

---

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

**Monthly Environmental  
Monitoring & Audit Report**

**Report No. 11**

April 2006

---

**ATKINS**

| <b>Contents</b>   | <b>Page</b> |
|---|-------------|
| <b>1 Environmental Status</b> .....                             | <b>1</b>    |
| 1.1 Works undertaken during the Reporting Period.....           | 1           |
| 1.2 Environmental Permit and Licences.....                      | 1           |
| 1.3 Environmental Document Submissions to EPD .....             | 1           |
| 1.4 Environmental Monitoring Locations .....                    | 2           |
| <b>2 Environmental Measures and Implementation Status</b> ..... | <b>2</b>    |
| <b>3 Monitoring Results</b> .....                               | <b>2</b>    |
| 3.1 Noise Monitoring.....                                       | 2           |
| 3.2 Water Quality Monitoring .....                              | 4           |
| 3.3 Landscape & Visual Resources .....                          | 4           |
| 3.4 Ad-hoc Air Quality Monitoring .....                         | 4           |
| 3.5 Waste Management .....                                      | 5           |
| <b>4 Environmental Audits</b> .....                             | <b>5</b>    |
| 4.1 Site Inspection and Audit .....                             | 5           |
| 4.2 Environmental Exceedances .....                             | 5           |
| 4.3 Environmental Complaint and Prosecution .....               | 6           |
| <b>5 Forecast and Schedule</b> .....                            | <b>6</b>    |
| 5.1 Key Issues for the Coming Months.....                       | 6           |
| 5.2 Monitoring Schedules for the Next Month .....               | 6           |
| <b>6 Conclusion</b> .....                                       | <b>7</b>    |

### **List of Annexes**

|         |   |
|---------|---|
| Annex A | Contractor's Works Programme  |
| Annex B | Mitigation Measures Checklist   |
| Annex C | Calibration Certificates  |
| Annex D | Noise Monitoring Results  |
| Annex E | Water Quality Visual Inspection Reports   |
| Annex F | Landscape & Visual Resources Inspection Reports   |
| Annex G | Weekly Site Inspection Reports  |
| Annex H | Notification of Environmental Exceedances   |
| Annex I | Action and Limit Levels   |
| Annex J | Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions |

### **List of Tables**

|           |   |
|-----------|---|
| Table 1.1 | Details of Permits and Licenses issued in April 2006  |
| Table 1.2 | Summary of Environmental Submissions to EPD in April 2006   |
| Table 1.3 | Noise Monitoring Stations   |
| Table 3.1 | Summary of Noise Monitoring Results during Normal Working Hours   |
| Table 3.2 | Summary of Noise Monitoring Results during Restricted Hours - All days during the evening (1900 to 2300 hours), and general holidays (including Sundays) during the day-time and evening (0700 to 2300 hours) |
| Table 3.3 | Summary of Noise Monitoring Results during Restricted Hours - All days during the night-time (2300 to 0700 hours)   |
| Table 3.4 | Summary of Waste Disposal for April 2006  |
| Table 5.1 | Tentative Noise Monitoring Schedule for May 2006  |

### **List of Figures**

|          |  |
|----------|--|
| Figure 1 | Site Plan & Locations of Noise and Air Quality Monitoring Stations |
|----------|--|

## **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 eleventh 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 30<sup>th</sup> April 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 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup> and 27<sup>th</sup> April 2006. The Independent Environmental Checker (IEC) joined the site inspection on 27<sup>th</sup> April 2006.
- Noise monitoring at three designated monitoring stations was undertaken on 4<sup>th</sup>, 11<sup>th</sup>, 19<sup>th</sup> and 25<sup>th</sup> April 2006 during normal working hours; and during the restricted hour periods on a weekly basis when there were construction activities scheduled during those periods.
- Visual site surveillance for water quality was undertaken three times a week.
- Site inspections for landscape and visual resources were undertaken on 20<sup>th</sup> and 26<sup>th</sup> April 2006.

