

# MATERIALAB CONSULTANTS LIMITED

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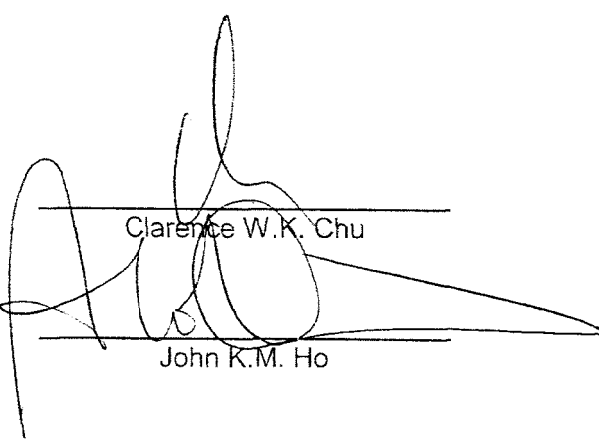
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**Agreement No. CE 43/2005 (EP)  
Harbour Area Treatment Scheme (HATS) Stage 2A  
Environmental Impact Assessment Study – Investigation**

Client : Maunsell Environmental Management Consultants Ltd.  
Our Ref. : 0101/06/ED/0074  
Date : October, 2006

Prepared by :

  
Clarence W.K. Chu

Certified by :

  
John K.M. Ho

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### **1. Background**

Mausell Environmental Management Consultants Ltd has been awarded a contract by the Drainage Services Department of the Government of the Hong Kong Special Administrative Region to undertake the consultancy titled "Harbour Area Treatment Scheme (HATS) Stage 2A Environmental Impact Assessment Study - Investigation.

MaterialLab Consultants Limited was requested by MEMCL as the Environmental Specialist which provides the staff, material, tools and equipment to conduct the baseline noise survey and prepare the background noise survey reports for the captioned work.

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### 2. Survey Methodology and QA/QC Procedures

The baseline noise survey comprising one set of  $L_{Aeq}$ ,  $L_{max}$ ,  $L_{min}$ ,  $L_{10}$  and  $L_{90}$  was conducted at thirteen designated locations for 30-minute interval over three survey periods (i.e. Daytime 0700 -1900hrs, Evening time 1900 -2300hrs and Night -time 2300 - 0700hrs).

Precision Integrating Sound Level Meter B&K Type 2238 / 2236 is a Type 1 sound level meter which can give equivalent continuous sound pressure level ( $L_{eq}$ ) and percentile sound pressure level ( $L_x$ ). The equipment calibration details for the measurement is presented in Appendix 1. The details is shown in Table 2.

Table 2 Noise Survey Equipment

EQUIPMENT LIST	MODEL	CALIBRATION FREQUENCY
Precision integrating sound level meter	B&K 2238 / 2236	Annually
Sound level calibrator	B&K 4231	Annually
Microphone extension cable (3m)	B&K A00027 B&K A00185 B&K A00408	-
Portable Combination Anemometer	-	-

Noise measurement should be made in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ) measured with an integrating sound level meter complying with International Electromechanical Commission Publications 651: 1979 (Type 1) and 804 : 1985 (Type 1).

Where a measurement is to be carried out at a building, the assessment point shall normally be at a position 1 meter from the exterior of the building facade and be at a position 1.2 meter above the ground level at a place other than a building.

Immediately prior to and following each noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agrees to within 1.0 dB.

Noise measurement should not be made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. The wind speed in m/s is measured along with the noise measurement. For reference, a correction of +3dB(A) is made to the free field measurements.

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## 3. Noise Survey Programme

The Noise survey was carried out on 17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> October, 2006, which was a normal weekday. The measurements were taken during 3 sessions, 07:00 to 19:00 (first session), 19:00 to 23:00 (second session) and 23:00 to 07:00 (third session). The noise measurement at location A7 was undertaken separately on 13<sup>th</sup> November 2006 due to renovation work in progress near to the sampling point.

