0
72	/	S196	PS	35.8	36.6	38.9	48.1	51.3	51.8	52.2
72	/	S197	PS	36.5	37.8	40.5	48.3	51.0	52.1	52.5
72	/	S198	PS	36.8	38.1	40.3	47.3	49.8	51.6	51.9
72	GIC	S199	SS	68.6	68.9	69.1	69.1	69.1	70.6	70.7
72	GIC	S200	SS	68.5	68.7	69.0	69.1	69.1	69.1	70.1
72	GIC	S201	SS	68.5	68.6	68.8	69.0	69.1	69.1	69.1
72	GIC	S202	SS	68.3	68.5	68.7	68.9	68.9	69.0	69.0
72	GIC	S203	SS	68.2	68.3	68.5	68.7	68.7	68.8	68.8
72	GIC	S204	SS	68.2	68.3	68.5	68.6	68.7	68.7	68.8
72	GIC	S205	SS	68.1	68.2	68.3	68.5	68.6	68.6	68.6
72	GIC	S206	SS	68.0	68.1	68.2	68.3	68.4	68.5	68.4
72	GIC	S207	SS	70.1	70.1	70.1	70.1	70.1	70.0	70.0
72	GIC	S208	SS	68.7	68.7	68.7	68.7	68.7	68.7	68.7
72	GIC	S209	SS	67.7	67.7	67.7	67.8	67.8	67.8	67.8
72	GIC	S210	SS	46.7	48.8	50.7	52.5	54.6	56.3	60.3
72	GIC	S211	SS	48.7	53.0	60.4	66.1	66.6	66.7	67.2
72	GIC	S212	SS	59.2	59.7	61.0	65.7	66.3	66.8	67.2
72	GIC	S213	SS	60.3	60.6	61.4	65.2	66.0	66.7	67.1
72	GIC	S214	SS	47.9	50.6	54.3	63.0	66.0	66.9	67.2
72	GIC	S215	SS	47.9	50.8	54.7	61.1	66.2	67.0	68.2
72	GIC	S216	SS	65.3	65.5	65.8	66.7	67.5	68.6	69.7

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Mitigated Scenario 2 - School

3m barrier on road between Areas 74(N) and 74(S), 5m barriers surrounding Area 74(S) site on Road D8 and D4

Area	Phase	NSRs	Type	Floor						
				1	2	3	4	5	6	7
72	GIC	S217	SS	64.2	64.4	64.7	65.3	65.8	66.4	67.4
72	GIC	S218	SS	63.3	63.6	63.9	64.1	64.9	65.2	65.7
72	GIC	S219	SS	63.5	63.7	63.8	64.0	64.7	65.0	65.2
72	GIC	S220	SS	63.8	63.9	64.0	64.2	64.6	65.0	65.1
72	GIC	S221	SS	64.1	64.2	64.3	64.4	64.7	65.1	65.2
72	GIC	S222	SS	64.6	64.6	64.7	64.8	65.0	65.2	65.3
72	GIC	S223	SS	65.1	65.1	65.2	65.2	65.3	65.4	65.6
72	GIC	S224	SS	71.3	71.3	71.3	71.2	71.2	71.2	71.1
72	GIC	S225	SS	71.9	71.8	71.8	71.8	71.8	71.8	71.8
72	GIC	S226	SS	71.5	71.5	71.5	71.5	71.5	71.5	71.6
72	GIC	S227	SS	67.0	67.0	67.1	67.1	67.2	67.7	68.7
72	GIC	S228	SS	66.8	67.0	67.9	70.0	70.3	70.5	71.0
72	GIC	S229	SS	67.7	67.8	68.0	69.4	69.9	70.5	71.2
72	GIC	S230	SS	67.6	67.7	67.8	68.7	69.5	70.9	71.5
72	GIC	S231	SS	51.1	53.9	57.2	62.2	70.3	71.6	72.1
72	GIC	S232	SS	50.8	53.6	57.1	66.7	71.3	72.2	72.5

Project: EIA for the Construction of Roads at Tiu Keng Leng, Tseung Kwan O

Noise Impact Assessment (Final)

Notes: Sof74 -

South of Area 74

72 - Area 72

MTR -

Site for the MTR Station

73 - Area 73B

Mitigated Scenario 3 - Other Areas (Open Sites)

Deckover on D8, 3m barrier on road between Areas 74(N) and 74(S) (EB only), 5 barrier on SB D8 adjacent to Area 72

