



Highways Department
Western Harbour Link Office

Agreement No. CE 27/92

ROUTE 3
COUNTRY PARK SECTION
AND TING KAU BRIDGE

PRELIMINARY DESIGN STAGE 2

Country Park Section - Ting Kau Bridge

Volume 4B
Environmental Assessment - Appendices

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FREEMAN FOX MAUNSELL

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Environmental Assessment - Appendices

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APPENDIX A1

ABBREVIATIONS

ABBREVIATIONS

Measurements

Technical units of measurement in this report are based on the International System of Units (SI) wherever possible. These technical units may be broadly grouped as prefixes and measurements. A prefix applies to the unit of measurement that immediately follows it - for example microgram is abbreviated as μg . Superscripts ² and ³ following a linear unit indicate area and volume - for example m^2 (square metres) and m^3 (cubic metres). Different units are combined by a full stop (.) to differentiate units of the same exponential sign, and a solidus (/) to indicate 'per'. For example, kilometres per hour is abbreviated as km/h , while megalitres per day per square kilometre is Ml/d.km^2 .

The prefixes used in this report are:

M	mega	1,000,000
k	kilo	1,000
m	milli	0.001
μ	micro	0.000,001

Units of measurement which have been used are:

yr	year
dB(A)	decibel, frequency weighting network A
$^{\circ}\text{C}$	degrees Celsius
g	gram
hr	hour
ha	hectare
Hz	hertz
$^{\circ}\text{K}$	degrees Kelvin
l	litre
L_{eq}	equivalent sound power level
L_{10}	sound power level exceeded 10% of the time
L_{90}	sound power level exceeded 90% of the time
m	metre
Pa	Pascal
pH	degree of alkalinity/acidity

% per cent

s second

t tonne

Miscellaneous

AFD	Agriculture and Fisheries Department
AQO	Air quality objective
ANL	Acceptable noise level
AOD	Along Ordnance Datum
ASR	Area Sensitivity Rating
BNL	Base Noise Level
BOD ₅	biochemical oxygen demand (five-day test)
BOT	Build, Operate and Transfer
CED	Civil Engineering Department
CNP	construction noise permit
CO	carbon monoxide
CPS	Country Park Section
CT9	Container Terminal 9
DG	dangerous goods
DO	dissolved oxygen
dwt	dead weight tonnage
EAPG	Environmental Assessment Planning Group
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EPA	Environmental Protection Authority
EPD	Environmental Protection Department
FDM	Fugitive dust model

FMC	Fill Management Committee
GEO	Geotechnical Engineering Office
HKPSG	Hong Kong Planning Standards and Guidelines
HVS	High Volume Sampler
ISCST	Industrial Source Complex Short Term (air dispersion model)
LAPH	Lantau Port and Harbour
LDPC	Land Development Policy Committee
LFC	Lantau Fixed Crossing
mPD	metres Principal Datum
N/A	not applicable
NCO	Noise Control Ordinance
N/D	not detected by analysis in sample
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSR	noise sensitive receiver
PD	principal datum
PHI	Proposed hazardous installations
PRC	Peoples Republic of China
RSP	Respirable suspended particulate
SR	Sensitive Receiver
SS	suspended solids
TKB	Ting Kau Bridge
TSP	total suspended particulate
US EPA	United States Environmental Protection Agency
WAHMO	Water and hydraulic modelling
WHC	Western Harbour Crossing

WKE	West Kowloon Expressway
WPCO	Water Pollution Control Ordinance
WQCZ	Water quality control zone
WQO	Water quality objective
ZVI	Zone of visual Influence

APPENDIX A2

APPENDIX A2

**CALINE 4 MODEL INPUT:
TRAFFIC FLOWS YEAR 2001 AND 2011**

CALINE 4 MODEL INPUT:**TRAFFIC FLOWS FOR YEARS 2001 AND 2011**

- A2.1 Morning peak-hour traffic flows for years 2001 and 2011 have been predicted and are shown in Table A2.1. The flows on Route 3 and slip roads are from information supplied by Transport Department; saturation flows on Tuen Mun Road are assumed. Transport Department predictions have been converted from PCUs/hour to vehicles/hour using a factor of 1.65.
- A2.2 A uniform traffic mix has been assumed on all roads: motorcycles (1%), passenger cars (12%), taxis (7%), light goods vehicles (25%), medium goods vehicles (44%), heavy goods vehicles (6%), coaches (1%), light buses (1%), and franchised buses (3%). All vehicles are assumed to have diesel engines with the exception of passenger cars and motorcycles, which are assumed to have petrol engines.
- A2.3 Traffic flow predictions are provided in Table A1.

TABLE A1 MORNING PEAK HOUR TRAFFIC FLOWS: 2001 AND 2011

ROAD SEGMENT	Veh/Hour	
	2001	2011
Ting Kau Bridge (Northbound)	1150	4000
Ting Kau Bridge (Southbound)	1550	5400
Slip Road: from TKB onto Tuen Mun Rd (Northbound)	340	2050
Slip Road: from Tuen Mun Rd onto TKB (Southbound)	570	3300
Tuen Mun Road west of TKB access (Eastbound)	3790	4200
Tuen Mun Road west of TKB access (Westbound)	3720	4200
Tuen Mun Road passing under Route 3 (Eastbound)	3220	900
Tuen Mun Road passing under Route 3 (Westbound)	3380	2150
Tuen Mun Road east of TKB access (Eastbound)	4200	3000
Tuen Mun Road east of TKB access (Westbound)	4200	4090
Slip Road: from Tuen Mun Rd to Tai Lam Tunnel (Northbound)	820	1950
Slip Road: from Tai Lam Tunnel to Tuen Mun Rd (Southbound)	980	2100
Route 3 passing over Tuen Mun Road (Northbound)	820	1950
Route 3 passing over Tuen Mun Road (Southbound)	980	2100
Route 3 approach to Ting Kau Tunnel (Northbound)	1630	3890
Route 3 departure from Tai Lam Tunnel (Southbound)	1960	4200

APPENDIX A3

APPENDIX A3

FUGITIVE DUST MODEL

CONSTRUCTION DUST IMPACT ASSESSMENT

FUGITIVE DUST MODEL

CONSTRUCTION DUST IMPACT ASSESSMENT

A3.1 In order to obtain a prediction of future construction dust levels, many assumptions and simplifications have been made concerning the physical conditions and timing of activities on the site. The intention of this modelling exercise is not to obtain an accurate estimate of future construction dust levels. Rather, it is to estimate the possible severity of future dust problems and determine if particular sensitive areas are likely to be particularly badly affected by dust. The results of the modelling may be used to target mitigation measures and monitoring activities implemented during construction.

A3.2 The US EPA publication *Compilation of Air Pollutant Emission Factors (AP-42)* has been used to obtain emission factors for unpaved haul roads (on Northwest Tsing Yi Island), heavy construction operations, and aggregate handling and stockpiling. The following factors have been used in the present assessment:

A3.3 *Dust from Unpaved Haul-roads*

1.530056 kg/veh•km travelled, based on:

- particle size $\leq 30 \mu\text{m}$
- 5% silt content of road surface, based on Table 11.2.1-1 in *AP-42* (gravel road)
- mean vehicle speed of 20 km/hr
- mean vehicle weight of 25.0 Mg
- 10 wheel per vehicle
- 50 days per year with precipitation of 0.254 mm or more

A3.4 *Aggregate Handling*

0.110166•U kg/day, where U = mean wind speed (m/s), based on:

- particle size $\leq 30 \mu\text{m}$
- 1.6% silt content of aggregate, based on Table 11.2.3-1 in *AP-42* (mean value for stone processing)
- drop height of 2 m
- 0.7% moisture content of aggregate, based on Table 11.2.3-1 in *AP-42* (mean value for stone processing)
- 7.6 m³ dumping device capacity, based on Table 11.2.3-3, using the maximum value in the given range

Assumes one batch drop of 125 Mg per day.

A3.5 Aggregate Storage

0.001773 • f kg/day, where f = percent of time that wind speed exceeds 5.4 m/s at mean pile height, based on:

- 1.6% silt content of aggregate, based on Table 11.2.3-1 in AP-42 (mean value for stone processing)
- 50 days per year with precipitation of 0.254 mm or more
- pile covers approximately 1 ha

A3.6 Heavy Construction Operations

1.2 tons per acre per month

APPENDIX A4

APPENDIX A4

GUIDELINES FOR DUST MONITORING

GUIDELINES FOR DUST MONITORING

A4.1 EPD has devised a set of dust monitoring and audit guidelines to ensure that its dust monitoring requirements are understood and met. EPD's guidelines are summarised below.

A4.2 *Monitoring Methodology*

Standard high volume sampling method should be used to obtain the mass concentration of TSP (total suspended particulates) in ambient air. The standard high volume sampling method as set out in the Title 40 of Code of Federal Regulations, Chapter 1 (part 50), Appendix B should be followed.

A4.3 *Monitoring Equipment*

A4.3.1 High Volume Sampler (HVS): The HVS should be equipped with an electronic mass flow controller and calibrated against a traceable standard at regular intervals.

A4.3.2 A direct reading dust meter capable of achieving comparable results so that results obtained by HVS may be used for the 1-hour sampling. The dust meter should be regularly calibrated against a primary standard.

A4.3.3 Wind Data Monitoring Equipment: Equipment should be set up in a non-sheltered location near dust monitoring locations to obtain wind speed and wind direction. The wind sensor should be installed on a mast 10 m above ground. Data should be stored in a data logger, and processed at least once a month. Wind direction should be divided into 16 sectors of 22.5 degrees each. Equipment should be calibrated at least every six months.

A4.4 *Selection of Monitoring Site*

Locations should be agreed upon with the Engineer in consultation with EPD as necessary during the EIA stage. In selecting sites, the following criteria should be considered:

- location should be at the site boundary or close to major dust emitters;
- location should be close to sensitive receivers;
- prevailing meteorological conditions should be considered.

A4.5 *Positioning of Sampler*

When positioning the sampler, the following points should be noted:

- Samplers should be placed at least 2 m apart.
- There must be an unrestricted airflow around the sampler:
 - If a sampler is placed near an obstruction, the height of the obstruction above

the sampler must be determined. The sampler should then be placed at a distance of at least twice this height from the obstruction.

- A minimum of 2 m separation is required between a rooftop sampler and a wall, parapet, or other rooftop structure.
- Sampler should not be placed near an incinerator or furnace flue.

A4.6 *Data Collection*

A4.6.1 A comprehensive set of field details should be recorded on the field data sheet, including temperature, pressure, weather conditions, elapsed-time meter reading for the starting and finishing times of the sampler, identification and weight of the filter paper, site activities, and any other relevant information.

A4.6.2 The flow rate of the sampler before and after the sampling exercise with the filter in position should be verified to be constant. The flow rates should be recorded in the data sheet.

A4.7 *Laboratory Measurement and Analysis of Filter Paper*

8" by 10" filter paper should be used, and labelled prior to sampling. The paper should be conditioned in a humidity-controlled chamber for over 24 hours and weighed prior to use. After sampling, the laden filter should be kept in a sealed plastic bag for transport to the laboratory. In the lab, the filter paper should be reconditioned in the humidity-controlled chamber, and weighed using a regularly-calibrated electronic balance accurate to 0.1 mg.

A4.8 *Reporting and Responsibilities*

A4.8.1 The monitoring team should report directly to the Engineer.

A4.8.2 An Environmental Monitoring and Audit (EM&A) Manual should be prepared and submitted to EPD within the month that the contract is offered.

A4.8.3 Monthly monitoring reports should be prepared and submitted to EPD before the 10th day of the following month.

A4.8.4 All exceedances of air quality standards, along with information on remediation measures, should be included in the monthly monitoring report.

A4.9 *Monitoring Requirements*

Requirements for Baseline, Impact, and Non-compliance monitoring are provided in Chapter 13 of the Report.

A4.10 *Quality Control*

A4.10.1 "Custody Transfer Documents" should be used to ensure that a chain of custody exists from the point of sampling to the final disposal of samples. At each point in the chain, one person is responsible for the sample until the custody transfer document is signed by someone else, who then assumes responsibility. In this way, the integrity of the samples can be ensured.

A4.10.2 All equipment calibration and recalibration exercises should be documented.

A4.10.3 Each measurement report should be checked and signed by the operator, a second staff member, and a senior before it is issued.

A4.10.4 Data input into the database should be checked against field records prior to being sent to the Officer responsible for the audit. In case of unresolved discrepancies, the data should be flagged to indicate that it may be unreliable.

A4.11 *Action Plans*

Action plans are provided in the main text.

A4.12 *Contingency Plans*

Contingency plans for the following kinds of problems should be worked out in advance, and included in the contract. An allowance for operating additional monitoring sites or increasing the numbers of equipment should be included in budget calculations.

- Delay in setting up monitoring sites or equipment, obtaining power supply, or laboratory facilities
- Failure or theft of equipment
- Adverse weather conditions
- Prolonged absence of key personnel

APPENDIX A5

APPENDIX A5

BACKGROUND NOISE LEVELS IN TING KAU

CONTENTS :

Location TK1

Location TK2

Location TK3

Location TK4

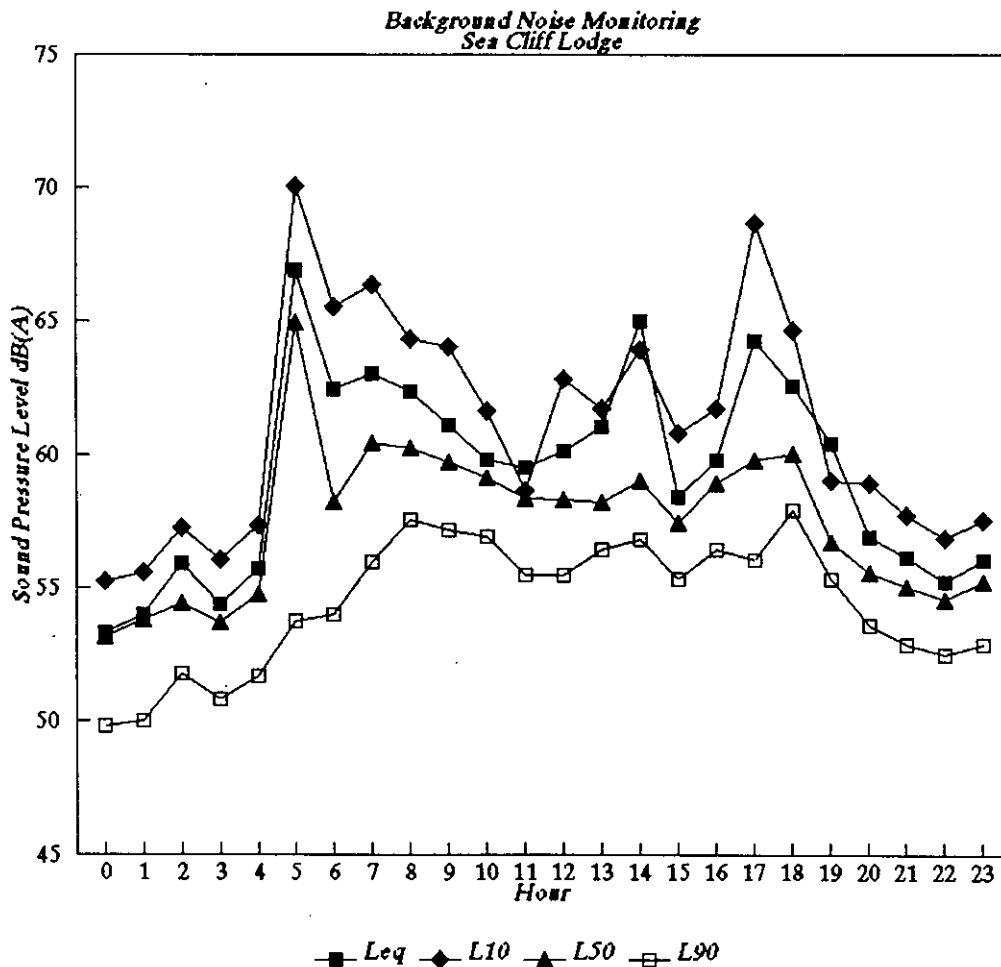
Project : Route 3 (Ting Kau Bridge)

Background Noise Monitoring

Location : Sea Cliff Lodge , Lot 424, Castle Peak Road (TK1)

Date : 6-7 May 1993

Hour	Leq	L10	L50	L90
0	53.33	55.26	53.2	49.82
1	53.99	55.58	53.81	50.01
2	55.91	57.27	54.42	51.81
3	54.39	56.08	53.71	50.82
4	55.74	57.37	54.77	51.71
5	66.89	70.08	64.97	53.74
6	62.45	65.56	58.25	54.01
7	63.05	66.35	60.46	55.97
8	62.35	64.36	60.26	57.57
9	61.12	64.05	59.74	57.16
10	59.84	61.65	59.15	56.96
11	59.54	58.66	58.36	55.49
12	60.15	62.86	58.35	55.48
13	61.05	61.76	58.24	56.46
14	65.02	63.96	59.05	56.85
15	58.43	60.85	57.47	55.37
16	59.82	61.76	58.96	56.47
17	64.31	68.67	59.84	56.07
18	62.61	64.65	60.04	57.95
19	60.45	59.05	56.76	55.37
20	56.94	58.96	55.57	53.61
21	56.17	57.76	55.07	52.91
22	55.26	56.87	54.58	52.5
23	56.07	57.57	55.26	52.91



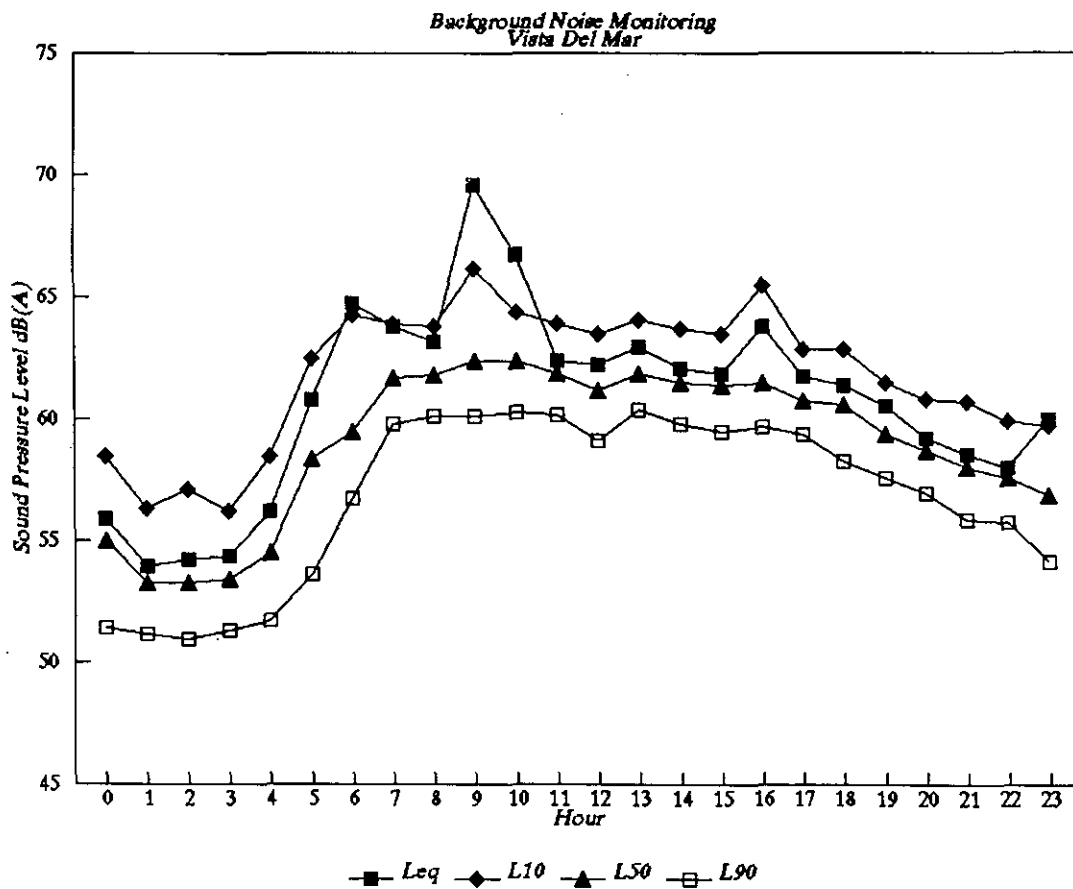
Project : Route 3 (Ting Kau Bridge)

