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**Improvements to  
San Tin Interchange  
(Contract No. HY/2004/09)**

**Monthly Environmental  
Monitoring & Audit Report**

**Report No. 8**

January 2006

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**ATKINS**

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## **Executive Summary**

Atkins China Limited (ACL) has been appointed by Chun Wo Construction & Engineering Co., Ltd. to implement the Environmental Monitoring and Audit (EM&A) programme for the construction works under Contract No. HY/2004/09 Improvements to San Tin Interchange (hereinafter, the Project).

The construction of the Project commenced since 21<sup>st</sup> June 2005. This report is the eighth monthly EM&A report for the Project which summarises the monitoring results and audit findings during the reporting period from 1<sup>st</sup> to 31<sup>st</sup> January 2006.

## **Environmental Monitoring and Audit Progress**

The monthly EM&A programme was undertaken in accordance with the EM&A Manual. A summary of the monitoring activities in this reporting period is listed below:

- Weekly site inspections were undertaken jointly with the Contractor and Engineer's Representative (ER) on 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup> and 25<sup>th</sup> January 2006. The Independent Environmental Checker (IEC) joined the site inspection on 25<sup>th</sup> January 2006.
- Noise monitoring at three designated monitoring stations was undertaken on 3<sup>rd</sup>, 10<sup>th</sup>, 17<sup>th</sup> and 25<sup>th</sup> January 2006 during normal hours, and 2<sup>nd</sup>, 8<sup>th</sup>, 15<sup>th</sup> and 22<sup>nd</sup> January 2006 during restricted hours.
- Visual site surveillance for water quality was undertaken three times a week.
- Site inspections for landscape and visual resources were undertaken on 16<sup>th</sup> and 24<sup>th</sup> January 2006.

## **Breaches of Action and Limit Levels**

There were four environmental exceedances recorded during restricted hours noise monitoring on 2<sup>nd</sup>, 8<sup>th</sup>, 15<sup>th</sup> and 22<sup>nd</sup> January 2006 within the reporting period. However, all the exceedances were proved not to be related to the Contractors' works and were attributable to the high ambient traffic noise from San Tin Highway and Fanling Highway.

## **Complaint Log**

No environmental complaints were received during this reporting period.

## **Notifications of Summons and Prosecutions**

There were no notifications of summons or prosecutions received during this reporting period.

## **Reporting Changes**

This report has been developed in compliance with the reporting requirements for the subsequent monthly EM&A reports as required by the Project EM&A Manual.

## **Future Key Issues**

Piling works at South Division will be continued in February 2006.

## 1 ENVIRONMENTAL STATUS

### 1.1 Works undertaken during the Reporting Period

The major construction activities undertaken during this reporting period are summarised below:

- Pre-bored H-piling works;
- Pre-drilling works;
- Laying of drainage pipes;
- Tree felling and transplantation;
- Bored piling works;
- Temporary platform formation;
- Trench works;
- Driven H-pile installation;
- Sheet piling works;
- Pile cap construction;
- Storage and preparation of viaduct segments; and
- Erection of viaduct segments.

According to the Contractor's programme, no construction activities were carried out from 26<sup>th</sup> to 31<sup>st</sup> January 2006 due to the Chinese New Year holiday. The site plan of the Project is shown in Figure 1. The Contractor's works programme is provided in Annex A.

### 1.2 Environmental Permit and Licences

There were no changes or clarification to the Environmental Permit (EP-190/2004) during the reporting period. Also, no Construction Noise Permit (CNP) was issued in January 2006.

### 1.3 Environmental Document Submissions to EPD

A summary of the status of the submissions to EPD as provided during the month of January 2006 is presented in Table 1.1.

**Table 1.1 Summary of Environmental Submissions to EPD in January 2006**

Item No.	Document Title	Date of Submission
1	Monthly EM&A Report No. 7 for December 2005	13 <sup>th</sup> January 2006

### 1.4 Environmental Monitoring Locations

Noise monitoring was undertaken at three monitoring stations CM1, CM2 & CM3. The locations are shown on Figure 1. Description of these monitoring stations is provided in Table 1.2.

**Table 1.2 Noise Monitoring Stations**

Monitoring Station ID	Description	Easting	Northing
CM1	Village house near San Tin Highway	826133	839839
CM2	Village house near San Tin Highway	826291	839918
CM3	Village house near Kwu Tung Road	826605	840076

## 2 ENVIRONMENTAL MEASURES AND IMPLEMENTATION STATUS

The mitigation measures listed in the Project EIA Report, EM&A Manual and Environmental Permit and the implementation status are provided in Annex B. Based on the site inspection findings, the Contractor has implemented the required mitigation measures during construction works to date in general.

