

Issue No. : 1  
Issue Date : December 2008  
Project No. : 768

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

**ENVIRONMENTAL MONITORING  
& AUDIT REPORT  
(NOVEMBER 2008)**

Prepared By:

**ALLIED ENVIRONMENTAL CONSULTANTS LTD.**

**COMMERCIAL-IN-CONFIDENCE**

**Allied Environmental Consultants Ltd.**  
**Acousticians & Environmental Engineers**

1001 Shanghai Industrial Investment Building, 48 Hennessy Road, Wanchai, Hong Kong  
Tel: (852) 2815-7028 Fax: (852) 2815-5399 Email: info@aechk.com



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Author:   
Nic Lam  
BSc(Hons)

Checked:   
Claudine Lee  
MSc MHKIEIA MHKIOA

Approved:   
Grace Kwok  
BEng(Hons) MHKIEIA MHKIOA  
MISWA MIAIA MRAPA LEED AP

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## **EXECUTIVE SUMMARY**

Allied Environmental Consultants Limited (AEC) has been appointed to conduct an environmental monitoring and audit (EM&A) program for the proposed Joint User Complex and Wholesale Fish Market at Area 44, Tuen Mun. The construction works was commenced on 31<sup>st</sup> July 2008. This report is the fourth monthly EM&A report, which details the environmental monitoring and audit results recorded during the period from 1<sup>st</sup> November 2008 to 30<sup>th</sup> November 2008.

Impact environmental monitoring for the proposed Joint User Complex and Wholesale Fish Market at Area 44, Tuen Mun has been carried out on 3<sup>rd</sup>, 8<sup>th</sup>, 14<sup>th</sup>, 20<sup>th</sup>, and 26<sup>th</sup> November 2008 at Block 15, Yuet Wu Villa. Baseline 1-hr TSP and noise monitoring were conducted within the period of 0700-1900 hours, where baseline 24-hr TSP monitoring was conducted continuously for a 24-hour period.

1-hour TSP monitoring results at the monitoring location ranged from 149 $\mu\text{g}/\text{m}^3$  to 200 $\mu\text{g}/\text{m}^3$  with an average of 178 $\mu\text{g}/\text{m}^3$ . 24-hour TSP monitoring results ranged from 79 $\mu\text{g}/\text{m}^3$  to 100 $\mu\text{g}/\text{m}^3$  with an average of 87 $\mu\text{g}/\text{m}^3$ .

Noise monitoring results at the monitoring location ranged from 61.2dB(A) to 62.1dB(A) with an average of 61.6dB(A).

Based on the monitoring results, the air quality and construction noise level shall comply with the environmental requirements in EM&A Manual. There were no breaches of the action and limit levels. There were no environmental complaints received in the reporting month. No notification of summons or prosecution was received.

Construction activities to be undertaken in December 2008 include the continuation of jack piling and drainage diversion. Potential environmental impacts include dust generation from stockpiles of dusty materials and the drainage diversion work; noise from operation of the equipments and jack piling, runoff from drainage diversion works and the storage of various C&D and chemical wastes. The Contractor should properly implement the required environmental mitigation measures as per the implementation schedule in the EM&A manual to ensure no significant adverse environmental impacts to be arisen from the construction works. The Contractor was reminded to maintain good housekeeping throughout the construction phase.

## 1. PROJECT BACKGROUND

A Joint User Complex and Wholesale Fish Market (WFM Complex) at Area 44 in Tuen Mun is proposed to be 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 proposed 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 proposed 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 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<br>Ms. Louise Li   | 2150 7092<br>2150 7140 | 2314 2866  |
| Environmental Permit Holder       | Architecture Services Department                    | Mr. S.W. Chow<br>Ms. Susana Chan | 2867 3716<br>2867 6706 | 2523 9622  |
| Architect                         | P&T Architects and Engineers Ltd.                   | Ms. Sarah Ng<br>Ms. Vivian Law   | 2835 3548<br>2832 3046 | 2891 3834  |
| Main Contractor                   | W. Hing Construction Co. Ltd.                       | Mr. Andy Chan<br>Mr. Tim Wong    | 9630 7404<br>6478 4623 | 8343-9188  |
| Environmental Team Leader         | Allied Environmental Consultants Ltd.               | Ms. Grace Kwok                   | 2815 7028              | 2815 5399  |
| Independent Environmental Checker | Cinotech Consultants Ltd.                           | Mr. Alex Ngai                    | 2151 2083              | 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. CONSTRUCTION WORKS & PROGRAMME

The major works undertaken and/or completed during the monitoring period are listed below:

- Jack piling works
- Drainage diversion works

Table 2 shows the interrelationship between construction activities and environmental mitigation measures for the reporting month.

*Table 2 Interrelationship between Construction Activities and Mitigation Measures*

| Construction Works | Major Environmental Impact             | Mitigation Measures                |
|--------------------|--|------------------------------------|
| Jack piling        | Noise impact                           | Well-maintained plants were used   |
| Drainage diversion | Air quality, and water quality impacts | Water spraying, avoided rainy days |

## 4. SUMMARY OF EM&A REQUIREMENT

For regular impact monitoring, the sampling frequency of at least once in every six-days, shall be strictly observed at the monitoring station for 24-hr TSP monitoring. For 1-hr TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs. For noise monitoring, one set of measurement between 0700-1900 hours on normal weekdays. Leq(30 min) shall be used as the monitoring parameter.

From baseline monitoring results, the proposed Action and Limit Levels for air quality are summarized in Table 3. The average baseline 1-hr TSP value of 129 $\mu\text{g}/\text{m}^3$  and 24-hr TSP value of 65 $\mu\text{g}/\text{m}^3$  measured at Block 15, Yuet Wu Villa was used to determine the action and limit level for air quality impact monitoring. The proposed Action and Limit Levels for construction noise are summarized in Table 4.

*Table 3 Action and Limit Level for Air Quality Impact Monitoring at Yuet Wu Villa*

| Parameters        | Baseline Level<br>( $\mu\text{g}/\text{m}^3$ ) | Action Level<br>( $\mu\text{g}/\text{m}^3$ ) | Limit Level<br>( $\mu\text{g}/\text{m}^3$ ) |
|-------------------|--|--|---|
| 24-Hour TSP Level | 65   | 173  | 260   |
| 1-Hour TSP Level  | 129  | 334  | 500   |

*Table 4 Action and Limit Levels for Construction Noise Impact Monitoring*

| Time Period  | Action Level                              | Limit Level  |
|--|---|--|
| Daytime (0700-1900 hours) on weekdays  | When one documented compliant is received | Dwelling 75dB(A) <sup>1</sup><br>School 70dB(A) <sup>1</sup><br>(65dB(A) during examinations) <sup>1</sup> |
| 1900-2300 on any day and 0700-2300 on Sunday and general holidays, for use of PME <sup>2</sup> | When one documented compliant is received | 65dB(A) <sup>3</sup>   |
| All days during the night-time (2300-0700 hours) <sup>2</sup>                                  | When one documented compliant is received | 50dB(A) <sup>3</sup>   |

Note: 1. Construction noise criteria stipulated in the TM-EIAO

2. A Construction Noise Permit (CNP) shall be required for the carrying out of the construction work during the restricted hours (1900-2300 on any day and 0700-2300 on Sunday and general holidays, for use of PME; and All days during the night-time (2300-0700 hours))

3. Area sensitivity rating of the monitoring location is "B".

Should non-compliance of the above Action and Limit levels occurs, the contractor shall undertake corresponding in accordance with the proposed Event Action Plan given in the EM&A Manual. A summarized general Event Action Plan is given in Table 5. Details should be referred to the Event Action Plan in the EM&A Manual.



Table 5 *Event Action Plan*

| Level  | Step 1   | Step 2   | Step 3   |
|--------|--|--|--|
| Action | <ul style="list-style-type: none"> <li>Identify source</li> <li>Check monitoring data and working methods</li> </ul>   | <ul style="list-style-type: none"> <li>Contact project manager to discuss and implement remedial action</li> <li>Rectify any unacceptable practice</li> <li>Amend working methods if appropriate</li> <li>If exceedance continues, commence additional monitoring</li> </ul>                               | <ul style="list-style-type: none"> <li>Notify client/project manager following correct of the situation</li> <li>Cease additional monitoring if exceedance stops</li> </ul>    |
| Limit  | <ul style="list-style-type: none"> <li>Identify source</li> <li>Notify client/project manager</li> <li>Check monitoring data and working methods</li> <li>Repeat measurement to confirm finding</li> <li>Commence additional monitoring</li> </ul> | <ul style="list-style-type: none"> <li>Take immediate action to avoid further exceedance</li> <li>Submit proposal for remedial actions to client/project manager within 3 working days</li> <li>Implement the agreed proposal</li> <li>If exceedance continues, amend and resubmit the proposal</li> </ul> | <ul style="list-style-type: none"> <li>Notify client/project manager following correction of the situation</li> <li>Cease additional monitoring if exceedance stops</li> </ul> |

## 5. MONITORING METHODOLOGY

### 5.1 Monitoring Programme

Air quality monitoring and noise monitoring were conducted at Block 15, Yuet Wu Villa on 3<sup>rd</sup>, 8<sup>th</sup>, 14<sup>th</sup>, 20<sup>th</sup>, and 26<sup>th</sup> November 2008. Air quality monitoring station was set up at the roof top of the residential block and noise monitoring was conducted at 1.2m above ground level at the junction of Wu Sau Street and Wu On Street as given in Figure 2 and 3. Figure 4 and 5 show photos taken during monitoring at the two locations.