Background Noise Monitoring

Location : Vista Del Mar (TK2)

Date : 10-11 May 1993

Hour	Leq	L10	L50	L90
0	55.89	58.47	55	51.42
1	53.95	56.31	53.22	51.11
2	54.19	57.07	53.22	50.9
3	54.37	56.21	53.42	51.31
4	56.18	58.47	54.5	51.71
5	60.75	62.46	58.37	53.62
6	64.73	64.26	59.48	56.71
7	63.75	63.87	61.66	59.76
8	63.16	63.76	61.76	60.07
9	69.58	66.16	62.36	60.07
10	66.69	64.35	62.34	60.25
11	62.36	63.86	61.84	60.15
12	62.18	63.45	61.15	59.06
13	62.93	64.04	61.85	60.33
14	62.03	63.65	61.45	59.76
15	61.82	63.46	61.33	59.47
16	63.79	65.45	61.44	59.65
17	61.69	62.84	60.74	59.34
18	61.34	62.84	60.54	58.26
19	60.53	61.46	59.36	57.56
20	59.18	60.76	58.67	56.9
21	58.52	60.66	57.97	55.81
22	58	59.88	57.57	55.7
23	59.92	59.67	56.81	54.1



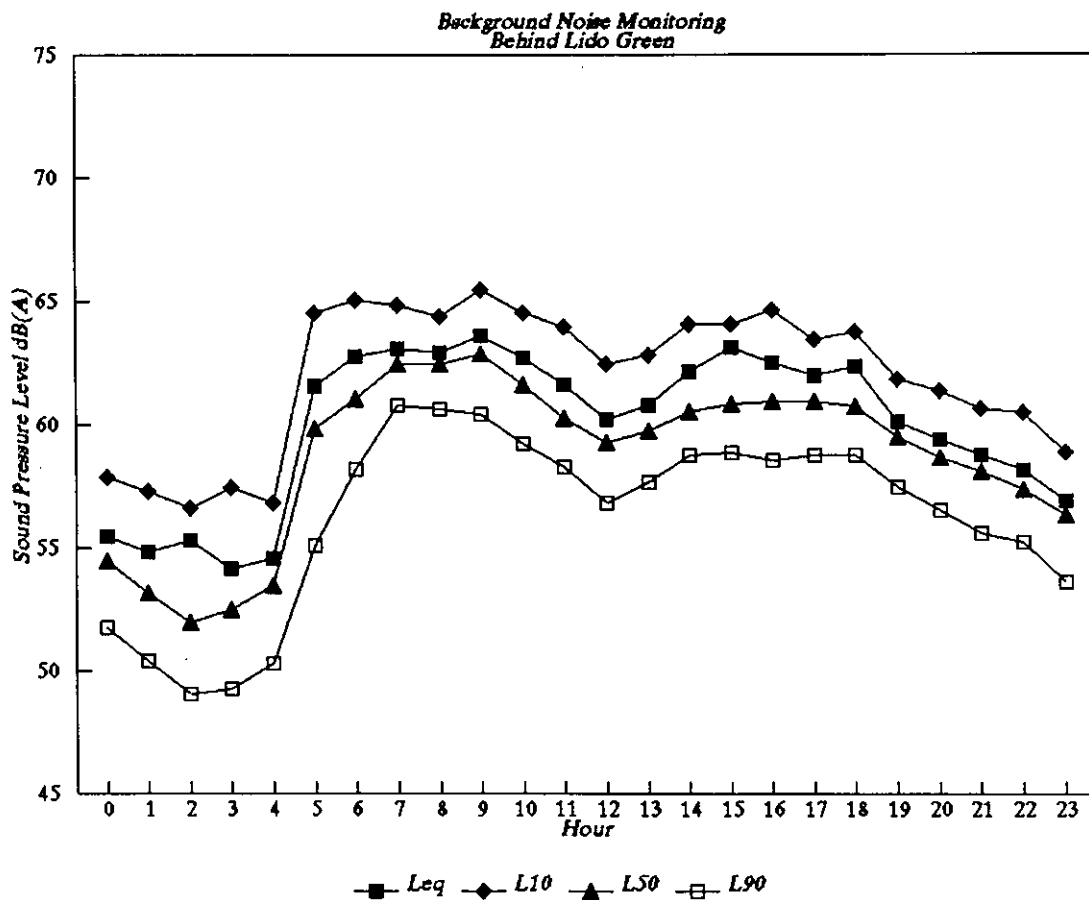
Project : Route 3 (Ting Kau Bridge)

Background Noise Monitoring

Location : Behind Lido Green (TK3)

Date : 17-18 May 1993

Hour	Leq	L10	L50	L90
0	55.48	57.87	54.5	51.78
1	54.88	57.27	53.21	50.42
2	55.34	56.6	52.01	49.1
3	54.17	57.47	52.51	49.3
4	54.58	56.81	53.52	50.31
5	61.55	64.55	59.87	55.1
6	62.74	65.07	61.05	58.16
7	63.07	64.86	62.45	60.76
8	62.9	64.36	62.44	60.65
9	63.61	65.45	62.86	60.44
10	62.7	64.55	61.64	59.24
11	61.63	63.94	60.25	58.26
12	60.21	62.45	59.26	56.85
13	60.77	62.84	59.75	57.65
14	62.12	64.04	60.54	58.75
15	63.1	64.05	60.84	58.85
16	62.52	64.65	60.93	58.55
17	62	63.45	60.94	58.75
18	62.33	63.75	60.74	58.76
19	60.13	61.85	59.46	57.46
20	59.36	61.36	58.67	56.51
21	58.78	60.64	58.06	55.6
22	58.15	60.46	57.36	55.2
23	56.87	58.86	56.3	53.62



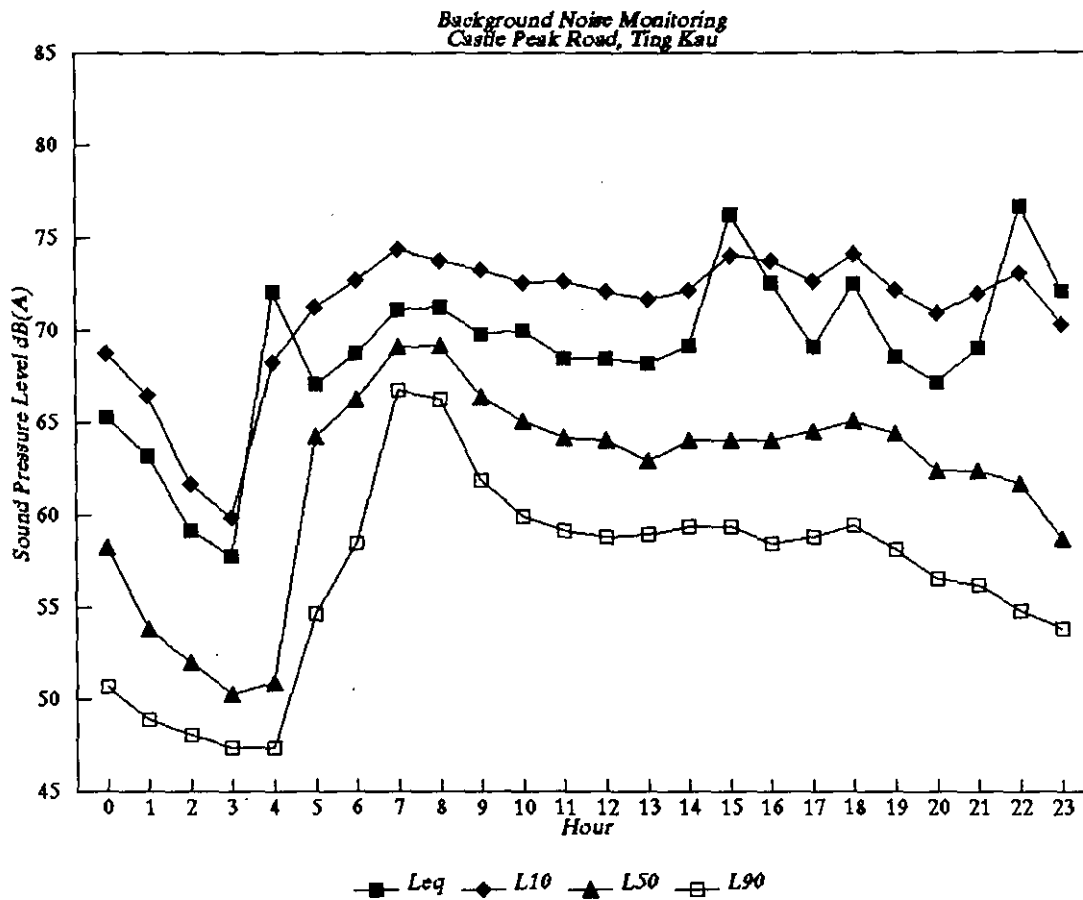
Project : Route 3 (Ting Kau Bridge)

Background Noise Monitoring

Location : Castle Peak Road (TK4)

Date : 18-19 May 1993

Hour	Leq	L10	L50	L90
0	65.30	68.75	58.26	50.71
1	63.18	66.47	53.80	48.91
2	59.21	61.65	52.01	48.10
3	57.78	59.87	50.31	47.41
4	72.09	68.26	50.92	47.41
5	67.10	71.27	64.27	54.70
6	68.74	72.68	66.27	58.47
7	71.10	74.37	69.07	66.75
8	71.22	73.76	69.16	66.26
9	69.82	73.25	66.37	61.86
10	70.03	72.56	65.06	59.96
11	68.47	72.67	64.15	59.16
12	68.47	72.06	64.05	58.86
13	68.20	71.66	62.94	58.95
14	69.14	72.16	64.05	59.36
15	76.24	74.05	64.05	59.35
16	72.57	73.75	64.05	58.51
17	69.07	72.67	64.55	58.86
18	72.52	74.06	65.05	59.46
19	68.52	72.17	64.37	58.16
20	67.14	70.88	62.35	56.51
21	69.02	71.97	62.36	56.21
22	76.69	73.06	61.65	54.81
23	72.11	70.28	58.67	53.80



APPENDIX A6

APPENDIX A6

A6.1 NOISE LEVEL PREDICTION FOR WORST CASE SCENARIO, CONSTRUCTION NOISE

CONTENTS :

Noise Sensitive Receiver 1 Without Mitigation

Noise Sensitive Receiver 1 With Mitigation

Noise Sensitive Receiver 2 With Mitigation

Noise Sensitive Receiver 3 With Mitigation

Noise Sensitive Receiver 4 With Mitigation

Noise Sensitive Receiver 5 With Mitigation

Noise Sensitive Receiver 6 With Mitigation

A6.2 NOISE LEVEL PREDICTION FOR ROAD TRAFFIC

NOISE AT NSR3

APPENDIX A6.1

R3CN1.WR1

NOISE SENSITIVE RECEIVE		NSR1									
CONSTRUCTION PERIOD:		3rd QUARTER - YEAR 1									
		NO NOISE MITIGATION									
NOISE SOURCE	SWL	DIST.	BARR	FAC	NO OF	AIR	GRND	SPL	ZONE		
			-IER	REFL.	ITEMS	ABS.	ABS.	dBA	SPL		
CONSTRUCTION ZONE A: TSING YI											
% SOFT GROUND COVER =		7.7									
CNP002	SIL. COMPR.	100	1100	0	3	2	-3.1	-0.4	33.7		
CNP023	HAND HELD PNEUM BR	117	1100	0	3	2	-3.1	-0.4	50.7		
CNP028	HYDR. BREAKER	122	1100	0	3	5	-3.1	-0.4	59.7		
CNO030	BULLDOZER	115	1100	0	3	2	-3.1	-0.4	48.7		
CNP048	MBL DIESEL CRANE	112	1100	0	3	1	-3.1	-0.4	42.7		
CNP050	VIBR. CMPCTER	105	1100	0	3	2	-3.1	-0.4	38.7		
CNP061	DERRICK BARGE	104	1100	0	3	1	-3.1	-0.4	34.7		
CNP064	HND HLD PERC DRILL	103	1100	0	3	2	-3.1	-0.4	36.7		
CNP067	DUMPTRUCK	117	1100	0	3	25	-3.1	-0.4	61.7		
CNP081	EXCAVATOR	112	1100	0	3	5	-3.1	-0.4	49.7		
CNP101	GEN. STND	108	1100	0	3	1	-3.1	-0.4	38.7		
CNP141	LORRY	112	1100	0	3	4	-3.1	-0.4	48.8		
CNP181	RCK DRL CR RWLER MNT	128	1100	0	3	10	-3.1	-0.4	68.7		
CNP186	ROLLER VIBR.	108	1100	0	3	2	-3.1	-0.4	41.7		
CNP201	CIRC WOOD SAW	108	1100	0	3	4	-3.1	-0.4	44.8		
CNP221	TUG BOAT	110	1100	0	3	1	-3.1	-0.4	40.7		
CNP222	TRACTOR	118	1100	0	3	2	-3.1	-0.4	51.7		
CNP282	WATER PUMP(PTRL)	103	1100	0	3	2	-3.1	-0.4	36.7	70.2	
ZONE B - TSING YI											
% SOFT GROUND COVER =		8.5									
CNP028	HYDR. BREAKER	122	1000	0	3	1	-2.8	-0.4	53.8		
CNP047	CONCR. PMP	109	1000	0	3	2	-2.8	-0.4	43.8		
CNP066	DUMPER	106	1000	0	3	4	-2.8	-0.4	43.8		
CNP081	EXCAVATOR	112	1000	0	3	2	-2.8	-0.4	46.8		
CNP201	CIRC WOOD SAW	108	1000	0	3	3	-2.8	-0.4	44.6	55.6	
ZONE B - ROCK ISLAND											
% SOFT GROUND COVER =		15									
CNP002	SIL. COMPR.	100	570	0	3	3	-1.6	-0.7	42.4		
CNP021	ELECTR. BAR BENDER	90	570	0	3	1	-1.6	-0.7	27.6		
CNP023	HAND HELD PNEUM BR	117	570	0	3	4	-1.6	-0.7	60.6		
CNP049	CRANE TOWR ELEC.	95	570	0	3	2	-1.6	-0.7	35.6		
CNP101	GEN. STND	108	570	0	3	2	-1.6	-0.7	48.6		
BS5228	VIBR. POKER	95	570	0	3	10	-1.6	-0.7	42.6	61.0	
ZONE B - OVER WATER											
% SOFT GROUND COVER =		34									
CNP044	CONCRETE MIXER/BARGE	109	250	0	3	4	-0.7	-1.5	59.9		
CNP048	MBL DIESEL CRANE	112	250	0	3	3	-0.7	-1.5	61.6		
CNP061	DERRICK BARGE	104	250	0	3	2	-0.7	-1.5	51.9		
CNP063	DREDGER,GRAB	112	250	0	3	4	-0.7	-1.5	62.9		
CNP165	PILING LGE DIAM BRD	115	250	0	3	4	-0.7	-1.5	65.9		
CNP166	PILG LGE RE REV CIRC	100	250	0	3	4	-0.7	-1.5	50.9		
CNP221	TUG BOAT	110	250	0	3	4	-0.7	-1.5	60.9		
CNP262	ELECTRIC WINCH	95	250	0	3	4	-0.7	-1.5	45.9	69.9	

R3CN1.WR1

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSRI
3rd QUARTER - YEAR 1
NO NOISE MITIGATION

CONTINUED

ZONE C MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA										
CNP002	SIL. COMPR.	100	90	0	3	4	-0.3	-3.4	58.2	
CNP044	CONCRETE MMXER BGE M	109	90	0	3	6	-0.3	-3.4	69.0	
CNP047	CONCR. PMP	109	90	0	3	2	-0.3	-3.4	64.2	
CNP048	MBL DIESEL CRANE	112	90	0	3	3	-0.3	-3.4	69.0	
CNP049	CRANE TOWR ELEC.	95	90	0	3	2	-0.3	-3.4	50.2	
CNP061	DERRICK BARGE	104	90	0	3	6	-0.3	-3.4	64.0	
CNP066	DUMPER	106	90	0	3	6	-0.3	-3.4	66.0	
CNP081	EXCAVATOR	112	90	0	3	2	-0.3	-3.4	67.2	
CNP102	SILENCED GENERATOR	100	90	0	3	4	-0.3	-3.4	58.2	
BS5228	VIBR. POKER	95	90	0	3	20	-0.3	-3.4	60.2	
CNP186	ROLLER VIBR.	108	90	0	3	2	-0.3	-3.4	63.2	
CNP221	TUG BOAT	110	90	0	3	3	-0.3	-3.4	67.0	
CNP262	ELECTRIC WINCH	95	90	0	3	6	-0.3	-3.4	55.0	76.0
ZONE D: MAIN ROUTE 3										
CNP002	SIL. COMPR.	100	70	0	3	1	-0.2	-3.0	54.9	
CNP021	ELECTR. BAR BENDER	90	70	0	3	1	-0.2	-3.0	44.9	
CNP023	HAND HELD PNEUM BR	117	70	0	3	1	-0.2	-3.0	71.9	
CNP044	CONCR. LORRY MIX	109	70	0	3	1	-0.2	-3.0	63.9	
CNP047	CONCR. PMP	109	70	0	3	1	-0.2	-3.0	63.9	
CNP048	MBL DSL CRANE	112	70	0	3	2	-0.2	-3.0	69.9	
CNP050	VIBR. CMPCTER	105	70	0	3	1	-0.2	-3.0	59.9	
CNP065	H-HLD ELEC. GRNDR	98	70	0	3	2	-0.2	-3.0	55.9	
CNP066	DUMPER	106	70	0	3	1	-0.2	-3.0	60.9	
CNP081	EXCAVATOR	112	70	0	3	1	-0.2	-3.0	66.9	
CNP102	GEN, SIL.	100	70	0	3	1	-0.2	-3.0	54.9	
CNP166	PLNG LGE REV CIRC	100	70	0	3	1	-0.2	-3.0	54.9	
BS5228	VIBR. POKER	95	70	0	3	10	-0.2	-3.0	59.9	
CNP282	WATER PUMP(PTRL)	103	70	0	3	1	-0.2	-3.0	57.9	76.1
ZONE E: RAMPS G&H										
CNP002	SIL. COMPR.	100	150	0	3	1	-0.4	-4.0	47.0	
CNP048	MBL DSL CRANE	112	150	0	3	1	-0.4	-4.0	59.0	
CNP066	DUMPER	106	150	0	3	1	-0.4	-4.0	53.0	
CNP081	EXCAVATOR	112	150	0	3	2	-0.4	-4.0	62.0	
CNP102	GEN, SIL.	100	150	0	3	1	-0.4	-4.0	47.0	
CNP141	LORRY	112	150	0	3	5	-0.4	-4.0	66.0	
CNP183	H-HLD PNM RCK DRL	116	150	0	3	2	-0.4	-4.0	66.0	
CNP282	WATER PUMP(PTRL)	103	150	0	3	1	-0.4	-4.0	50.0	70.3
ZONE F: CUTTING ADJACENT TO TUEN MUN ROAD										
CNP002	SIL. COMPR.	100	550	-10	3	2	-1.5	-4.6	27.1	
CNP027	EXC MNTD B PNM BRKR	122	550	-10	3	2	-1.5	-4.6	49.1	
CNP066	DUMPER	106	550	-10	3	4	-1.5	-4.6	36.1	
CNP081	EXCAVATOR	112	550	-10	3	4	-1.5	-4.6	42.1	
CNP141	LORRY	112	550	-10	3	10	-1.5	-4.6	46.0	
CNP182	RCK DRL CRWL MNTD	123	550	-10	3	4	-1.5	-4.6	53.1	
CNP183	H-HLD PNM RCK DRL	116	550	-10	3	2	-1.5	-4.6	43.1	
CNP186	ROLLER VIBR.	108	550	-10	3	2	-1.5	-4.6	35.1	
CNP281	WATER PMP ELEC.	88	550	-10	3	2	-1.5	-4.6	15.1	55.6

