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

**Monthly Environmental  
Monitoring & Audit Report**

**Report No. 9**

February 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 ninth 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 28<sup>th</sup> February 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 4<sup>th</sup>, 9<sup>th</sup>, 15<sup>th</sup> and 23<sup>rd</sup> February 2006. The Independent Environmental Checker (IEC) joined the site inspection on 23<sup>rd</sup> February 2006.
- Noise monitoring at three designated monitoring stations was undertaken on 4<sup>th</sup>, 7<sup>th</sup>, 16<sup>th</sup> and 21<sup>st</sup> February 2006 during normal hours, and 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup> and 26<sup>th</sup> February 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 28<sup>th</sup> February 2006.

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

There were four environmental exceedances recorded during restricted hours noise monitoring on 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup> and 26<sup>th</sup> February 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 March 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;
- Concreting for road paving;
- 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 1<sup>st</sup> to 3<sup>rd</sup> February 2006 due to the Lunar 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.

One Construction Noise Permits (CNP) was issued in February 2006. Details of the CNP are summarised in Table 1.1.

**Table 1.1 Details of Permits and Licenses issued in February 2006**

Permit/ License	Reference No.	Issue Date	Expiry Date
Construction Noise Permit for general construction work	GW-RN00047-06	3 <sup>rd</sup> February 2006	13 <sup>th</sup> February 2006

### 1.3 Environmental Document Submissions to EPD

A summary of the status of the submissions specified in the Project EP as provided during February 2006 is presented in Table 1.2.

**Table 1.2 Summary of Environmental Submissions to EPD in February 2006**

Item No.	Document Title	Date of Submission
1	Monthly EM&A Report No. 8 for January 2006	13 <sup>th</sup> February 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 1.3.

**Table 1.3 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, it appears that the Contractor has implemented the required mitigation measures during construction works to date.

## 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 February 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 $L_{eq(30 \text{ minutes})}$ noise		
	CM1	CM2	CM3
4 <sup>th</sup> February 2006	65	69	70
7 <sup>th</sup> February 2006	68	69	65
16 <sup>th</sup> February 2006	67	70	62
21 <sup>st</sup> February 2006	69	71	69

**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.
- (2) The scheduled measurement on 14<sup>th</sup> February was rearranged to 16<sup>th</sup> February due to adverse weather condition (rainy) on 14<sup>th</sup> February 2006.
- (3) The scheduled measurement on 28<sup>th</sup> February was cancelled due to adverse weather condition (heavy rain).

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

Date of Monitoring	Restricted Hours Noise Monitoring Results $L_{eq(15 \text{ minutes})}$ noise		
	CM1	CM2	CM3
5 <sup>th</sup> February 2006	63	<u>67</u>	59
12 <sup>th</sup> February 2006	63	<u>67</u>	58
19 <sup>th</sup> February 2006	62	<u>70</u>	62
26 <sup>th</sup> February 2006	61	<u>68</u>	57

**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 the Limit Level (65dB (A)).

### 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 followed all necessary site practices to maintain the site drainage system and wastewater handling, including:

- regular removal of deposited sediment, debris and stagnant water at bottom of box culvert and U-channel;
- application of anti-mosquito agent to the U-channel regularly as a precautionary measure to prevent mosquito breeding;
- regular removal of accumulated rainwater in drip trays.

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 February 2006.

During the inspections, the soil provided for the transplantation nursery area appeared to be fairly loose and may be unable to provide sufficient supports to the trees. The Contractor was reminded to ensure the trees in the transplantation nursery are supported with sufficient soil, and the soil is properly kept inside the transplantation nursery area by provision of sandbags and closing the gaps between the concrete blocks that are provided to encircle the transplantation nursery area. 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 February 2006**

Waste Type	Destination	No. of Trips	Quantity
C & D Waste	NENT	6	30 m <sup>3</sup>
C & D Waste	WENT	1	5 m <sup>3</sup>
Building debris	CEDD's Tuen Mun Area 38 Fill Bank	555	2,775 m <sup>3</sup>
	CEDD's Tuen Mun Area 38 C&D Materials Recycling Facility	30	150 m <sup>3</sup>
Chemical Toilet Waste	Collected by Proenvironmental Services Ltd.	27	-
Sewage Holding Tank Waste	Collected by Waylung Waste Services Ltd.	10	-



## **4 ENVIRONMENTAL AUDITS**

### **4.1 Site Inspection and Audit**

Site inspections were undertaken on 4<sup>th</sup>, 9<sup>th</sup>, 15<sup>th</sup> and 23<sup>rd</sup> February 2006, and jointly with the IEC on 23<sup>rd</sup> February 2006. Specific locations within the site were identified during the inspection for improvements in proper implementation of the environmental mitigation measures. These include:

- Regular removal of deposited sediment, debris and stagnant water at bottom of box culvert and U-channel;
- Frequent disposal of general refuse stored in storage basin provided in isolated area;
- Proper storage of used construction materials (e.g. used wooden formworks);
- Fully covering the stockpile of excavated soil to prevent fugitive dust emissions;
- Removal of stagnant water pools to prevent mosquito breeding;
- Keeping access path to the chemical waste storage area clear of obstacles to avoid accidental spillage during haulage of the chemical waste.

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 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup> and 26<sup>th</sup> February 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;
- Bored piles construction;

- Tree transplantation and felling;
- Sheet piling works;
- Driven H-pile installation;
- Pre-bored H-pile installation;
- Drainage pipe laying works;
- Demolition works (breaking of existing Santin Highway and pile cap breaking);
- Erection of viaduct segments; and
- Road paving.

## 5.2 Monitoring Schedules for the Next Month

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

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

<b>Date</b>	<b>Noise Monitoring Station</b>
1 <sup>st</sup> March 2006 (Wednesday)	CM1, CM2 & CM3
7 <sup>th</sup> March 2006 (Tuesday)	CM1, CM2 & CM3
14 <sup>th</sup> March 2006 (Tuesday)	CM1, CM2 & CM3
21 <sup>st</sup> March 2006 (Tuesday)	CM1, CM2 & CM3
28 <sup>th</sup> March 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.