Area	NSRs	Floors																			
		1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
MTR	O14	56.8	59.5	61.0	60.9	61.0	60.9	60.9	61.1	61.1	61.0	61.0	61.0	61.0	61.0	61.0	60.9	60.7	60.6	60.5	
MTR	O15	66.2	69.9	70.0	70.5	70.6	70.5	70.3	70.2	70.0	69.8	69.6	69.5	69.3	69.1	69.0	68.9	68.7	68.6	68.5	68.3
MTR	O16	65.6	68.0	68.8	69.1	69.6	69.7	69.7	69.6	69.6	69.6	69.4	69.3	69.2	69.1	68.9	68.8	68.7	68.6	68.5	68.4
MTR	O17	65.1	68.1	67.9	67.7	67.6	67.5	67.4	67.3	67.2	67.1	67.0	66.8	66.7	66.6	66.5	66.4	66.3	66.1	66.0	65.9
MTR	O18	62.9	68.3	68.4	68.3	68.1	67.9	67.8	67.6	67.5	67.4	67.3	67.2	67.1	67.0	66.9	66.8	66.6	66.5	66.4	66.3
MTR	O19	61.7	65.7	65.7	65.8	66.2	65.9	65.7	65.5	65.4	65.2	65.0	64.9	64.7	64.5	64.4	64.2	64.1	63.9	63.8	63.7
MTR	O20	69.2	68.5	67.9	67.3	66.8	66.3	65.9	65.5	65.1	64.8	64.5	64.2	63.9	63.6	63.4	63.2	63.0	62.8	62.6	62.4
MTR	O21	71.1	70.4	69.7	69.2	68.7	68.2	67.9	67.5	67.2	66.9	66.6	66.3	66.1	65.8	65.6	65.4	65.2	65.0	64.9	64.7
MTR	O22	59.8	69.3	68.8	68.3	67.8	67.3	66.9	66.5	66.2	65.9	65.6	65.3	65.0	64.8	64.5	64.3	64.1	63.9	63.7	63.5
MTR	O23	58.1	71.4	70.9	70.4	69.9	69.5	69.1	68.8	68.5	68.2	67.9	67.7	67.4	67.2	67.0	66.8	66.6	66.4	66.2	66.1
MTR	O24	60.1	71.4	71.0	70.5	70.1	69.7	69.4	69.1	68.8	68.5	68.2	68.0	67.8	67.6	67.4	67.2	67.0	66.8	66.7	66.5
MTR	O25	64.9	71.4	71.7	71.4	71.0	70.7	70.4	70.1	69.8	69.5	69.3	69.0	68.8	68.6	68.4	68.2	68.0	67.9	67.7	67.5
MTR	O26	57.2	61.7	62.8	64.1	65.0	64.7	64.6	64.4	64.3	64.3	64.1	64.0	63.9	63.7	63.6	63.5	63.3	63.2	63.1	63.0
73	O27	66.5	66.0	65.4	64.7	64.0	63.4	62.9	62.3	61.9	61.5	61.1	60.7	60.4	60.1	59.8	59.5	59.2	59.0	58.8	58.5
73	O28	37.2	36.7	35.9	35.2	34.5	33.8	33.3	32.8	32.3	31.9	31.5	31.1	30.8	30.5	30.2	29.9	29.6	29.4	29.2	29.0
73	O29	66.8	66.4	65.7	64.9	64.2	63.5	63.0	62.4	62.0	61.5	61.1	60.8	60.4	60.1	59.8	59.5	59.3	59.0	58.8	58.6
73	O30	70.8	70.4	69.7	69.1	68.5	67.9	67.4	66.9	66.5	66.2	65.8	65.5	65.2	64.9	64.6	64.4	64.2	63.9	63.7	63.5
73	O31	69.9	69.4	68.9	68.4	67.9	67.4	67.0	66.5	66.2	65.8	65.5	65.2	64.9	64.6	64.4	64.1	63.9	63.7	63.5	63.3
73	O32	69.7	69.3	68.9	68.4	68.0	67.5	67.1	66.7	66.4	66.0	65.7	65.4	65.1	64.9	64.6	64.4	64.2	63.9	63.7	63.5
72	O33	75.3	74.6	74.0	73.5	73.1	72.7	72.4	72.1	71.8	71.6	71.3	71.1	70.9	70.7	70.5	70.3	70.1	70.0	69.8	69.6
72	O34	75.6	74.6	73.8	73.0	72.4	71.9	71.4	71.0	70.6	70.2	69.9	69.5	69.3	69.0	68.7	68.5	68.3	68.0	67.8	67.6
72	O35	76.2	75.3	74.5	73.9	73.3	72.8	72.4	72.0	71.6	71.3	70.9	70.7	70.4	70.1	69.9	69.6	69.4	69.2	69.0	68.8
72	O36	75.8	74.7	73.9	73.1	72.5	72.0	71.5	71.0	70.6	70.2	69.9	69.6	69.3	69.0	68.8	68.5	68.3	68.1	67.9	67.7
72	O37	76.9	76.0	75.2	74.5	73.9	73.4	73.0	72.6	72.2	71.8	71.5	71.2	70.9	70.7	70.4	70.2	70.0	69.7	69.5	69.3
72	O38	75.9	74.7	73.8	73.1	72.4	71.9	71.4	70.9	70.5	70.1	69.8	69.5	69.2	68.9	68.6	68.4	68.2	67.9	67.7	67.5
72	O39	65.1	65.1	65.4	65.7	65.8	65.8	65.8	65.8	65.8	65.8	65.8	65.8	66.0	65.9	65.9	65.9	65.8	65.7	65.6	65.5
72	O40	68.1	68.1	68.4	68.6	68.6	68.6	68.5	68.5	68.4	68.4	68.3	68.3	68.2	68.1	68.1	68.0	68.0	67.9	67.8	67.7
72	O41	68.2	68.1	68.3	68.6	68.6	68.6	68.6	68.5	68.5	68.4	68.4	68.3	68.3	68.2	68.1	68.0	68.0	67.9	67.8	67.7
72	O42	67.4	67.5	67.7	67.9	68.0	68.0	68.0	67.9	67.9	67.8	67.7	67.7	67.6	67.5	67.4	67.4	67.3	67.2	67.1	67.0
72	O43	69.1	69.1	69.2	69.3	69.2	69.2	69.2	69.1	69.1	69.0	68.9	68.9	68.8	68.7	68.6	68.5	68.4	68.4	68.3	68.2
72	O44	67.9	68.0	68.1	68.1	68.0	68.0	68.0	68.0	67.9	67.9	67.8	67.7	67.6	67.5	67.4	67.3	67.2	67.1	67.0	66.9
72	O45	71.0	71.0	71.0	70.9	70.8	70.7	70.6	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9	69.8	69.7	69.6	69.5	69.4
72	O46	70.9	70.9	70.8	70.7	70.6	70.5	70.4	70.2	70.1	70.0	69.9	69.8	69.6	69.5	69.4	69.3	69.1	69.0	68.9	68.8
72	O47	72.0	71.9	71.8	71.7	71.6	71.5	71.4	71.2	71.1	71.0	70.9	70.8	70.7	70.5	70.4	70.3	70.2	70.1	70.0	69.9
72	O48	71.3	71.3	71.1	71.0	70.9	70.9	70.7	70.6	70.5	70.3	70.2	70.1	70.0	69.9	69.8	69.7	69.5	69.4	69.3	69.2
72	O49	71.5	71.5	71.4	71.3	71.3	71.2	71.1	71.0	70.9	70.8	70.7	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9	69.8
72	O50	71.6	71.6	71.5	71.4	71.3	71.2	71.2	71.1	71.0	70.9	70.8	70.7	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9
72	O51	70.9	70.9	70.8	70.8	70.7	70.6	70.6	70.5	70.4	70.3	70.2	70.1	70.0	69.9	69.8	69.7	69.6	69.5	69.4	69.3

