Issue No.	:	1
Issue Date	:	January 2012
Project No.	:	768 (2)

JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44, TUEN MUN

ENVIRONMENTAL MONITORING & AUDIT REPORT FOR OPERATIONAL PHASE (DECEMBER 2011)

Prepared By:

ALLIED ENVIRONMENTAL CONSULTANTS LTD.

COMMERCIAL-IN-CONFIDENCE

Allied Environmental Consultants Limited
Acousticians & Environmental Engineers

19/F., Kwan Chart Tower, 6 Tonnochy Road, Wan Chai, Hong Kong
Tel: (852) 2815 7028 Fax: (852) 2815 5399 Email: info@aechk.com

AEC 沛然環境評估工程顧問有限公司

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Author: _____
Ronan L. H. Chan
BSc

Checked: _____
Nic H. H. Lam
BSc(Hons) AMHKIOA AMHKIEIA

Approved: _____
Grace M. H. Kwok
BEng(Hons) MHKIEIA MHKIOA
MISWA MIAIA MRAPA LEED AP

Table of Contents

List of Tables

List of Figures

List of Appendices

EXECUTIVE SUMMARY

Allied Environmental Consultants Limited (AEC) has been appointed to conduct an environmental monitoring and audit (EM&A) program for the Joint User Complex and Wholesale Fish Market (WFM) at Area 44, Tuen Mun. The operation of the WFM was commenced on 23rd December 2010. This report is the thirteenth monthly EM&A report for operational phase, which detailed the environmental monitoring and audit results recorded during the period from 1st December 2011 to 31st December 2011.

Impact environmental monitoring for the Joint User Complex and Wholesale Fish Market at Area 44, Tuen Mun has been carried out at Yuet Wu Villa. Odour patrol and noise monitoring were conducted on 1st, 8th, 12th, 22nd and 30th December 2011. Both monitoring were conducted within the period of 0300-0630 hours.

The odour intensity ratings on 1st, 8th, 12th, 22nd and 30th December 2011 were 1-No Odour.

The minimum and maximum average noise level measured at Yuet Wu Villa was 50.9dB(A) $L_{eq(5min)}$ and 55.3dB(A) $L_{eq(5min)}$ respectively.

Based on the monitoring results, the odour monitoring complied with the environmental requirements in EM&A Manual. The measured monitoring results were higher than the predicted noise levels due to the increment of noise level from ambient background noise levels.

In the reporting month, no non-compliance, complaint, inspection notice, notification of summons or prosecution was received.

There was no major change in the operation of WFM.

Monitoring works had been conducted for 12 months of the operational of the Wholesale Fish Market as stated in EM&A Manual and the approved Environmental Permit EP-296/2007. The EM&A requirements were fulfilled and the completion of EM&A programme shall be notified to the EPD. The operation phase EM&A programme was completed and no further works should be carried out in future.

1. PROJECT BACKGROUND

A Joint User Complex and Wholesale Fish Market (WFM Complex) at Area 44 in Tuen Mun is designed and built by Architectural Services Department on behalf of Agriculture, Fisheries and Conservation Department, Marine Department, Home Affairs Department, and Food and Environmental Hygiene Department of the Hong Kong SAR. The WFM Complex is to provide a permanent site for the relocation of the existing temporary wholesale fish market at Tuen Mun Area 27 and to accommodate a community hall, a dragon boat racing spectator stand, and other community facilities for public use. The development is a 3-storey complex to accommodate a wholesale fish market, a public toilet, a refuse collection point and a marine refuse collection point at the ground floor, a community hall on the first floor, and a dragon boat race spectator stand with landscaped deck on roof level. The Wholesale Fish Market is categorized as a designated project under the Environmental Impact Assessment Ordinance (EIAO) and therefore a detailed Environmental Impact Assessment (EIA-085/2002) has been conducted in year 2002 and an Environmental Permit (EP-296/2007) was issued by Environmental Protection Department in December 2007. The construction works were commenced on 31st July 2008. Major construction works of the Project were substantially completed in September 2010 and handover works were completed in November 2010. The EM&A programme of construction phase was terminated and the EM&A programme of operational phase was commenced effective from 23rd December 2010.

The subject site is located at Castle Peak Bay of Tuen Mun given in Figure 1. The subject site is bounded to the north by a future local open space presently used as a temporary car park, to the east by Castle Peak Bay typhoon shelter, to the south by a future lorry park and to the west by Wu Shan Road. Yuet Wu Villa being the nearest residential establishment is located at around 85m from the site boundary.

1.1 Project Organization and Contact Personnel

Key personnel and contact particulars are summarized in Table 1.

Table 1 Contact Details of Key Personnel

Role	Department / Company	Names	Contact Number	Fax Number
Lead User Department	Agriculture, Fisheries, and Conservation Department	Mr. K.H. Chan Ms. Louise Li	2150 7092 2150 7104	2314 2866
Environmental Permit Holder	Architecture Services Department	Mr. S.W. Chow Ms. Rio Kwok	2867 3716 2867 3706	2523 9622
Environmental Team Leader	Allied Environmental Consultants Ltd.	Ms. Grace Kwok	2815 7028	2815 5399
Independent Environmental Checker	Cinotech Consultants Ltd.	Dr. Priscilla Choy	2151 2089	3107 1388

2. SENSITIVE RECEIVERS

Air Sensitive Receivers (ASRs) within 500m include Yuet Wu Villa, lawn bowling field, tennis court, which are less than 100m away from the subject site. Tuen Mun Wu Hong Clinic is located to the west at about 100m to the site boundary. Two secondary schools, Ka Chi Secondary School and South Tuen Mun Government Secondary School, are approximately 300m to the south of the site boundary.