The schedule of the noise survey programme is shown in Table 3

Table 3(a) Noise Survey Schedule ( October 2006 )

SUN	MON	TUE	WED	THU	FRI	SAT
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				

Table 3(b) Noise Survey Schedule ( November 2006 )

SUN	MON	TUE	WED	THU	FRI	SAT
			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		

Legend: The day of measurement is shaded

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### 4. Noise Measurement Locations

Noise measurement at various locations in Wanchai, North Point, Sai Wan, Hong Kong South and Stonecutters Island was selected for baseline work. The locations are shown in Appendix 4 and the details are summarized as follows:

Table 4 Noise Measurement Locations

Designation	Noise Measurement Location
N1	Ground Level facade of Healthy Gardens Block C main entrance (facing King's Road), Healthy Street West
N2	Ground Level facade of Hyde Centre (facing Glouceter Road)
N3	Ground Level facade of Chi Cheung Building (facing Connaught Road West)
N4	Sitting-out area of Sun Yat Sen Memorial Park (facing Connaught Road West) ( free-field measurement )
N5	Ground Level facade of Kwan Yick Building Phase III (facing Connaught Road West)
N6	Ground Level facade of home for the elderly (facing Sha Wan Drive)
N7	Main entrance of Aegean Terrace (facing Cyberport Road), Sassoon Road
N8	Ground Level facade of Wah Yu House (facing Waterfall Bay Road), Wah Fu Estate
N9	Sitting-out area of Waterfall Bay Park (facing Waterfall Bay Road), ( free-field measurement )
N10	Ground Level facade of Wah Lai House (facing Tin Wan Praya Road), Wah Kwai Estate
N11	Ground Level facade of Mei Chun Court (facing Lee Nam Road), South Horizons Phase III
N12	Planned FSD Diving Rescue and Diving Training Centre (facing northwards), ( free-field measurement )
N13	At roadside of Container Terminal Road South ( free-field measurement )

Remark : For security reason, the noise measurement at N13 was carried out on roadside instead of the barrack.

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## 5. Results and Observations

During the three measurement sessions, the existing noise environment was of higher levels in some locations (i.e. King's Road, Gloucester Road, Connaught Road or Container Terminal Road South). With the measurement points located at such busy areas the major noise sources were identified stemming from vehicular traffic. In addition, no special noise sources (except vehicles) were recorded in residential areas (i.e. N7, N8, N9, N10 and N11).

The noise survey field data is presented in Appendix 2. The summary of the noise survey data is tabulated as follows:

N1 – Ground Level facade of Healthy Gardens Block C main entrance at Healthy Street West

Date	Sampling Time	L <sub>Aeq</sub> (30min)	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
20/10/2006	12:55 – 13:25	76.8	80.0	70.5	94.4	66.8
18/10/2006	19:02 – 19:32	75.2	77.5	67.0	92.4	63.8
20/10/2006	02:15 – 02:45	67.8	71.5	56.5	84.4	53.3

N2 – Ground Level facade of Hyde Centre at Gloucester Road

Date	Sampling Time	L <sub>Aeq</sub> (30min)	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
19/10/2006	14:33 – 15:03	72.5	75.5	67.0	86.4	65.0
19/10/2006	19:02 – 19:32	71.7	74.5	65.0	86.3	62.5
20/10/2006	01:18 – 01:48	72.2	74.5	65.0	88.5	60.6

N3 – Ground Level facade of Chi Cheung Building at Connaught Road West

Date	Sampling Time	L <sub>Aeq</sub> (30min)	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
17/10/2006	14:45 – 15:15	73.6	75.5	69.5	97.6	67.1
17/10/2006	21:53 – 22:23	69.2	70.5	63.0	95.6	59.1
18/10/2006	00:20 – 00:50	64.6	67.5	58.5	75.8	52.6

N4 – Sitting-out area of Sun Yat Sen Memorial Park

Date	Sampling Time	L <sub>Aeq</sub> (30min)	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
17/10/2006	16:05 – 16:35	68.0	70.5	64.5	79.8	61.6
17/10/2006	21:18 – 21:48	66.4	68.0	62.5	81.1	60.0
17/10/2006	23:42 – 00:12	59.6	61.5	55.5	73.0	52.8

N5 – Ground Level facade of Kwan Yick Building Phase III at Connaught Road West

Date	Sampling Time	L <sub>Aeq</sub> (30min)	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
17/10/2006	15:25 – 15:55	69.7	72.5	63.0	95.0	59.8
17/10/2006	22:30 – 23:00	65.9	69.0	59.0	84.2	56.6
17/10/2006	23:05 – 23:35	66.3	69.0	59.0	90.8	55.2