R3CN1.WR1

NOISE SENSITIVE RECEIVER: NSR1
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 NO MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	340	0	3	2	-1.0	-4.5	41.9
CNP027	EXC MNTD B PNM BRKR	122	340	0	3	2	-1.0	-4.5	63.9
CNP066	DUMPER	106	340	0	3	4	-1.0	-4.5	51.0
CNP081	EXCAVATOR	112	340	0	3	4	-1.0	-4.5	57.0
CNP141	LORRY	112	340	0	3	10	-1.0	-4.5	60.9
CNP186	ROLLER VIBR.	108	340	0	3	1	-1.0	-4.5	46.9
CNP281	WATER PMP ELEC.	88	340	0	3	2	-1.0	-4.5	29.9 66.4

TOTAL CONSTRUCTION NOISE LEVEL AT NSR1 NO MITIGATION -----
80.7

R3CN1.WR2

ROUTE 3 - TING KAU INTERCHANGE NOVEMBER 1993
 NOISE SENSITIVE RECEIVE NSR1
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1
 WITH NOISE MITIGATION

NOISE SOURCE	SWL	DIST.	BARR -IER	FAC REFL.	NO OF ITEMS	AIR ABS.	GRND ABS.	SPL dBA	ZONE SPL
CONSTRUCTION ZONE A: TSING YI									
% SOFT GROUND COVER =	7.7								
CNP002	SIL. COMPR.	100	1100	0	3	2	-3.1	-0.4	33.7
CNP023	HAND HELD PNEUM BR	117	1100	0	3	2	-3.1	-0.4	50.7
CNP028	HYDR. BREAKER	122	1100	-10	3	5	-3.1	-0.4	49.7 *
CNO030	BULLDOZER	115	1100	0	3	2	-3.1	-0.4	48.7
CNP048	MBL DIESEL CRANE	112	1100	0	3	1	-3.1	-0.4	42.7
CNP050	VIBR. CMPCTER	105	1100	0	3	2	-3.1	-0.4	38.7
CNP061	DERRICK BARGE	104	1100	0	3	1	-3.1	-0.4	34.7
CNP064	HND HLD PERC DRILL	103	1100	0	3	2	-3.1	-0.4	36.7
CNP067	DUMPTRUCK	117	1100	0	3	12	-3.1	-0.4	58.5 **
CNP081	EXCAVATOR	112	1100	0	3	5	-3.1	-0.4	49.7
CNP101	GEN. STND	108	1100	0	3	1	-3.1	-0.4	38.7
CNP141	LORRY	112	1100	0	3	4	-3.1	-0.4	48.8
CNP181	RCK DRL CR RWLER MNT	128	1100	-10	3	10	-3.1	-0.4	58.7 *
CNP186	ROLLER VIBR.	108	1100	0	3	2	-3.1	-0.4	41.7
CNP201	CIRC WOOD SAW	108	1100	0	3	4	-3.1	-0.4	44.8
CNP221	TUG BOAT	110	1100	0	3	1	-3.1	-0.4	40.7
CNP222	TRACTOR	118	1100	0	3	2	-3.1	-0.4	51.7
CNP282	WATER PUMP(PTRL)	103	1100	0	3	2	-3.1	-0.4	36.7 63.4
ZONE B - TSING YI									
% SOFT GROUND COVER =	8.5								
CNP028	HYDR. BREAKER	122	1000	0	3	1	-2.8	-0.4	53.8
CNP047	CONCR. PMP	109	1000	0	3	2	-2.8	-0.4	43.8
CNP066	DUMPER	106	1000	0	3	4	-2.8	-0.4	43.8
CNP081	EXCAVATOR	112	1000	0	3	2	-2.8	-0.4	46.8
CNP201	CIRC WOOD SAW	108	1000	0	3	3	-2.8	-0.4	44.6 55.6
ZONE B - ROCK ISLAND									
% SOFT GROUND COVER =	15								
CNP002	SIL. COMPR.	100	570	0	3	3	-1.6	-0.7	42.4
CNP021	ELECTR. BAR BENDER	90	570	0	3	1	-1.6	-0.7	27.6
CNP023	HAND HELD PNEUM BR	117	570	0	3	4	-1.6	-0.7	60.6
CNP049	CRANE TOWR ELEC.	95	570	0	3	2	-1.6	-0.7	35.6
CNP101	GEN. STND	108	570	0	3	2	-1.6	-0.7	48.6
BS5228	VIBR. POKER	95	570	0	3	10	-1.6	-0.7	42.6 61.0
ZONE B - OVER WATER									
% SOFT GROUND COVER =	34								
CNP044	CONCRETE MIXER/BARGE	109	250	0	3	4	-0.7	-1.5	59.9
CNP048	MBL DIESEL CRANE	112	250	0	3	3	-0.7	-1.5	61.6
CNP061	DERRICK BARGE	104	250	0	3	2	-0.7	-1.5	51.9
CNP063	DREDGER, GRAB	112	250	0	3	4	-0.7	-1.5	62.9
CNP165	PILING, LGE DE BORED	115	250	0	3	2	-0.7	-1.5	62.9 **
CNP166	PILG LGE RE REV CIRC	100	250	0	3	4	-0.7	-1.5	50.9
CNP221	TUG BOAT	110	250	0	3	2	-0.7	-1.5	57.9 **
CNP262	ELECTRIC WINCH	95	250	0	3	4	-0.7	-1.5	45.9 68.6

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSR1
3rd QUARTER - YEAR 1
WITH NOISE MITIGATION

CONTINUED

MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA										
ZONE C										
CNP002	SIL. COMPR.	100	90	0	3	4	-0.3	-3.4	58.2	
CNP044	CONCRETE MMXER BGE M	109	90	-10	3	6	-0.3	-3.4	59.0	*
CNP047	CONCR. PMP	109	90	-10	3	2	-0.3	-3.4	54.2	*
CNP048	MBL DIESEL CRANE	112	90	0	3	2	-0.3	-3.4	67.2	**
CNP049	CRANE TOWR ELEC.	95	90	0	3	2	-0.3	-3.4	50.2	
CNP061	DERRICK BARGE	104	90	0	3	6	-0.3	-3.4	64.0	
CNP066	DUMPER	106	90	0	3	6	-0.3	-3.4	66.0	
CNP081	EXCAVATOR	112	90	0	3	2	-0.3	-3.4	67.2	
CNP102	SILENCED GENERATOR	100	90	0	3	4	-0.3	-3.4	58.2	
BS5228	VIBR. POKER	95	90	0	3	20	-0.3	-3.4	60.2	
CNP186	ROLLER VIBR.	108	90	0	3	2	-0.3	-3.4	63.2	
CNP221	TUG BOAT	110	90	0	3	2	-0.3	-3.4	65.2	**
CNP262	ELECTRIC WINCH	95	90	0	3	6	-0.3	-3.4	55.0	74.2
ZONE D: MAIN ROUTE 3										
CNP002	SIL. COMPR.	100	70	0	3	1	-0.2	-3.0	54.9	
CNP021	ELECTR. BAR BENDER	90	70	0	3	1	-0.2	-3.0	44.9	
CNP023	HAND HELD PNEUM BR	117	70	-10	3	1	-0.2	-3.0	61.9	*
CNP044	CONCR. LORRY MIX	109	70	-10	3	1	-0.2	-3.0	53.9	*
CNP047	CONCR. PMP	109	70	-10	3	1	-0.2	-3.0	53.9	*
CNP048	MBL DSL CRANE	112	70	0	3	1	-0.2	-3.0	66.9	**
CNP050	VIBR. CMPCTER	105	70	0	3	1	-0.2	-3.0	59.9	
CNP065	H-HLD ELEC. GRNDR	98	70	0	3	2	-0.2	-3.0	55.9	
CNP066	DUMPER	106	70	0	3	1	-0.2	-3.0	60.9	
CNP081	EXCAVATOR	112	70	-10	3	1	-0.2	-3.0	56.9	*
CNP102	GEN, SIL.	100	70	0	3	1	-0.2	-3.0	54.9	
CNP166	PLNG LGE REV CIRC	100	70	0	3	1	-0.2	-3.0	54.9	
BS5228	VIBR. POKER	95	70	0	3	10	-0.2	-3.0	59.9	
CNP282	WATER PUMP(PTRL)	103	70	0	3	1	-0.2	-3.0	57.9	71.0
ZONE E: RAMPS G&H										
CNP002	SIL. COMPR.	100	150	0	3	1	-0.4	-4.0	47.0	
CNP048	MBL DSL CRANE	112	150	0	3	1	-0.4	-4.0	59.0	
CNP066	DUMPER	106	150	0	3	1	-0.4	-4.0	53.0	
CNP081	EXCAVATOR	112	150	0	3	2	-0.4	-4.0	62.0	
CNP102	GEN, SIL.	100	150	0	3	1	-0.4	-4.0	47.0	
CNP141	LORRY	112	150	0	3	5	-0.4	-4.0	66.0	
CNP183	H-HLD PNM RCK DRL	116	150	-10	3	2	-0.4	-4.0	56.0	*
CNP282	WATER PUMP(PTRL)	103	150	0	3	1	-0.4	-4.0	50.0	68.6
ZONE F: CUTTING ADJACENT TO TUEN MUN ROAD										
CNP002	SIL. COMPR.	100	550	-10	3	2	-1.5	-4.6	27.1	
CNP027	EXC MNTD B PNM BRKR	122	550	-10	3	2	-1.5	-4.6	49.1	
CNP066	DUMPER	106	550	-10	3	4	-1.5	-4.6	36.1	
CNP081	EXCAVATOR	112	550	-10	3	4	-1.5	-4.6	42.1	
CNP141	LORRY	112	550	-10	3	10	-1.5	-4.6	46.0	
CNP182	RCK DRL CRWL MNTD	123	550	-10	3	4	-1.5	-4.6	53.1	
CNP183	H-HLD PNM RCK DRL	116	550	-10	3	2	-1.5	-4.6	43.1	
CNP186	ROLLER VIBR.	108	550	-10	3	2	-1.5	-4.6	35.1	
CNP281	WATER PMP ELEC.	88	550	-10	3	2	-1.5	-4.6	15.1	55.6

R3CN1.WR2

NOISE SENSITIVE RECEIVER: NSR1
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 WITH NOISE MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	340	0	3	2	-1.0	-4.5	41.9
CNP027	EXC MNTD B PNM BRKR	122	340	-10	3	2	-1.0	-4.5	53.9 *
CNP066	DUMPER	106	340	0	3	4	-1.0	-4.5	51.0
CNP081	EXCAVATOR	112	340	0	3	4	-1.0	-4.5	57.0
CNP141	LORRY	112	340	0	3	5	-1.0	-4.5	57.9 **
CNP186	ROLLER VIBR.	108	340	0	3	1	-1.0	-4.5	46.9
CNP281	WATER PMP ELEC.	88	340	0	3	2	-1.0	-4.5	29.9 61.9

TOTAL CONSTRUCTION NOISE LEVEL AT NSR1 WITH MITIGATION. 77.7

* denotes noise control barrier,

** denotes reduction in number of items of plant.

R3CN2.WR2

ROUTE 3 - TING KAU INTERCHANGE NOVEMBER 1993

NOISE SENSITIVE RECEIVE NSR2

CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1

WITH NOISE MITIGATION

NOISE SOURCE	SWL	DIST.	BARR -IER	FAC REFL.	NO OF ITEMS	AIR ABS.	GRND ABS.	SPL dBA	ZONE SPL
CONSTRUCTION ZONE A: TSING YI									
% SOFT GROUND COVER =	10.4								
CNP002	SIL. COMPR.	100	1250	0	3	2	-3.5	-0.5	32.1
CNP023	HAND HELD PNEUM BR	117	1250	0	3	2	-3.5	-0.5	49.1
CNP028	HYDR. BREAKER	122	1250	-10	3	5	-3.5	-0.5	48.1 *
CNO030	BULLDOZER	115	1250	0	3	2	-3.5	-0.5	47.1
CNP048	MBL DIESEL CRANE	112	1250	0	3	1	-3.5	-0.5	41.1
CNP050	VIBR. CMPCTER	105	1250	0	3	2	-3.5	-0.5	37.1
CNP061	DERRICK BARGE	104	1250	0	3	1	-3.5	-0.5	33.1
CNP064	HND HLD PERC DRILL	103	1250	0	3	2	-3.5	-0.5	35.1
CNP067	DUMPTRUCK	117	1250	0	3	12	-3.5	-0.5	56.9 **
CNP081	EXCAVATOR	112	1250	0	3	5	-3.5	-0.5	48.1
CNP101	GEN. STND	108	1250	0	3	1	-3.5	-0.5	37.1
CNP141	LORRY	112	1250	0	3	4	-3.5	-0.5	47.1
CNP181	RCK DRL CR RWLER MNT	128	1250	-10	3	10	-3.5	-0.5	57.1 *
CNP186	ROLLER VIBR.	108	1250	0	3	2	-3.5	-0.5	40.1
CNP201	CIRC WOOD SAW	108	1250	0	3	4	-3.5	-0.5	43.1
CNP221	TUG BOAT	110	1250	0	3	1	-3.5	-0.5	39.1
CNP222	TRACTOR	118	1250	0	3	2	-3.5	-0.5	50.1
CNP282	WATER PUMP(PTRL)	103	1250	0	3	2	-3.5	-0.5	35.1 61.7
ZONE B - TSING YI									
% SOFT GROUND COVER =	10.4								
CNP028	HYDR. BREAKER	122	1150	0	3	1	-3.2	-0.5	52.1
CNP047	CONCR. PMP	109	1150	0	3	2	-3.2	-0.5	42.1
CNP066	DUMPER	106	1150	0	3	4	-3.2	-0.5	42.1
CNP081	EXCAVATOR	112	1150	0	3	2	-3.2	-0.5	45.1
CNP201	CIRC WOOD SAW	108	1150	0	3	3	-3.2	-0.5	42.8 53.9
ZONE B - ROCK ISLAND									
% SOFT GROUND COVER =	17.1								
CNP002	SIL. COMPR.	100	730	0	3	3	-2.0	-0.8	39.7
CNP021	ELECTR. BAR BENDER	90	730	0	3	1	-2.0	-0.8	24.9
CNP023	HAND HELD PNEUM BR	117	730	0	3	4	-2.0	-0.8	57.9
CNP049	CRANE TOWR ELEC.	95	730	0	3	2	-2.0	-0.8	32.9
CNP101	GEN. STND	108	730	0	3	2	-2.0	-0.8	45.9
BS5228	VIBR. POKER	95	730	0	3	10	-2.0	-0.8	39.9 58.3
ZONE B - OVER WATER									
% SOFT GROUND COVER =	28.6								
CNP044	CONCRETE MIXER/BARGE	109	420	0	3	4	-1.2	-1.3	55.1
CNP048	MBL DIESEL CRANE	112	420	0	3	3	-1.2	-1.3	56.8
CNP061	DERRICK BARGE	104	420	0	3	2	-1.2	-1.3	47.1
CNP063	DREDGER,GRAB	112	420	0	3	4	-1.2	-1.3	58.1
CNP165	PILING,LGE DE BORED	115	420	0	3	2	-1.2	-1.3	58.1 **
CNP166	PILG LGE RE REV CIRC	100	420	0	3	4	-1.2	-1.3	46.1
CNP221	TUG BOAT	110	420	0	3	2	-1.2	-1.3	53.1 **
CNP262	ELECTRIC WINCH	95	420	0	3	4	-1.2	-1.3	41.1 63.8

R3CN2.WR2

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSR2
3rd QUARTER - YEAR 1
WITH NOISE MITIGATION

CONTINUED

ZONE C MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA										
CNP002	SIL. COMPR.	100	265	0	3	4	-0.7	-4.4	47.4	
CNP044	CONCRETE MMXER BGE M	109	265	-10	3	6	-0.7	-4.4	48.2	*
CNP047	CONCR. PMP	109	265	-10	3	2	-0.7	-4.4	43.4	*
CNP048	MBL DIESEL CRANE	112	265	0	3	2	-0.7	-4.4	56.4	**
CNP049	CRANE TOWR ELEC.	95	265	0	3	2	-0.7	-4.4	39.4	
CNP061	DERRICK BARGE	104	265	0	3	6	-0.7	-4.4	53.2	
CNP066	DUMPER	106	265	0	3	6	-0.7	-4.4	55.2	
CNP081	EXCAVATOR	112	265	0	3	2	-0.7	-4.4	56.4	
CNP102	SILENCED GENERATOR	100	265	0	3	4	-0.7	-4.4	47.4	
BS5228	VIBR. POKER	95	265	0	3	20	-0.7	-4.4	49.4	
CNP186	ROLLER VIBR.	108	265	0	3	2	-0.7	-4.4	52.4	
CNP221	TUG BOAT	110	265	0	3	2	-0.7	-4.4	54.4	**
CNP262	ELECTRIC WINCH	95	265	0	3	6	-0.7	-4.4	44.2	63.4
ZONE D: MAIN ROUTE 3										
CNP002	SIL. COMPR.	100	110	0	3	1	-0.3	-3.7	50.1	
CNP021	ELECTR. BAR BENDER	90	110	0	3	1	-0.3	-3.7	40.1	
CNP023	HAND HELD PNEUM BR	117	110	-10	3	1	-0.3	-3.7	57.1	*
CNP044	CONCR. LORRY MIX	109	110	-10	3	1	-0.3	-3.7	49.1	*
CNP047	CONCR. PMP	109	110	-10	3	1	-0.3	-3.7	49.1	*
CNP048	MBL DSL CRANE	112	110	0	3	1	-0.3	-3.7	62.1	**
CNP050	VIBR. CMPCTER	105	110	0	3	1	-0.3	-3.7	55.1	
CNP065	H-HLD ELEC. GRNDR	98	110	0	3	2	-0.3	-3.7	51.2	
CNP066	DUMPER	106	110	0	3	1	-0.3	-3.7	56.1	
CNP081	EXCAVATOR	112	110	-10	3	1	-0.3	-3.7	52.1	*
CNP102	GEN, SIL.	100	110	0	3	1	-0.3	-3.7	50.1	
CNP166	PLNG LGE REV CIRC	100	110	0	3	1	-0.3	-3.7	50.1	
BS5228	VIBR. POKER	95	110	0	3	10	-0.3	-3.7	55.1	
CNP282	WATER PUMP(PTRL)	103	110	0	3	1	-0.3	-3.7	53.1	66.2
ZONE E: RAMPS G&H										
CNP002	SIL. COMPR.	100	90	0	3	1	-0.3	-3.4	52.2	
CNP048	MBL DSL CRANE	112	90	0	3	1	-0.3	-3.4	64.2	
CNP066	DUMPER	106	90	0	3	1	-0.3	-3.4	58.2	
CNP081	EXCAVATOR	112	90	0	3	2	-0.3	-3.4	67.2	
CNP102	GEN, SIL.	100	90	0	3	1	-0.3	-3.4	52.2	
CNP141	LORRY	112	90	0	3	5	-0.3	-3.4	71.2	
CNP183	H-HLD PNM RCK DRL	116	90	-10	3	2	-0.3	-3.4	61.2	*
CNP282	WATER PUMP(PTRL)	103	90	0	3	1	-0.3	-3.4	55.2	73.8
ZONE F: CUTTING ADJACENT TO TUEN MUN RO										
CNP002	SIL. COMPR.	100	310	-10	3	2	-0.9	-4.5	32.9	
CNP027	EXC MNTD B PNM BRKR	122	310	-10	3	2	-0.9	-4.5	54.9	
CNP066	DUMPER	106	310	-10	3	4	-0.9	-4.5	41.9	
CNP081	EXCAVATOR	112	310	-10	3	4	-0.9	-4.5	47.9	
CNP141	LORRY	112	310	-10	3	10	-0.9	-4.5	51.9	
CNP182	RCK DRL CRWL MNTD	123	310	-10	3	4	-0.9	-4.5	58.9	
CNP183	H-HLD PNM RCK DRL	116	310	-10	3	2	-0.9	-4.5	48.9	
CNP186	ROLLER VIBR.	108	310	-10	3	2	-0.9	-4.5	40.9	
CNP281	WATER PMP ELEC.	88	310	-10	3	2	-0.9	-4.5	20.9	61.5