A construction site for the proposed Junior Police Officers' Married Quarters is located at Wu Hong Street which is 110m away from the monitoring location, which can be a major source of the noise and TSP generation during the monitoring period. Figure 6 shows the photos of the construction site.

## 5.2 Air Quality Monitoring

1-hour and 24-hour TSP air quality monitoring was conducted at the designated air quality monitoring location using a High Volume TSP Sampler (Model No: Anderson GMWS-2310 ACCU-VOL) at the designated location. The Calibration Record of the High-Volume TSP Sampler is given in Appendix A. 24-hour TSP samples were taken every six days. 1-hour TSP samples were taken three times a day between 0700-1900 hours.

## 5.3 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 6 and the Calibration Certificate for the sound level meter and calibrator is given in Appendix B.

*Table 6 Noise Monitoring Equipment*

| <b>Manufacturer</b> | <b>Type/Model No.</b> | <b>Equipment</b>                               |
|---------------------|-----------------------|--|
| RION                | Model NL 31           | Precision Sound Level Analyser with windshield |
| RION                | Model NC 73           | Calibrator                                     |

Noise levels measurements were recorded in terms of thirty minutes A-weighted equivalent continuous sound pressure level ( $Leq(30min)$ ) on a daily 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 construction site.

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.

## 6. RESULTS

### 6.1. Air Quality

1-hour and 24-hour TSP monitoring results are summarized in Table 7 and 8 and serve as the basis for determining the action and limit levels. The minimum and maximum 1-hour TSP measured at Yuet Wu Villa was  $149\mu g/m^3$  and  $200\mu g/m^3$  respectively with an average of  $178\mu g/m^3$ . The minimum and maximum 24-hour TSP measured was  $79\mu g/m^3$  and  $100\mu g/m^3$  respectively with an average of  $87\mu g/m^3$ . Summary of air quality monitoring record is provided in Appendix C and D.

Table 7 1-Hour TSP Monitoring Results

| Day | Date        | 1-hr TSP ( $\mu\text{g}/\text{m}^3$ ) |           |           |         | Average<br>( $\mu\text{g}/\text{m}^3$ ) |
|-----|-------------|---------------------------------------|-----------|-----------|---------|---|
|     |             | Reading 1                             | Reading 2 | Reading 3 | Average |   |
| 1   | 3 Nov 2008  | 149                                   | 157       | 183       | 163     | <b>178</b>                              |
| 2   | 8 Nov 2008  | 161                                   | 184       | 188       | 178     |   |
| 3   | 14 Nov 2008 | 181                                   | 200       | 191       | 191     |   |
| 4   | 20 Nov 2008 | 181                                   | 184       | 187       | 184     |   |
| 5   | 26 Nov 2008 | 183                                   | 175       | 168       | 175     |   |

Table 8 24-Hour TSP Monitoring Results

| Day | Date        | 24-hr TSP ( $\mu\text{g}/\text{m}^3$ ) |
|-----|-------------|--|
| 1   | 3 Nov 2008  | 100                                    |
| 2   | 8 Nov 2008  | 92                                     |
| 3   | 14 Nov 2008 | 84                                     |
| 4   | 20 Nov 2008 | 80                                     |
| 5   | 26 Nov 2008 | 79                                     |
|     | Average     | <b>87</b>                              |

## 6.2. Noise

Noise monitoring results in terms of  $L_{\text{eq}(30\text{min})}$ ,  $L_{10(30\text{min})}$   $L_{90(30\text{min})}$  measured at the designated noise monitoring location are summarized in Table 9.  $L_{10}$  and  $L_{90}$  represent sound levels that are exceeded 10% and 90% of the time respectively. Normally,  $L_{10}$  measurements can be considered as the average peak levels, whilst  $L_{90}$  levels can be considered as the average background noise levels.

During the reporting month, the minimum and maximum noise level measured at Yuet Wu Villa was 61.2dB(A)  $L_{\text{eq}(30\text{min})}$  and 62.1dB(A)  $L_{\text{eq}(30\text{min})}$  respectively with an average of 61.6dB(A)  $L_{\text{eq}(30\text{min})}$ . No exceedance was recorded in this reporting period. Summary of noise monitoring record will be provided in Appendix E.

Table 9 Noise Monitoring Results

| Day | Date           | $L_{10(30\text{mins})}$ (dB(A)) | $L_{90(30\text{mins})}$ (dB(A)) | $L_{\text{eq}(30\text{mins})}$ (dB(A)) |
|-----|----------------|---------------------------------|---------------------------------|--|
| 1   | 3 Nov 2008     | 63.2                            | 58.2                            | 61.7                                   |
| 2   | 8 Nov 2008     | 63                              | 58.2                            | 61.2                                   |
| 3   | 14 Nov 2008    | 64.3                            | 58.9                            | 62.1                                   |
| 4   | 20 Nov 2008    | 63                              | 57.9                            | 61.2                                   |
| 5   | 26 Nov 2008    | 63.5                            | 58.9                            | 61.7                                   |
|     | <b>Average</b> | <b>63.4</b>                     | <b>58.4</b>                     | <b>61.6</b>                            |

### 6.3. Weather Conditions

Weather data of the monitoring station were obtained from the nearest Hong Kong Observatory (HKO) Tuen Mun automatic weather station located at Tuen Mun Town Park (63 mPD). Table 10 summarizes the wind data during the monitoring dates. Wind record from HKO will be shown in Appendix F.

*Table 10 Summary of Weather Conditions during the Monitoring Period*

| Date        | Weather | Prevailing Wind direction | Daily Average Wind speed (m/s) |
|-------------|---------|---------------------------|--------------------------------|
| 3 Nov 2008  | Cloudy  | NE                        | 2.66                           |
| 8 Nov 2008  | Sunny   | N                         | 3.66                           |
| 14 Nov 2008 | Sunny   | N                         | 1.93                           |
| 20 Nov 2008 | Sunny   | NE                        | 3.07                           |
| 26 Nov 2008 | Sunny   | N                         | 2.34                           |

## 7. SITE INSPECTION & AUDIT

4 site inspections were conducted by the Environmental Team (ET) in this reported period. Major observations by the ET, actions by the Contractor and outcome are summarized in the Table 11.

*Table 11 Summary of Site Inspections*

|   | Date        | Observations                                   | Action taken by Contractor                                       | Outcome                                  |
|---|-------------|--|--|--|
| 1 | 6 Nov 2008  | No outstanding observations during inspection. | Contractor was required to keep up with the mitigation measures. |  |
| 2 | 14 Nov 2008 | Oil drums were placed on bare land.            | Contractor was requested to provide drip tray for oil drums.     | The situation was rectified immediately. |
| 3 | 21 Nov 2008 | No outstanding observations during inspection. | Contractor was required to keep up with the mitigation measures. |  |
| 4 | 28 Nov 2008 | No outstanding observations during inspection. | Contractor was required to keep up with the mitigation measures. |  |

During site inspections in the reporting month, no non-conformance of implementation of environmental mitigation measures was identified. All environmental mitigation measures for construction stages stated in approved EIA Report, EM&A Manual and Environmental Permit shall be carried out throughout the whole construction period as shown in Appendix G.

## **8. NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

In this reporting period, no complaint, inspection notice, notification of summons or prosecution was received. No non-compliance was recorded.