Noise Sensitive Receivers (NSRs) within 300m are Yuet Wu Villa, Siu Hei Court, Yan Chai Hospital Low Chan Chor Si Primary School and Wu King Estate. The nearest NSR will be Block 15 of Yuet Wu Villa.

3. SUMMARY OF EM&A REQUIREMENT

For regular impact monitoring, odour patrol shall be carried out on a regular basis during the first year of operation. Odour patrol shall be carried out once a week during the first three months of operation of the WFM. The odour patrol frequency shall be reviewed afterwards.

According to the approved EM&A Manual, the Action and Limit Levels for operational phase odour patrol are summarized in Table 2.

Table 2 Action and Limit Levels for Operational Phase Odour Patrol

Parameter	Action Level	Limit Level
Perceived odour intensity	Higher than or equal to Level 3	Level 5
Incidence of odour complaints	Any incidence of odour complaint received	Two or more odour complaints received within one month

Should non-compliance of the above Action and Limit levels occurs, the Fish Marketing Organization (FMO) shall undertake corresponding in accordance with the Event/Action Plan given in the EM&A Manual. An Event/Action Plan for operational phase odour monitoring is given in Table 3.

Table 3 Event/Action Plan for Operational Phase Odour Patrol

EVENT	ACTION		
	WFM Management (FMO)	AFCD	ASD
Action Level	1. Identify source/reason of odour nuisance or complaint 2. Inform AFCD 3. Repeat odour patrol to confirm finding 4. Discuss with AFCD on remedial actions required	1. Identify the source/reason of odour nuisance or complaint within one week 2. Rectify any unacceptable practice 3. Amend working method if appropriate 4. Inform ASD if cause of nuisance or complaint is considered to be caused by civil or E&M design problems' 5. Implement amended working methods 6. Contact complaintant within 10 working days to inform the cause of nuisance and action taken	1. Assist AFCD to find the cause of the complaint 2. Modify or improve design as appropriate
Limit Level	1. Identify source/reason of odour nuisance or complaint 2. Inform AFCD 3. Repeat odour patrol to confirm finding 4. Discuss with AFCD on remedial actions required including retrofitting the scrubber system 5. Increase odour patrol frequency to daily 6. If the perceived odour intensity reduces, cease additional odour patrol	1. Carry out investigation to identify the source/reason of nuisance or odour complaint 2. Rectify any unacceptable practice 3. Amend working method if appropriate 4. Inform ASD if cause of nuisance or complaint is considered to be caused by civil or E&M design problems 5. Ensure remedial measures are properly implemented 6. To liaise with ASD on additional odour measures including retrofitting the scrubber system. If odour nuisance continues, consider what portion of the work is responsible for the high level of odour intensity and stop that portion of work until the exceedance is abated 7. Contact complainant within 10 days to inform the cause of nuisance and action taken	1. Assist AFCD to find the cause of the nuisance or complaint 2. Modify or improve the design of the odour measures including the retrofitting of scrubber system 3. Assist AFCD to formulate remedial actions

For noise monitoring, the operational noise level shall be measured weekly in terms of the A-weighted equivalent continuous sound pressure level (Leq). $L_{eq(5min)}$ shall be used as monitoring parameter for the period from 0300 to 0630 hours. Each set of measurement shall include at least 3 consecutive $L_{eq(5min)}$ results. As supplementary information for data auditing, statistical results such as $L_{10(5min)}$ and $L_{90(5min)}$ shall also be obtained for reference.

Additional noise monitoring shall not be given for marine traffic noise. With consideration given to the selected access route, which represent the worst-scenarios in terms of distance to nearby receivers, the highest marine traffic noise levels at nearby sensitive receivers are found to be below the prevailing background noise level they are currently exposed to. The operation of the proposed WFM is not expected to generate additional marine traffic noise within the typhoon shelter and will not cause any deterioration to the existing noise climate in the vicinity of the typhoon shelter.

From baseline monitoring results, the Action and Limit Levels for operational phase noise monitoring are summarized in Table 4.

Table 4 Action and Limit Levels for Operational Phase Noise Monitoring

Time Period	Action Level	Limit Level
All days during the night-time (2300-0700 hours)	When one documented compliant is received	58dB(A)

Should non-compliance of the above Action and Limit levels occurs, the Fish Marketing Organization (FMO) shall undertake corresponding in accordance with the Event Action Plan given in the EM&A Manual. An Event/Action Plan for operational phase noise monitoring is given in Table 5.

Table 5 Event/Action Plan for Operational Phase Noise Monitoring

EVENT	ACTION		
	WFM Management (FMO)	AFCD	ASD
Action Level	1. Notify AFCD 2. Identify source 3. Discuss with AFCD and formulate remedial measures 4. Increase monitoring frequency to check mitigation effectiveness	1. Identify the source 2. Rectify any unacceptable practice 3. Amend working method if appropriate 4. Inform ASD if cause of nuisance or complaint is considered to be caused by civil or E&M design problems' 5. Implement amended working methods 6. Ensure remedial measures are properly implemented	1. Assist AFCD to find the cause of the exceedance 2. Modify or improve design as appropriate
Limit Level	1. Notify AFCD 2. Identify source 3. Repeat measurement to confirm finding 4. Increase monitoring frequency 5. Discuss with AFCD and formulate remedial measures 6. Assess effectiveness of the remedial actions 7. If exceedance stops, cease additional monitoring	1. Carry out investigation to identify the source 2. Rectify any unacceptable practice 3. Amend working method if appropriate 4. Inform ASD if cause of nuisance or complaint is considered to be caused by civil or E&M design problems 5. Implement amended working methods 6. Ensure remedial measures are properly implemented 7. If exceedance continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated	1. Assist AFCD to find the cause of the exceedance 2. Modify or improve the design as appropriate 3. Assist AFCD to formulate remedial actions

4. MONITORING METHODOLOGY

4.1 Monitoring Programme

Odour patrol and noise monitoring were conducted around Yuet Wu Villa and at Block 15, Yuet Wu Villa respectively on 1st, 8th, 12th, 22nd and 30th December 2011. Appendix A displayed the detail schedule of the odour patrol and noise monitoring.