R3CN2.WR2

NOISE SENSITIVE RECEIVER: NSR2
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 WITH NOISE MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	280	0	3	2	-0.8	-4.4	43.9
CNP027	EXC MNTD B PNM BRKR	122	280	-10	3	2	-0.8	-4.4	55.9 *
CNP066	DUMPER	106	280	0	3	4	-0.8	-4.4	52.9
CNP081	EXCAVATOR	112	280	0	3	4	-0.8	-4.4	58.9
CNP141	LORRY	112	280	0	3	5	-0.8	-4.4	59.8 **
CNP186	ROLLER VIBR.	108	280	0	3	1	-0.8	-4.4	48.9
CNP281	WATER PMP ELEC.	88	280	0	3	2	-0.8	-4.4	31.9 63.8

TOTAL CONSTRUCTION NOISE LEVEL AT NSR2 WITH MITIGATION. 75.9

* denotes noise control barrier,

** denotes reduction in number of items of plant.

R3CN3.WR2

ROUTE 3 - TING KAU INTERCHANGE NOVEMBER 1993
 NOISE SENSITIVE RECEIVE NSR3
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1
 WITH NOISE MITIGATION

NOISE SOURCE	SWL	DIST.	BARR -IER	FAC REFL.	NO OF ITEMS	AIR ABS.	GRND ABS.	SPL dBA	ZONE SPL
CONSTRUCTION ZONE A: TSING YI									
% SOFT GROUND COVER =	25								
CNP002	SIL. COMPR.	100	1400	0	3	2	-3.9	-1.2	30.0
CNP023	HAND HELD PNEUM BR	117	1400	0	3	2	-3.9	-1.2	47.0
CNP028	HYDR. BREAKER	122	1400	-10	3	5	-3.9	-1.2	46.0 *
CNO030	BULLDOZER	115	1400	0	3	2	-3.9	-1.2	45.0
CNP048	MBL DIESEL CRANE	112	1400	0	3	1	-3.9	-1.2	39.0
CNP050	VIBR. CMPCTER	105	1400	0	3	2	-3.9	-1.2	35.0
CNP061	DERRICK BARGE	104	1400	0	3	1	-3.9	-1.2	31.0
CNP064	HND HLD PERC DRILL	103	1400	0	3	2	-3.9	-1.2	33.0
CNP067	DUMPTRUCK	117	1400	0	3	12	-3.9	-1.2	54.8 **
CNP081	EXCAVATOR	112	1400	0	3	5	-3.9	-1.2	46.0
CNP101	GEN. STND	108	1400	0	3	1	-3.9	-1.2	35.0
CNP141	LORRY	112	1400	0	3	4	-3.9	-1.2	45.0
CNP181	RCK DRL CR RWLER MNT	128	1400	-10	3	10	-3.9	-1.2	55.0 *
CNP186	ROLLER VIBR.	108	1400	0	3	2	-3.9	-1.2	38.0
CNP201	CIRC WOOD SAW	108	1400	0	3	4	-3.9	-1.2	41.0
CNP221	TUG BOAT	110	1400	0	3	1	-3.9	-1.2	37.0
CNP222	TRACTOR	118	1400	0	3	2	-3.9	-1.2	48.0
CNP282	WATER PUMP(PTRL)	103	1400	0	3	2	-3.9	-1.2	33.0 59.6
ZONE B - TSING YI									
% SOFT GROUND COVER =	25.9								
CNP028	HYDR. BREAKER	122	1350	0	3	1	-3.8	-1.2	49.4
CNP047	CONCR. PMP	109	1350	0	3	2	-3.8	-1.2	39.4
CNP066	DUMPER	106	1350	0	3	4	-3.8	-1.2	39.4
CNP081	EXCAVATOR	112	1350	0	3	2	-3.8	-1.2	42.4
CNP201	CIRC WOOD SAW	108	1350	0	3	3	-3.8	-1.2	40.2 51.2
ZONE B - ROCK ISLAND									
% SOFT GROUND COVER =	38.9								
CNP002	SIL. COMPR.	100	900	0	3	3	-2.5	-1.8	36.3
CNP021	ELECTR. BAR BENDER	90	900	0	3	1	-2.5	-1.8	21.6
CNP023	HAND HELD PNEUM BR	117	900	0	3	4	-2.5	-1.8	54.6
CNP049	CRANE TOWR ELEC.	95	900	0	3	2	-2.5	-1.8	29.6
CNP101	GEN. STND	108	900	0	3	2	-2.5	-1.8	42.6
BS5228	VIBR. POKER	95	900	0	3	10	-2.5	-1.8	36.6 55.0
ZONE B - OVER WATER									
% SOFT GROUND COVER =	63.6								
CNP044	CONCRETE MIXER/BARGE	109	550	0	3	4	-1.5	-2.9	50.7
CNP048	MBL DIESEL CRANE	112	550	0	3	3	-1.5	-2.9	52.5
CNP061	DERRICK BARGE	104	550	0	3	2	-1.5	-2.9	42.7
CNP063	DREDGER,GRAB	112	550	0	3	4	-1.5	-2.9	53.7
CNP165	PILING,LGE DE BORED	115	550	0	3	2	-1.5	-2.9	53.7 **
CNP166	PILG LGE RE REV CIRC	100	550	0	3	4	-1.5	-2.9	41.7
CNP221	TUG BOAT	110	550	0	3	2	-1.5	-2.9	48.7 **
CNP262	ELECTRIC WINCH	95	550	0	3	4	-1.5	-2.9	36.7 59.5

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSR3
3rd QUARTER - YEAR 1
WITH NOISE MITIGATION

CONTINUED

ZONE C MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA										
CNP002	SIL. COMPR.	100	400	0	3	4	-1.1	-4.5	43.3	
CNP044	CONCRETE MMXER BGE M	109	400	-10	3	6	-1.1	-4.5	44.1	*
CNP047	CONCR. PMP	109	400	-10	3	2	-1.1	-4.5	39.3	*
CNP048	MBL DIESEL CRANE	112	400	0	3	2	-1.1	-4.5	52.3	**
CNP049	CRANE TOWR ELEC.	95	400	0	3	2	-1.1	-4.5	35.3	
CNP061	DERRICK BARGE	104	400	0	3	6	-1.1	-4.5	49.1	
CNP066	DUMPER	106	400	0	3	6	-1.1	-4.5	51.1	
CNP081	EXCAVATOR	112	400	0	3	2	-1.1	-4.5	52.3	
CNP102	SILENCED GENERATOR	100	400	0	3	4	-1.1	-4.5	43.3	
BS5228	VIBR. POKER	95	400	0	3	20	-1.1	-4.5	45.3	
CNP186	ROLLER VIBR.	108	400	0	3	2	-1.1	-4.5	48.3	
CNP221	TUG BOAT	110	400	0	3	2	-1.1	-4.5	50.3	**
CNP262	ELECTRIC WINCH	95	400	0	3	6	-1.1	-4.5	40.1	59.3
ZONE D: MAIN ROUTE 3										
CNP002	SIL. COMPR.	100	100	0	3	1	-0.3	-3.6	51.1	
CNP021	ELECTR. BAR BENDER	90	100	0	3	1	-0.3	-3.6	41.1	
CNP023	HAND HELD PNEUM BR	117	100	-10	3	1	-0.3	-3.6	58.1	*
CNP044	CONCR. LORRY MIX	109	100	-10	3	1	-0.3	-3.6	50.1	*
CNP047	CONCR. PMP	109	100	-10	3	1	-0.3	-3.6	50.1	*
CNP048	MBL DSL CRANE	112	100	0	3	1	-0.3	-3.6	63.1	**
CNP050	VIBR. CMPCTER	105	100	0	3	1	-0.3	-3.6	56.1	
CNP065	H-HLD ELEC. GRNDR	98	100	0	3	2	-0.3	-3.6	52.1	
CNP066	DUMPER	106	100	0	3	1	-0.3	-3.6	57.1	
CNP081	EXCAVATOR	112	100	-10	3	1	-0.3	-3.6	53.1	*
CNP102	GEN, SIL.	100	100	0	3	1	-0.3	-3.6	51.1	
CNP166	PLNG LGE REV CIRC	100	100	0	3	1	-0.3	-3.6	51.1	
BS5228	VIBR. POKER	95	100	0	3	10	-0.3	-3.6	56.1	
CNP282	WATER PUMP(PTRL)	103	100	0	3	1	-0.3	-3.6	54.1	67.2
ZONE E: RAMPS G&H										
CNP002	SIL. COMPR.	100	75	0	3	1	-0.2	-3.1	54.2	
CNP048	MBL DSL CRANE	112	75	0	3	1	-0.2	-3.1	66.2	
CNP066	DUMPER	106	75	0	3	1	-0.2	-3.1	60.2	
CNP081	EXCAVATOR	112	75	0	3	2	-0.2	-3.1	69.2	
CNP102	GEN, SIL.	100	75	0	3	1	-0.2	-3.1	54.2	
CNP141	LORRY	112	75	0	3	5	-0.2	-3.1	73.2	
CNP183	H-HLD PNM RCK DRL	116	75	-10	3	2	-0.2	-3.1	63.2	*
CNP282	WATER PUMP(PTRL)	103	75	0	3	1	-0.2	-3.1	57.2	75.7
ZONE F: CUTTING ADJACENT TO TUEN MUN RO										
CNP002	SIL. COMPR.	100	420	-10	3	2	-1.2	-4.5	29.8	
CNP027	EXC MNTD B PNM BRKR	122	420	-10	3	2	-1.2	-4.5	51.8	
CNP066	DUMPER	106	420	-10	3	4	-1.2	-4.5	38.8	
CNP081	EXCAVATOR	112	420	-10	3	4	-1.2	-4.5	44.8	
CNP141	LORRY	112	420	-10	3	10	-1.2	-4.5	48.8	
CNP182	RCK DRL CRWL MNTD	123	420	-10	3	4	-1.2	-4.5	55.8	
CNP183	H-HLD PNM RCK DRL	116	420	-10	3	2	-1.2	-4.5	45.8	
CNP186	ROLLER VIBR.	108	420	-10	3	2	-1.2	-4.5	37.8	
CNP281	WATER PMP ELEC.	88	420	-10	3	2	-1.2	-4.5	17.8	58.4

R3CN3.WR2

NOISE SENSITIVE RECEIVER: NSR3
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 WITH NOISE MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	60	0	3	2	-0.2	-2.6	59.7
CNP027	EXC MNTD B PNM BRKR	122	60	-10	3	2	-0.2	-2.6	71.7 *
CNP066	DUMPER	106	60	0	3	4	-0.2	-2.6	68.7
CNP081	EXCAVATOR	112	60	0	3	4	-0.2	-2.6	74.7
CNP141	LORRY	112	60	0	3	5	-0.2	-2.6	75.7 **
CNP186	ROLLER VIBR.	108	60	0	3	1	-0.2	-2.6	64.7
CNP281	WATER PMP ELEC.	88	60	0	3	2	-0.2	-2.6	47.7 79.7

TOTAL CONSTRUCTION NOISE LEVEL AT NSR3 WITH MITIGATION. 81.4

* denotes noise control barrier,

** denotes reduction in number of items of plant.

R3CN4 . WR2

ROUTE 3 - TING KAU INTERCHANGE NOVEMBER 1993
 NOISE SENSITIVE RECEIVE NSR4
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1
 WITH NOISE MITIGATION

NOISE SOURCE	SWL	DIST.	BARR -IER	FAC REFL.	NO OF ITEMS	AIR ABS.	GRND ABS.	SPL dBA	ZONE SPL
CONSTRUCTION ZONE A: TSING YI									
% SOFT GROUND COVER =	18								
CNP002	SIL. COMPR.	100	1350	0	3	2	-3.8	-0.9	30.8
CNP023	HAND HELD PNEUM BR	117	1350	0	3	2	-3.8	-0.9	47.8
CNP028	HYDR. BREAKER	122	1350	-10	3	5	-3.8	-0.9	46.8 *
CNO030	BULLDOZER	115	1350	0	3	2	-3.8	-0.9	45.8
CNP048	MBL DIESEL CRANE	112	1350	0	3	1	-3.8	-0.9	39.8
CNP050	VIBR. CMPCTER	105	1350	0	3	2	-3.8	-0.9	35.8
CNP061	DERRICK BARGE	104	1350	0	3	1	-3.8	-0.9	31.8
CNP064	HND HLD PERC DRILL	103	1350	0	3	2	-3.8	-0.9	33.8
CNP067	DUMPTRUCK	117	1350	0	3	12	-3.8	-0.9	55.6 **
CNP081	EXCAVATOR	112	1350	0	3	5	-3.8	-0.9	46.8
CNP101	GEN. STND	108	1350	0	3	1	-3.8	-0.9	35.8
CNP141	LORRY	112	1350	0	3	4	-3.8	-0.9	45.8
CNP181	RCK DRL CR RWLER MNT	128	1350	-10	3	10	-3.8	-0.9	55.8 *
CNP186	ROLLER VIBR.	108	1350	0	3	2	-3.8	-0.9	38.8
CNP201	CIRC WOOD SAW	108	1350	0	3	4	-3.8	-0.9	41.8
CNP221	TUG BOAT	110	1350	0	3	1	-3.8	-0.9	37.8
CNP222	TRACTOR	118	1350	0	3	2	-3.8	-0.9	48.8
CNP282	WATER PUMP(PTRL)	103	1350	0	3	2	-3.8	-0.9	33.8 60.4
ZONE B - TSING YI									
% SOFT GROUND COVER =	18								
CNP028	HYDR. BREAKER	122	1300	0	3	1	-3.6	-0.8	50.2
CNP047	CONCR. PMP	109	1300	0	3	2	-3.6	-0.8	40.2
CNP066	DUMPER	106	1300	0	3	4	-3.6	-0.8	40.3
CNP081	EXCAVATOR	112	1300	0	3	2	-3.6	-0.8	43.2
CNP201	CIRC WOOD SAW	108	1300	0	3	3	-3.6	-0.8	41.0 52.1
ZONE B - ROCK ISLAND									
% SOFT GROUND COVER =	27.8								
CNP002	SIL. COMPR.	100	900	0	3	3	-2.5	-1.3	36.9
CNP021	ELECTR. BAR BENDER	90	900	0	3	1	-2.5	-1.3	22.1
CNP023	HAND HELD PNEUM BR	117	900	0	3	4	-2.5	-1.3	55.1
CNP049	CRANE TOWR ELEC.	95	900	0	3	2	-2.5	-1.3	30.1
CNP101	GEN. STND	108	900	0	3	2	-2.5	-1.3	43.1
BS5228	VIBR. POKER	95	900	0	3	10	-2.5	-1.3	37.1 55.5
ZONE B - OVER WATER									
% SOFT GROUND COVER =	50								
CNP044	CONCRETE MIXER/BARGE	109	610	0	3	4	-1.7	-2.3	50.3
CNP048	MBL DIESEL CRANE	112	610	0	3	3	-1.7	-2.3	52.0
CNP061	DERRICK BARGE	104	610	0	3	2	-1.7	-2.3	42.3
CNP063	DREDGER,GRAB	112	610	0	3	4	-1.7	-2.3	53.3
CNP165	PILING,LGE DE BORED	115	610	0	3	2	-1.7	-2.3	53.3 **
CNP166	PILG LGE RE REV CIRC	100	610	0	3	4	-1.7	-2.3	41.3
CNP221	TUG BOAT	110	610	0	3	2	-1.7	-2.3	48.3 **
CNP262	ELECTRIC WINCH	95	610	0	3	4	-1.7	-2.3	36.3 59.0

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSR4
3rd QUARTER - YEAR 1
WITH NOISE MITIGATION