Resultant Noise Levels at affected Classrooms

NSR	level 1	level 2	level 3	level 4	level 5	level 6	level 7
s199 no mitigation 5m barrier	-	classroom 1 72.3 68.9	classroom 6 72.3 69.1	classroom 8 72.2 69.1	classroom 15 72.1 69.1	classroom 20 72.0 70.6	-
s200 no mitigation 5m barrier	-	classroom 2 71.6 68.7	classroom 71.6 69.0	classroom 9 71.5 69.1	classroom 16 71.5 69.1	classroom 21 71.4 69.1	Library 71.4 70.1
s201 no mitigation 5m barrier	-	classroom 3 71.2 68.6	classroom 71.2 68.8	classroom 10 71.1 69.0	classroom 17 71.1 69.1	classroom 22 71.0 69.1	Library 71.0 69.1
S202 no mitigation 5m barrier	-	classroom 4 70.9 68.5	classroom 70.9 68.7	classroom 11 70.9 68.9	classroom 18 70.8 68.9	classroom 23 70.8 69.0	Library 70.7 69.0
S203 no mitigation 5m barrier	Guidance Activity /Interview Room 70.6 68.2	classroom 5 70.6 68.3	classroom 70.6 68.5	classroom 12 70.6 68.7	computer room 70.5 68.7	classroom 24 70.5 68.8	Library 70.5 68.8
S204 no mitigation 5m barrier	multi-media room 70.4 68.2	-	remedia teaching room 1 70.4 68.5	classroom 13 70.3 68.6	computer room 70.3 68.7	classroom 25 70.3 68.7	-
S205 no mitigation 5m barrier	multi-media room 70.1 68.1	-	remedia teaching room 2 70.1 68.3	classroom 13 70.1 68.5	remedial teaching room 3 70.0 68.6	classroom 25 70.0 68.6	-
S206 no mitigation 5m barrier	design & technology room (metal bias) 70.1 70.1	-	classroom 7 69.8 68.2	classroom 14 69.7 68.3	classroom 19 69.7 68.4	classroom 26 69.7 68.5	-
S207 no mitigation 5m barrier	design & technology room (metal bias) 70.1 70.1	music room 70.1 70.1	needlework & dress room 70.1 70.1	geography room 70.1 70.1	integrated science lab 2 70.0 70.1	chemistry lab 70.0 70.0	-
S208 no mitigation	design & technology room (metal bias) 68.9	music room 68.9	needlework & dress room 68.9	geography room 68.9	integrated science lab 2 68.9	chemistry lab 68.9	-

Resultant Noise Levels at affected Classrooms

5m barrier	68.7	68.7	68.7	68.7	68.7	68.7	68.7	68.7	68.7
S209	design & technology room (wood bias)	art & design room	home management room	biology lab	integrated science lab 1	physics lab	-		
no mitigation	67.7	67.7	67.7	67.8	67.8	68.1			
5m barrier	67.7	67.7	67.7	67.8	67.8	67.8			
S210	design & technology room (wood bias)	art & design room	home management room	biology lab	integrated science lab 1	physics lab	-		
no mitigation	46.6	48.7	50.9	53.1	54.9	59.8			
5m barrier	46.7	48.8	50.7	52.5	54.6	56.3			
S211	Guidance Activity /Interview Room	classroom 5	classroom	classroom 12	computer room	classroom 24	Library		
no mitigation	48.7	53.0	60.4	66.1	66.6	67.7	69.0		
5m barrier	48.7	53.0	60.4	66.1	66.6	66.7	67.2		
S212	-	classroom 4	classroom	classroom 11	classroom 18	classroom 23	Library		
no mitigation	-	59.7	61.0	65.7	66.2	69.1	69.1		
5m barrier	-	59.7	61.0	65.7	66.3	66.8	67.2		
S213	-	classroom 3	classroom	classroom 10	classroom 17	classroom 22	Library		
no mitigation	-	60.6	61.4	65.1	65.8	69.3	69.3		
5m barrier	-	60.6	61.4	65.2	66.0	66.7	67.1		
S214	-	classroom 2	classroom	classroom 9	classroom 16	classroom 21	Library		
no mitigation	-	50.9	54.5	63.0	69.5	69.6	69.6		
5m barrier	-	50.6	54.3	63.0	66.0	66.9	67.2		
S215	-	classroom 1	classroom 6	classroom 8	classroom 15	classroom 20	-		
no mitigation	-	50.9	54.8	60.5	70.0	70.0	-		
5m barrier	-	50.8	54.7	61.1	66.2	67.0	-		

NSR	level 1	level 2	level 3	level 4	level 5	level 6	level 7
S216	-	classroom 1	classroom 6	classroom 8	classroom 15	classroom 20	-
no mitigation	-	71.5	71.4	71.4	71.3	71.3	-
5m barrier	-	65.5	65.8	66.7	67.5	68.6	-
S217	-	classroom 2	classroom	classroom 9	classroom 16	classroom 21	Library
no mitigation	-	70.7	70.7	70.6	70.6	70.6	70.5