4.2 Odour Patrol

Odour patrol shall be conducted to investigate if there is any potential for odour nuisance due to the operation of the Wholesale Fish Market. The patrol shall be carried out by a team of at least two personnel during the peak hours for trading operation at the WFM from 3:00 to 6:30 a.m.

The area covered by the odour patrol shall include Air Sensitive Receivers in the vicinity of the WFM, namely Yuet Wu Villa. The location plan of odour patrol and sniffing locations are shown in Figure 2 and the Meteorological Data Monitoring instrumentation details are given in Table 6. Sniffing Locations L1, L2 and L3 are situated near Yuet Wu Villa Block 4, Block 13 and Block 15 respectively. At each sniffing location, the monitoring time shall be at least five minutes upon arrival to determine the odour intensity rating.

Table 6 Meteorological Data Monitoring Equipment

Monitoring Equipment	Brand Name & Model No.	Serial No.	Data monitored
Weather meter	AZ 8909	9174569	Wind Speed, wind direction, temperature and relative humidity

During the patrol, the patrol officers shall identify if there was any odour characterised of that emitted from the WFM and assess the intensity of the odour perceived individually. The following odour intensity rating shall be adopted in the assessment:

1. - no odour
2. - not unpleasant
3. - slightly unpleasant
4. - unpleasant
5. - very unpleasant

Mean value of the odour intensity ratings assessed by the patrol team shall be reported. Location of odour assessment, temperature, wind speed, wind direction, relative humidity and time of patrol shall also be recorded.

If the mean odour intensity rating was higher than or equal to level 3, the patrol officers should investigate from where the odour was originated and identify the source of odour emission, if possible.

4.3 Noise Monitoring

Noise monitoring was conducted at the designated noise monitoring location between 0700-1900 hours using a sound level meter which complies with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). Noise instrumentation details are given in Table 7 and the Calibration Certificate for the sound level meter and calibrator is given in Appendix B. Noise monitoring was conducted at 1.2m above ground level in front of the residential block and at the junction of Wu Sau Street and Wu On Street as given in Figure 3. Figure 4 shows photo taken during monitoring.

Table 7 Noise Monitoring Equipment

Manufacturer	Type/Model No.	Equipment
Svantek	Svan-959	Precision Sound Level Analyser with windshield
Svantek	SV-30A	Sound Level Calibrator
AZ	AZ 8909	Weather Meter

Noise level measurements were recorded in terms of five minutes A-weighted equivalent continuous sound pressure level ($L_{eq(5min)}$) on a weekly basis. The sound level meter was calibrated immediately prior to and following each noise measurement. The meter was mounted on a tripod at a height of 1.2m and the microphone was positioned at 1m away the building façade of the noise monitoring station facing the WFM Complex.

Noise measurements were not made in the presence of fog, rain, and wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed was checked with a portable anemometer capable of measuring the wind speed in m/s.

5. RESULTS

5.1. Operational Phase Odour Patrol

Results of operational phase odour patrol are summarized in Table 8. The odour intensity ratings on 1st, 8th, 12th, 22nd and 30th December 2011 were 1-No Odour.

Table 8 Results of Operational Phase Odour Patrol

Date	Arrival Time	Location	Temperature (℃)	Wind Speed (m/s)	Wind Direction	Relative Humidity (%)	Patrol Officer (s)	Sniffing Location	Odour Intensity Rating
1st December 2011	05:44	Yuet Wu Villa	20.1	0.5	N	66.5	Cheng Kam Wing	L1	1
	06:08		19.2	3.0	E	71.8		L2	1
	06:01		19.4	0.6	NE	71.2		L3	1
	05:44		20.1	0.5	N	66.5	Tsui Churh Yiu	L1	1
	06:08		19.2	3.0	E	71.8		L2	1
	06:01		19.4	0.6	NE	71.2		L3	1
8th December 2011	05:21	Yuet Wu Villa	20.2	1.9	N	73.2	Cheng Kam Wing	L1	1
	05:36		20.0	1.2	N	74.7		L2	1
	05:41		19.9	2.5	NE	75.5		L3	1
	05:21		20.2	1.9	N	73.2	Tsui Churh Yiu	L1	1
	05:36		20.0	1.2	N	74.7		L2	1
	05:41		19.9	2.5	NE	75.5		L3	1
12th December 2011	05:20	Yuet Wu Villa	10.9	1.4	N	44.1	Cheng Kam Wing	L1	1
	05:43		10.6	3.5	NE	47.5		L2	1
	05:35		10.7	2.6	N	47.9		L3	1
	05:20		10.9	1.4	N	44.1	Tsui Churh Yiu	L1	1
	05:43		10.6	3.5	NE	47.5		L2	1
	05:35		10.7	2.6	N	47.9		L3	1
22nd December 2011	05:47	Yuet Wu Villa	18.4	1.6	E	51.1	Cheng Kam Wing	L1	1
	06:11		17.1	2.1	E	55.2		L2	1
	06:05		17.1	1.0	NE	54.8		L3	1
	05:47		18.4	1.6	E	51.1	Tsui Churh Yiu	L1	1
	06:11		17.1	2.1	E	55.2		L2	1
	06:05		17.1	1.0	NE	54.8		L3	1
30th December 2011	06:14	Yuet Wu Villa	15.9	1.9	E	68.9	Cheng Kam Wing	L1	1
	06:01		15.8	0.4	E	70.5		L2	1
	06:19		15.8	1.7	E	70.7		L3	1
	06:14		15.9	1.9	E	68.9	Tsui Churh Yiu	L1	1
	06:01		15.8	0.4	E	70.5		L2	1
	06:19		15.8	1.7	E	70.7		L3	1