CONTINUED

ZONE C MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA										
CNP002	SIL. COMPR.	100	500	0	3	4	-1.4	-4.6	41.1	
CNP044	CONCRETE MMXER BGE M	109	500	-10	3	6	-1.4	-4.6	41.8	*
CNP047	CONCR. PMP	109	500	-10	3	2	-1.4	-4.6	37.0	*
CNP048	MBL DIESEL CRANE	112	500	0	3	2	-1.4	-4.6	50.0	**
CNP049	CRANE TOWR ELEC.	95	500	0	3	2	-1.4	-4.6	33.0	
CNP061	DERRICK BARGE	104	500	0	3	6	-1.4	-4.6	46.8	
CNP066	DUMPER	106	500	0	3	6	-1.4	-4.6	48.8	
CNP081	EXCAVATOR	112	500	0	3	2	-1.4	-4.6	50.0	
CNP102	SILENCED GENERATOR	100	500	0	3	4	-1.4	-4.6	41.1	
BS5228	VIBR. POKER	95	500	0	3	20	-1.4	-4.6	43.0	
CNP186	ROLLER VIBR.	108	500	0	3	2	-1.4	-4.6	46.0	
CNP221	TUG BOAT	110	500	0	3	2	-1.4	-4.6	48.0	**
CNP262	ELECTRIC WINCH	95	500	0	3	6	-1.4	-4.6	37.8	57.0
ZONE D: MAIN ROUTE 3										
CNP002	SIL. COMPR.	100	360	0	3	1	-1.0	-4.5	38.4	
CNP021	ELECTR. BAR BENDER	90	360	0	3	1	-1.0	-4.5	28.4	
CNP023	HAND HELD PNEUM BR	117	360	-10	3	1	-1.0	-4.5	45.4	*
CNP044	CONCR. LORRY MIX	109	360	-10	3	1	-1.0	-4.5	37.4	*
CNP047	CONCR. PMF	109	360	-10	3	1	-1.0	-4.5	37.4	*
CNP048	MBL DSL CRANE	112	360	0	3	1	-1.0	-4.5	50.4	**
CNP050	VIBR. CMPCTER	105	360	0	3	1	-1.0	-4.5	43.4	
CNP065	H-HLD ELEC. GRNDR	98	360	0	3	2	-1.0	-4.5	39.4	
CNP066	DUMPER	106	360	0	3	1	-1.0	-4.5	44.4	
CNP081	EXCAVATOR	112	360	-10	3	1	-1.0	-4.5	40.4	*
CNP102	GEN, SIL.	100	360	0	3	1	-1.0	-4.5	38.4	
CNP166	PLNG LGE REV CIRC	100	360	0	3	1	-1.0	-4.5	38.4	
BS5228	VIBR. POKER	95	360	0	3	10	-1.0	-4.5	43.4	
CNP282	WATER PUMP(PTRL)	103	360	0	3	1	-1.0	-4.5	41.4	54.5
ZONE E: RAMPS G&H										
CNP002	SIL. COMPR.	100	270	0	3	1	-0.8	-4.4	41.2	
CNP048	MBL DSL CRANE	112	270	0	3	1	-0.8	-4.4	53.2	
CNP066	DUMPER	106	270	0	3	1	-0.8	-4.4	47.2	
CNP081	EXCAVATOR	112	270	0	3	2	-0.8	-4.4	56.2	
CNP102	GEN, SIL.	100	270	0	3	1	-0.8	-4.4	41.2	
CNP141	LORRY	112	270	0	3	5	-0.8	-4.4	60.2	
CNP183	H-HLD PNM RCK DRL	116	270	-10	3	2	-0.8	-4.4	50.2	*
CNP282	WATER PUMP(PTRL)	103	270	0	3	1	-0.8	-4.4	44.2	62.8
ZONE F: CUTTING ADJACENT TO TUEN MUN RO										
CNP002	SIL. COMPR.	100	80	-10	3	2	-0.2	-3.2	46.5	
CNP027	EXC MNTD B PNM BRKR	122	80	-10	3	2	-0.2	-3.2	68.5	
CNP066	DUMPER	106	80	-10	3	4	-0.2	-3.2	55.5	
CNP081	EXCAVATOR	112	80	-10	3	4	-0.2	-3.2	61.5	
CNP141	LORRY	112	80	-10	3	10	-0.2	-3.2	65.5	
CNP182	RCK DRL CRWL MNTD	123	80	-10	3	4	-0.2	-3.2	72.5	
CNP183	H-HLD PNM RCK DRL	116	80	-10	3	2	-0.2	-3.2	62.5	
CNP186	ROLLER VIBR.	108	80	-10	3	2	-0.2	-3.2	54.5	
CNP281	WATER PMP ELEC.	88	80	-10	3	2	-0.2	-3.2	34.5	75.1

NOISE SENSITIVE RECEIVER: NSR4
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 WITH NOISE MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	400	0	3	2	-1.1	-4.5	40.3
CNP027	EXC MNTD B PNM BRKR	122	400	-10	3	2	-1.1	-4.5	52.3 *
CNP066	DUMPER	106	400	0	3	4	-1.1	-4.5	49.3
CNP081	EXCAVATOR	112	400	0	3	4	-1.1	-4.5	55.3
CNP141	LORRY	112	400	0	3	5	-1.1	-4.5	56.3 **
CNP186	ROLLER VIBR.	108	400	0	3	1	-1.1	-4.5	45.3
CNP281	WATER PMP ELEC.	88	400	0	3	2	-1.1	-4.5	28.3 60.3

TOTAL CONSTRUCTION NOISE LEVEL AT NSR4 WITH MITIGATION. 75.8

* denotes noise control barrier,

** denotes reduction in number of items of plant.

ROUTE 3 - TING KAU INTERCHANGE NOVEMBER 1993
 NOISE SENSITIVE RECEIVE NSR5
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1
 WITH NOISE MITIGATION

NOISE SOURCE	SWL	DIST.	BARR -IER	FAC REFL.	NO OF ITEMS	AIR ABS.	GRND ABS.	SPL dBA	ZONE SPL
CONSTRUCTION ZONE A: TSING YI									
% SOFT GROUND COVER =	23.3								
CNP002	SIL. COMPR.	100	1350	0	3	2	-3.8	-1.1	30.5
CNP023	HAND HELD PNEUM BR	117	1350	0	3	2	-3.8	-1.1	47.5
CNP028	HYDR. BREAKER	122	1350	-10	3	5	-3.8	-1.1	46.5 *
CNO030	BULLDOZER	115	1350	0	3	2	-3.8	-1.1	45.5
CNP048	MBL DIESEL CRANE	112	1350	0	3	1	-3.8	-1.1	39.5
CNP050	VIBR. CMPCTER	105	1350	0	3	2	-3.8	-1.1	35.5
CNP061	DERRICK BARGE	104	1350	0	3	1	-3.8	-1.1	31.5
CNP064	HND HLD PERC DRILL	103	1350	0	3	2	-3.8	-1.1	33.5
CNP067	DUMPTRUCK	117	1350	0	3	12	-3.8	-1.1	55.3 **
CNP081	EXCAVATOR	112	1350	0	3	5	-3.8	-1.1	46.5
CNP101	GEN. STND	108	1350	0	3	1	-3.8	-1.1	35.5
CNP141	LORRY	112	1350	0	3	4	-3.8	-1.1	45.5
CNP181	RCK DRL CR RWLER MNT	128	1350	-10	3	10	-3.8	-1.1	55.5 *
CNP186	ROLLER VIBR.	108	1350	0	3	2	-3.8	-1.1	38.5
CNP201	CIRC WOOD SAW	108	1350	0	3	4	-3.8	-1.1	41.5
CNP221	TUG BOAT	110	1350	0	3	1	-3.8	-1.1	37.5
CNP222	TRACTOR	118	1350	0	3	2	-3.8	-1.1	48.5
CNP282	WATER PUMP(PTRL)	103	1350	0	3	2	-3.8	-1.1	33.5 60.1
ZONE B - TSING YI									
% SOFT GROUND COVER =	24.2								
CNP028	HYDR. BREAKER	122	1300	0	3	1	-3.6	-1.1	49.9
CNP047	CONCR. PMP	109	1300	0	3	2	-3.6	-1.1	39.9
CNP066	DUMPER	106	1300	0	3	4	-3.6	-1.1	40.0
CNP081	EXCAVATOR	112	1300	0	3	2	-3.6	-1.1	42.9
CNP201	CIRC WOOD SAW	108	1300	0	3	3	-3.6	-1.1	40.7 51.8
ZONE B - ROCK ISLAND									
% SOFT GROUND COVER =	37								
CNP002	SIL. COMPR.	100	850	0	3	3	-2.4	-1.7	37.1
CNP021	ELECTR. BAR BENDER	90	850	0	3	1	-2.4	-1.7	22.3
CNP023	HAND HELD PNEUM BR	117	850	0	3	4	-2.4	-1.7	55.3
CNP049	CRANE TOWR ELEC.	95	850	0	3	2	-2.4	-1.7	30.3
CNP101	GEN. STND	108	850	0	3	2	-2.4	-1.7	43.3
BS5228	VIBR. POKER	95	850	0	3	10	-2.4	-1.7	37.3 55.7
ZONE B - OVER WATER									
% SOFT GROUND COVER =	63								
CNP044	CONCRETE MIXER/BARGE	109	500	0	3	4	-1.4	-2.9	51.8
CNP048	MBL DIESEL CRANE	112	500	0	3	3	-1.4	-2.9	53.5
CNP061	DERRICK BARGE	104	500	0	3	2	-1.4	-2.9	43.7
CNP063	DREDGER,GRAB	112	500	0	3	4	-1.4	-2.9	54.8
CNP165	PILING,LGE DE BORED	115	500	0	3	2	-1.4	-2.9	54.7 **
CNP166	PILG LGE RE REV CIRC	100	500	0	3	4	-1.4	-2.9	42.8
CNP221	TUG BOAT	110	500	0	3	2	-1.4	-2.9	49.7 **
CNP262	ELECTRIC WINCH	95	500	0	3	4	-1.4	-2.9	37.8 60.5

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSR5
3rd QUARTER - YEAR 1
WITH NOISE MITIGATION

CONTINUED

ZONE C MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA									
CNP002	SIL. COMPR.	100	330	0	3	4	-0.9	-4.5	45.3
CNP044	CONCRETE MMXER BGE M	109	330	-10	3	6	-0.9	-4.5	46.0 *
CNP047	CONCR. PMP	109	330	-10	3	2	-0.9	-4.5	41.2 *
CNP048	MBL DIESEL CRANE	112	330	0	3	2	-0.9	-4.5	54.2 **
CNP049	CRANE TOWR ELEC.	95	330	0	3	2	-0.9	-4.5	37.2
CNP061	DERRICK BARGE	104	330	0	3	6	-0.9	-4.5	51.0
CNP066	DUMPER	106	330	0	3	6	-0.9	-4.5	53.0
CNP081	EXCAVATOR	112	330	0	3	2	-0.9	-4.5	54.2
CNP102	SILENCED GENERATOR	100	330	0	3	4	-0.9	-4.5	45.3
BS5228	VIBR. POKER	95	330	0	3	20	-0.9	-4.5	47.2
CNP186	ROLLER VIBR.	108	330	0	3	2	-0.9	-4.5	50.2
CNP221	TUG BOAT	110	330	0	3	2	-0.9	-4.5	52.2 **
CNP262	ELECTRIC WINCH	95	330	0	3	6	-0.9	-4.5	42.0 61.2
ZONE D: MAIN ROUTE 3									
CNP002	SIL. COMPR.	100	80	0	3	1	-0.2	-3.2	53.5
CNP021	ELECTR. BAR BENDER	90	80	0	3	1	-0.2	-3.2	43.5
CNP023	HAND HELD PNEUM BR	117	80	-10	3	1	-0.2	-3.2	60.5 *
CNP044	CONCR. LORRY MIX	109	80	-10	3	1	-0.2	-3.2	52.5 *
CNP047	CONCR. PMP	109	80	-10	3	1	-0.2	-3.2	52.5 *
CNP048	MBL DSL CRANE	112	80	0	3	1	-0.2	-3.2	65.5 **
CNP050	VIBR. CMPCTER	105	80	0	3	1	-0.2	-3.2	58.5
CNP065	H-HLD ELEC. GRNDR	98	80	0	3	2	-0.2	-3.2	54.5
CNP066	DUMPER	106	80	0	3	1	-0.2	-3.2	59.5
CNP081	EXCAVATOR	112	80	-10	3	1	-0.2	-3.2	55.5 *
CNP102	GEN, SIL.	100	80	0	3	1	-0.2	-3.2	53.5
CNP166	PLNG LGE REV CIRC	100	80	0	3	1	-0.2	-3.2	53.5
BS5228	VIBR. POKER	95	80	0	3	10	-0.2	-3.2	58.5
CNP282	WATER PUMP(PTRL)	103	80	0	3	1	-0.2	-3.2	56.5 69.6
ZONE E: RAMPS G&H									
CNP002	SIL. COMPR.	100	50	0	3	1	-0.1	-2.0	58.8
CNP048	MBL DSL CRANE	112	50	0	3	1	-0.1	-2.0	70.8
CNP066	DUMPER	106	50	0	3	1	-0.1	-2.0	64.8
CNP081	EXCAVATOR	112	50	0	3	2	-0.1	-2.0	73.9
CNP102	GEN, SIL.	100	50	0	3	1	-0.1	-2.0	58.8
CNP141	LORRY	112	50	0	3	5	-0.1	-2.0	77.8
CNP183	H-HLD PNM RCK DRL	116	50	-10	3	2	-0.1	-2.0	67.9 *
CNP282	WATER PUMP(PTRL)	103	50	0	3	1	-0.1	-2.0	61.8 80.4
ZONE F: CUTTING ADJACENT TO TUEN MUN RO									
CNP002	SIL. COMPR.	100	470	-10	3	2	-1.3	-4.6	28.7
CNP027	EXC MNTD B PNM BRKR	122	470	-10	3	2	-1.3	-4.6	50.7
CNP066	DUMPER	106	470	-10	3	4	-1.3	-4.6	37.7
CNP081	EXCAVATOR	112	470	-10	3	4	-1.3	-4.6	43.7
CNP141	LORRY	112	470	-10	3	10	-1.3	-4.6	47.7
CNP182	RCK DRL CRWL MNTD	123	470	-10	3	4	-1.3	-4.6	54.7
CNP183	H-HLD PNM RCK DRL	116	470	-10	3	2	-1.3	-4.6	44.7
CNP186	ROLLER VIBR.	108	470	-10	3	2	-1.3	-4.6	36.7
CNP281	WATER PMP ELEC.	88	470	-10	3	2	-1.3	-4.6	16.7 57.3

NOISE SENSITIVE RECEIVER: NSR5
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 WITH NOISE MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	110	0	3	2	-0.3	-3.7	53.2
CNP027	EXC MNTD B PNM BRKR	122	110	-10	3	2	-0.3	-3.7	65.2 *
CNP066	DUMPER	106	110	0	3	4	-0.3	-3.7	62.2
CNP081	EXCAVATOR	112	110	0	3	4	-0.3	-3.7	68.2
CNP141	LORRY	112	110	0	3	5	-0.3	-3.7	69.1 **
CNP186	ROLLER VIBR.	108	110	0	3	1	-0.3	-3.7	58.1
CNP281	WATER PMP ELEC.	88	110	0	3	2	-0.3	-3.7	41.2 73.1

TOTAL CONSTRUCTION NOISE LEVEL AT NSR5 WITH MITIGATION. 81.6

* denotes noise control barrier,

** denotes reduction in number of items of plant.

R3CN6.WR2

ROUTE 3 - TING KAU INTERCHANGE NOVEMBER 1993

NOISE SENSITIVE RECEIVE NSR6

CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1

WITH NOISE MITIGATION

NOISE SOURCE	SWL	DIST.	BARR -IER	FAC REFL.	NO OF ITEMS	AIR ABS.	GRND ABS.	SPL dBA	ZONE SPL
CONSTRUCTION ZONE A: TSING YI									
% SOFT GROUND COVER =	10.4								
CNP002	SIL. COMPR.	100	1280	0	3	2	-3.6	-0.5	31.8
CNP023	HAND HELD PNEUM BR	117	1280	0	3	2	-3.6	-0.5	48.8
CNP028	HYDR. BREAKER	122	1280	-10	3	5	-3.6	-0.5	47.8 *
CNO030	BULLDOZER	115	1280	0	3	2	-3.6	-0.5	46.8
CNP048	MBL DIESEL CRANE	112	1280	0	3	1	-3.6	-0.5	40.8
CNP050	VIBR. CMPCTER	105	1280	0	3	2	-3.6	-0.5	36.8
CNP061	DERRICK BARGE	104	1280	0	3	1	-3.6	-0.5	32.8
CNP064	HND HLD PERC DRILL	103	1280	0	3	2	-3.6	-0.5	34.8
CNP067	DUMPTRUCK	117	1280	0	3	12	-3.6	-0.5	56.6 **
CNP081	EXCAVATOR	112	1280	0	3	5	-3.6	-0.5	47.8
CNP101	GEN. STND	108	1280	0	3	1	-3.6	-0.5	36.8
CNP141	LORRY	112	1280	0	3	4	-3.6	-0.5	46.8
CNP181	RCK DRL CR RWLER MNT	128	1280	-10	3	10	-3.6	-0.5	56.8 *
CNP186	ROLLER VIBR.	108	1280	0	3	2	-3.6	-0.5	39.8
CNP201	CIRC WOOD SAW	108	1280	0	3	4	-3.6	-0.5	42.8
CNP221	TUG BOAT	110	1280	0	3	1	-3.6	-0.5	38.8
CNP222	TRACTOR	118	1280	0	3	2	-3.6	-0.5	49.8
CNP282	WATER PUMP(PTRL)	103	1280	0	3	2	-3.6	-0.5	34.8 61.4
ZONE B - TSING YI									
% SOFT GROUND COVER =	10.4								
CNP028	HYDR. BREAKER	122	1190	0	3	1	-3.3	-0.5	51.7
CNP047	CONCR. PMP	109	1190	0	3	2	-3.3	-0.5	41.7
CNP066	DUMPER	106	1190	0	3	4	-3.3	-0.5	41.7
CNP081	EXCAVATOR	112	1190	0	3	2	-3.3	-0.5	44.7
CNP201	CIRC WOOD SAW	108	1190	0	3	3	-3.3	-0.5	42.4 53.5
ZONE B - ROCK ISLAND									
% SOFT GROUND COVER =	14.5								
CNP002	SIL. COMPR.	100	790	0	3	3	-2.2	-0.7	38.9
CNP021	ELECTR. BAR BENDER	90	790	0	3	1	-2.2	-0.7	24.2
CNP023	HAND HELD PNEUM BR	117	790	0	3	4	-2.2	-0.7	57.2
CNP049	CRANE TOWR ELEC.	95	790	0	3	2	-2.2	-0.7	32.2
CNP101	GEN. STND	108	790	0	3	2	-2.2	-0.7	45.2
BS5228	VIBR. POKER	95	790	0	3	10	-2.2	-0.7	39.2 57.6
ZONE B - OVER WATER									
% SOFT GROUND COVER =	26.5								
CNP044	CONCRETE MIXER/BARGE	109	510	0	3	4	-1.4	-1.2	53.2
CNP048	MBL DIESEL CRANE	112	510	0	3	3	-1.4	-1.2	55.0
CNP061	DERRICK BARGE	104	510	0	3	2	-1.4	-1.2	45.2
CNP063	DREDGER, GRAB	112	510	0	3	4	-1.4	-1.2	56.2
CNP165	PILING, LGE DE BORED	115	510	0	3	2	-1.4	-1.2	56.2 **
CNP166	PILG LGE RE REV CIRC	100	510	0	3	4	-1.4	-1.2	44.2
CNP221	TUG BOAT	110	510	0	3	2	-1.4	-1.2	51.2 **
CNP262	ELECTRIC WINCH	95	510	0	3	4	-1.4	-1.2	39.2 61.9

NOISE SENSITIVE RECEIVE
CONSTRUCTION PERIOD:

NSR6
3rd QUARTER - YEAR 1
WITH NOISE MITIGATION

CONTINUED

ZONE C MITIGATION INVOLVES SCREEN ON STH SIDE OF RECLAMATION AREA										
CNP002	SIL. COMPR.	100	370	0	3	4	-1.0	-4.5	44.1	
CNP044	CONCRETE MMXER BGE M	109	370	-10	3	6	-1.0	-4.5	44.9	*
CNP047	CONCR. PMP	109	370	-10	3	2	-1.0	-4.5	40.1	*
CNP048	MBL DIESEL CRANE	112	370	0	3	2	-1.0	-4.5	53.1	**
CNP049	CRANE TOWR ELEC.	95	370	0	3	2	-1.0	-4.5	36.1	
CNP061	DERRICK BARGE	104	370	0	3	6	-1.0	-4.5	49.9	
CNP066	DUMPER	106	370	0	3	6	-1.0	-4.5	51.9	
CNP081	EXCAVATOR	112	370	0	3	2	-1.0	-4.5	53.1	
CNP102	SILENCED GENERATOR	100	370	0	3	4	-1.0	-4.5	44.1	
BS5228	VIBR. POKER	95	370	0	3	20	-1.0	-4.5	46.1	
CNP186	ROLLER VIBR.	108	370	0	3	2	-1.0	-4.5	49.1	
CNP221	TUG BOAT	110	370	0	3	2	-1.0	-4.5	51.1	**
CNP262	ELECTRIC WINCH	95	370	0	3	6	-1.0	-4.5	40.9	60.1
ZONE D: MAIN ROUTE 3										
CNP002	SIL. COMPR.	100	185	0	3	1	-0.5	-4.2	44.9	
CNP021	ELECTR. BAR BENDER	90	185	0	3	1	-0.5	-4.2	34.9	
CNP023	HAND HELD PNEUM BR	117	185	-10	3	1	-0.5	-4.2	51.9	*
CNP044	CONCR. LORRY MIX	109	185	-10	3	1	-0.5	-4.2	43.9	*
CNP047	CONCR. PMP	109	185	-10	3	1	-0.5	-4.2	43.9	*
CNP048	MBL DSL CRANE	112	185	0	3	1	-0.5	-4.2	56.9	**
CNP050	VIBR. CMPCTER	105	185	0	3	1	-0.5	-4.2	49.9	
CNP065	H-HLD ELEC. GRNDR	98	185	0	3	2	-0.5	-4.2	46.0	
CNP066	DUMPER	106	185	0	3	1	-0.5	-4.2	50.9	
CNP081	EXCAVATOR	112	185	-10	3	1	-0.5	-4.2	46.9	*
CNP102	GEN, SIL.	100	185	0	3	1	-0.5	-4.2	44.9	
CNP166	PLNG LGE REV CIRC	100	185	0	3	1	-0.5	-4.2	44.9	
BS5228	VIBR. POKER	95	185	0	3	10	-0.5	-4.2	49.9	
CNP282	WATER PUMP(PTRL)	103	185	0	3	1	-0.5	-4.2	47.9	61.0
ZONE E: RAMPS G&H										
CNP002	SIL. COMPR.	100	160	0	3	1	-0.4	-4.1	46.4	
CNP048	MBL DSL CRANE	112	160	0	3	1	-0.4	-4.1	58.4	
CNP066	DUMPER	106	160	0	3	1	-0.4	-4.1	52.4	
CNP081	EXCAVATOR	112	160	0	3	2	-0.4	-4.1	61.4	
CNP102	GEN, SIL.	100	160	0	3	1	-0.4	-4.1	46.4	
CNP141	LORRY	112	160	0	3	5	-0.4	-4.1	65.4	
CNP183	H-HLD PNM RCK DRL	116	160	-10	3	2	-0.4	-4.1	55.4	*
CNP282	WATER PUMP(PTRL)	103	160	0	3	1	-0.4	-4.1	49.4	67.9
ZONE F: CUTTING ADJACENT TO TUEN MUN RO										
CNP002	SIL. COMPR.	100	200	-10	3	2	-0.6	-4.2	37.2	
CNP027	EXC MNTD B PNM BRKR	122	200	-10	3	2	-0.6	-4.2	59.2	
CNP066	DUMPER	106	200	-10	3	4	-0.6	-4.2	46.2	
CNP081	EXCAVATOR	112	200	-10	3	4	-0.6	-4.2	52.2	
CNP141	LORRY	112	200	-10	3	10	-0.6	-4.2	56.2	
CNP182	RCK DRL CRWL MNTD	123	200	-10	3	4	-0.6	-4.2	63.2	
CNP183	H-HLD PNM RCK DRL	116	200	-10	3	2	-0.6	-4.2	53.2	
CNP186	ROLLER VIBR.	108	200	-10	3	2	-0.6	-4.2	45.2	
CNP281	WATER PMP ELEC.	88	200	-10	3	2	-0.6	-4.2	25.2	65.8

R3CN6.WR2

NOISE SENSITIVE RECEIVER: NSR6
 CONSTRUCTION PERIOD: 3rd QUARTER - YEAR 1 CONTINUED
 WITH NOISE MITIGATION

ZONE G: RAMPS C&D

CNP002	SIL. COMPR.	100	300	0	3	2	-0.8	-4.4	43.2
CNP027	EXC MNTD B PNM BRKR	122	300	-10	3	2	-0.8	-4.4	55.2 *
CNP066	DUMPER	106	300	0	3	4	-0.8	-4.4	52.2
CNP081	EXCAVATOR	112	300	0	3	4	-0.8	-4.4	58.2
CNP141	LORRY	112	300	0	3	5	-0.8	-4.4	59.2 **
CNP186	ROLLER VIBR.	108	300	0	3	1	-0.8	-4.4	48.2
CNP281	WATER PMP ELEC.	88	300	0	3	2	-0.8	-4.4	31.2 63.2

TOTAL CONSTRUCTION NOISE LEVEL AT NSR6 WITH MITIGATION. 72.6

* denotes noise control barrier,

** denotes reduction in number of items of plant.

APPENDIX A6.2

SCHALLPLAN Version 3.70 /05.07.93

(C) 1986-93 Braunstein + Berndt GmbH

S O U N D - L E V E L - C A L C U L A T I O N

axis

Project : axis
Run file : 010

Date : 26.08.93
Time : 11:21

Run command:

calc at nsr3 from main bridge in 1 degree steps - no facade correction
AXIS;KD ASP 31 PROTOK31 SW1;S6 I2 H1 H6 R1 G1//

Calculation parameters and standards:

Number of reflections : 1
Max. reflection loss : 1.5
Incr. of scanning angle: 1.0

Standards

Road : Great Britain-> Calculation of Road Traffic Noise
Railroad: Austria -> \AL 28 + \AL 30
Hong Kong Construction noise

Output commands:

ASP Results 031

Files:

G001
H001
H006
I002
R001
S006

Project : axis

Cycle : 000

receiver: NSR3 X: 5958.0 Y: 5724.5 H: 67.2 terrain elevation: 65.2
begin angle: 209.8 end angle: 30.7 floor height: 2.8 floor No.: 1 land usage:

S006																						
angle	km/miles	L10		Geometry		DISTANCE		Screening					SCREENING LOSS		View angle		Groundabsorption			Atten	Ref.	Level
		18h	dB(A)	E _{SI}	h	D _E	A	B	C	D	Z	h _{eff}	D _Z	w	D _w	G	h _m	D _B	D _D	loss	dB(A)	dB(A)
				m	m		m				m	dB(A)		dB(A)		m	dB(A)	dB(A)	dB(A)			dB(A)
230.3	-999999979	87.1	78.9	539.3	102.5	-16.1	116.8	655.3	1119.5	348.0	0.64	18.2	15.1	1.0	-22.6	-	-	-	-	-	-	33.3
231.3	-999999979	87.1	78.9	539.3	102.5	-16.1	120.4	606.9	1086.1	359.4	0.58	17.2	14.9	1.0	-22.6	-	-	-	-	-	-	33.6
232.3	-999999979	87.1	78.9	539.3	102.5	-16.1	124.3	559.5	1055.0	371.8	0.53	16.2	14.6	1.0	-22.6	-	-	-	-	-	-	33.9
233.3	-999999979	87.1	78.9	539.3	102.5	-16.1	128.5	512.8	1025.9	385.1	0.47	15.1	14.3	1.0	-22.6	-	-	-	-	-	-	34.2
234.3	-999999979	87.1	78.9	539.3	102.5	-16.1	674.2	286.4	998.7	46.5	8.45	59.1	26.1	1.0	-22.6	-	-	-	-	-	-	22.4
235.3	-999999979	87.1	78.9	539.3	102.5	-16.1	658.8	217.5	973.2	106.7	9.83	59.0	27.0	1.0	-22.6	-	-	-	-	-	-	21.5
236.3	-999999979	87.1	78.9	539.3	102.5	-16.1	648.2	201.2	949.2	110.1	10.34	58.8	27.3	1.0	-22.6	-	-	-	-	-	-	21.2
237.3	-999999979	87.1	78.9	539.3	102.5	-16.1	657.9	189.4	926.7	90.0	10.61	57.9	27.5	0.2	-29.2	-	-	-	-	-	-	14.4
237.3	-999999979	84.7	79.5	435.2	102.5	-15.1	657.9	187.4	924.6	90.0	10.68	57.8	27.7	0.8	-23.6	-	-	-	-	-	-	18.3
238.3	-999999979	84.7	79.5	435.2	102.5	-15.1	668.0	169.6	896.3	70.0	11.24	56.6	28.0	1.0	-22.6	-	-	-	-	-	-	19.0
239.3	-999999979	84.7	79.5	435.2	102.5	-15.1	678.7	104.6	870.1	102.5	15.76	55.4	30.0	1.0	-22.6	-	-	-	-	-	-	17.0
240.3	-999999979	84.7	79.5	275.0	102.5	-13.2	666.3	48.4	848.9	177.7	43.58	55.2	30.0	0.3	-27.7	-	-	-	-	-	-	13.8
240.3	-999999979	84.7	79.5	435.2	102.5	-15.1	666.3	47.9	845.5	177.7	46.40	55.1	30.0	0.7	-24.1	-	-	-	-	-	-	15.4
241.3	-999999979	84.7	79.5	275.0	102.5	-13.2	641.9	178.7	809.6	-	11.02	55.0	27.8	1.0	-22.6	-	-	-	-	-	-	21.1
242.3	-999999979	84.7	79.5	275.0	102.5	-13.2	619.5	166.3	774.1	-	11.68	54.7	28.2	1.0	-22.6	-	-	-	-	-	-	20.7
243.3	-999999979	84.7	79.5	275.0	102.5	-13.2	598.7	155.3	741.7	-	12.35	54.5	28.6	0.4	-26.6	-	-	-	-	-	-	16.3
243.3	-999999979	84.7	79.5	214.4	102.5	-12.1	598.7	154.4	740.7	-	12.40	54.4	28.6	0.6	-24.7	-	-	-	-	-	-	19.2
244.3	-999999979	84.7	79.5	214.4	102.5	-12.1	579.6	136.6	702.6	-	13.58	53.9	29.3	1.0	-22.6	-	-	-	-	-	-	20.7
245.3	-999999979	84.7	79.5	104.3	102.5	-9.2	561.8	131.0	678.6	-	14.13	53.8	29.5	0.2	-29.5	-	-	-	-	-	-	16.4
245.3	-999999979	84.7	79.5	214.4	102.5	-12.1	561.8	121.5	668.4	-	14.87	53.3	29.9	0.8	-23.5	-	-	-	-	-	-	19.1
246.3	-999999979	84.7	79.5	104.3	102.5	-9.2	545.2	90.1	616.5	-	18.84	51.8	30.0	1.0	-22.6	-	-	-	-	-	-	22.9
247.3	-999999979	84.7	79.5	104.3	102.5	-9.2	529.8	62.5	565.0	-	27.28	49.9	30.0	0.4	-27.0	-	-	-	-	-	-	18.5
247.3	-999999979	84.7	79.5	86.5	102.5	-8.6	529.8	61.7	563.8	-	27.71	49.9	30.0	0.6	-24.5	-	-	-	-	-	-	21.6
248.3	-999999979	84.7	79.5	86.5	102.5	-8.6	512.0	48.0	513.2	-	46.75	47.9	30.0	1.0	-22.6	-	-	-	-	-	-	23.6
249.3	-999999979	84.7	79.5	86.5	102.5	-8.6	406.4	64.8	471.1	-	0.17	4.4	10.4	1.0	-22.6	-	-	-	-	-	-	43.2
250.3	-999999979	84.7	79.5	94.0	102.5	-8.9	368.2	68.8	436.8	-	0.14	4.1	10.0	1.0	-22.6	-	-	-	-	-	-	43.2

S006

angle	km/miles	L10 18h dB(A)	Geometry		dist ¹⁰⁵³ D E	Screening					Screening loss		View angle		Groundabsorption			Atten D loss dB(A)	Ref. loss dB(A)	Level dB(A)
			E SI m	h m		A	B	C	D	Z	h eff m	D Z dB(A)	w	D w dB(A)	G	h m	D B dB(A)			
250.3	-999999795	84.7 79.5	86.5	102.5	-8.6	368.2	67.5	435.6	-	0.14	4.0	10.0	0.0	-42.5	-	-	-	-	-	23.7
251.3	-999999795	84.7 79.5	68.4	102.3	-7.7	335.9	72.9	408.7	-	0.14	4.1	10.0	0.5	-26.0	-	-	-	-	-	41.0
251.3	-999999795	84.7 79.5	94.0	102.5	-8.9	335.9	72.5	408.4	-	0.13	3.9	9.8	0.5	-25.2	-	-	-	-	-	40.9
252.3	-999999795	84.7 79.5	68.4	101.6	-7.7	313.4	62.7	376.0	-	0.13	3.7	9.9	1.0	-22.6	-	-	-	-	-	44.5
253.3	-999999795	84.7 79.5	68.4	100.9	-7.7	297.8	50.5	348.2	-	0.14	3.5	10.0	1.0	-22.6	-	-	-	-	-	44.5
254.3	-999999795	84.7 79.5	100.7	100.2	-9.1	283.8	41.1	324.7	-	0.15	3.3	10.1	0.6	-25.1	-	-	-	-	-	40.4
254.3	-999999795	84.7 79.5	68.4	100.3	-7.7	283.8	40.7	324.3	-	0.13	3.1	9.9	0.4	-26.1	-	-	-	-	-	41.0
255.3	-999999795	84.7 79.5	100.7	100.0	-9.1	271.2	39.2	310.2	-	0.15	3.2	10.2	1.0	-22.6	-	-	-	-	-	42.9
256.3	-999999795	84.7 79.5	100.7	99.9	-9.1	259.7	37.5	297.1	-	0.16	3.2	10.3	1.0	-22.6	-	-	-	-	-	42.8
257.3	-999999795	84.7 79.5	100.7	99.7	-9.1	249.2	36.0	285.1	-	0.17	3.2	10.4	1.0	-22.6	-	-	-	-	-	42.7
258.3	-999999795	84.7 79.5	100.7	99.6	-9.1	239.7	34.6	274.1	-	0.17	3.2	10.4	1.0	-22.6	-	-	-	-	-	42.6
259.3	-999999795	84.7 79.5	100.7	99.5	-9.1	230.9	33.3	264.0	-	0.18	3.2	10.5	1.0	-22.6	-	-	-	-	-	42.5
260.3	-999999795	84.7 79.5	100.7	99.3	-9.1	222.8	32.1	254.8	-	0.19	3.2	10.6	1.0	-22.6	-	-	-	-	-	42.5
261.3	-999999795	84.7 79.5	100.7	99.2	-9.1	214.6	31.8	246.2	-	0.19	3.2	10.6	1.0	-22.6	-	-	-	-	-	42.5
262.3	-999999795	84.7 79.5	100.7	99.1	-9.1	207.0	31.5	238.3	-	0.18	3.2	10.6	1.0	-22.6	-	-	-	-	-	42.5
263.3	-999999795	84.7 79.5	92.3	99.0	-8.7	199.9	31.5	231.2	-	0.19	3.2	10.6	0.1	-31.2	-	-	-	-	-	34.1
263.3	-999999795	84.7 79.5	100.7	99.0	-9.1	199.9	31.2	231.0	-	0.18	3.1	10.5	0.9	-23.2	-	-	-	-	-	41.9
264.3	-999999795	84.7 79.5	92.3	98.9	-8.7	193.4	30.5	223.7	-	0.18	3.1	10.6	1.0	-22.6	-	-	-	-	-	42.8
265.3	-999999795	84.7 79.5	92.3	98.6	-8.7	187.3	29.5	216.6	-	0.19	3.1	10.7	1.0	-22.6	-	-	-	-	-	42.8
266.3	-999999795	84.7 79.5	92.3	98.4	-8.7	181.7	28.6	210.1	-	0.20	3.1	10.7	1.0	-22.6	-	-	-	-	-	42.7
267.3	-999999795	84.7 79.5	92.3	98.3	-8.7	176.5	27.8	204.0	-	0.20	3.1	10.8	1.0	-22.6	-	-	-	-	-	42.6
268.3	-999999795	84.7 79.5	92.3	98.1	-8.7	171.6	27.0	198.4	-	0.21	3.1	10.9	1.0	-22.6	-	-	-	-	-	42.6
269.3	-999999795	84.7 79.5	92.3	97.9	-8.7	167.1	26.2	193.1	-	0.21	3.1	10.9	1.0	-22.6	-	-	-	-	-	42.5
270.3	-999999795	84.7 79.5	92.3	97.8	-8.7	162.8	25.6	188.1	-	0.22	3.1	11.0	1.0	-22.6	-	-	-	-	-	42.4
271.3	-999999795	84.7 79.5	92.3	97.6	-8.7	158.8	24.9	183.5	-	0.22	3.1	11.0	1.0	-22.6	-	-	-	-	-	42.4
272.3	-999999795	84.7 79.5	92.3	97.5	-8.7	155.0	24.3	179.1	-	0.23	3.1	11.1	1.0	-22.6	-	-	-	-	-	42.3
273.3	-999999795	84.7 79.5	92.3	97.3	-8.7	151.5	23.7	175.0	-	0.24	3.1	11.1	1.0	-22.6	-	-	-	-	-	42.3
274.3	-999999795	84.7 79.5	92.3	97.2	-8.7	148.2	23.2	171.1	-	0.24	3.1	11.2	1.0	-22.6	-	-	-	-	-	42.2
275.3	-999999795	84.7 79.5	92.3	97.1	-8.7	145.0	22.7	167.5	-	0.25	3.1	11.2	1.0	-22.6	-	-	-	-	-	42.2
276.3	-999999795	84.7 79.5	92.3	96.9	-8.7	142.1	22.2	164.0	-	0.25	3.1	11.3	1.0	-22.6	-	-	-	-	-	42.1
277.3	-999999795	84.7 79.5	92.3	96.8	-8.7	139.3	21.8	160.8	-	0.26	3.1	11.3	1.0	-22.6	-	-	-	-	-	42.1