Resultant Noise Levels at affected Classrooms

5m barrier		64.4	64.7	65.3	65.8	66.4	67.4
S218	-	classroom 3	classroom	classroom 10	classroom 17	classroom 22	Library
no mitigation		69.3	69.3	69.3	69.6	69.8	69.8
5m barrier		63.6	63.9	64.1	64.9	65.2	65.7
S219	-	classroom 4	classroom	classroom 11	classroom 18	classroom 23	Library
no mitigation		68.2	68.3	68.3	68.4	69.2	69.2
5m barrier		63.7	63.8	64.0	64.7	65.0	65.2
S220	Guidance Activity /Interview Room	classroom 5	classroom	classroom 12	computer room	classroom 24	Library
no mitigation	67.7	67.7	67.7	67.7	67.9	68.1	68.8
5m barrier	63.8	63.9	64.0	64.2	64.6	65.0	65.1
S221	multi-media room	-	remedia teaching room 1	classroom 13	computer room	classroom 25	-
no mitigation	67.3		67.3	67.4	67.5	67.5	
5m barrier	64.1		64.3	64.4	64.7	65.1	
S222	multi-media room	-	remedia teaching room 2	classroom 13	remedial teaching room 3	classroom 25	-
no mitigation	67.1		67.1	67.1	67.2	67.3	
5m barrier	64.6		64.7	64.8	65.0	65.2	
S223	-	classroom 7	classroom 7	classroom 14	classroom 19	classroom 26	-
no mitigation	67.0		67.0	67.0	67.0	67.1	
5m barrier	65.1		65.2	65.2	65.3	65.4	
S224	design & technology room (metal bias)	music room	needlework & dress room	geography room	integrated science lab 2	chemistry lab	-
no mitigation	71.3	71.3	71.3	71.2	71.2	71.2	
5m barrier	71.3	71.3	71.3	71.2	71.2	71.2	
S225	design & technology room (metal bias)	music room	needlework & dress room	geography room	integrated science lab 2	chemistry lab	-
no mitigation	71.8	71.8	71.8	71.8	71.8	71.8	
5m barrier	71.9	71.8	71.8	71.8	71.8	71.8	
S226	design & technology room (wood bias)	art & design room	home management room	biology lab	integrated science lab 1	physics lab	-
no mitigation	71.5	71.5	71.5	71.5	71.5	71.5	
5m barrier	71.5	71.5	71.5	71.5	71.5	71.5	

S227	design & technology room (wood bias)	art & design room	home management room	biology lab	integrated science lab 1	physics lab	-
no mitigation 5m barrier	67.0 67.0	67.0 67.0	67.0 67.1	67.1 67.1	67.2 67.2	67.8 67.7	
S228	Guidance activity & Interview Room	classroom 5	classroom	classroom 12	computer room	classroom 24	Library
no mitigation 5m barrier	66.8 66.8	67.0 67.0	67.9 67.9	70.0 70.0	70.3 70.3	70.5 70.5	71.1 71.0
S229	-	classroom 4	classroom	classroom 11	classroom 18	classroom 23	Library
no mitigation 5m barrier		67.8 67.8	68.0 68.0	69.4 69.4	69.9 69.9	70.5 70.5	71.6 71.2
S230	-	classroom 3	classroom	classroom 10	classroom 17	classroom 22	Library
no mitigation 5m barrier		67.7 67.7	67.8 67.8	68.7 68.7	69.5 69.5	71.2 70.9	72.0 71.5
S231	-	classroom 2	classroom	classroom 9	classroom 16	classroom 21	Library
no mitigation 5m barrier		53.9 53.9	57.3 57.2	62.2 62.2	71.1 70.3	72.3 71.6	72.2 72.1
S232	-	classroom 1	classroom 6	classroom 8	classroom 15	classroom 20	-
no mitigation 5m barrier		53.6 53.6	57.1 57.1	68.7 66.7	72.2 71.3	72.5 72.2	

Appendix C

Appendix C Construction Phase Noise
Assessment

Predicted Construction Phase Noise at Sensitive Receivers
Unmitigated Scenario

Sensitive Receiver	Distance (m)	Tasks	SPL of equipment used				Total SPL at NSR	over limit?
CN 1 (a)	157	Drainage (a)	60.1	65.1			69.3	no
	157	Drainage (b)	59.1	68.1	57.9	57.1	72.2	yes
	157	Pavement (a)	74.9	52.1			77.9	yes
	157	Pavement (b)	57.1	60.9	69.9		73.6	yes
CN 1 (b)	181	Drainage (a)	58.8	63.8			68.0	no
	181	Drainage (b)	57.9	66.9	56.6	55.8	71.0	yes
	181	Pavement (a)	73.6	50.8			76.6	yes
	181	Pavement (b)	55.8	59.6	68.6		72.3	yes
CN 2	126	Drainage (a)	62.0	67.0			71.2	no
	126	Drainage (b)	61.0	70.0	59.8	59.0	74.1	no
	126	Pavement (a)	76.8	54.0			79.8	yes
	126	Pavement (b)	59.0	62.8	71.8		75.5	no
CN 3	380	Drainage (a)	52.4	57.4			61.6	no
	380	Drainage (b)	51.4	60.4	50.2	49.4	64.6	no
	380	Pavement (a)	67.2	44.4			70.2	no
	380	Pavement (b)	49.4	53.2	62.2		65.9	no
CN 4	338	Drainage (a)	53.4	58.4			62.6	no
	338	Drainage (b)	52.4	61.4	51.2	50.4	65.6	no
	338	Pavement (a)	68.2	45.4			71.2	no
	338	Pavement (b)	50.4	54.2	63.2		66.9	no
CN 5	132	Drainage (a)	61.6	66.6			70.8	no
	132	Drainage (b)	60.6	69.6	59.4	58.6	73.7	no
	132	Pavement (a)	76.4	53.6			79.4	yes
	132	Pavement (b)	58.6	62.4	71.4		75.1	no