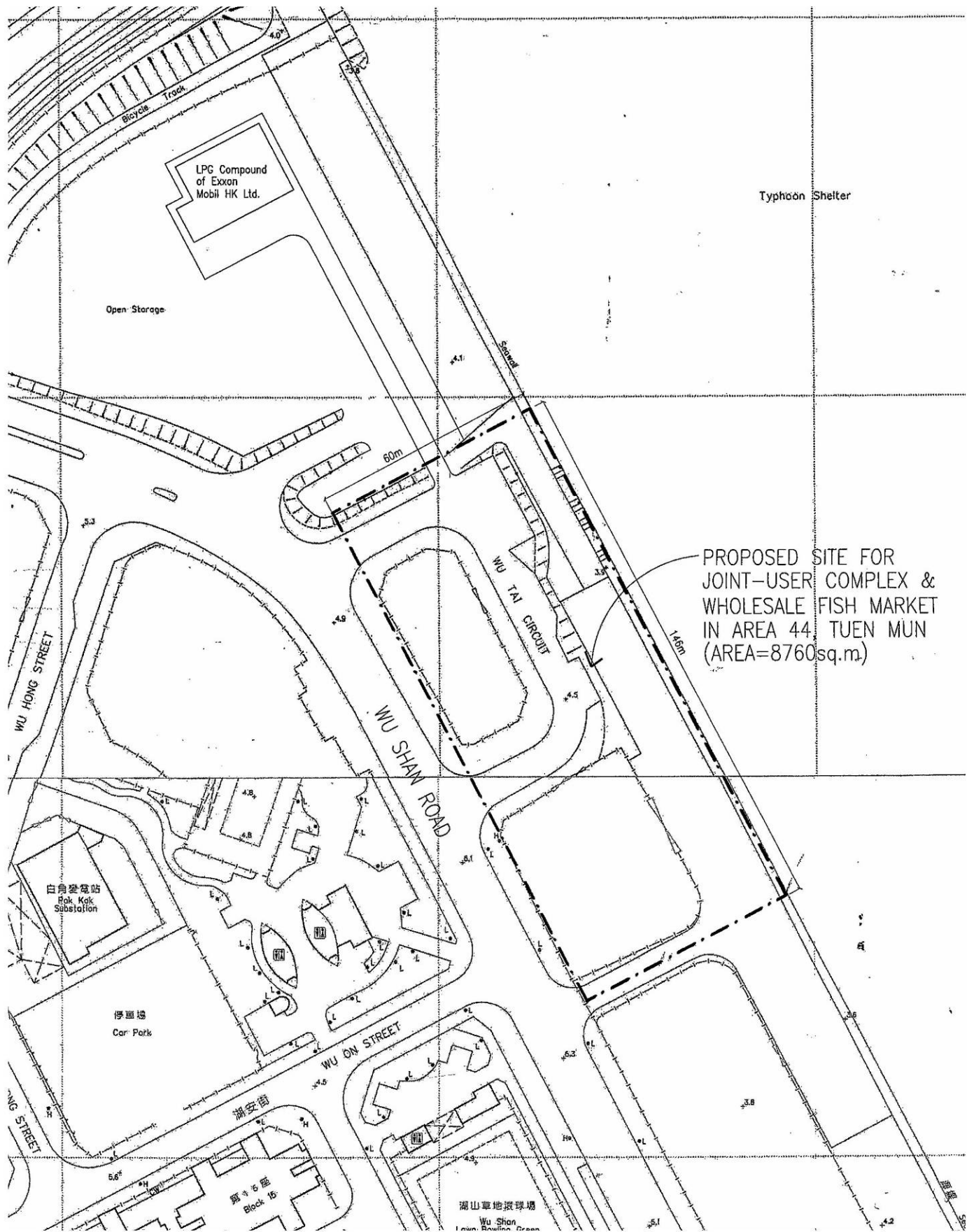
## **9. OTHERS**

199.02m<sup>3</sup> of inert C&D waste was disposed at public fill. 3.1 tonnes of waste was disposed to landfill. No chemical waste was transported off site in this reported period.

## **10. CONCLUSIONS**

Environmental monitoring has been carried out for the proposed Joint User Complex and Wholesale Fish Market at Area 44, Tuen Mun. 1-hour and 24-hour TSP air quality monitoring and noise monitoring was conducted at Block 15, Yuet Wu Villa during the period from 1<sup>st</sup> November 2008 to 30<sup>th</sup> November 2008.

The average 1-hour TSP level is 178µg/m<sup>3</sup> and average 24-hour TSP level is 87µg/m<sup>3</sup>. For impact noise monitoring, the 30-minute average noise level is 61.6dB(A) .



**JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44,  
TUEN MUN  
SITE LOCATION PLAN**

Figure No.

1

Rev.:

0

Scale

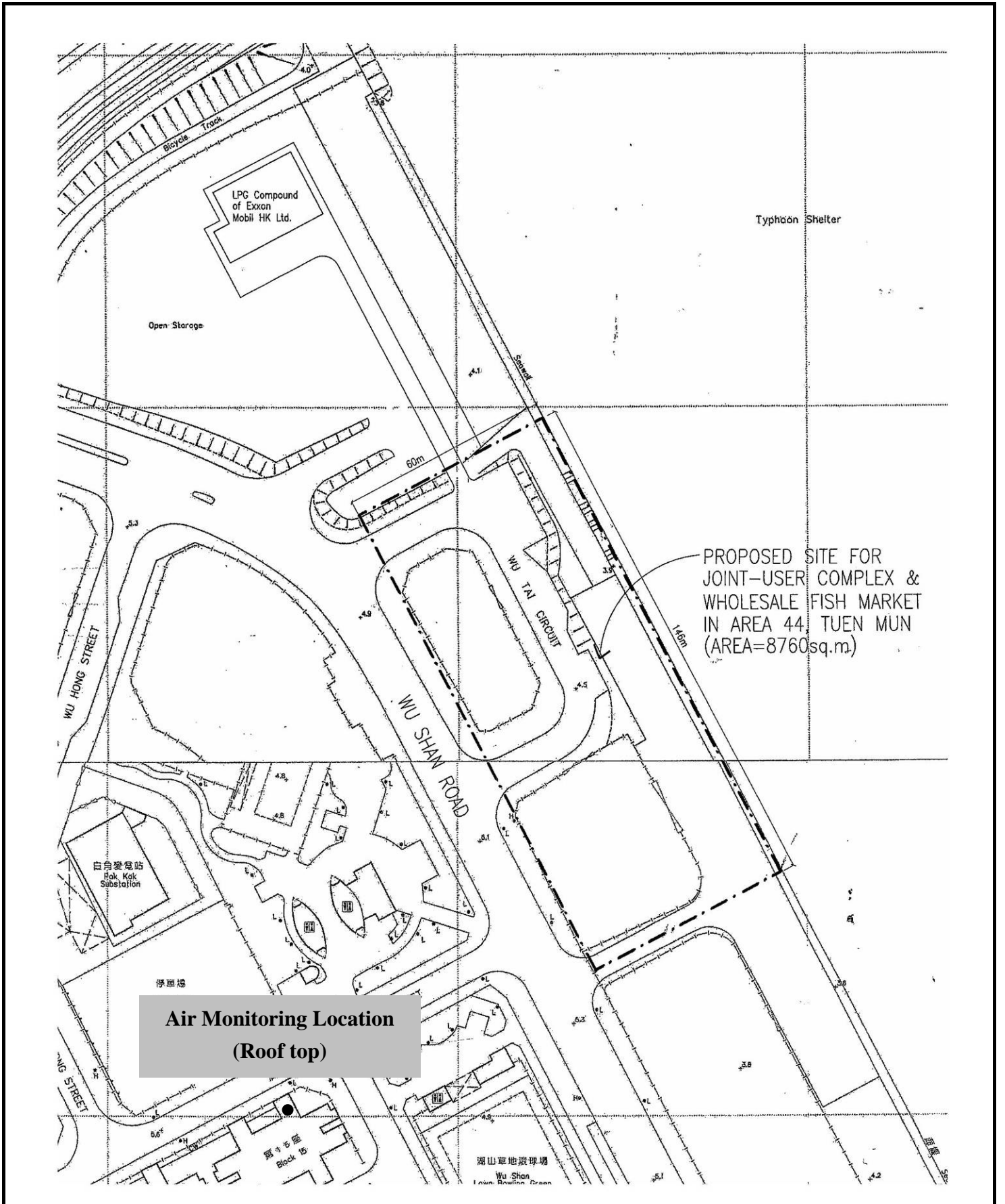
NTS

Date

12/08







PROPOSED SITE FOR  
 JOINT-USER COMPLEX &  
 WHOLESALE FISH MARKET  
 IN AREA 44, TUEN MUN  
 (AREA=8760sq.m)

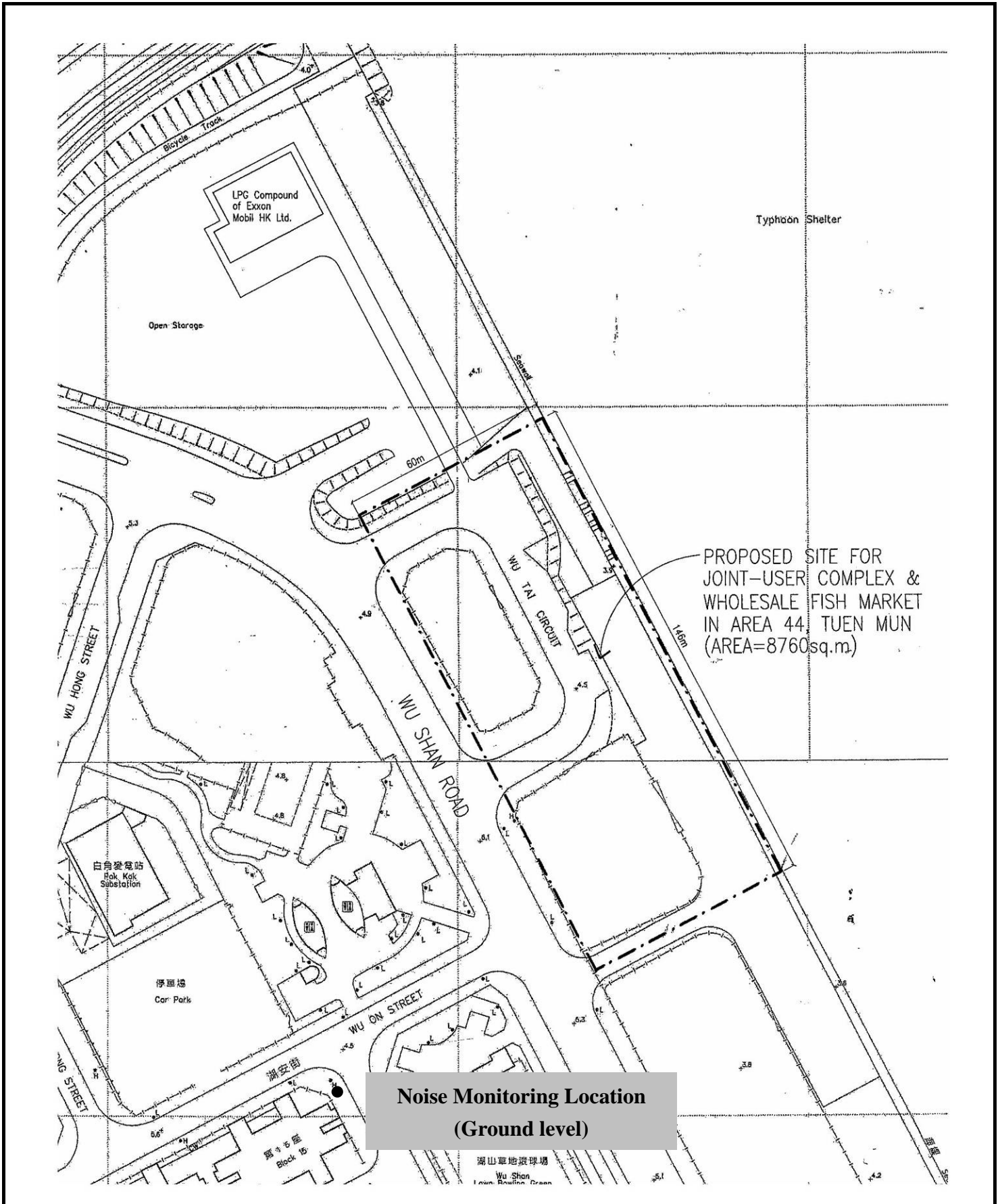
**Air Monitoring Location  
 (Roof top)**