5.2. Noise

Noise monitoring results in terms of $L_{eq(5min)}$, $L_{10(5min)}$ $L_{90(5min)}$ measured at the designated noise monitoring location are summarized in Table 9. $L_{10(5min)}$ and $L_{90(5min)}$ represent sound levels that are exceeded 10% and 90% of the time respectively. Normally, $L_{10(5min)}$ measurements can be considered as the average peak levels, whilst $L_{90(5min)}$ levels can be considered as the average background noise levels.

During the reporting month, the minimum and maximum average noise level measured at Yuet Wu Villa was 50.9dB(A) $L_{eq(5min)}$ and 55.3dB(A) $L_{eq(5min)}$ respectively. Summary of noise monitoring record is provided in Appendix C. The measured monitoring results were higher than the predicted noise levels due to the increment of noise level from ambient background noise levels.

Table 9 Noise Monitoring Results

Date	$L_{10(5mins)}$ (dB(A))	$L_{90(5mins)}$ (dB(A))	$L_{eq\ (5mins)}$ (dB(A))	Average $L_{eq(5min)}$ (dB(A))	Predicted $L_{eq(5min)}$ (dB(A))	Major Noise Source (s)
1st December 2011	53.7	45.8	50.8	52.5	50	Vehicle passes-by along Wu Sau Street
	56.3	46.3	52.9			
	57.2	47.6	53.4			
8th December 2011	52.9	46.2	50	50.9	50	Vehicle passes-by along Wu Sau Street
	53.9	46	50.9			
	55.2	45.7	51.6			
12th December 2011	58.6	48.9	53.9	53.1	50	Vehicle passes-by along Wu Sau Street
	53.8	46.5	51.6			
	56.3	47.3	53.4			
22nd December 2011	54	46	52.3	52.3	50	Vehicle passes-by along Wu Sau Street
	56.3	46.4	53.4			
	54.1	46.8	50.8			
30th December 2011	61.3	49.5	57.5	55.3	50	Vehicle passes-by along Wu Sau Street
	57.5	49.3	54			
	56.2	49.9	52.9			

6. IMPLEMENTATION OF MITIGATION MEASURES

The relevant parties have implemented odour and noise mitigation measures which shall include, but not limited to the following:

- The WFM Complex (including the parking area) shall be enclosed to reduce the odour nuisance to the nearby residents;
- Contract specifications on the sound power level of mechanical ventilation system shall be followed;
- Off-route lorries shall not pass along the Wu Shan Road outside Yuet Wu Villa;
- Lorries queuing and vessel's horning shall be controlled by WFM management and AFCD.

All environmental mitigation measures for operational stages stated in approved EIA Report, EM&A Manual and Environmental Permit was carried out throughout the whole operational period as shown in Appendix D. The environmental mitigation measures undertaken were considered adequate. There was no major change in the operation of WFM and no additional environmental mitigation measures shall be given. The odour patrol frequency was reviewed in March 2011 in accordance with EM&A Manual, Section 9.2.2. The odour monitoring shall be prolonged, which the weekly odour patrol frequency shall persist as stated in EM&A Manual.

7. NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

In the reporting month, no non-compliance, complaint, inspection notice, notification of summons or prosecution was received.