Predicted Construction Phase Noise at Sensitive Receivers
Mitigated Scenario

Sensitive Receiver	Distance (m)	Tasks	SPL of equipment used				Total SPL at NSR	over limit?
CN 1 (a)	157	Drainage (a)	50.1	57.1			60.9	no
	157	Drainage (b)	52.1	60.1	54.9	57.1	66.0	no
	157	Pavement (a)	66.9	42.1			69.9	no
	157	Pavement (b)	49.1	53.9	61.9		65.7	no
CN 1 (b)	181	Drainage (a)	48.8	55.8			59.6	no
	181	Drainage (b)	50.9	58.9	53.6	55.8	64.8	no
	181	Pavement (a)	65.6	40.8			68.6	no
	181	Pavement (b)	47.8	52.6	60.6		64.5	no
CN 2	126	Drainage (a)	52.0	59.0			62.8	no
	126	Drainage (b)	54.0	62.0	56.8	59.0	67.9	no
	126	Pavement (a)	68.8	44.0			71.8	no
	126	Pavement (b)	51.0	55.8	63.8		67.6	no
CN 3	380	Drainage (a)	42.4	49.4			53.2	no
	380	Drainage (b)	44.4	52.4	47.2	49.4	58.3	no
	380	Pavement (a)	59.2	34.4			62.2	no
	380	Pavement (b)	41.4	46.2	54.2		58.0	no
CN 4	338	Drainage (a)	43.4	50.4			54.2	no
	338	Drainage (b)	45.4	53.4	48.2	50.4	59.3	no
	338	Pavement (a)	60.2	35.4			63.2	no
	338	Pavement (b)	42.4	47.2	55.2		59.0	no
CN 5	132	Drainage (a)	51.6	58.6			62.4	no
	132	Drainage (b)	53.6	61.6	56.4	58.6	67.5	no
	132	Pavement (a)	68.4	43.6			71.4	no
	132	Pavement (b)	50.6	55.4	63.4		67.2	no

Appendix D

Appendix D QA Checking Calculations of
Operational Phase Noise
Assessment Results

CALCULATION OF ROAD TRAFFIC NOISE (CRTN) UK Department of Transport 1988

Project: Number Title
Spreadsheet to check Sound Plan results: written by MG 3 May 1994; revised by J.L. 15 November 1996.
This sheet printed: 18/02/98

Includes these corrections: 1.0 Impervious road surface NB: If link has previous surfacing, enter -2.5 in 'Previous' column
2.5 Facade effect

NB: Includes change in velocity based on gradient and proportion of heavy vehicles. If specific projected speeds are used, disable this function
NB: Hard ground assumed

NSR ID:	Floor:	Elevation (m PD):	Corrections in dB(A) [except Delta V, in km/h]																					
			Flow (veh/ht)	Heavy (veh/ht)	Speed (km/h)	Grad (%)	Horiz dist (m)	Vert dist (m)	AoV (deg)	Ref (deg)	Prev (-2.5)	Basic dB(A)	Final dB(A)	Speed % HV	Grad	Dist	AoV	Barrier	Ref	Delta V	Impero	Pero	Facade	
			06																					
			1																					
			14.5																					
Link																								
1			900	25%	50	0.0%	152	8.9	100	0	0.0	71.7	62.7	2.6	0.0	-10.6	-2.6	0.00	0.0	0.0	-1.0	0.0	2.5	
2			150	25%	50	0.0%	13	7.125	19	0	0.0	64.0	57.1	2.6	0.0	-1.2	-9.8	0.00	0.0	0.0	-1.0	0.0	2.5	
3			150	25%	50	0.0%	16	7.535	111	0	0.0	64.0	64.1	2.6	0.0	-1.9	-2.1	0.00	0.0	0.0	-1.0	0.0	2.5	
4			150	25%	50	0.0%	11	8.36	19	0	0.0	64.0	57.4	2.6	0.0	-0.9	-9.8	0.00	0.0	0.0	-1.0	0.0	2.5	
5*			400	16%	50	0.0%	19	7.125	28	0	0.0	68.2	50.7	1.3	0.0	-2.4	-8.1	-9.91	0.0	0.0	-1.0	0.0	2.5	
6*			400	16%	50	0.0%	20	6.705	96	0	0.0	68.2	56.4	1.3	0.0	-2.6	-2.7	-9.37	0.0	0.0	-1.0	0.0	2.5	
7*			400	16%	50	0.0%	18	4.53	30	0	0.0	67.0	53.3	1.3	0.0	-2.1	-7.8	-7.92	0.0	0.0	-1.0	0.0	2.5	
8			300	32%	50	0.0%	32	7.125	30	0	0.0	67.0	59.8	3.4	0.0	-4.3	-7.8	0.00	0.0	0.0	-1.0	0.0	2.5	
9			300	32%	50	0.0%	34	7.535	71	0	0.0	67.0	63.3	3.4	0.0	-4.5	-4.0	0.00	0.0	0.0	-1.0	0.0	2.5	
10			300	32%	50	0.0%	32	8.36	30	0	0.0	67.0	59.8	3.4	0.0	-4.3	-7.8	0.00	0.0	0.0	-1.0	0.0	2.5	
11			1550	14%	50	0.0%	96	7	57	0	0.0	74.1	62.9	1.0	0.0	-8.7	-5.0	0.00	0.0	0.0	-1.0	0.0	2.5	
12			1500	14%	50	0.0%	106	7	33	0	0.0	74.0	60.0	1.0	0.0	-9.1	-7.4	0.00	0.0	0.0	-1.0	0.0	2.5	
13			1025	15%	50	0.0%	106	7	22	0	0.0	72.3	56.8	1.2	0.0	-9.1	-9.1	0.00	0.0	0.0	-1.0	0.0	2.5	
14			1625	26%	50	0.0%	166	8.9	37	0	0.0	74.3	60.7	2.8	0.0	-11.0	-6.9	0.00	0.0	0.0	-1.0	0.0	2.5	
15			3675	22%	50	0.0%	166	8.9	57	0	0.0	77.9	65.6	2.3	0.0	-11.0	-5.0	0.00	0.0	0.0	-1.0	0.0	2.5	
Spreadsheet																								
TOTAL dB(A)			72.7	Difference Prediction (XLS-SP)																				
			72.8	-0.1																				

* If apply the gradient correction to the links, G = 2.3%, the result will be 73.0 dB(A).
Since the two way traffic flows were not separated in the model, so no gradient correction for the upward flow on the flyover was added.
Screening by the flyover parapet was considered.