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

**LOCATION OF AIR QUALITY MONITORING STATION**

|            |       |
|------------|-------|
| Figure No. | Rev.: |
| 2          | 0     |
| Scale      | Date  |
| NTS        | 12/08 |





**JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44,  
TUEN MUN  
LOCATION OF NOISE MONITORING STATION**

|            |     |       |       |
|------------|-----|-------|-------|
| Figure No. | 3   | Rev.: | 0     |
| Scale      | NTS | Date  | 12/08 |







*Roof top of Block 15, Yuet Wu Villa*



*High-Volume Dust Sampler*

**JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44,  
TUEN MUN  
PHOTOS OF AIR QUALITY MONITORING STATION**

Figure No.

4

Rev.:

0

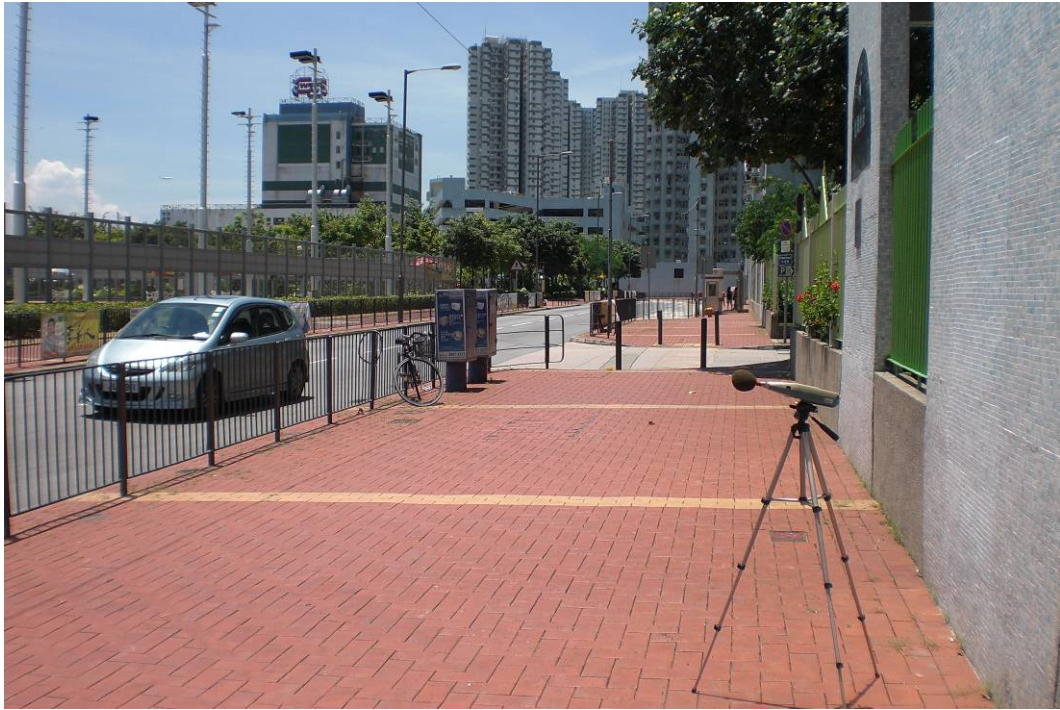
Scale

NTS

Date

12/08





*Noise monitoring station*



*View from the noise monitoring station*

**JOINT USER COMPLEX AND WHOLESALE FISH MARKET AT AREA 44,  
TUEN MUN  
PHOTOS OF NOISE MONITORING STATION**

|            |       |
|------------|-------|
| Figure No. | Rev.: |
| 5          | 0     |
| Scale      | Date  |
| NTS        | 12/08 |







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

**PHOTOS OF CONSTRUCTION SITE FOR JUNIOR POLICE OFFICERS' MARRIED QUARTERS**

Figure No.

6

Rev.:

0

Scale

NTS

Date

12/08



*Appendix A*

---

*Calibration Record of High-Volume TSP Sampler*

**High-Volume TSP Sampler**  
**1-Point Calibration Record**

Location : A1  
Calibrated by : P.F.Yeung  
Date : 4/9/08

**Sampler**

Model : GMWS-2310 ACCU-VOL  
Serial Number : S/N 0890

**Calibration Office and Standard Calibration Relationship**

Serial Number : CM-AIR-43  
Service Date : 10 July 2008  
Slope (m) : 0.056389  
Intercept (b) : -0.025123  
Correlation Coefficient(r) : 0.999909

**Standard Condition**

Pstd (hpa) : 1013  
Tstd (K) : 298.18

**Calibration Condition**

Pa (hpa) : 1012  
Ta(K) : 300

**IC (Indicated flow)** : 42 cfm

**Actual flow** : 1.15 m<sup>3</sup>/min

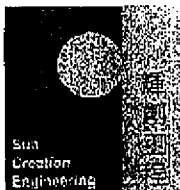
Checked by: Magnum Fan

Date: 16/09/08

*Appendix B*

---

*Calibration Certification of the Sound Level Meter  
and Calibrator*



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C081909

## Certificate of Calibration

*This is to certify that the equipment*

*Description : Sound Level Meter*

*Manufacturer : Rion*

*Model No. : NL-31*

*Serial No. : 00410224*

*has been calibrated for the specific items and ranges.  
The results are shown in the Calibration Report No. C081909.*

*The equipment is supplied by*

*Co. Name : Envirotech Services Co.*

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,  
Hong Kong*

*Date of Issue : 14 April 2008*

*Certified by :*

*K C Lee*

The test equipment used for testing are traceable to the National Standards as specified in this report.  
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 401 Tsing Shan Wai Exchange Building, 1 Ring On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C083194

## Certificate of Calibration

*This is to certify that the equipment*

*Description : Sound Level Calibrator*

*Manufacturer : Rion*

*Model No. : NC-73*

*Serial No. : 10997142*

*has been calibrated for the specific items and ranges.  
The results are shown in the Calibration Report No. C083194.*

*The equipment is supplied by*

*Co. Name : Envirotech Services Co.*

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,  
Hong Kong*

*Date of Issue : 25 June 2008*

*Certified by :*

  
K. Q. Lee

The test equipment used for testing are traceable to the National Standards as specified in this report.  
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Calibration and Testing Laboratory of Sun Creation Engineering Limited

604-606, Tsing Shan Wai Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

Tel: 2927 2606

Fax: 2744 8986

E-mail: callab@suncreation.com

Website: www.suncreation.com



*Appendix C*

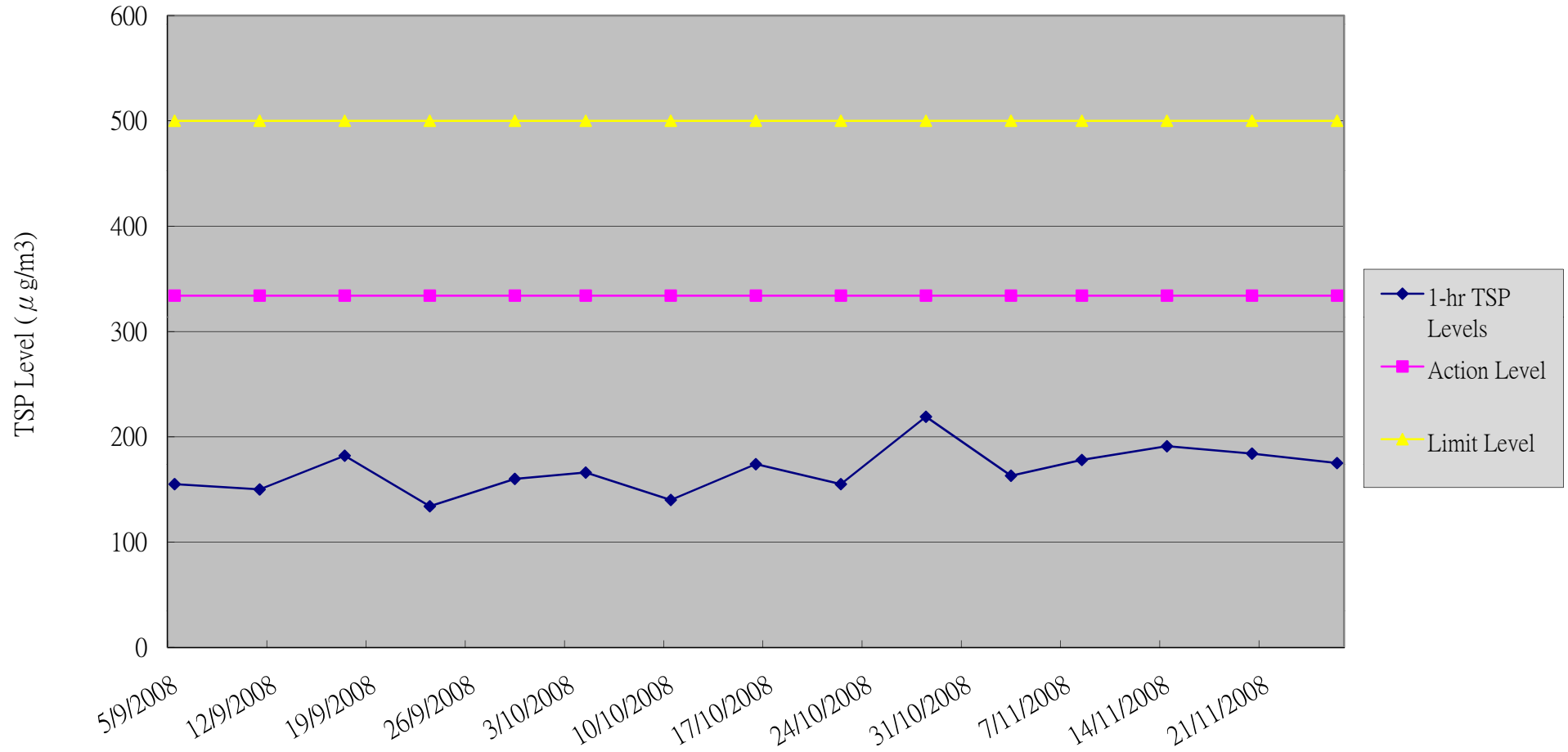
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*Summary and Graphical Plot of 1-Hour TSP  
Monitoring Record*