N6 – Ground Level facade of home for the elderly at Sha Wan Drive

Date	Sampling Time	L <sub>Aeq</sub> (30min)	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
18/10/2006	15:35 – 16:05	70.2	71.5	56.5	99.9	68.5
18/10/2006	22:26 – 22:56	63.4	62.0	54.5	88.6	53.5
18/10/2006	23:02 – 23:32	64.6	61.5	54.5	84.5	53.6

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## N7 – Main entrance of Aegean at Sassoon Road

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
13/11/2006	15:45 – 16:15	51.2	52.5	45.5	61.5	43.5
13/11/2006	20:30 – 21:00	45.4	47.5	41.0	54.5	39.6
14/11/2006	00:00 – 00:30	42.8	44.5	41.0	47.6	39.2

## N8 – Ground Level facade of Wah Yu House at Wah Fu Estate

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
18/10/2006	16:20 – 16:50	59.0	60.0	51.5	80.3	47.7
19/10/2006	22:15 – 22:45	52.6	54.0	50.0	70.7	48.7
19/10/2006	00:57 – 01:27	50.7	52.0	48.5	70.9	41.3

## N9 – Sitting-out area of Waterfall Bay Park

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
18/10/2006	16:55 – 17:25	60.7	62.5	52.0	82.2	49.1
19/10/2006	21:42 – 22:12	54.6	56.0	47.0	74.9	44.3
19/10/2006	00:23 – 00:53	52.0	54.0	45.0	82.5	42.3

## N10 – Ground Level facade of Wah Lai House at Wah Kwai Estate

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
20/10/2006	13:58 – 14:28	61.3	63.5	55.5	83.0	53.8
19/10/2006	20:54 – 21:24	58.1	61.0	51.5	81.6	48.9
19/10/2006	23:00 – 23:30	51.8	53.0	49.0	70.2	46.8

## N11 – Ground Level facade of Mei Chun Court at South Horizons Phase III

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
20/10/2006	15:05 – 15:35	57.2	59.0	54.0	73.9	53.2
19/10/2006	20:01 – 20:31	57.1	60.0	50.0	70.5	48.8
19/10/2006	23:58 – 00:28	52.8	54.0	49.0	69.1	48.3

## N12 – Planned FSD Diving Rescue and Diving Training Centre in Stonecutters Island Sewage Treatment Plant

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
20/10/2006	10:45 – 11:15	67.9	70.0	64.0	83.0	60.8
20/10/2006	22:30 – 23:00	61.0	62.5	58.5	75.4	57.1
20/10/2006	23:10 – 23:40	59.6	60.5	58.0	68.9	56.3

## N13 – At roadside of Container Terminal Road South on Stonecutters Island

Date	Sampling Time	L <sub>Aeq(30min)</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>Max</sub>	L <sub>Min</sub>
20/10/2006	11:40 – 12:10	76.7	79.0	66.0	96.7	58.0
20/10/2006	21:45 – 22:15	69.2	70.5	57.0	94.9	54.9
20/10/2006	23:55 – 00:25	69.5	71.0	56.5	95.5	53.7