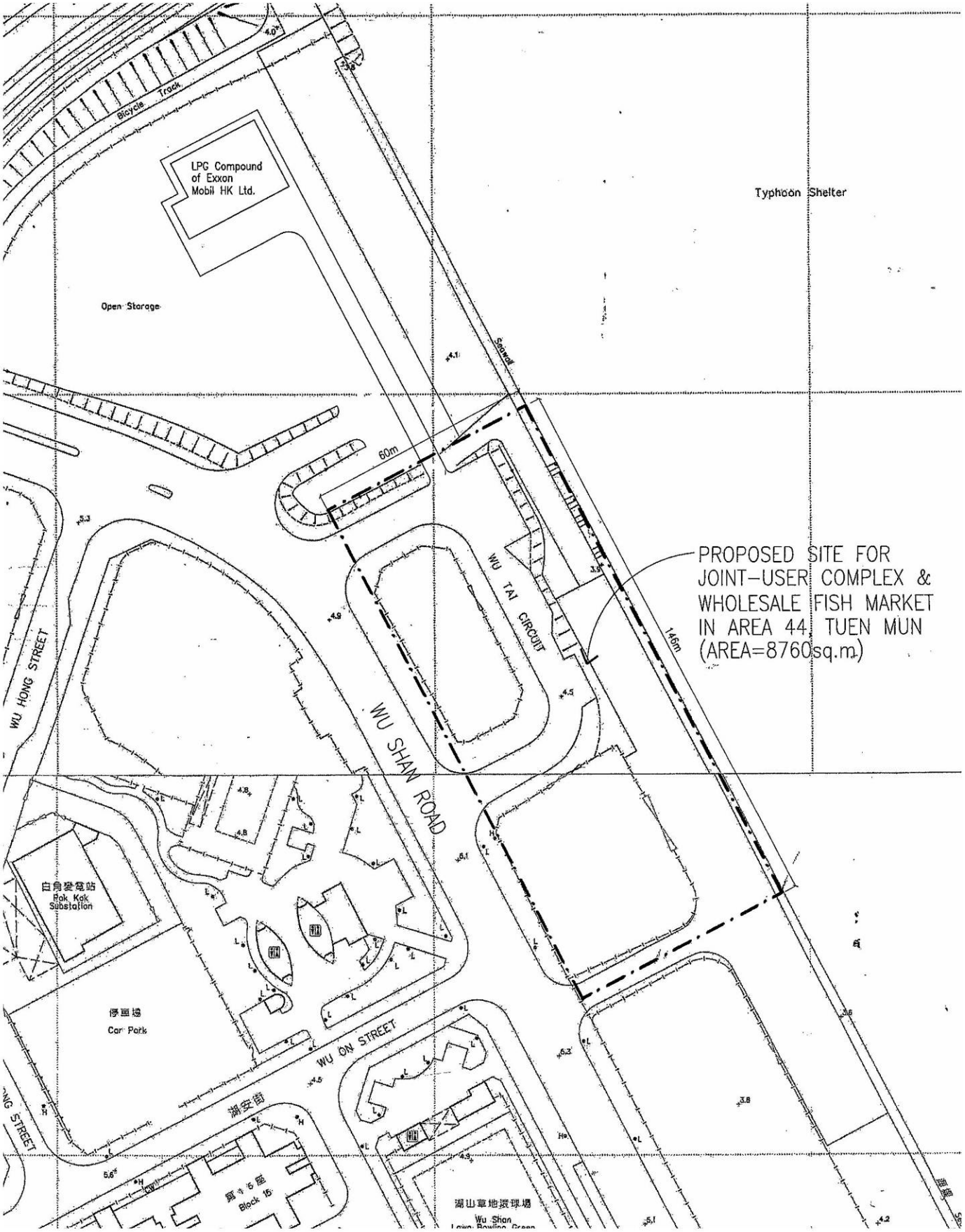
8. CONCLUSIONS

Environmental monitoring has been carried out for the Joint User Complex and Wholesale Fish Market at Area 44, Tuen Mun. Odour patrol and noise monitoring were conducted Yuet Wu Villa during the period from 1st December 2011 to 31st December 2011.

The odour intensity ratings on 1st, 8th, 12th, 22nd and 30th December were 1-No Odour. For impact noise monitoring, the minimum and maximum average noise level measured at Yuet Wu Villa was 50.9dB(A) $L_{eq(5min)}$ and 55.3dB(A) $L_{eq(5min)}$ respectively. The measured monitoring results were higher than the predicted noise levels due to the increment of noise level from ambient background noise levels.

In the reporting month, no non-compliance, complaint, inspection notice, notification of summons or prosecution was received.

The operation phase EM&A programme was completed and no further works should be carried out in future.



JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44, TUEN MUN

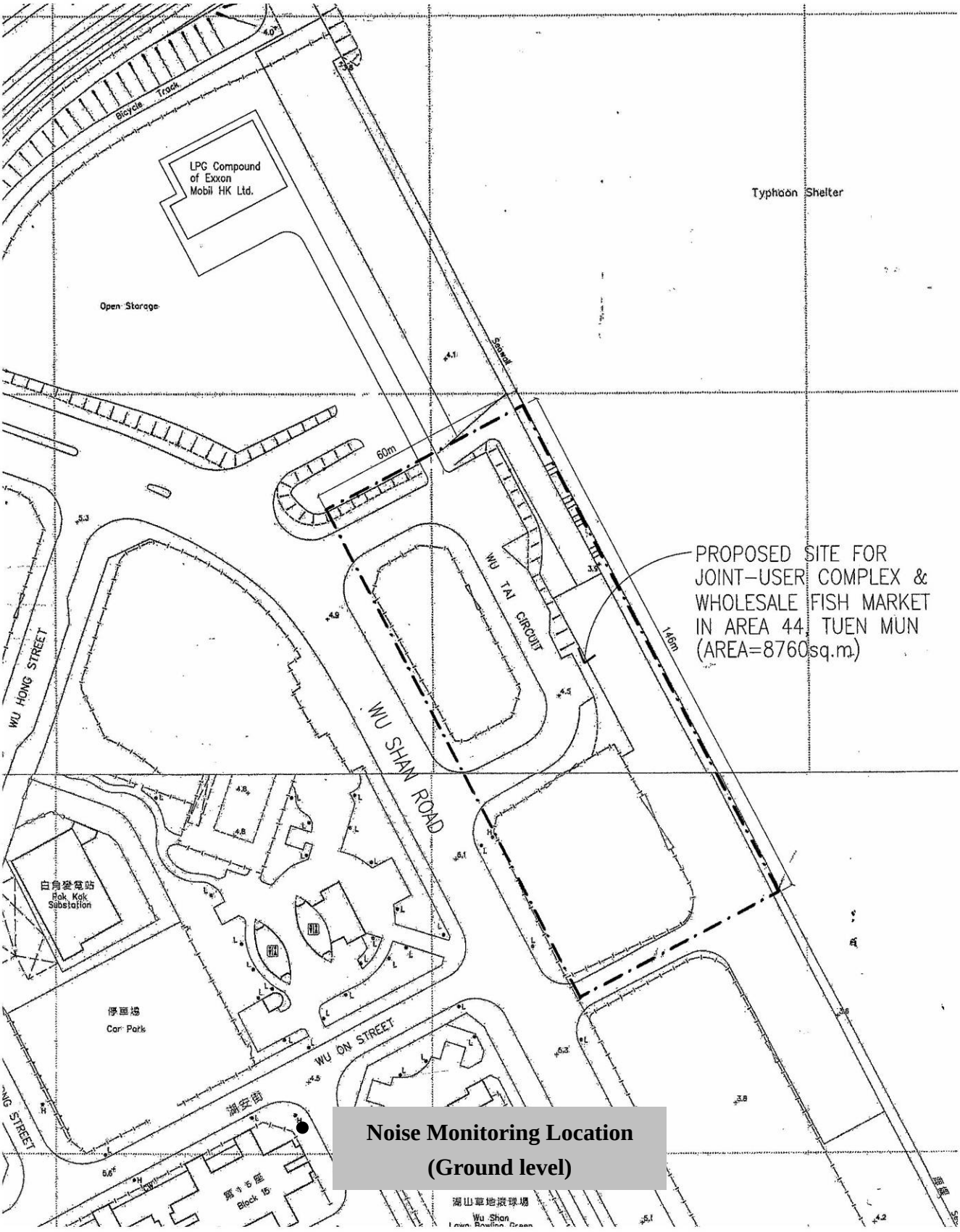
SITE LOCATION PLAN

Figure No.	Rev.:
1	0
Scale	Date
NTS	1/11

JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44, TUEN MUN

LOCATION PLAN OF OPERATIONAL PHASE ODOUR PATROL AND SNIFFING LOCATIONS

Figure No.	Rev.:
2	0
Scale	Date
NTS	2/11



JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44, TUEN MUN

LOCATION OF NOISE MONITORING STATION

Figure No.	Rev.:
3	0
Scale	Date
NTS	1/11

JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44, TUEN MUN

PHOTOS OF NOISE MONITORING STATION

Figure No.	Rev.:
4	0
Scale: NTS	Date: 1/11

Appendix A

Detail Schedule of Odour Patrol and Noise Monitoring

Schedule for air and noise monitoring programme of Tuen Mun Wholesale Fish Market

Monitoring schedule for the reporting month

Date	Start Time
1st December 2011	05:40
8th December 2011	05:15
12th December 2011	05:10
22nd December 2011	05:45
30th December 2011	06:01

Appendix B

Calibration Certification of the Sound Level Meter and Calibrator

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33 –35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

Certificate of Calibration

Certificate No. ATS10-063-CC001

Customer:	**Aeolian View Consultants** Room 1907 Tung Che Commercial Centre, 246 Des Voeux Road West, Hong Kong	
Item Tested		
Description:	Sound Analyzer	, Microphone
Manufacturer:	Svantek	
Type No.:	Svan-959	, 40AE
Serial No.:	11238	, 69242
Test Conditions		
Temperature:	20°C	
Relative Humidity:	65%	
Test Specifications:	Calibration Check	
Date of calibration:	27 January 2011	
Test Results:	All calibration points are within manufacturer's specification.	

The test equipment used for calibration is traceable to National Standards via:
- Standards and Calibration Laboratory, the Government of the HKSAR

Certified by: _____
Y. T. Leung
MIOA, MHKIOA

Issue Date: 27 January 2011

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33 –35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

1. The instrument under test was allowed to stabilize in the laboratory for over 24 hours.

2. Calibration equipment:

Description:	Acoustical Calibrator
Manufacturer:	Brüel & Kjær
Type No.:	4231
Serial No.:	2478237
Last Calibration Date:	16 July 2010
Certificate No.:	DC100132

3. The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. Acoustic Testing Services Limited shall not be liable for any loss or damage resulting from the use of the equipment.

4. Calibration Results

Setting of unit-under-test (UUT)				Applied value		UUT Reading, dB
Range, dB	Parameter	Frequency Weighting	Response	Level, dB	Frequency, Hz	
20-120	SPL	A	F	94.03	1000	94.0
			S			94.0
			I			94.0
		C	F			94.0
			S			94.0
			I			94.0
		L	F			94.0
			S			94.0
			I			94.0
		A	F	114.04	1000	114.0
			S			114.0
			I			114.0

5. The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33 –35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

Certificate of Calibration

Certificate No. ATS10-063-CC002

Customer:	**Aeolian View Consultants** Room 1907 Tung Che Commercial Centre, 246 Des Voeux Road West, Hong Kong
Item Tested	
Description:	Sound Level Calibrator
Manufacturer:	Svantek
Type No.:	SV-30A
Serial No.:	7441
Test Conditions	
Temperature:	20°C
Relative Humidity:	65%
Test Specifications:	Calibration Check
Date of calibration:	27 January 2011
Test Results:	All calibration points are within manufacturer's specification.