**Impact Monitoring for Fish Market Project in Tuen Mun****Air Quality monitoring: 1-hour TSP****Month: November 2008**

| Date      | Time          | 1-hr TSP ( $\mu\text{g}/\text{m}^3$ ) | Average |
|-----------|---------------|---------------------------------------|---------|
| 3-Nov-08  | 08:20 - 09:20 | 149                                   | 163     |
|           | 09:22 - 10:22 | 157                                   |         |
|           | 10:24 - 11:24 | 183                                   |         |
| 8-Nov-08  | 08:30 - 09:30 | 161                                   | 178     |
|           | 09:40 - 10:40 | 184                                   |         |
|           | 10:45 - 11:45 | 188                                   |         |
| 14-Nov-08 | 08:40 - 09:40 | 181                                   | 191     |
|           | 09:40 - 10:40 | 200                                   |         |
|           | 10:40 - 11:40 | 191                                   |         |
| 20-Nov-08 | 09:00 - 10:00 | 181                                   | 184     |
|           | 10:00 - 11:00 | 184                                   |         |
|           | 11:00 - 12:00 | 187                                   |         |
| 26-Nov-08 | 09:00 - 10:00 | 183                                   | 175     |
|           | 10:00 - 11:00 | 175                                   |         |
|           | 11:00 - 12:00 | 168                                   |         |
|           |               | Average                               | 178     |

1-hr TSP Levels



*Appendix D*

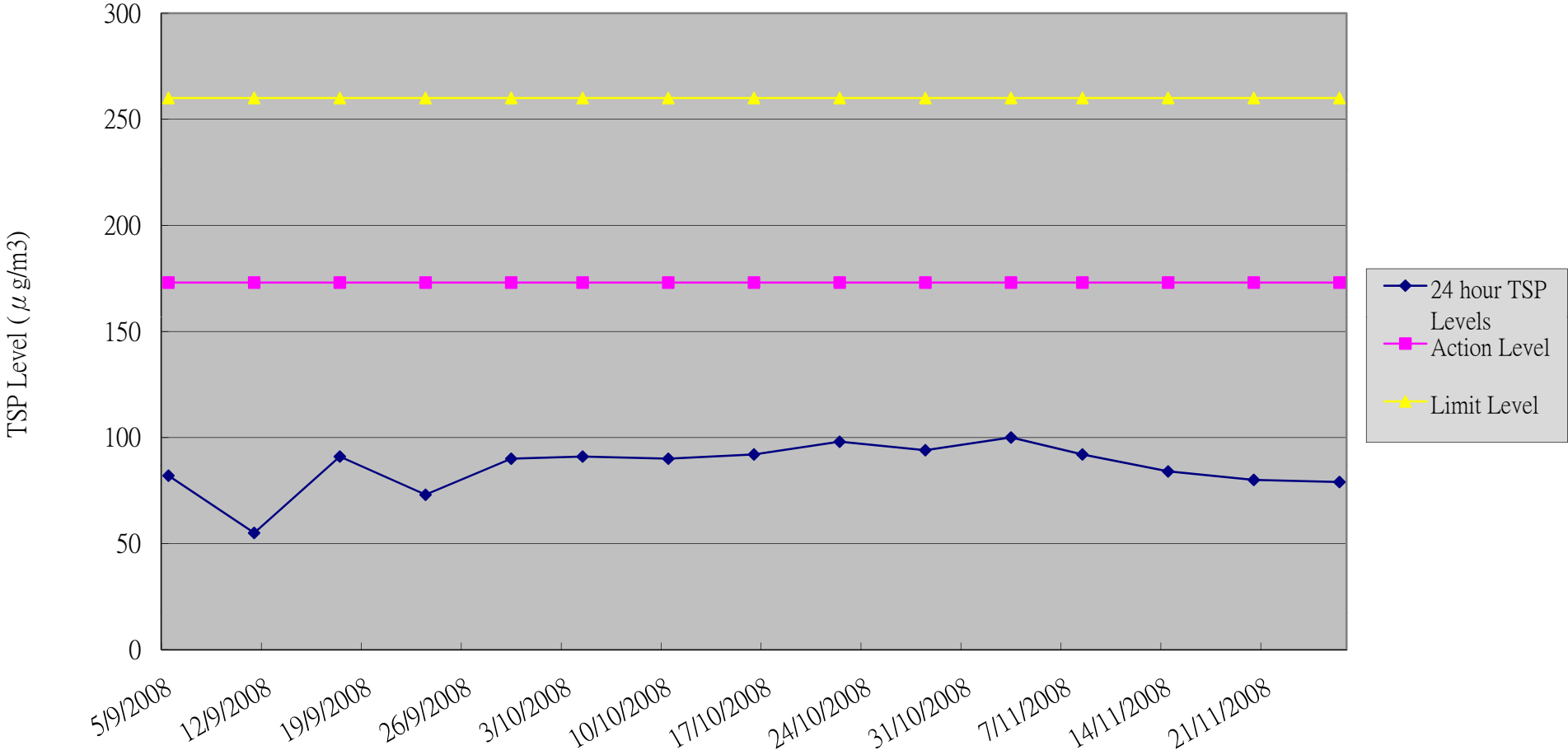
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*Summary and Graphical Plot of 24-Hour TSP  
Monitoring Record*

**Impact Monitoring for Fish Market Project in Tuen Mun**  
**Air Quality monitoring: 24-Hour TSP**  
**Month: November 2008**

| Date      | Start time | 24-hr TSP ( $\mu\text{g}/\text{m}^3$ ) |
|-----------|------------|--|
| 3-Nov-08  | 11:26      | 100                                    |
| 8-Nov-08  | 11:50      | 92                                     |
| 14-Nov-08 | 11:40      | 84                                     |
| 20-Nov-08 | 12:00      | 80                                     |
| 26-Nov-08 | 12:00      | 79                                     |
| Average   |            | 87                                     |

24-hour TSP Levels



*Appendix E*

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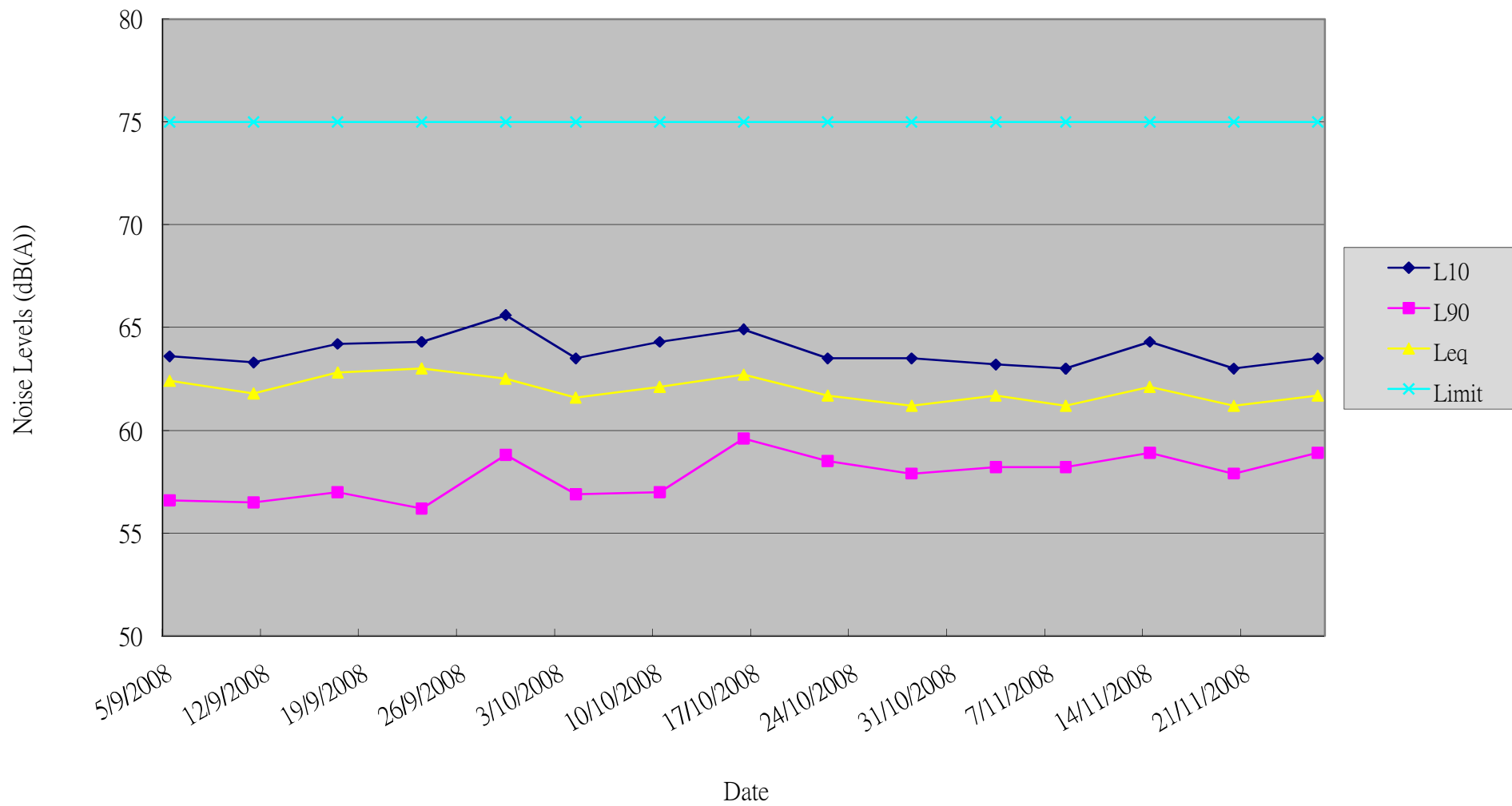
*Summary and Graphical Plot of Noise Monitoring  
Record*