Project : axis

S006

angle	km/miles	L10 18h dB(A)	Geometry ^{distance} loss			Screening					Screening ^{Screening} loss		View angle		Groundabsorption			Atten loss dB(A)	Ref. loss dB(A)	Level dB(A)	L10	
			E SI m	h m	D E	A	B	C	D	Z	h eff m	D Z dB(A)	w	D w dB(A)	G	h m	D B dB(A)					D D dB(A)
278.3	-999999795	84.7 79.5	92.3	96.7	-8.7	136.6	21.3	157.7	-	0.26	3.1	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.0
279.3	-999999795	84.7 79.5	92.3	96.6	-8.7	134.1	20.9	154.8	-	0.27	3.1	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.0
280.3	-999999795	84.7 79.5	92.3	96.5	-8.7	132.0	20.3	152.0	-	0.26	3.0	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.1
281.3	-999999795	84.7 79.5	92.3	96.4	-8.7	130.0	19.7	149.4	-	0.24	2.9	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.2
282.3	-999999795	84.7 79.5	92.3	96.3	-8.7	128.0	19.1	146.9	-	0.23	2.8	11.1	1.0	-22.6	-	-	-	-	-	-	-	42.3
283.3	-999999795	84.7 79.5	92.3	96.2	-8.7	126.2	18.6	144.6	-	0.22	2.7	11.0	0.9	-23.1	-	-	-	-	-	-	-	41.9
283.3	-999999795	84.7 79.5	98.0	96.2	-8.9	126.2	18.5	144.5	-	0.22	2.7	11.0	0.1	-31.5	-	-	-	-	-	-	-	33.2
284.3	-999999795	84.7 79.5	98.0	96.1	-8.9	124.5	18.2	142.5	-	0.22	2.6	11.0	1.0	-22.6	-	-	-	-	-	-	-	42.3
285.3	-999999795	84.7 79.5	98.0	95.9	-8.9	122.9	18.0	140.6	-	0.22	2.6	11.0	1.0	-22.6	-	-	-	-	-	-	-	42.2
286.3	-999999795	84.7 79.5	98.0	95.8	-8.9	121.3	17.7	138.8	-	0.22	2.6	11.0	1.0	-22.6	-	-	-	-	-	-	-	42.2
287.3	-999999795	84.7 79.5	98.0	95.6	-8.9	119.8	17.5	137.1	-	0.23	2.6	11.1	1.0	-22.6	-	-	-	-	-	-	-	42.2
288.3	-999999795	84.7 79.5	98.0	95.5	-8.9	118.4	17.3	135.5	-	0.23	2.6	11.1	1.0	-22.6	-	-	-	-	-	-	-	42.2
289.3	-999999795	84.7 79.5	98.0	95.4	-8.9	117.1	17.1	133.9	-	0.23	2.6	11.1	1.0	-22.6	-	-	-	-	-	-	-	42.1
290.3	-999999795	84.7 79.5	98.0	95.2	-8.9	115.8	16.9	132.4	-	0.24	2.6	11.1	1.0	-22.6	-	-	-	-	-	-	-	42.1
291.3	-999999795	84.7 79.5	98.0	95.1	-8.9	114.6	16.7	131.0	-	0.24	2.6	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.0
292.3	-999999795	84.7 79.5	98.0	95.0	-8.9	113.4	16.5	129.7	-	0.24	2.6	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.0
293.3	-999999795	84.7 79.5	98.0	94.8	-8.9	112.3	16.4	128.4	-	0.24	2.6	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.0
294.3	-999999795	84.7 79.5	98.0	94.7	-8.9	111.2	16.2	127.2	-	0.25	2.6	11.3	1.0	-22.6	-	-	-	-	-	-	-	42.0
295.3	-999999795	84.7 79.5	98.0	94.6	-8.9	110.2	16.1	126.0	-	0.25	2.6	11.3	1.0	-22.6	-	-	-	-	-	-	-	42.0
296.3	-999999795	84.7 79.5	98.0	94.5	-8.9	109.3	15.9	124.9	-	0.25	2.6	11.3	1.0	-22.6	-	-	-	-	-	-	-	41.9
297.3	-999999795	84.7 79.5	98.0	94.3	-8.9	108.4	15.8	123.9	-	0.25	2.6	11.3	1.0	-22.6	-	-	-	-	-	-	-	41.9
298.3	-999999795	84.7 79.5	98.0	94.2	-8.9	107.5	15.6	122.9	-	0.26	2.6	11.3	1.0	-22.6	-	-	-	-	-	-	-	41.9
299.3	-999999795	84.7 79.5	98.0	94.1	-8.9	106.7	15.5	122.0	-	0.26	2.6	11.4	1.0	-22.6	-	-	-	-	-	-	-	41.9
300.3	-999999795	84.7 79.5	98.0	94.0	-8.9	105.9	15.4	121.1	-	0.26	2.6	11.4	1.0	-22.6	-	-	-	-	-	-	-	41.9
301.3	-999999795	84.7 79.5	98.0	93.9	-8.9	105.2	15.3	120.2	-	0.26	2.6	11.4	1.0	-22.6	-	-	-	-	-	-	-	41.8
302.3	-999999795	84.7 79.5	98.0	93.8	-8.9	104.5	15.2	119.4	-	0.26	2.6	11.4	1.0	-22.6	-	-	-	-	-	-	-	41.8
303.3	-999999795	84.7 79.5	98.0	93.7	-8.9	103.9	15.0	118.7	-	0.27	2.7	11.5	1.0	-22.6	-	-	-	-	-	-	-	41.7
304.3	-999999795	84.7 79.5	98.0	93.6	-8.9	103.4	14.9	118.0	-	0.28	2.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.7
305.3	-999999795	84.7 79.5	99.3	93.5	-9.0	102.9	14.7	117.4	-	0.28	2.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.5
305.3	-999999795	84.7 79.5	98.0	93.5	-8.9	102.9	14.7	117.3	-	0.28	2.7	11.5	0.1	-32.6	-	-	-	-	-	-	-	31.7
306.3	-999999795	84.7 79.5	99.3	93.4	-9.0	102.4	14.7	116.8	-	0.29	2.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.6

Project : axis

S006																					
angle	km/miles	L10 18h dB(A)	Geometry			Screening					Screening loss		View angle		Groundabsorption			Atten loss dB(A)	Ref. dB(A)	Level dB(A)	L10
			E SI m	h m	D E	A	B	C	D	Z	h eff m	D Z dB(A)	w	D w dB(A)	G	h m m	D g dB(A)				
307.3	-999999795	84.7 79.5	99.3	93.4	-9.0	102.0	14.6	116.3	-	0.29	2.7	11.6	1.0	-22.6	-	-	-	-	-	41.6	
308.3	-999999795	84.7 79.5	99.3	93.3	-9.0	101.6	14.6	115.9	-	0.29	2.7	11.6	1.0	-22.6	-	-	-	-	-	41.5	
309.3	-999999795	84.7 79.5	99.3	93.2	-9.0	101.3	14.5	115.5	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
310.3	-999999795	84.7 79.5	99.3	93.2	-9.0	100.9	14.5	115.1	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
311.3	-999999795	84.7 79.5	99.3	93.1	-9.0	100.6	14.4	114.7	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
312.3	-999999795	84.7 79.5	99.3	93.1	-9.0	100.3	14.4	114.4	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
313.3	-999999795	84.7 79.5	99.3	93.0	-9.0	100.1	14.3	114.1	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
314.3	-999999795	84.7 79.5	99.3	93.0	-9.0	99.9	14.3	113.9	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
315.3	-999999795	84.7 79.5	99.3	92.9	-9.0	99.7	14.3	113.7	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
316.3	-999999795	84.7 79.5	99.3	92.9	-9.0	99.6	14.3	113.5	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
317.3	-999999795	84.7 79.5	99.3	92.8	-9.0	99.4	14.2	113.4	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
318.3	-999999795	84.7 79.5	99.3	92.7	-9.0	99.3	14.2	113.3	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
319.3	-999999795	84.7 79.5	99.3	92.7	-9.0	99.3	14.2	113.2	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
320.3	-999999795	84.7 79.5	99.3	92.6	-8.9	99.2	14.2	113.1	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
321.3	-999999795	84.7 79.5	99.3	92.6	-8.9	99.2	14.2	113.1	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
322.3	-999999795	84.7 79.5	99.3	92.5	-8.9	99.2	14.2	113.1	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
323.3	-999999795	84.7 79.5	99.3	92.5	-8.9	99.3	14.2	113.2	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
324.3	-999999795	84.7 79.5	99.3	92.4	-8.9	99.3	14.2	113.3	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
325.3	-999999795	84.7 79.5	99.3	92.4	-8.9	99.4	14.3	113.4	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
326.3	-999999795	84.7 79.5	99.3	92.3	-8.9	99.6	14.3	113.6	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
327.3	-999999795	84.7 79.5	99.3	92.3	-8.9	99.7	14.3	113.7	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
328.3	-999999795	84.7 79.5	99.3	92.2	-8.9	99.9	14.3	114.0	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
329.3	-999999795	84.7 79.5	99.3	92.1	-8.9	100.1	14.4	114.2	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
330.3	-999999795	84.7 79.5	99.3	92.1	-8.9	100.4	14.4	114.5	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
331.3	-999999795	84.7 79.5	99.3	92.0	-8.9	100.7	14.4	114.8	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
332.3	-999999795	84.7 79.5	99.3	92.0	-8.9	101.0	14.5	115.2	-	0.30	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
333.3	-999999795	84.7 79.5	99.3	91.9	-8.9	101.3	14.5	115.6	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
334.3	-999999795	84.7 79.5	99.3	91.9	-8.9	101.7	14.6	116.0	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
335.3	-999999795	84.7 79.5	99.3	91.8	-8.9	102.1	14.7	116.5	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
336.3	-999999795	84.7 79.5	99.3	91.7	-8.9	102.5	14.7	117.0	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	
337.3	-999999795	84.7 79.5	99.3	91.7	-8.9	103.0	14.8	117.5	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	41.5	

Project : axis

S006

angle	km/miles	L10		Geometry		Antenna	Screening					Screening	View angle		Groundabsorption			Atten	Ref.	Level	L10		
		18h	dB(A)	E _{SI}	h	D _E	A	B	C	D	Z	h _{eff}	D _Z	w	D _w	G	h _m	D _B	D _D	loss	dB(A)	dB(A)	dB(A)
				m	m		m					m	dB(A)		dB(A)		m	dB(A)	dB(A)	dB(A)		dB(A)	
338.3	-99999979	84.7	79.5	99.3	91.6	-8.9	103.5	14.9	118.1	-	0.29	2.7	11.7	1.0	-22.6	-	-	-	-	-	-	-	41.6
339.3	-99999979	84.7	79.5	99.3	91.6	-8.9	104.1	15.0	118.8	-	0.29	2.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.6
340.3	-99999979	84.7	79.5	99.3	91.5	-8.9	104.7	15.1	119.4	-	0.29	2.7	11.6	0.6	-24.5	-	-	-	-	-	-	-	39.6
340.3	-99999979	84.7	79.5	92.6	91.5	-8.7	104.7	15.0	119.4	-	0.29	2.7	11.6	0.4	-26.9	-	-	-	-	-	-	-	37.5
341.3	-99999979	84.7	79.5	92.6	91.5	-8.7	105.3	15.5	120.5	-	0.29	2.8	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.8
342.3	-99999979	84.7	79.5	92.6	91.4	-8.7	105.9	15.9	121.6	-	0.29	2.8	11.7	1.0	-22.6	-	-	-	-	-	-	-	41.8
343.3	-99999979	84.7	79.5	92.6	91.4	-8.7	106.6	16.4	122.8	-	0.29	2.9	11.7	1.0	-22.6	-	-	-	-	-	-	-	41.8
344.3	-99999979	84.7	79.5	92.6	91.3	-8.7	107.6	16.7	124.0	-	0.29	2.9	11.7	1.0	-22.6	-	-	-	-	-	-	-	41.8
345.3	-99999979	84.7	79.5	92.6	91.3	-8.7	108.7	16.9	125.3	-	0.29	2.9	11.7	1.0	-22.6	-	-	-	-	-	-	-	41.8
346.3	-99999979	84.7	79.5	92.6	91.2	-8.7	109.9	17.1	126.7	-	0.29	2.9	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.9
347.3	-99999979	84.7	79.5	92.6	91.2	-8.7	111.2	17.3	128.1	-	0.28	2.9	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.9
348.3	-99999979	84.7	79.5	92.6	91.1	-8.7	112.5	17.5	129.7	-	0.28	2.9	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.9
349.3	-99999979	84.7	79.5	92.6	91.1	-8.7	113.8	17.7	131.3	-	0.28	2.9	11.6	1.0	-22.6	-	-	-	-	-	-	-	41.9
350.3	-99999979	84.7	79.5	92.6	91.0	-8.7	115.3	17.9	132.9	-	0.28	2.9	11.5	1.0	-22.6	-	-	-	-	-	-	-	42.0
351.3	-99999979	84.7	79.5	92.6	91.0	-8.7	116.8	18.2	134.7	-	0.27	2.9	11.5	1.0	-22.6	-	-	-	-	-	-	-	42.0
352.3	-99999979	84.7	79.5	92.6	90.9	-8.7	118.4	18.5	136.6	-	0.27	2.9	11.5	1.0	-22.6	-	-	-	-	-	-	-	42.0
353.3	-99999979	84.7	79.5	92.6	90.9	-8.7	120.1	18.7	138.5	-	0.26	2.9	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.1
354.3	-99999979	84.7	79.5	92.6	90.8	-8.7	121.8	19.0	140.6	-	0.26	2.9	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.1
355.3	-99999979	84.7	79.5	92.6	90.7	-8.7	123.7	19.3	142.8	-	0.26	2.9	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.1
356.3	-99999979	84.7	79.5	92.6	90.7	-8.7	125.7	19.6	145.0	-	0.25	2.9	11.3	1.0	-22.6	-	-	-	-	-	-	-	42.2
357.3	-99999979	84.7	79.5	92.6	90.6	-8.7	127.7	20.0	147.5	-	0.25	2.9	11.3	1.0	-22.6	-	-	-	-	-	-	-	42.2
358.3	-99999979	84.7	79.5	92.6	90.5	-8.7	129.9	20.3	150.0	-	0.25	2.9	11.3	1.0	-22.6	-	-	-	-	-	-	-	42.2
359.3	-99999979	84.7	79.5	92.6	90.5	-8.7	132.2	20.7	152.7	-	0.24	2.9	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.3
360.3	-99999979	84.7	79.5	92.6	90.4	-8.7	134.6	21.1	155.5	-	0.24	2.9	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.3
361.3	-99999979	84.7	79.5	92.6	90.3	-8.6	137.2	21.5	158.5	-	0.23	2.9	11.1	0.7	-24.0	-	-	-	-	-	-	-	40.9
361.3	-99999979	84.7	79.5	83.0	90.3	-8.2	137.2	21.4	158.4	-	0.24	3.0	11.2	0.3	-28.0	-	-	-	-	-	-	-	37.4
362.3	-99999979	84.7	79.5	83.0	90.2	-8.2	139.9	22.4	162.1	-	0.25	3.1	11.2	1.0	-22.6	-	-	-	-	-	-	-	42.7
363.3	-99999979	84.7	79.5	83.0	90.0	-8.2	142.8	23.5	166.0	-	0.26	3.2	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.5
364.3	-99999979	84.7	79.5	83.0	89.8	-8.2	145.8	24.6	170.2	-	0.28	3.4	11.5	1.0	-22.6	-	-	-	-	-	-	-	42.4
365.3	-99999979	84.7	79.5	83.0	89.6	-8.2	149.0	25.9	174.7	-	0.29	3.6	11.7	1.0	-22.6	-	-	-	-	-	-	-	42.3
366.3	-99999979	84.7	79.5	83.0	89.4	-8.2	152.8	26.9	179.4	-	0.30	3.7	11.7	1.0	-22.6	-	-	-	-	-	-	-	42.2

Project : axis

VIPAC Engineers & Scientists 275/283 Norman By Road Port Melbourne, Vic. 3207

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S006

angle	km/miles	L10 18h dB(A)	Geometry		Distance loss D E	Screening					Subs loss D Z		View angle		Groundabsorption			Atten D D loss dB(A)	Ref. loss dB(A)	Level dB(A)	L10		
			E SI m	h m		A	B	C	D	Z	h eff m	D Z dB(A)	W	D W dB(A)	G	h m	D B dB(A)					D D dB(A)	
367.3	-999999979	84.7 79.5	83.0	89.1	-8.2	157.1	27.7	184.6	-	0.29	3.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	42.3	
368.3	-999999979	84.7 79.5	83.0	88.9	-8.2	161.8	28.6	190.0	-	0.28	3.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	42.4	
369.3	-999999979	84.7 79.5	83.0	88.6	-8.2	166.7	29.5	195.9	-	0.27	3.7	11.5	1.0	-22.6	-	-	-	-	-	-	-	42.4	
370.3	-999999979	84.7 79.5	83.0	88.3	-8.2	172.1	30.4	202.3	-	0.27	3.7	11.4	1.0	-22.6	-	-	-	-	-	-	-	42.5	
371.3	-999999979	84.7 79.5	83.0	88.1	-8.2	177.9	31.5	209.1	-	0.25	3.7	11.3	0.7	-24.4	-	-	-	-	-	-	-	40.8	
371.3	-999999979	84.7 79.5	57.8	87.9	-6.8	177.9	31.0	208.6	-	0.27	3.8	11.5	0.3	-27.2	-	-	-	-	-	-	-	39.2	
372.3	-999999979	84.7 79.5	57.8	87.6	-6.8	184.2	35.5	219.4	-	0.28	4.1	11.5	1.0	-22.6	-	-	-	-	-	-	-	43.8	
372.3	-999999979	84.7 79.5	57.8	87.1	-6.8	191.0	40.8	231.5	-	0.30	4.5	11.7	1.0	-22.6	-	-	-	-	-	-	-	43.6	
373.3	-999999979	84.7 79.5	57.8	87.1	-6.8	191.0	40.8	231.5	-	0.30	4.5	11.7	1.0	-22.6	-	-	-	-	-	-	-	43.4	
374.3	-999999979	84.7 79.5	57.8	86.5	-6.8	198.4	47.0	245.1	-	0.32	4.9	11.9	1.0	-22.6	-	-	-	-	-	-	-	43.3	
375.3	-999999979	84.7 79.5	57.8	85.9	-6.8	207.2	53.6	260.5	-	0.34	5.4	12.1	1.0	-22.6	-	-	-	-	-	-	-	43.5	
376.3	-999999979	84.7 79.5	57.8	85.2	-6.8	221.1	57.3	278.1	-	0.32	5.4	11.9	1.0	-22.6	-	-	-	-	-	-	-	41.4	
377.3	-999999979	84.7 79.5	57.8	84.5	-6.7	237.1	61.5	298.4	-	0.28	5.2	11.6	0.6	-25.0	-	-	-	-	-	-	-	44.1	
377.3	-999999979	87.8 78.9	42.6	84.1	-5.6	237.1	61.1	297.9	-	0.32	5.6	11.9	0.4	-26.2	-	-	-	-	-	-	-	48.0	
378.3	-999999979	87.8 78.9	42.6	83.3	-5.6	255.8	73.6	329.2	-	0.29	5.7	11.6	1.0	-22.6	-	-	-	-	-	-	-	45.4	
379.3	-999999979	87.8 78.9	42.6	82.4	-5.6	277.9	90.4	368.0	-	0.25	5.9	11.3	0.5	-25.5	-	-	-	-	-	-	-	46.9	
379.3	-999999979	87.8 78.9	22.5	81.7	-3.5	277.9	90.3	367.9	-	0.30	6.4	11.8	0.5	-25.6	-	-	-	-	-	-	-	40.7	
380.3	-999999979	87.8 78.9	22.5	81.2	-3.4	307.1	147.9	454.7	-	0.23	6.8	11.1	0.1	-32.6	-	-	-	-	-	-	-	48.4	
380.3	-999999979	87.8 78.9	38.0	80.8	-5.1	307.1	134.5	441.4	-	0.25	6.9	11.3	0.9	-23.0	-	-	-	-	-	-	-	49.8	
381.3	-999999979	87.8 78.9	38.0	79.9	-5.1	354.8	168.5	523.1	-	0.17	6.2	10.4	1.0	-22.6	-	-	-	-	-	-	-	51.0	
382.3	-999999979	87.8 78.9	38.0	78.6	-5.1	456.2	186.3	642.3	-	0.09	4.9	9.2	1.0	-22.6	-	-	-	-	-	-	-	41.7	
383.3	-999999979	87.8 78.9	38.0	77.7	-5.0	591.1	241.4	832.4	-	0.05	4.1	8.2	0.1	-32.9	-	-	-	-	-	-	-	50.2	
383.3	-999999979	87.8 78.9	54.8	77.6	-6.4	591.1	216.3	807.4	-	0.05	3.9	8.2	0.9	-23.0	-	-	-	-	-	-	-	52.5	
384.3	-999999979	87.8 78.9	54.8	77.6	-6.4	806.5	220.3	1026.8	-	0.01	1.7	6.3	1.0	-22.6	-	-	-	-	-	-	-	52.6	
385.3	-999999979	87.8 78.9	54.8	77.6	-6.4	1117.7	293.1	11410.8	-	0.01	1.7	5.9	0.9	-22.8	-	-	-	-	-	-	-	52.6	

part.level with signal addition day: 0.0 dB(A) night: dB(A) nachts: 0.0 dB(A)