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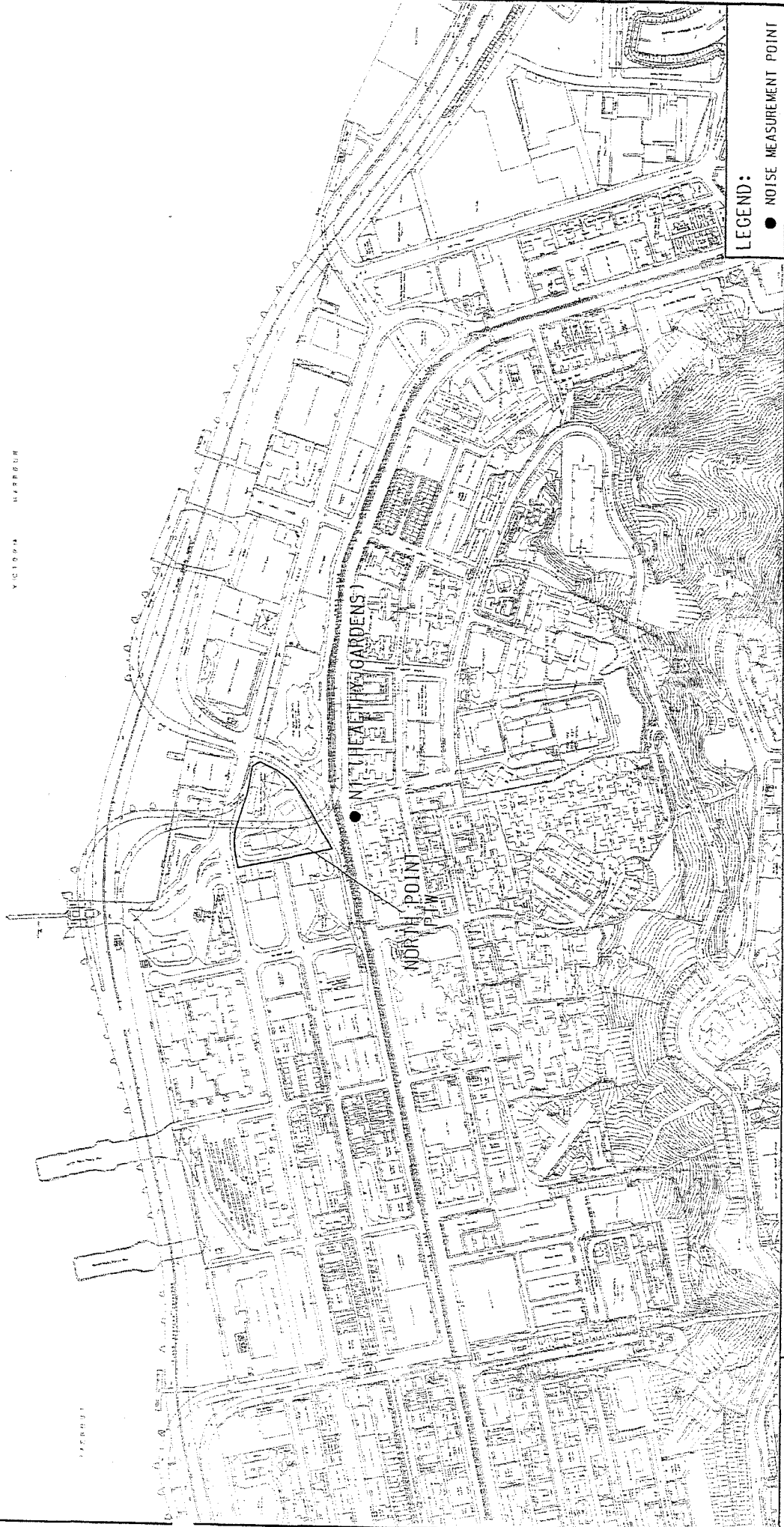
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### APPENDIX 4

### LOCATIONS OF NOISE MEASUREMENT POINT



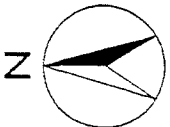
VICTORIA HARBOUR



LEGEND:

- NOISE MEASUREMENT POINT

<b>MAUNSELL   AECOM</b> Maunsell Environmental Management Consultants Ltd X:\A02106\DRAM\ING\REPORT\NOISE_SPECIFICATION\FIG1.DWG	AGREEMENT NO. CE 43/2005 (EP) HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY - INVESTIGATION LOCATION OF NOISE MEASUREMENT POINT - NORTH POINT PTW		SCALE A3 1:4000	DATE JUN 06
	CHECK DCFL	DRAWN JLPY	DRAWING NO. A02106	REV. 1



VICTORIA HARBOUR

WAN CHAI EAST  
PTW

N2 (HYDRO-CENTRE)

LEGEND:

● NOISE MEASUREMENT POINT

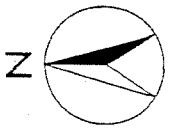
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		REV.	-

AGREEMENT NO. CE 43/2005 (EP)  
 HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY -- INVESTIGATION  
 LOCATION OF NOISE MEASUREMENT POINT -- WAN CHAI EAST PTW