The test equipment used for calibration is traceable to National Standards via:
- Standards and Calibration Laboratory, the Government of the HKSAR,
- The Calibration Laboratory, DANAK

Certified by: _____

Y. T. LEUNG
MIOA, MHKIOA

Issue Date: 27 January 2011

聲學測試服務有限公司
Acoustic Testing Services Limited
Unit E, 2/F., Century Industrial Centre, 33 –35 Au Pui Wan Street, Fo Tan, Shatin, New Territories, Hong Kong
Tel: (852) 2690 9126 Fax: (852) 2690 9125 E-mail: info@ATSL.com.hk http://www.ATSL.com.hk

1. The instrument under test was allowed to stabilize in the laboratory for over 24 hours.

2. Calibration equipment:

	Type	Serial No.	Last Calibration Date	Calibration Report Number	Traceable to
PULSE Frequency Analyzer	3560-B	2454296	16-Aug-2010	LF100096	SCL, HKSAR
Reference Microphone*	B&K 4942	2497997	16-Mar-2010	LF100032	SCL, HKSAR

3. Calibration Results

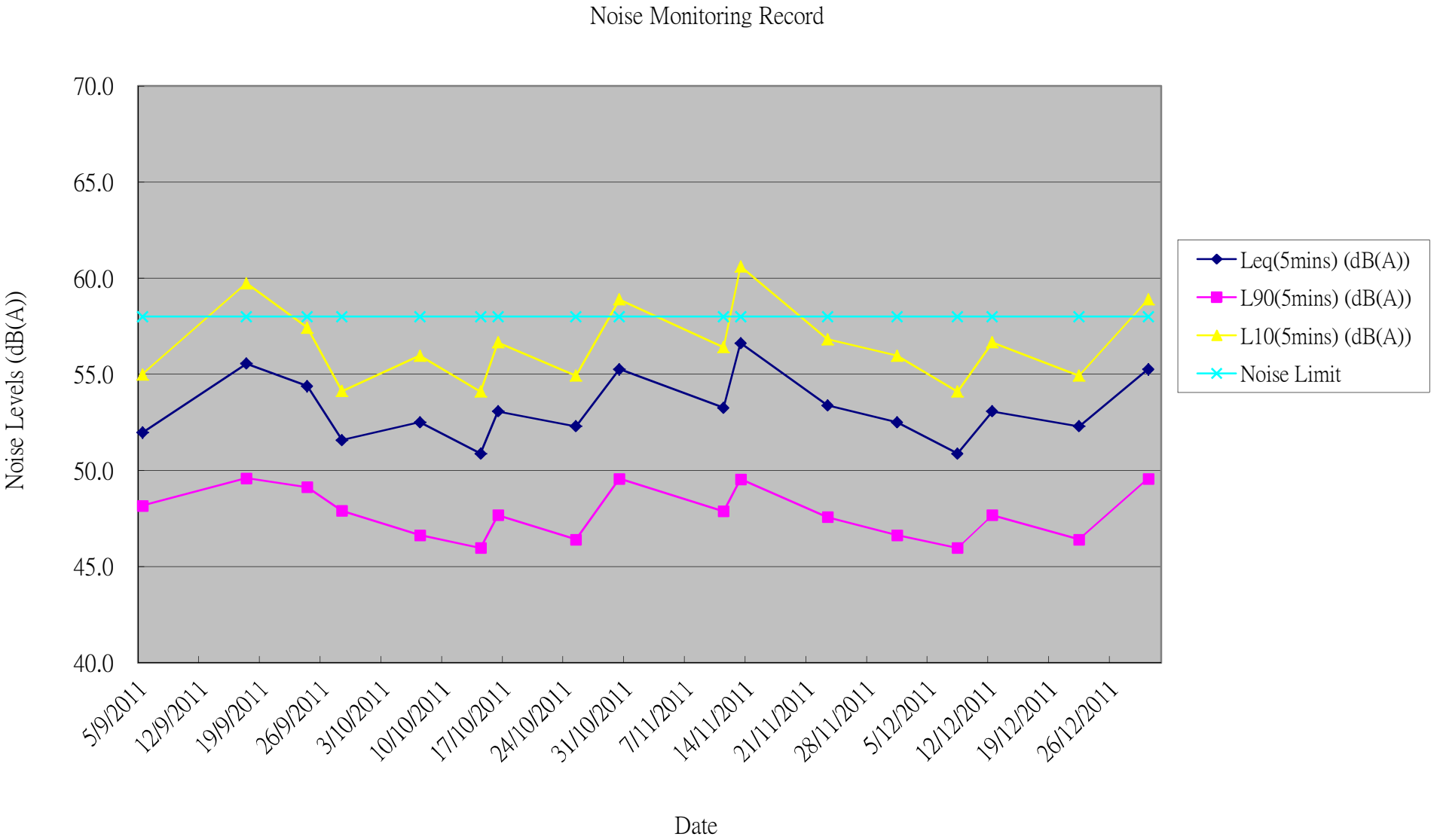
Nominal value dB	Measured value dB	Expanded Measurement Uncertainty of Reference Microphone B&K 4942 at 1000 Hz	
		dB	mV/Pa
94.00	94.00	0.08	0.40

Appendix C

Summary and Graphical Plot of Noise Monitoring Record

Impact Monitoring for Fish Market Project in Tuen Mun
Noise Monitoring
Month: December 2011

Date	Time	$L_{10(5mins)}$ (dB(A))	$L_{90(5mins)}$ (dB(A))	$L_{eq\ (5mins)}$ (dB(A))	Average $L_{eq(5min)}$ (dB(A))
1-Dec-11	05:40 - 05:55	53.7	45.8	50.8	52.5
		56.3	46.3	52.9	
		57.2	47.6	53.4	
8-Dec-11	05:15 - 05:30	52.9	46.2	50	50.9
		53.9	46	50.9	
		55.2	45.7	51.6	
12-Dec-11	05:10 - 05:25	58.6	48.9	53.9	53.1
		53.8	46.5	51.6	
		56.3	47.3	53.4	
22-Dec-11	05:45 - 06:00	54	46	52.3	52.3
		56.3	46.4	53.4	
		54.1	46.8	50.8	
30-Dec-11	06:10 - 06:25	61.3	49.5	57.5	55.3
		57.5	49.3	54	
		56.2	49.9	52.9	