64.9

+ facade reflection +2.5

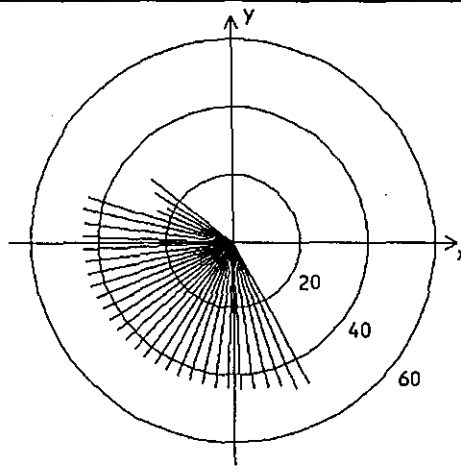
67.4 dB(A)

N S R 3

x: 5958.0 y: 5724.5 h: 67.20

Noise source L10(1h) , %Reflex

Main Bridge 64.92 0.00



Level 64.9 0.0 0.0
in dB(A) (1h) (r) (%)

VIPAC Engineers & Scientists 275/283 Norman By Road Port Melbourne, Vic. 3207

page
4

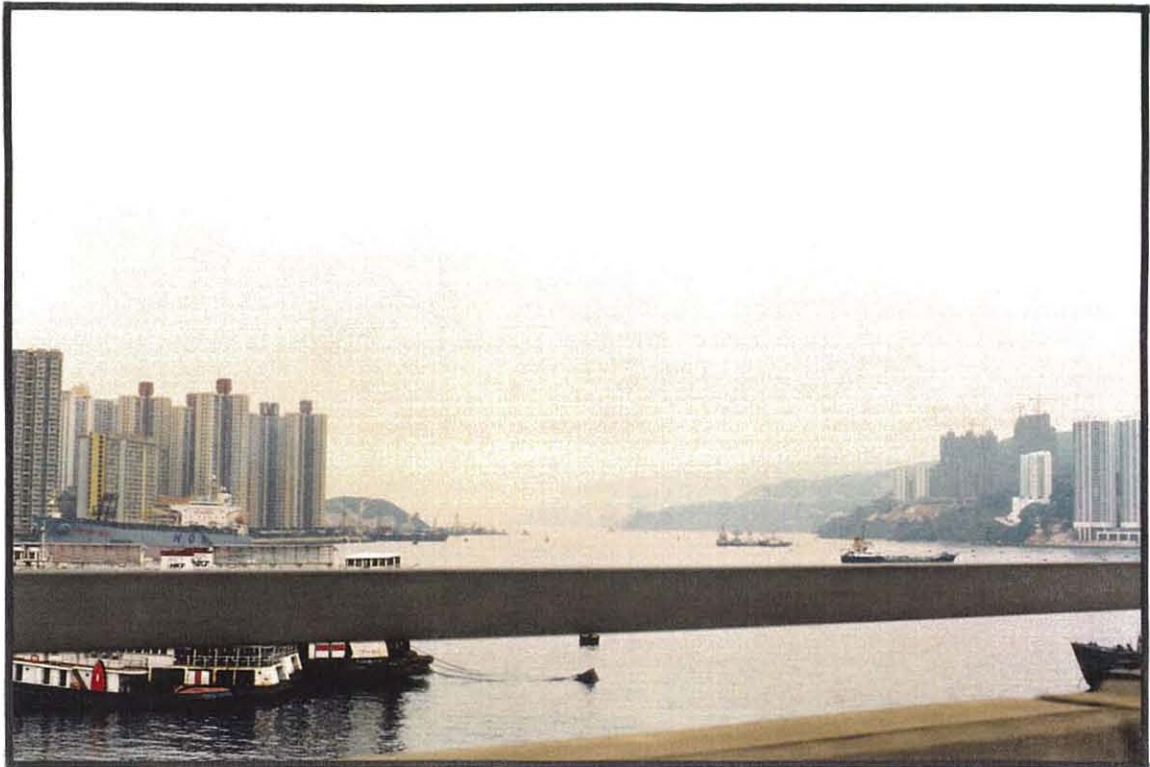
APPENDIX A7

APPENDIX A7

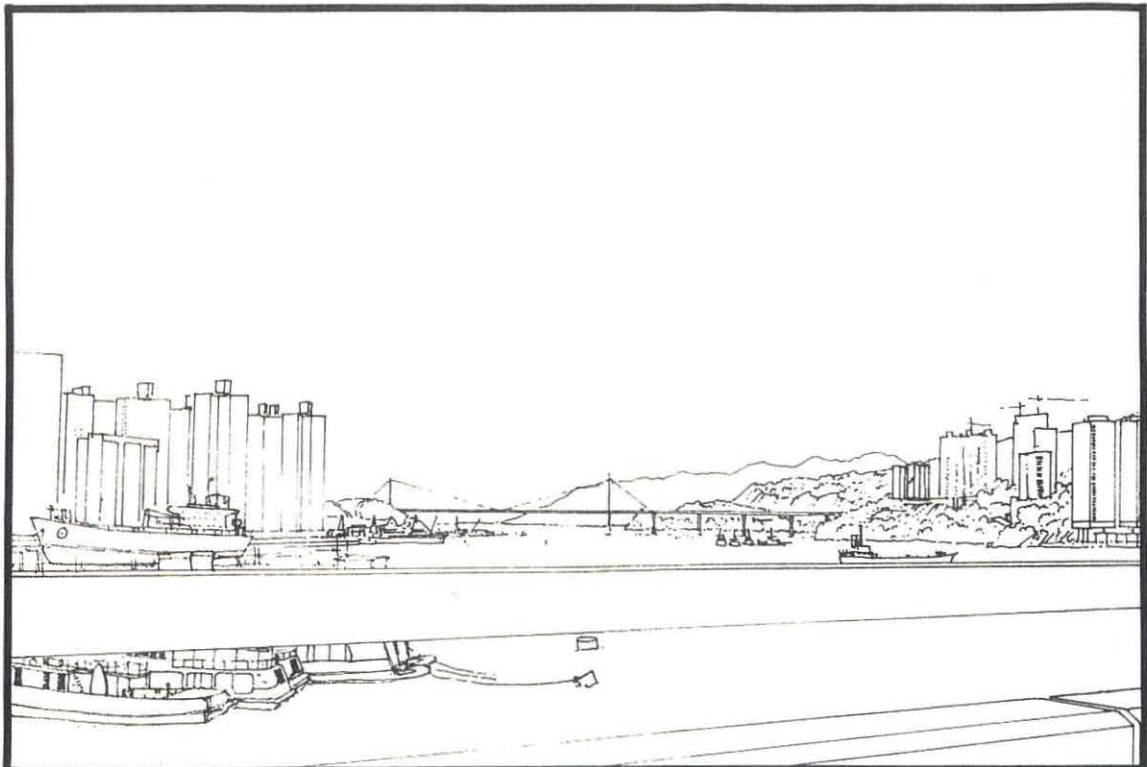
LANDSCAPE AND VISUAL IMPACT

CONTENTS :

Plate No. A7.1	View from Tuen Mun expressway at Tsuen Wan
Plate No. A7.2	View East Along Rambler Channel Towards Tsuen Wan
Plate No. A7.3	View North from Tsing Yi Island
Plate No. A7.4	View East Along Rambler Channel Towards Tsuen Wan View South along Western Ridge of Tsing Yi Island



EXISTING



AFTER CONSTRUCTION

FREEMAN FOX MAUNSELL

Job Title : ROUTE 3 TING KAU BRIDGE SECTOR
LANDSCAPE AND VISUAL IMPACT

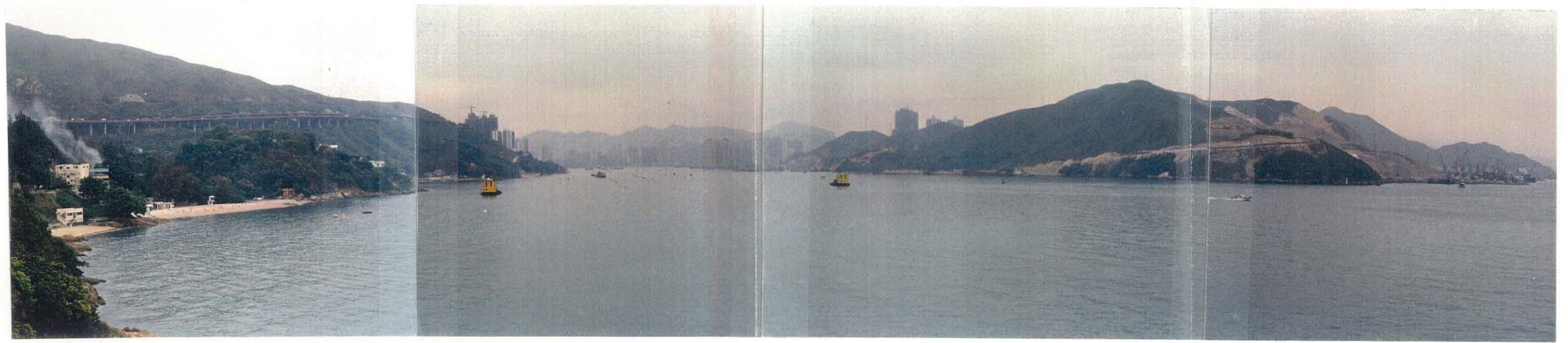
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View from Tuen Mun Expressway at Tsuen Wan

Scale : N/A

Drg No.

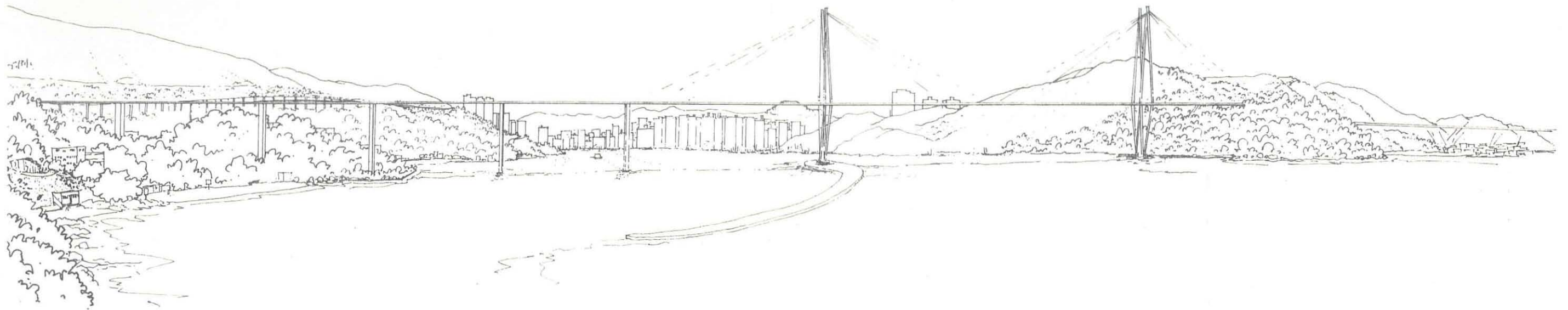
Date : July 1993

PLATE NO. A7.1



EXISTING

VIEW EAST ALONG RAMBLER CHANNEL TOWARDS TSUEN WAN
 Ting Kau Bay positioned to left of photograph, below the Tuen Mun Expressway
 Tsing Yi Island positioned to right of photograph



AFTER CONSTRUCTION

FREEMAN FOX MAUNSELL

Job Title : **ROUTE 3 TING KAU BRIDGE EIA**

Scale : N/A

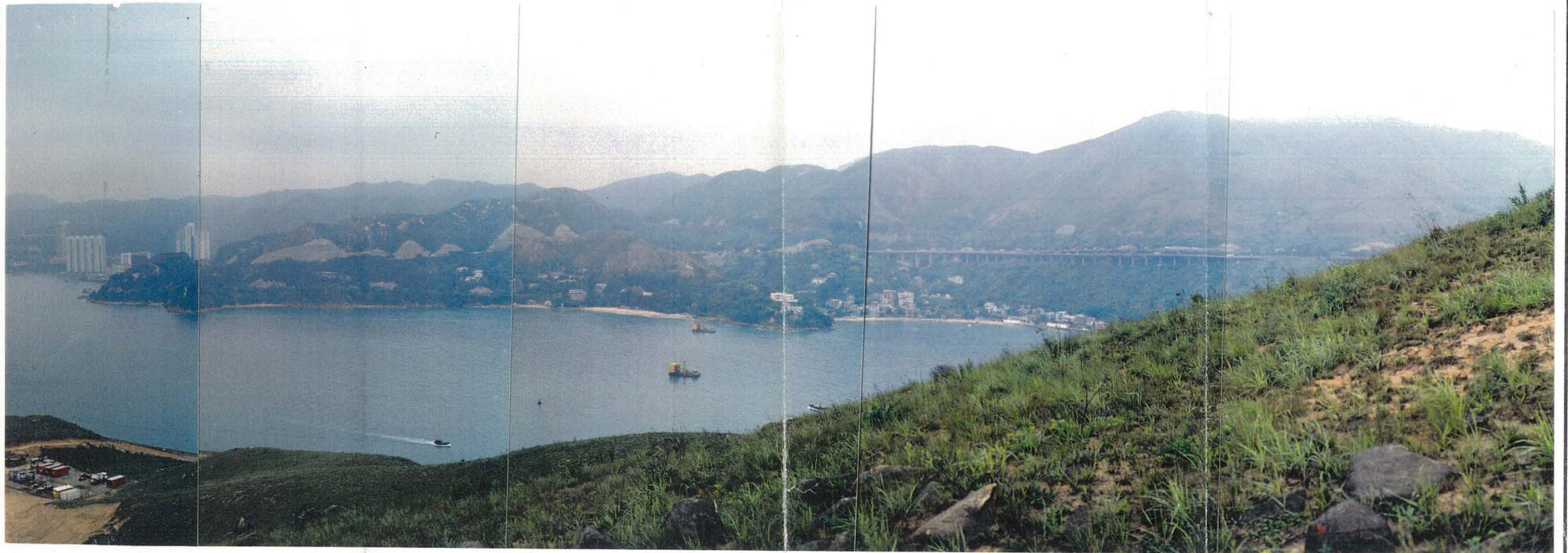
Job No.

Date Nov. 93

058 000

Fig No.

PLATE No. A7.2



VIEW NORTH FROM TSING YI ISLAND

View Across the entrance to Ramblers Channel towards Ting Kau Bay and Tai Lam Country Park. Tuen Mun road and associated regraded slopes clearly visible Sham Tseng positioned to far left of photograph

FREEMAN FOX MAUNSELL

Job Title :
ROUTE 3 TING KAU BRIDGE SECTOR - EXISTING LANDSCAPE

Scale : N/A

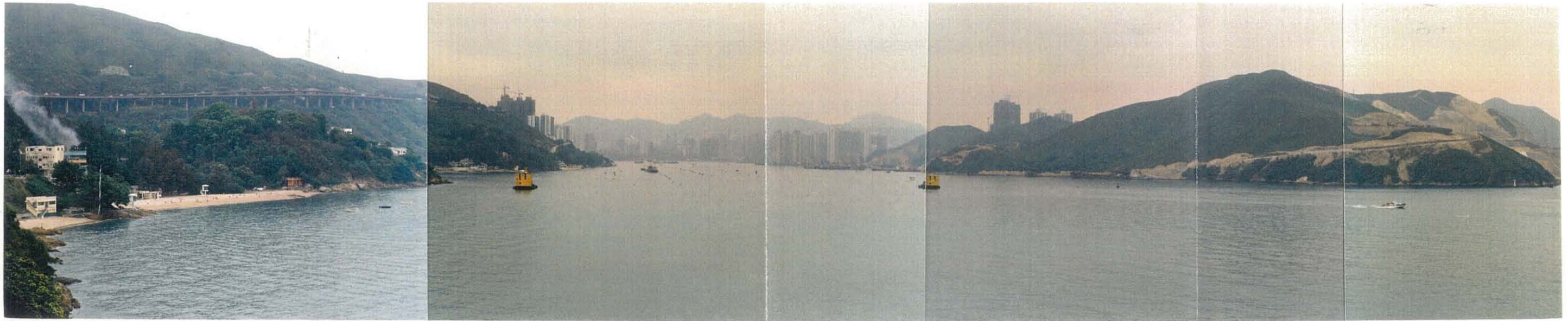
Job No.

058 000

Fig No.

PLATE No. A7.3

Date Nov. 93



VIEW EAST ALONG RAMBLER CHANNEL TOWARDS TSUEN WAN
 Ting Kau Bay positioned to left of photograph, below the Tuen Mun Expressway.
 Tsing Yi Island positioned to right of photograph



VIEW SOUTH ALONG WESTERN RIDGE OF TSING YI ISLAND
 Area immediately outside area heavily effected by regrading works, chemical and cargo storage and borrow activities
 Lantau and Ma Wan Islands position to right of photograph.

FREEMAN FOX MAUNSELL

Job Title :
 ROUTE 3 TING KAU BRIDGE SECTOR - EXISTING LANDSCAPE

Scale : N/A

Job No.

Date Nov. 93

058 000

Fig No.

PLATE No. A7.4

APPENDIX A8

APPENDIX A8

SPECIES OF INFAUNA RECORDED FROM BEACH SEDIMENTS

IN HONG KONG

APPENDIX A8

<p>Nemertini: Nemertean sp.</p> <p>Polychaeta: Phyllodoce sp. Micropodarke dubia (Hessle) Nerid sp. Aglaophamus sp. Glycera sp. Goniada sp. Bhawania sp. Onuphis eremita Audouin & M. Edwards Onuphis sp. Lumbrineris sp. Schistomeringos sp. Aonides sp. Minuspio sp. magelona sp. Chaetozone setosa Maimngrem Tharyx sp. Cirratulus sp. Ophelina acuminata (Rathke) Sternaspis scutata (Ranzani) Clymenella sp. Lanice conchilega (Pallas) Terebellides stroemi Sars</p>	<p>Sipunculida: Golfingia sp. Sipunculid sp. A Sipunculid sp. B</p> <p>Tanaididae: Leptognathia sp. Tanald sp.</p> <p>Isopoda: Isopod sp.</p> <p>Cumacea: Bodotria sp.</p> <p>Amphipoda: Platyschnopus sp. Ameplisca sp. Bybils sp. Urothoe sp. Lyslanassid sp. Amphithoe sp. Phoxocephalid sp. Dexamine sp. Amphilochid sp.</p>	<p>Decapoda: Pagurid sp. A Pagurid sp. B Grapsid sp. Laucosia sp. Thalamita sp. Philyra sp.</p> <p>Bivalvia: Musculus sp. Modiolus sp. Cardiid sp. A Cardiid sp. B Tellinides sp. Tellinid sp.</p> <p>Ophiuroidea: Amphioplus sp.</p> <p>Holothuroidea: Cucumaria sp.</p> <p>Protochordata: Branchiostoma belcheri (Gray)</p> <p>Pisces: Goby sp. A Goby sp. B</p>
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(Shin, P.K.S. 1987)