MAUNSELL ACCOM

Maunsell Environmental  
Management Consultants Ltd

K: A02106/DRAWING/REPORT/NOISE SPECIFICATION/F 102-008



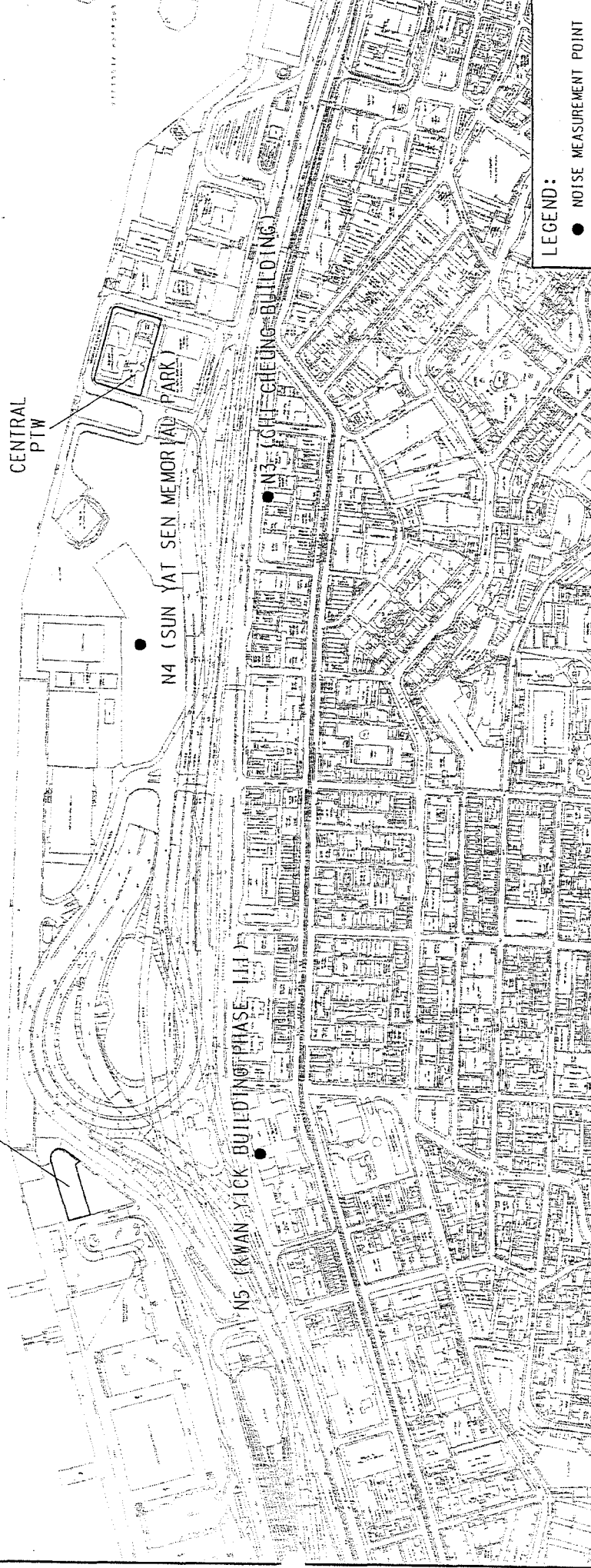
FUNG MAT ROAD SITE

CENTRAL  
PTW

N4 (SUN YAT SEN MEMORIAL PARK)

N5 (KWAN YICK BUILDING PHASE III)

N3 (SHE CHEUNG BUILDING)



LEGEND:  
● NOISE MEASUREMENT POINT

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HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY - INVESTIGATION  
LOCATIONS OF NOISE MEASUREMENT POINTS - CENTRAL PTW AND FUNG MAT ROAD SITE