CALCULATION OF ROAD TRAFFIC NOISE (CRIN) UK Department of Transport 1988

Project: Number Title
 Spreadsheet to check SoundPlan results: written by MG 3 May 1994; revised by JL 15 November 1996.
 This sheet printed: 17/02/98

Includes these corrections: -1.0 Impervious road surface NB: If link has pervious surfacing, enter -2.5 in 'Previous' column
 2.5 Facade effect

NB: Includes change in velocity based on gradient and proportion of heavy vehicles. If specific projected speeds are used, disable this function
 NB: Hard ground assumed

NSR ID:	Floor:	Elevation (m PD):	Flow (veh/h)	Heavy veh (%)	Speed (km/h)	Grad (%)	Horiz dist (m)	Vert dist (m)	AoV (deg)	Ref (deg)	Perv (-2.5)	Basic dB(A)	Final dB(A)	Corrections in dB(A) (except Delta V, in km/h)						Delta V	Impero	Pero	Facade				
														Speed/ % HV	Grad	Dist	AoV	Barrier	Ref								
1	3	27.4	1300	20%	50	0.0%	15	13	5	0	0.0	73.3	59.0	2.0	0.0	-2.2	-15.6	0.00	0.0	0.0	0.0	0.0	0.0	2.5			
2	3	27.4	750	20%	50	0.0%	18	10.9	100	0	0.0	71.0	69.4	2.0	0.0	-2.5	-2.6	0.00	0.0	0.0	0.0	0.0	0.0	2.5			
Spreadsheet														SoundPlan		Difference											
TOTAL dB(A)														69.7		69.7		0.0									

CALCULATION OF ROAD TRAFFIC NOISE (CRTN) UK Department of Transport 1988

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 This sheet printed: 17/02/98

Includes these corrections: -1.0 Impervious road surface NB: If link has pervious surfacing, enter -2.5 in 'Pervious' column
 2.5 Facade effect

NB: Includes change in velocity based on gradient and proportion of heavy vehicles. If specific projected speeds are used, disable this function
 NB: Hard ground assumed

Link	Flow (veh/hr)	Heavy veh (%)	Speed (km/h)	Grad (%)	Horiz dist (m)	Vert dist (m)	AoV (deg)	Refl (deg)	Perv (-2.5)	Basic dB(A)	Final dB(A)	Corrections in dB(A) (except Delta V, in km/h)						Perov	Facade								
												Spazi/ % HV	Grad	Dist	AoV	Barrier	Refl			Delta V	Impero						
1	300	18%	50	0.0%	18	8.5	64	0	0.0	67.0	54.4	1.7	0.0	-2.3	-4.5	-8.88	0.0	0.0	-1.0	0.0	2.5						
2	300	18%	50	0.0%	20	10.2	60	0	0.0	67.0	62.6	1.7	0.0	-2.8	-4.8	0.00	0.0	0.0	-1.0	0.0	2.5						
3	300	18%	50	0.0%	24	12	15	0	0.0	67.0	55.9	1.7	0.0	-3.5	-10.8	0.00	0.0	0.0	-1.0	0.0	2.5						
4	300	18%	50	0.0%	42	13.8	12	0	0.0	67.0	52.9	1.7	0.0	-5.5	-11.8	0.00	0.0	0.0	-1.0	0.0	2.5						
Spreadsheets												SoundPlan		Difference													
TOTAL dB(A)												64.4		-0.1													

CALCULATION OF ROAD TRAFFIC NOISE (CRTN) UK Department of Transport 1988

Project: Number Title
Spreadsheet to check SoundPlan results: written by MG 3 May 1994; revised by JL 15 November 1996.
This sheet printed: 18/02/98

Includes these corrections: 1.0 Impervious road surface NB: If link has pervious surfacing, enter -2.5 in 'Pervious' column
2.5 Facade effect