## 3 MONITORING RESULTS

### 3.1 Noise Monitoring

#### 3.1.1 Noise Monitoring Equipment

The details of the noise monitoring equipment are listed below and the calibration certificates are presented in Annex C:

- Sound level meter ONO-SOKKI LA-5110
- Acoustical calibrator ONO-SOKKI SC-2110
- Hand-held anemometer

#### 3.1.2 Noise Monitoring Methodology

The sound level meter was calibrated with an acoustical calibrator prior to each measurement. It was set on a tripod at 1.2 m above local ground level at the monitoring station. Measurement of the A-weighted  $L_{eq(30 \text{ minutes})}$  noise level for normal daytime hours was undertaken. Three consecutive A-weighted  $L_{eq(5 \text{ minutes})}$  noise levels were measured for restricted hours monitoring. Wind speed was checked during the monitoring period using the hand-held anemometer to ensure steady wind speed did not exceed 5 m/s, or gusts did not exceed 10 m/s. After the noise measurement the sound level meter was re-calibrated using the acoustical calibrator.

#### 3.1.3 Noise Monitoring Results

Noise monitoring was undertaken on a weekly basis when noise generating activities were underway. The noise monitoring results obtained during the normal daytime hours and restricted hours in January 2006 are summarised in Table 3.1 and Table 3.2, respectively. There were no environmental exceedances of the Action and Limit Levels for noise monitoring recorded during the normal daytime hours within the reporting period but four exceedances were recorded during the restricted hours. Details of the monitoring time period and weather condition during the monitoring period and the graphical presentation of the noise monitoring results are provided in Annex D.

**Table 3.1 Summary of Noise Monitoring Results during Normal Daytime Hours**

Date of Monitoring	Normal Hours Noise Monitoring Results $L_{eq(30 \text{ minutes})}$ dB(A)		
	CM1	CM2	CM3
3 <sup>rd</sup> January 2006	69	70	65
10 <sup>th</sup> January 2006	67	72	67
17 <sup>th</sup> January 2006	67	70	67
25 <sup>th</sup> January 2006	65	71	68

Remarks:

- (1) CM2 is a non-façade measurement location. A positive correction of 3dB(A) has been applied to the measured noise level at CM2 according to EPD's guideline.

**Table 3.2 Summary of Noise Monitoring Results during Restricted Hours**

Date of Monitoring	Restricted Hours Noise Monitoring Results $L_{eq(15 \text{ minutes})}$ dB(A)		
	CM1	CM2	CM3
2 <sup>nd</sup> January 2006	61	<u>69</u>	61
8 <sup>th</sup> January 2006	62	<u>68</u>	60
15 <sup>th</sup> January 2006	63	<u>68</u>	61
22 <sup>nd</sup> January 2006	64	<u>68</u>	62

Remark:

- (1) CM2 is a non-façade measurement location. A positive correction of 3dB(A) has been applied to the measured noise level at CM2 according to EPD's guideline.  
 (2) Underlined figure indicates exceedance of Limit Level (65dB(A)).  
 (3) No construction activities were carried out during the Chinese New Year public holiday. Thus, no noise monitoring was conducted.

### 3.2 Water Quality Monitoring

Visual site surveillances for water quality were undertaken three times a week. Based on the visual inspection results, the Contractor has generally followed all necessary site practices to control the surface runoff, and to maintain the site drainage system, including:

- Pumping away stagnant water accumulated in the peripheral U-channel to ensure smooth water flow in the drainage system; and
- Regular removal of deposited sediment accumulated at the bottom of U-channel.

The details of the water quality visual inspection reports are provided in Annex E.

### 3.3 Landscape & Visual Resources

Two site inspections on the landscape & visual resources were undertaken in January 2006.

During the inspections, stockpile of excavated soil in the South Division area (that is to be reused on site later) was found to be not covered with sufficient tarpaulin sheet. The Contractor has agreed to take immediate action to seal the surface of the stockpile temporarily by covering it with a thin layer of cement on top. The Contractor was also reminded to implement proper roots wrapping procedures during transplantation process to prevent loss of soil and moisture, and to ensure that the root system is protected. In addition, some sandbags that were provided to contain the soil at the transplantation nursery area were seen to have been broken. The Contractor was reminded to provide sufficient sandbags to nursery area, and check regularly. The details of the inspections are provided in Annex F.