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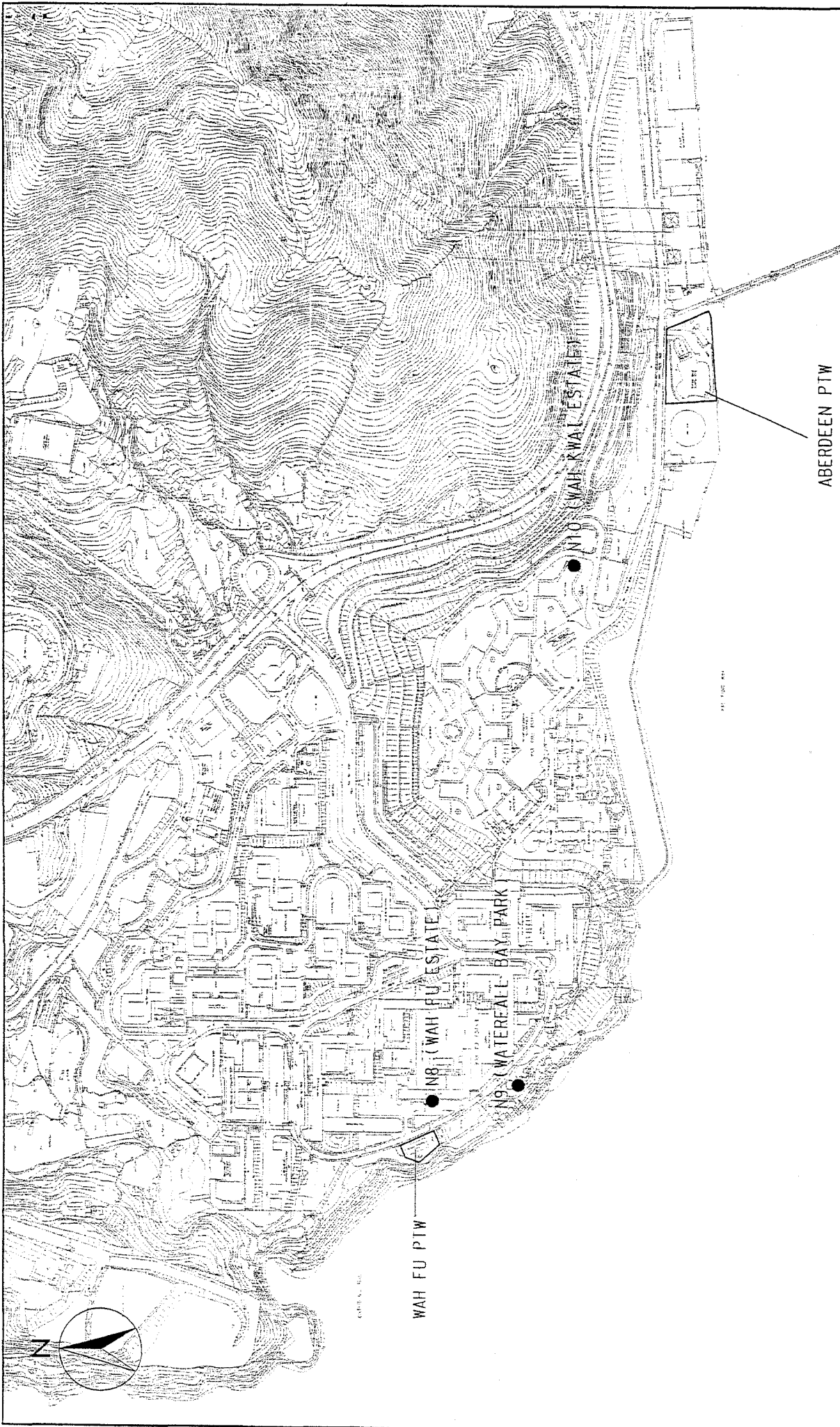
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REV			

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 HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY - INVESTIGATION  
**LOCATIONS OF NOISE MEASUREMENT POINTS - SANDY BAY PTW AND CYBERPORT PTW**