**Impact Monitoring for Fish Market Project in Tuen Mun**  
**Noise Monitoring**  
**Month: November 2008**

| Date      | Time          | L10(30mins) (dB(A)) | L90(30mins) (dB(A)) | Leq(30mins) (dB(A)) |
|-----------|---------------|---------------------|---------------------|---------------------|
| 3-Nov-08  | 10:20 - 10:50 | 63.2                | 58.2                | 61.7                |
| 8-Nov-08  | 09:00 - 09:30 | 63                  | 58.2                | 61.2                |
| 14-Nov-08 | 09:05 - 09:35 | 64.3                | 58.9                | 62.1                |
| 20-Nov-08 | 09:10 - 09:40 | 63                  | 57.9                | 61.2                |
| 26-Nov-08 | 09:10 - 09:40 | 63.5                | 58.9                | 61.7                |
| Average   |               | 63.4                | 58.4                | 61.6                |



### Noise Monitoring Record



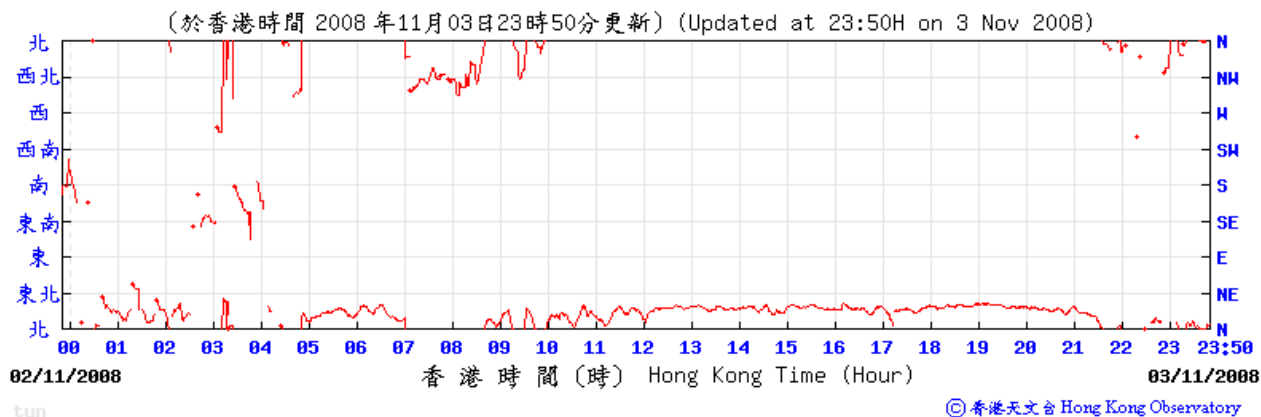
*Appendix F*

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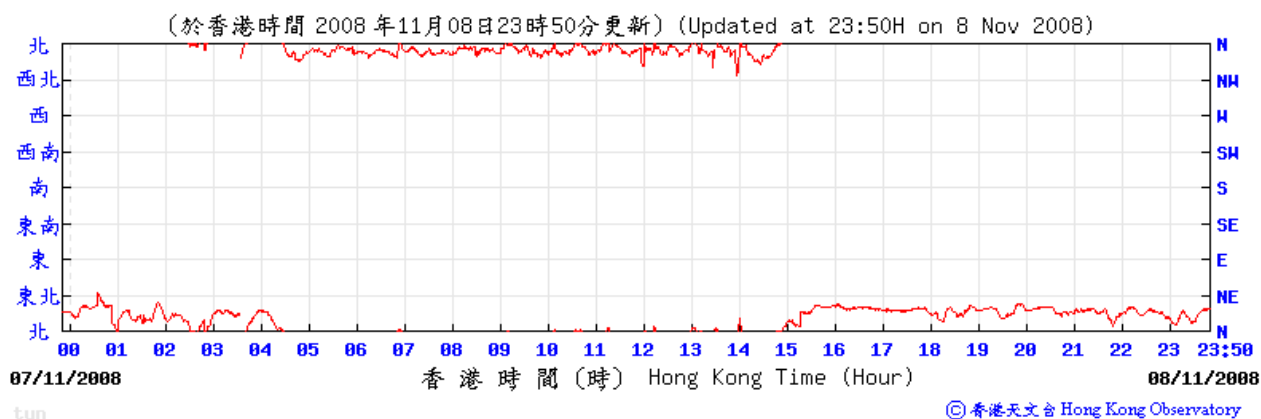
*Wind Record from Hong Kong Observatory*