Noise Monitoring Record
Noise Levels (dB(A))
70.0
65.0
60.0
55.0
50.0
45.0
40.0
5/9/2011
12/9/2011
19/9/2011
26/9/2011
3/10/2011
10/10/2011
17/10/2011
24/10/2011
31/10/2011
7/11/2011
14/11/2011
21/11/2011
28/11/2011
5/12/2011
12/12/2011
19/12/2011
26/12/2011
Date
Leq(5mins) (dB(A))
L90(5mins) (dB(A))
L10(5mins) (dB(A))
Noise Limit

Appendix D

Mitigation Measures Implementation Schedule for Operational Stage

MITIGATION MEASURES IMPLEMENTATION SCHEDULE FOR OPERATIONAL STAGE

EIA Ref. Section	EM&A Ref. Section	Environmental Protection Measures	Status
4.7	2.8	Air Quality	
		• The WFM (including parking area) shall be enclosed with no unprotected openings facing Wu Shan Road to reduce the potential odour nuisance posed to the nearby residents	^
		• Exhaust air from the WFM (including parking area) shall be discharged on the eastern elevation facing the typhoon shelter	^
		• Contingency provision of future addition of odour removal system for the WFM, if required, will be allowed in the current design	^
		• All fresh air intakes for the Community Hall and Other Possible Community Uses shall be sited at levels above 15mPD and 18.5mPD, respectively, and fitted with appropriate filters to remove odour	^
		• Exhaust air from the RCP and Marine RCP shall be treated with appropriate deodorisation system prior to discharge to outdoors	^
		• Good hygiene and effective operational and waste management practices	^
		• Daily washing down of fish market areas and the storage and daily removal of organic wastes	^
		• Drains and channels shall be easy to clean and construction materials for the WFM shall be impervious, durable and easy to clean	^
		• Measures should be taken to further minimize the potential odour impact during the transportation of fish or other odorous materials, including the use of properly covered containers	^
		• Deodourisation systems shall be installed for the public toilets	^
5.7	3.7	Noise	
		• To avoid a potential night time nuisance to nearby residents a right-turn only junction (northern access road/Wu Shan Road) is provided for vehicles leaving the WFM	^
		• Arrangement will be made with drivers to reduce lorry queuing; assistance will be sought from WFM users and vessel operators to avoid loudhailer operation and reduce horn tooting along the seafront	^
		• MD and WFM management to encourage vessels to use the eastern harbour entrance	^
		• MD and WFM management to encourage the use of silencers at fishing vessels' exhaust	^
		• MD to monitor and maintain practical and safe movement within the harbour, and to assist MARPOL and EPD in minimizing where possible noise impact to nearby residents	^
		• To request vessel owners to avoid horning except in emergency and to use other means such as phones to notify their presence	^
		• The WFM (including parking area) shall be enclosed with no unprotected openings facing Wu Shan Road to reduce potential noise nuisance posed to the nearby residents	^
		• A canopy is to be provided to cover all the fish unloading areas on the quay to increase noise screening to NSRs	^
		• Mechanical plant exhausts shall be directed towards the typhoon shelter and appropriately screened from Wu Shan Road and nearby NSRs	^
		• Suitable noise control measures will be included in building services system design, such as provision of silencers and acoustic louvers to mechanical plant and plantroom	^

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; * Not satisfactory but rectified by the contractor.

As updated on 4 January 2012

MITIGATION MEASURES IMPLEMENTATION SCHEDULE FOR OPERATIONAL STAGE

EIA Ref. Section	EM&A Ref. Section	Environmental Protection Measures	Status
6.7	4.1	Water Quality	
		• Surface drainage channels of operational areas shall be easily cleaned and connected to foul sewerage	^
		• Wastewater from toilets, kitchen, and other users of the WFM market shall be discharged into a foul sewer or a sewage treatment facility. No effluent discharge into the nullah will be allowed	^
		• The flushing water storage tank shall be properly designed so as to minimize the amount of water for each flush	^
		• Wastewater resulting from cleansing of floors of the fish market and the refuse collection units (RCP) should be discharged into a foul sewer to avoid direct discharge of wastewater to the nullah	^
		• Chemical toilets shall be provided to cope with the additional sewage generated on the day of Dragon Boat Festival	^
7.2	5.1	Waste Management	
		• In order to minimize the amount of waste disposal, durable and reusable containers should be used, where practicable, instead of plastic bags	^
		• Organic matter shall be collected and sealed in plastic bags after each operation and removed daily	^
		• The design shall allow for separation and suitable storage of broken polyfoam casings prior to collection	^
		• Municipal solid waste generated from community hall, library and offices will be segregated	^
8.7	6.1	Hazard to Life	
		• Manually operated warning siren shall be installed to instruct people to take timely shelter	^
		• Fire drill exercises shall be organized for the workers at the site and users of the WFM	^
		• Pedestrian access to the area of podium within the 150m consultation zone should be minimized by design	^
		• LPG deliveries shall be avoided during the hours when the spectator stand is fully occupied on the day of Dragon Boat Festival	^
		• Reference shall be made to the Code of Practice for the Provision of Means of Escape in Case of Fire (Hong Kong Buildings Department [1997]) and the Code of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment (Hong Kong Fire Services Department [1997])	^

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; * Not satisfactory but rectified by the contractor.

As updated on 4 January 2012