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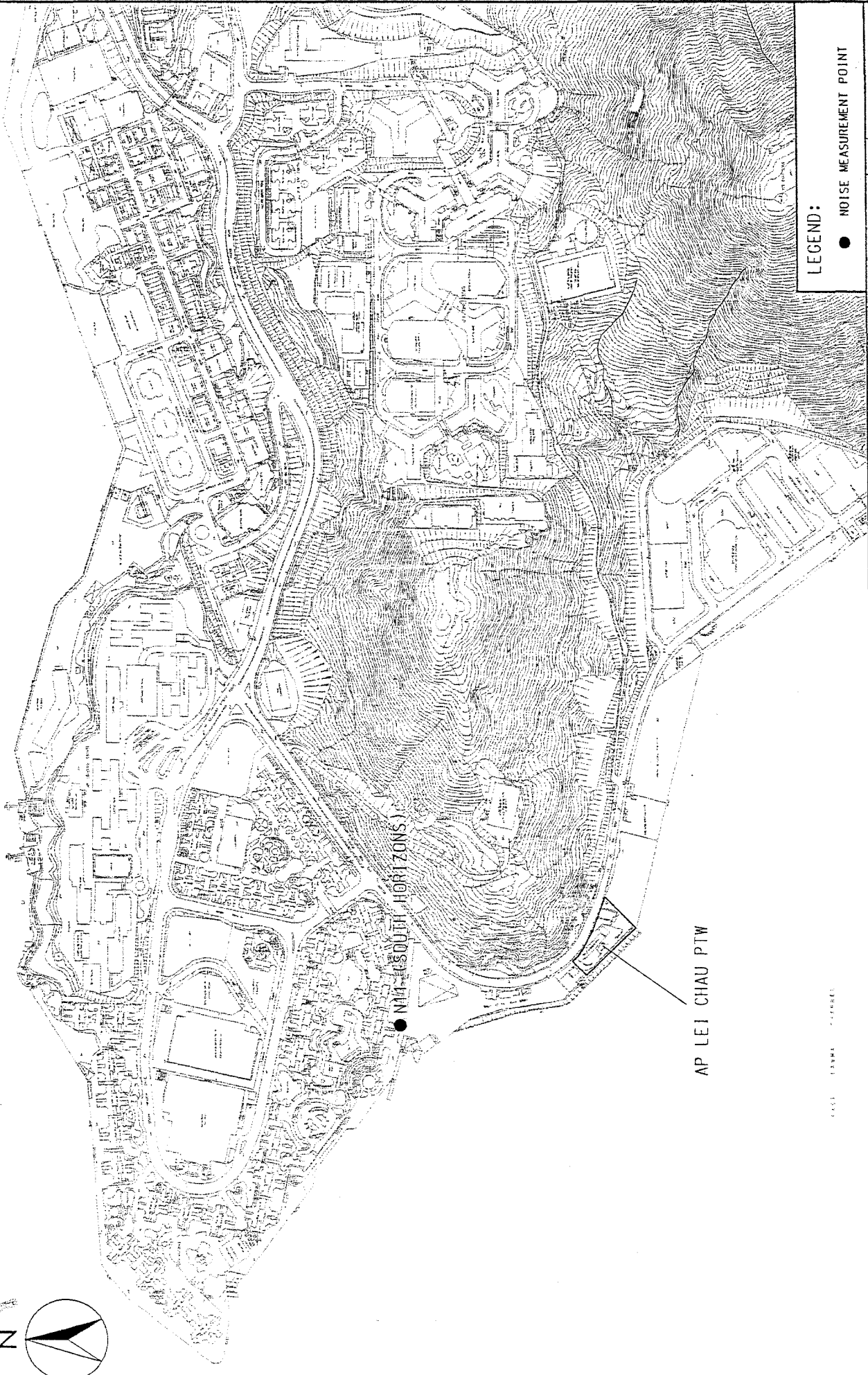
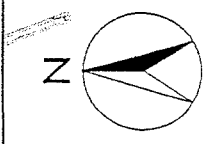
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- NOISE MEASUREMENT POINT

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AGREEMENT NO. CE 43/2005 (EP)  
 HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY - INVESTIGATION  
 LOCATIONS OF NOISE MEASUREMENT POINTS - WAH FU PTW AND ABERDEEN PTW