# Wind Direction at Hong Kong Observatory Tuen Mun Automatic Weather Station

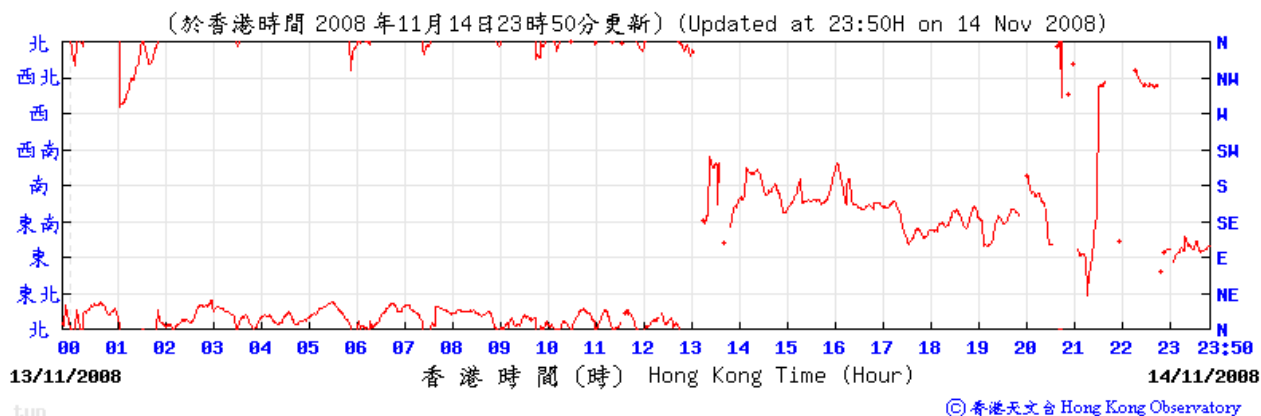
3/11/2008



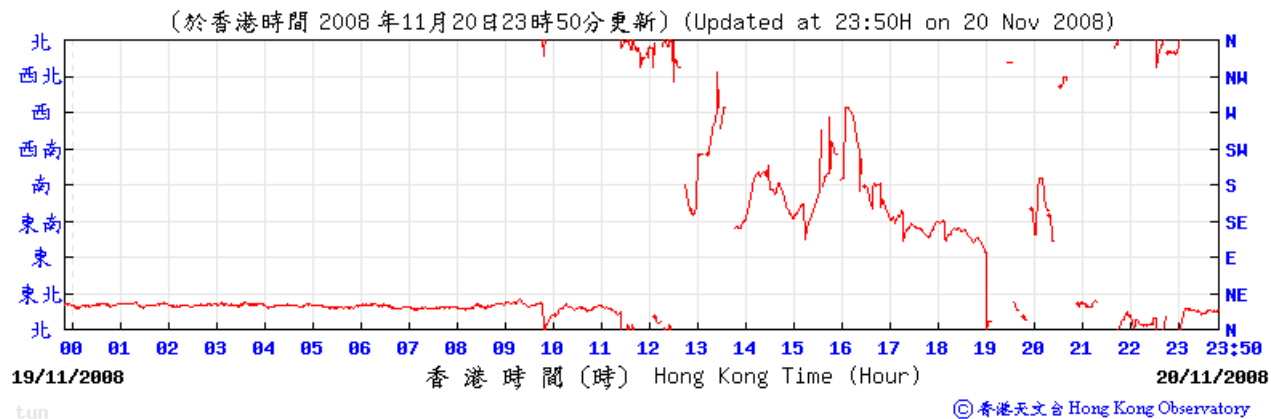
8/11/2008



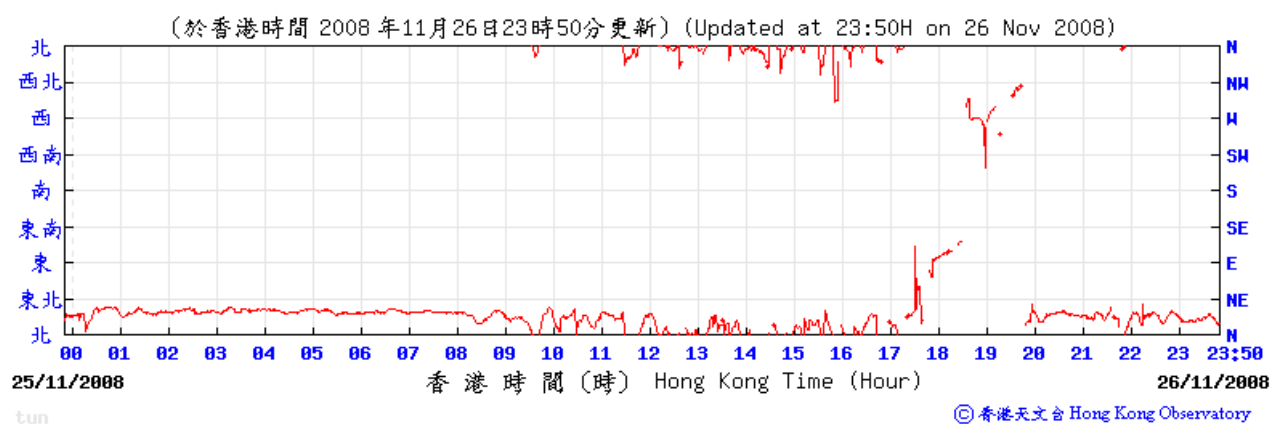
14/11/2008



20/11/2008



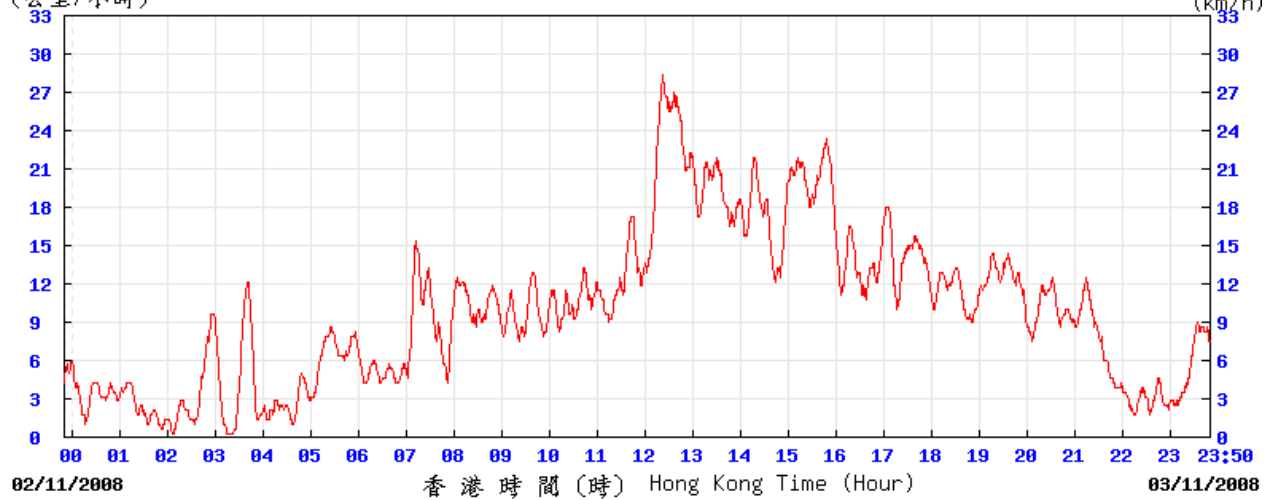
26/11/2008



# Wind Speed at Hong Kong Observatory Tuen Mun Automatic Weather Station

3/11/2008

(公里/小時) (於香港時間 2008 年11月 3日23時50分更新) (Updated at 23:50H on 3 Nov 2008)

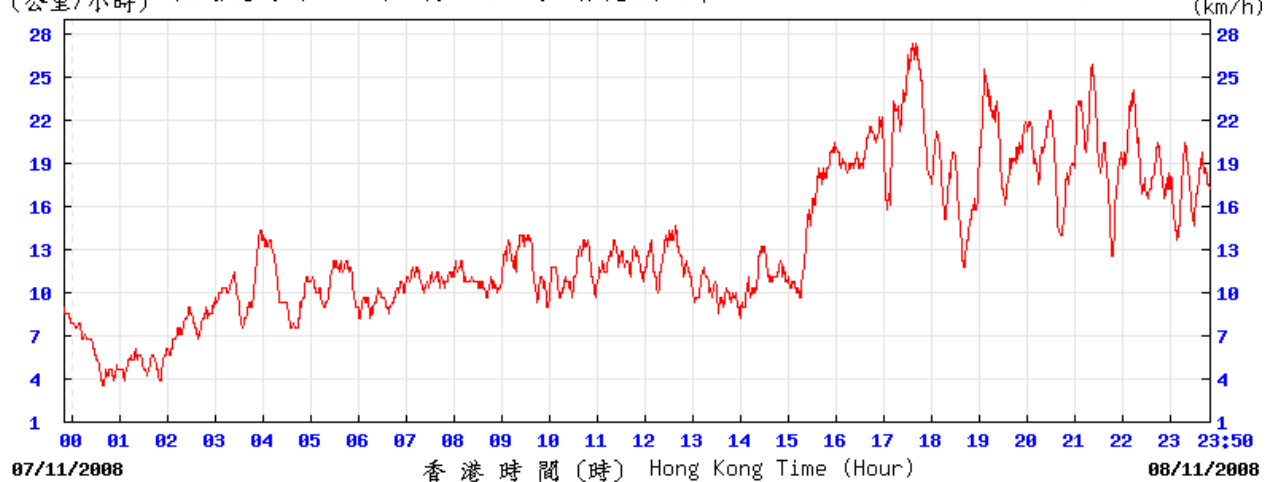


tun

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8/11/2008

(公里/小時) (於香港時間 2008 年11月 8日23時50分更新) (Updated at 23:50H on 8 Nov 2008)

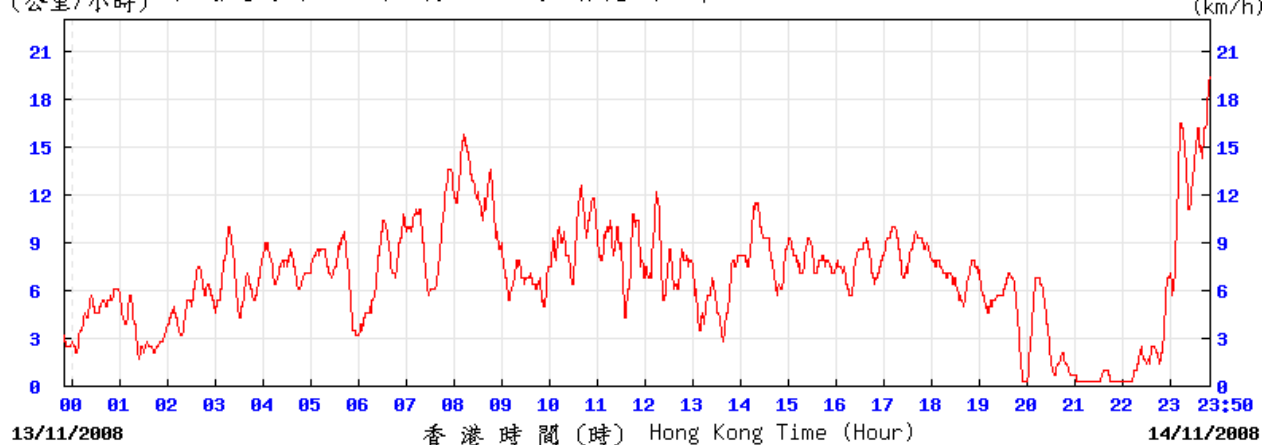


tun

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14/11/2008

(公里/小時) (於香港時間 2008 年11月 14日23時50分更新) (Updated at 23:50H on 14 Nov 2008)