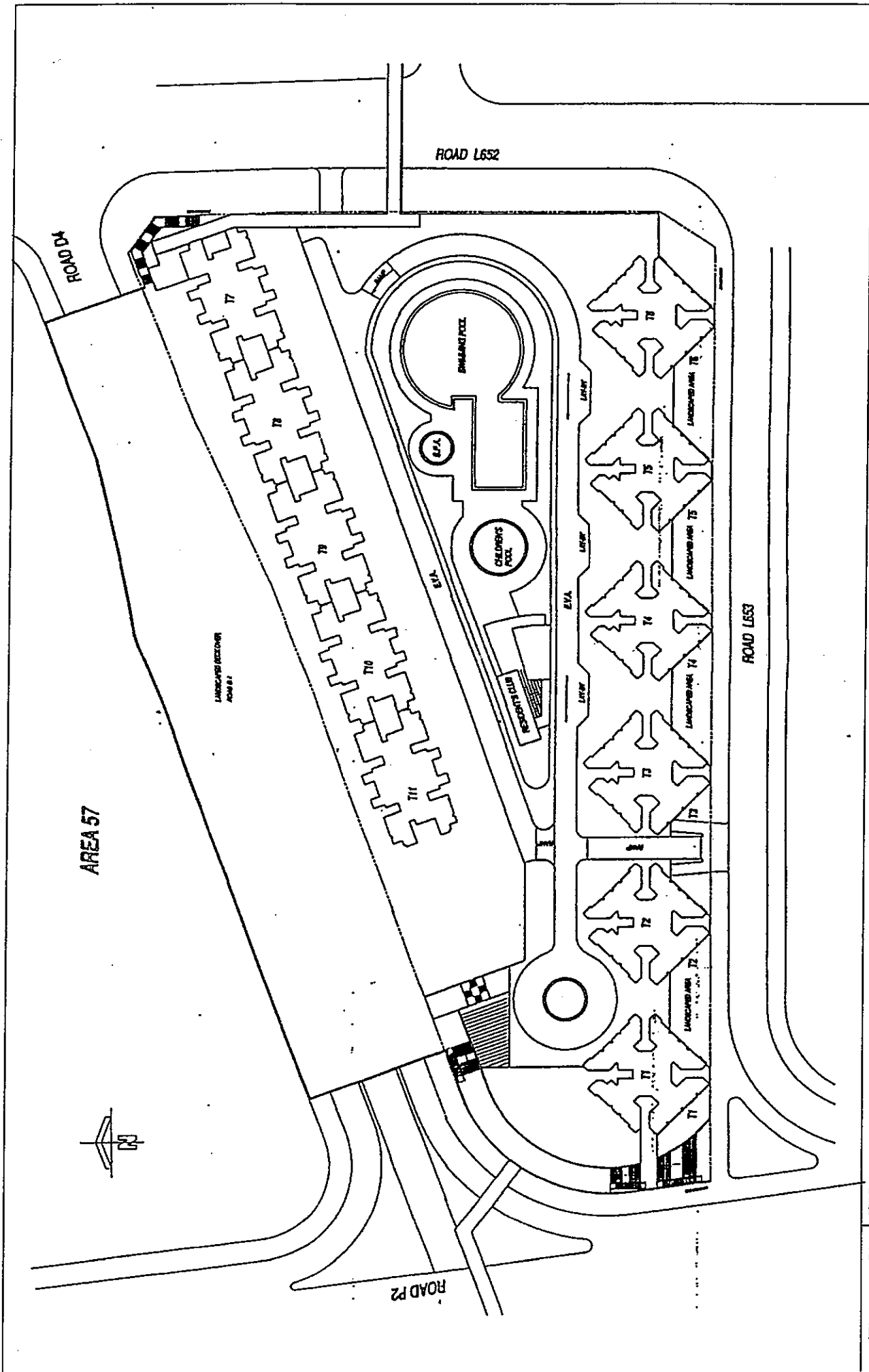
NB: Includes change in velocity based on gradient and proportion of heavy vehicles. If specific projected speeds are used, disable this function
NB: Hard ground assumed

Link	NSR ID	Floor	Elevation (m PD)	Flow (veh/hr)	Heavy veh (%)	Speed (km/h)	Grad (%)	Horiz dist (m)	Vert dist (m)	AoV (deg)	Ref (deg)	Perv (-2.5)	Basic dB(A)	Final dB(A)	Corrections in dB(A) [except Delta V, in km/h]									
															% HV	Speed	Grad	Dist	AoV	Barrier	Refl	Delta V	Impero	Pero
1				900	25%	50	0.0%	120	7.2	32	0	0.0	71.7	58.8	0.0	-9.6	-7.5	0.00	0.0	0.0	-1.0	0.0	2.5	
2				150	25%	50	0.0%	101	5.425	41	0	0.0	64.0	52.8	2.6	-8.9	-6.4	0.00	0.0	0.0	-1.0	0.0	2.5	
3				150	25%	50	0.0%	103	5.835	25	0	0.0	64.0	50.6	2.6	-9.0	-8.6	0.00	0.0	0.0	-1.0	0.0	2.5	
4				150	25%	50	0.0%	111	6.66	30	0	0.0	64.0	51.0	2.6	-9.3	-7.8	0.00	0.0	0.0	-1.0	0.0	2.5	
5*				400	16%	50	0.0%	89	5.425	45	0	0.0	68.2	56.7	1.3	-8.4	-6.0	0.00	0.0	0.0	-1.0	0.0	2.5	
6*				400	16%	50	0.0%	92	5.005	30	0	0.0	68.2	54.8	1.3	-8.5	-7.8	0.00	0.0	0.0	-1.0	0.0	2.5	
7*				400	16%	50	0.0%	96	2.83	30	0	0.0	68.2	54.6	1.3	-8.7	-7.8	0.00	0.0	0.0	-1.0	0.0	2.5	
8				300	32%	50	0.0%	83	5.425	49	0	0.0	67.0	58.2	3.4	-8.1	-5.7	0.00	0.0	0.0	-1.0	0.0	2.5	
9				300	32%	50	0.0%	85	5.835	32	0	0.0	67.0	56.2	3.4	-8.2	-7.5	0.00	0.0	0.0	-1.0	0.0	2.5	
10				300	32%	50	0.0%	91	6.66	26	0	0.0	67.0	55.0	3.4	-8.5	-8.4	0.00	0.0	0.0	-1.0	0.0	2.5	
11				1550	14%	50	0.0%	84	5.3	68	0	0.0	74.1	64.3	1.0	-8.1	-4.2	0.00	0.0	0.0	-1.0	0.0	2.5	
12				1500	14%	50	0.0%	95	5.3	47	0	0.0	74.0	62.0	1.0	-8.0	-5.8	0.00	0.0	0.0	-1.0	0.0	2.5	
13				1025	15%	50	0.0%	94	5.3	14	0	0.0	72.3	55.3	1.2	-8.6	-11.1	0.00	0.0	0.0	-1.0	0.0	2.5	
14				950	17%	50	0.0%	86	3.5	14	0	0.0	72.0	55.7	1.5	-8.2	-11.1	0.00	0.0	0.0	-1.0	0.0	2.5	
15				1625	26%	50	0.0%	134	7.2	32	0	0.0	74.3	61.0	2.8	-10.1	-7.5	0.00	0.0	0.0	-1.0	0.0	2.5	
Spreadsheet	SoundPlan	Difference																						
TOTAL dB(A)	69.9	Prediction	69.9	0.0																				

* If apply the gradient correction to the links, G = 2.3%, the result will be 70.0 dB(A).
Since the two way traffic flows were not separated in the model, so no gradient correction for the upward flow on the flyover was added.