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 Management Consultants Ltd



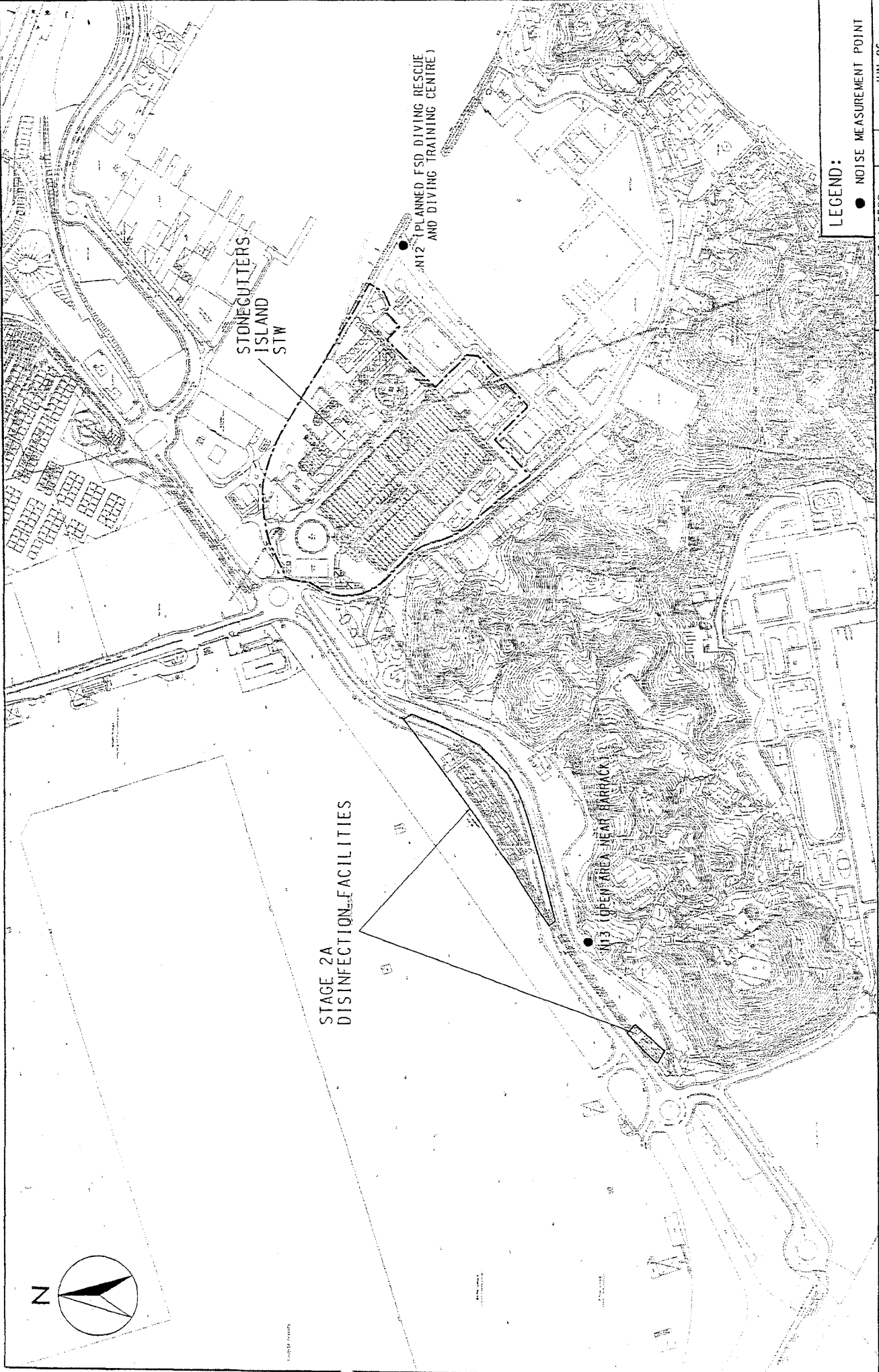
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● NOISE MEASUREMENT POINT

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JOB No.	A02106	DRAWING No.	6
REV			

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 HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY - INVESTIGATION  
 LOCATION OF NOISE MEASUREMENT POINT - AP LEI CHAU PTW

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 Maresell Environmental  
 Alignment Consultants Ltd



LEGEND:

●	NOISE MEASUREMENT POINT
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 HARBOUR AREA TREATMENT SCHEME (HATS) STAGE 2A ENVIRONMENTAL IMPACT ASSESSMENT STUDY - INVESTIGATION

LOCATION OF NOISE MEASUREMENT POINT - STONECUTTERS ISLAND STW AND DISINFECTION FACILITIES

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