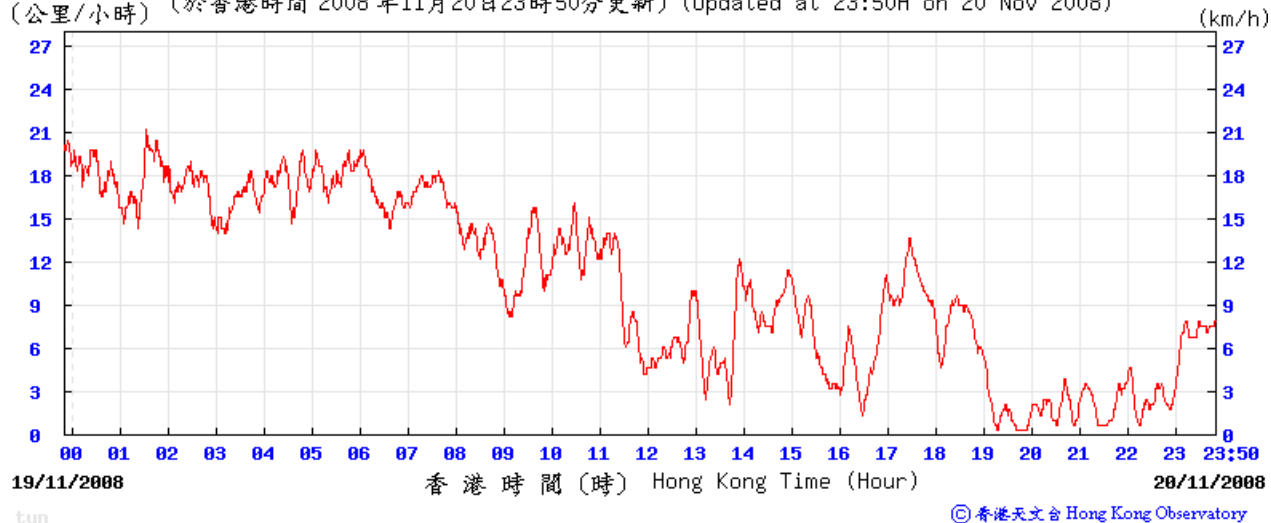


tun

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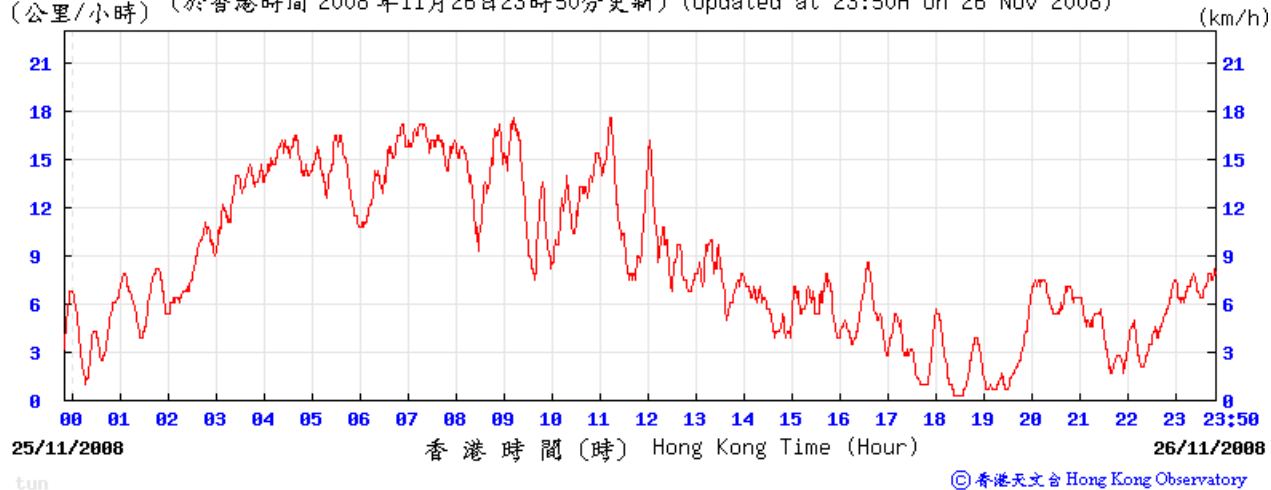
20/11/2008

(公里/小時) (於香港時間 2008 年11月20日23時50分更新) (Updated at 23:50H on 20 Nov 2008)



26/11/2008

(公里/小時) (於香港時間 2008 年11月26日23時50分更新) (Updated at 23:50H on 26 Nov 2008)



*Appendix G*

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*Mitigation Measures Implementation Schedule for  
Construction Stage*

## MITIGATION MEASURES IMPLEMENTATION SCHEDULE FOR CONSTRUCTION STAGE

| EIA Ref. Section | EM&A Ref. Section | Environmental Protection Measures  | Location/Duration of Measures/ Timing of completion measures              | Relevant Legislation & Guidelines |
|------------------|-------------------|--|---|-----------------------------------|
| 4.7              | 2.8               | <p><b>Air Quality</b></p> <ul style="list-style-type: none"> <li>• Hoarding of not less than 2.4m high shall be provided along the site boundary section adjoins a road, street, service land or other area accessible to the public</li> <li>• Spray water to where excavation to be taken place immediately prior to, during and after excavation</li> <li>• Any stockpile of dusty material shall be either: (a) covered entirely by impervious sheeting; (b) placed in an area sheltered on the top and the three sides; or (c) sprayed with water or a dust suppression chemical so as to maintain the entire surface wet</li> <li>• Cement bags or any other dusty materials collected during the work should be disposed of in totally enclosed containers</li> <li>• All dusty materials should be sprayed with water immediately prior to any loading, unloading or transfer operation so as to minimise the dusty materials wet</li> <li>• Any dusty material remaining after a stockpile of cement or other materials is removed should be wetted and removed from the surface of roads</li> <li>• Where a vehicle leaving the construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle</li> <li>• Conveyor belts shall be fitted with windboards, and conveyor transfer points and hopper discharge areas shall be enclosed and fitted with belt cleaners</li> <li>• Skip hoist for the transport of construction wastes should be properly enclosed</li> <li>• Vehicle washing facilities including a high pressure water jet shall be provided at the designated vehicle exit point and every vehicle immediately before leaving the construction site shall be washed to remove any dusty materials from its body and wheels</li> <li>• Every main haul road, vehicle washing areas and the section of road between the washing facilities and the exit point shall be paved with concrete, bituminous materials, hardcore or metal plates and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet</li> <li>• Debris from the construction of the WFM shall be covered entirely by impervious sheeting or stored in a sheltered debris collection area</li> </ul> | Construction site of the proposed WFM/ Throughout the construction period | APCO/EIA Study                    |
| 5.7              | 3.7               | <p><b>Noise</b></p> <ul style="list-style-type: none"> <li>• Use quiet construction equipment</li> <li>• Use silencers / mufflers, noise barriers / enclosure where practicable</li> <li>• The Contractor is required to determine the number and type of construction equipment taking</li> </ul>   | Construction site of the proposed WFM throughout the                      | NCO/EIA Study                     |



| EIA Ref. Section | EM&A Ref. Section | Environmental Protection Measures  | Location/Duration of Measures/ Timing of completion measures             | Relevant Legislation & Guidelines |
|------------------|-------------------|--|--|-----------------------------------|
|                  |                   | <p>into account the use of quiet plant while devising a feasible work programme</p> <ul style="list-style-type: none"> <li>• Only well-maintained plant shall be operated on-site and all equipment shall be routinely checked</li> <li>• Turn off or throttle down idle plant</li> <li>• Plants known to emit noise strongly shall be oriented away from NSRs</li> <li>• Mobile plants shall be sited as far away from NSRs as possible</li> <li>• Stockpiles and other structures shall be effectively utilised as practicable to screen noise from on-site construction activities</li> <li>• Obtain valid noise permits for construction work during restricted hours</li> </ul>   | construction period  |                                   |
| 6.7              | 4.1               | <p><b>Water Quality</b></p> <ul style="list-style-type: none"> <li>• Site shall be kept clean and tidy to avoid construction materials and waste being washed off from site</li> <li>• Works shall be planned to avoid rainy season so as to minimize the runoff and reduce the amount of soil that can be carried offsite</li> <li>• Surface run-off from the construction site shall be directed to silt traps or sedimentation basin before reuse or discharge with help of channels, earth bunds or sand bag barriers for suspended solids removal prior to its being discharged to storm water drain. Silt trap design shall conform to the guidelines laid down in Appendix A1 of ProPECC PN 1/94</li> <li>• Wastewater likely to be contaminated with oil or grease should be passed through an oil separator or grease trap before entering the site drainage system</li> <li>• Hoarding gaps should be tightly sealed to avoid the seepage of wastewater to the nullah and outside the site</li> <li>• Perimeter channels shall be provide at site boundaries, where necessary, to intercept storm-water runoff from outside the site</li> <li>• Silt traps, sedimentation basins, channels and manholes shall be regularly cleaned to remove the deposited silt and grit</li> <li>• Temporarily exposed slope surfaces and construction material stockpiles shall be covered with tarpaulin or similar fabric to prevent erosion</li> <li>• Wastewater generated from bored-piling shall be re-circulated after sedimentation as practicable. The final discharge of the wastewater shall be via silt removal facilities</li> <li>• All fuel tanks and chemical storage areas shall be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters</li> <li>• Obtain valid discharge license for construction site discharges</li> <li>• Chemical toilets shall be provided on site</li> <li>• Monitor the quality of water discharge to ensure compliance of the license condition</li> </ul> | Construction site of the proposed WFM Throughout the construction period | WPCO/EIA Study                    |



| <b>EIA Ref. Section</b> | <b>EM&amp;A Ref. Section</b> | <b>Environmental Protection Measures</b>  | <b>Location/Duration of Measures/ Timing of completion measures</b> | <b>Relevant Legislation &amp; Guidelines</b> |
|-------------------------|------------------------------|---|---|--|
|                         |                              | <ul style="list-style-type: none"> <li>• Sufficient guidance shall be given to all workers before carrying out excavation in the vicinity of pipelines</li> <li>• Manually operated warning siren shall be installed to instruct people to take timely shelter</li> <li>• Fire drill exercises shall be organized for the workers at the site and users of the WFM</li> </ul> |   |  |