Appendix E

Appendix E Proposed Site Layout of Area
67 North



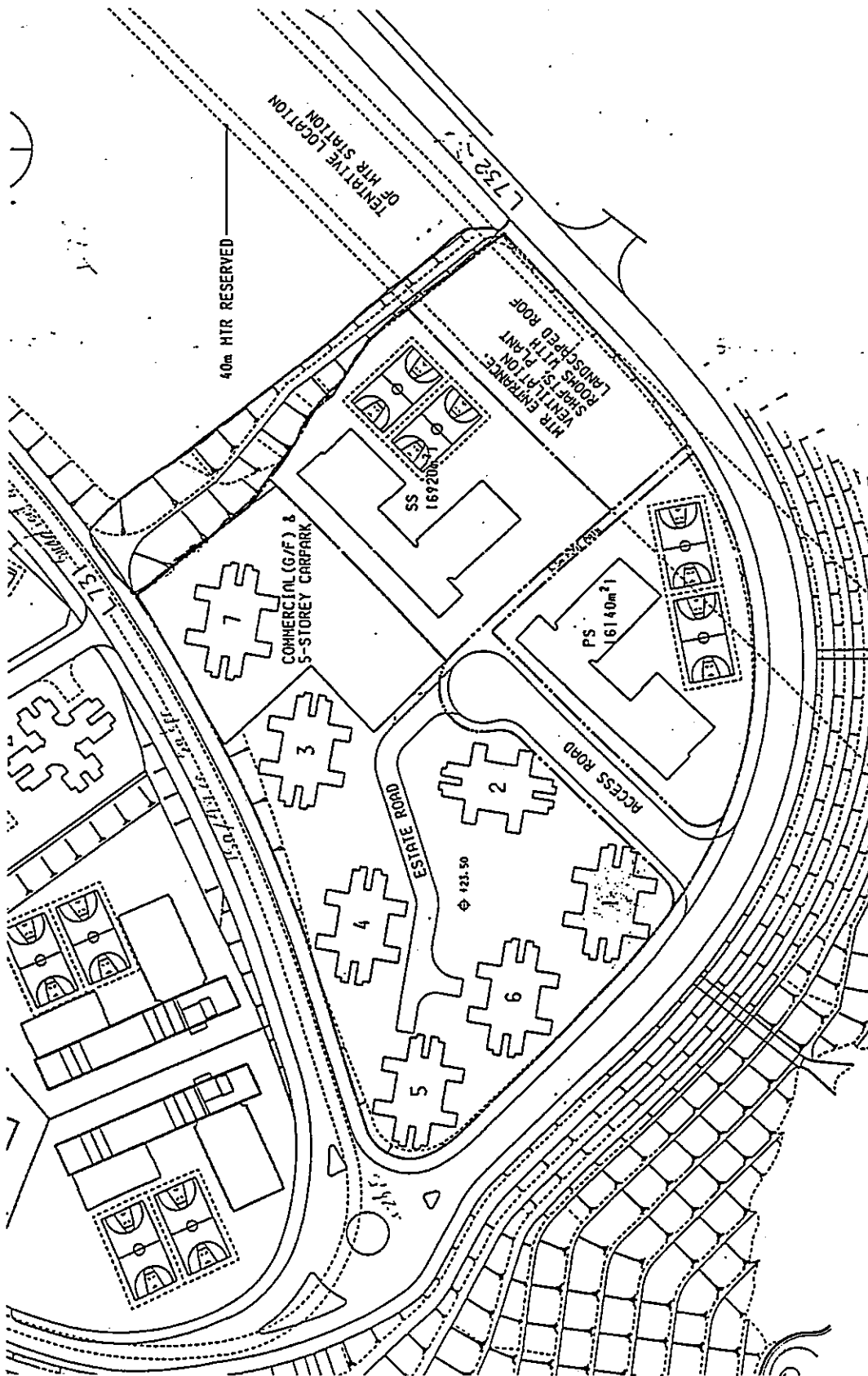
環科
CES

TITLE

Proposed Layout of Sandwich Class Housing in Area 67 (Source Hong Kong Housing Society)

CES (ASIA) LIMITED

PROJECT NO	DATE	January 1998
DESIGNED	DRAWING NO	Appendix E1
		C230
		Suki Chung



環科
CES

TITLE

Proposed Layout for Area 73B West

CES (ASIA) LIMITED

PROJECT NO	DATE	DESIGNED	DRAWING NO
C230	March 1998	Laura Wong	Appendix E.2

MVA ASIA Limited

3rd Floor, East Town Building, 41 Lockhart Road, Wanchai, Hong Kong
Tel : 2529 7037 Fax : 2527 8490



NOTES
 1. ALL LEVELS ARE IN METRES ABOVE
 2. ALL DIMENSIONS ARE IN METRES.
 3. GRID LINES ARE HONG KONG GRID
 1980.

LEGEND

- EXISTING SLOPE
- CUT SLOPE UNDER CONSTRUCTION
- FILL SLOPE UNDER CONSTRUCTION
- PROPOSED CARRIAGEWAY
- PROPOSED PEAKITY AREA
- FOOTPATH WITH AVENUES OR TREES
- PROPOSED CYCLE TRACK
- PLATFORM LEVEL UNDER CONSTRUCTION
- PROPOSED CARRIAGEWAY LEVEL
- RETAINING WALL UNDER CONSTRUCTION
- LIMIT OF WORKS AREA
- FUTURE FOOTPATH SUBJECT TO DETAIL DESIGN

REVISIONS

NO	DESCRIPTION AND DATE	INITIAL AND DESIGNATION
1		

NAME AND DESIGNATION	INITIAL	DATE
APPROVED		
CHECKED	T. M. KUAN CE/22	5.2.98
DRAWN	Y. M. LUI ST/22	5.2.98
PROJECT	H. C. LUI TO/27	3.3.96

TU KENG LENG PUBLIC HOUSING DEVELOPMENT

LAYOUT PLAN OF PUBLIC ROADS AT TU KENG LENG

SCALE 1 : 2000
 DRAWING NO
 SOURCE