### 3.4 Ad-hoc Air Quality Monitoring

No ad-hoc air quality monitoring was required during the reporting period.

### 3.5 Waste Management

The Contractor has adopted a trip ticket system for the disposal of construction wastes. According to the records provided by the Contractor, the disposal of construction waste within the reporting period is summarised in Table 3.3.

**Table 3.3 Summary of Waste Disposal for January 2006**

Waste Type	Destination	No. of Trips	Quantity
C & D Waste	NENT	12	60 m <sup>3</sup>
Building debris	CEDD's Tuen Mun Area 38 Fill Bank	575	2875 m <sup>3</sup>
Chemical Toilet Waste	Collected by Proenvironmental Services Ltd.	33	-
Sewage Holding Tank Waste	Collected by Waylung Waste Services Ltd.	11	-

## 4 ENVIRONMENTAL AUDITS

### 4.1 Site Inspection and Audit

Site inspections were undertaken on 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup> and 25<sup>th</sup> January 2006, and jointly with the IEC on 25<sup>th</sup> January 2006. Specific locations within the site were identified during the inspection for improvements in proper implementation of the environmental mitigation measures. These include:

- Good house-keeping on site to avoid accumulation of refuse and stagnant water pools.
- Covering stockpile of excavated soil with a thin layer of cement to prevent dust emissions.
- Regular cleaning of U-channel and maintenance of drainage system to ensure that drainage system can function properly.

In addition, the Contractor was reminded to display all relevant Construction Noise Permit (CNP) at the entrances of each works area in order to comply with the CNP conditions.



The record of the weekly site inspection findings is provided in Annex G. Following the environmental inspections, the Contractor has undertaken remedial actions to improve the implementation of mitigation measures.

#### **4.2 Environmental Exceedances**

During the reporting period, there were four exceedances of the limit level during restricted hours noise monitoring at monitoring station CM2 recorded.

Further to investigation and discussion with the ER, the project-related works being undertaken during the measurement period were located further away at North 2 Division area, which is over 300m away from the monitoring stations. The exceedances were due to the high ambient background noise caused by road traffic on San Tin Highway. Thus, the noise exceedances recorded on 2<sup>nd</sup>, 8<sup>th</sup>, 15<sup>th</sup> and 22<sup>nd</sup> January 2006 were found not to be attributable to project works.

Records of the notification of environmental exceedances are provided in Annex H. The Action and Limit Levels for impact monitoring are provided in Annex I.

#### **4.3 Environmental Complaint and Prosecution**

During the reporting period, no environmental complaints, prosecutions or summons were received. Cumulative statistics on complaints, notifications of summons and successful prosecutions for the Project are provided in Annex J.

### **5 FORECAST AND SCHEDULE**

#### **5.1 Key Issues for the Coming Months**

The key issues with respect to the works in the forthcoming 2 months include:

- Pile cap construction ;
- Bore piles construction;
- Tree transplantation and felling;
- Sheet piling works;
- Driven H-pile installation;
- Pre-bored H-pile installation;
- Subway extension works (plastering);
- Drainage pipe laying works;
- Demolition works (breaking of existing San Sham Road and pile cap breaking);  
and
- Erection of viaduct segments.

#### **5.2 Monitoring Schedules for the Next Month**

The tentative schedule for noise monitoring in February 2006 is provided in Table 5.1 below:

**Table 5.1 Tentative Noise Monitoring Schedule for February 2006**

<b>Date</b>	<b>Noise Monitoring Station</b>
4 <sup>th</sup> February 2006 (Saturday)	CM1, CM2 & CM3
7 <sup>th</sup> February 2006 (Tuesday)	CM1, CM2 & CM3
14 <sup>th</sup> February 2006 (Tuesday)	CM1, CM2 & CM3
21 <sup>st</sup> February 2006 (Tuesday)	CM1, CM2 & CM3
28 <sup>th</sup> February 2006 (Tuesday)	CM1, CM2 & CM3

## **6 CONCLUSION**

There was no environmental non-compliance attributable to the Project works during the reporting period.

There were four exceedances of the Limit Level recorded during the restricted hours noise monitoring within the reporting period. However, they were found not to be attributable to project works.

No environmental complaints, prosecutions or summons was received during the reporting period. Mitigation Measures stated in the Project EIA have been implemented.