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

There were five environmental exceedances recorded during the restricted hours noise monitoring on 2<sup>nd</sup>, 6<sup>th</sup>, 11<sup>th</sup>, 23<sup>rd</sup> and 25<sup>th</sup> April 2006. However, all the exceedances were proved not to have been caused by the site activities of the Contractor and were attributable to the high ambient traffic noise from San Tin 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***

Installation of viaduct segments will continue in May 2006. The Contamination Assessment Report (CAR) of Site A and Site E will be under preparation in May 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;
- Laying of drainage pipes;
- Road widening works;
- Bored piling works;
- Trench works;
- Sheet piling works;
- Pier construction;
- Storage and preparation of viaduct segments; and
- Erection of precast viaduct segments.

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.

Three Construction Noise Permits (CNP) were issued in April 2006. Details of the CNP are summarised in Table 1.1.

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

| Permit/ License   | Reference No. | Issue Date                  | Expiry Date                 |
|---|---------------|-----------------------------|-----------------------------|
| Construction Noise Permit for general construction work | GW-RN0174-06  | 6 <sup>th</sup> April 2006  | 27 <sup>th</sup> April 2006 |
| Construction Noise Permit for general construction work | GW-RN0177-06  | 24 <sup>th</sup> April 2006 | 24 <sup>th</sup> June 2006  |
| Construction Noise Permit for general construction work | GW-RN0195-06  | 27 <sup>th</sup> April 2006 | 23 <sup>rd</sup> May 2006   |

### 1.3 Environmental Document Submissions to EPD

A summary of the status of the submissions to EPD as provided during the month of April 2006 is presented in Table 1.2.

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

| Item No. | Document Title                            | Date of Submission          |
|----------|---|-----------------------------|
| 1        | Monthly EM&A Report No. 10 for March 2006 | 13 <sup>th</sup> April 2006 |

## 1.4 Environmental Monitoring Locations

Noise monitoring was undertaken at three monitoring stations CM1, CM2 and 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, 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 in April 2006, during the normal working hours, restricted hours from 1900 to 2300 hours on normal working

days and from 0700 to 1900 hours on general holidays, and restricted hours from 2300 to 0700 hours of the next day are summarised in Table 3.1, Table 3.2, and Table 3.3, 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 five 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 Working Hours**

| Date of Monitoring          | Normal Hours. Noise Monitoring Results $L_{eq(30 \text{ minutes})}$ noise |     |     |
|-----------------------------|---|-----|-----|
|                             | CM1   | CM2 | CM3 |
| 4 <sup>th</sup> April 2006  | 68  | 71  | 66  |
| 11 <sup>th</sup> April 2006 | 69  | 72  | 68  |
| 19 <sup>th</sup> April 2006 | 68  | 71  | 64  |
| 25 <sup>th</sup> April 2006 | 68  | 71  | 62  |

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 - All days during the evening (1900 to 2300 hours), and general holidays (including Sundays) during the day-time and evening (0700 to 2300 hours)**

| Date of Monitoring          | Restricted Hours Noise Monitoring Results $L_{eq(15 \text{ minutes})}$ noise |           |     |
|-----------------------------|--|-----------|-----|
|                             | CM1  | CM2       | CM3 |
| 2 <sup>nd</sup> April 2006  | 62   | <u>68</u> | 61  |
| 6 <sup>th</sup> April 2006  | 64   | <u>68</u> | 58  |
| 11 <sup>th</sup> April 2006 | 65   | <u>69</u> | 58  |
| 23 <sup>rd</sup> April 2006 | 64   | <u>69</u> | 58  |
| 25 <sup>th</sup> April 2006 | 64   | <u>71</u> | 59  |

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 of 65dB(A).

**Table 3.3 Summary of Noise Monitoring Results during Restricted Hours - All days during the night-time (2300 to 0700 hours)**

| Date of Monitoring          | Restricted Hours Noise Monitoring Results $L_{eq(15 \text{ minutes})}$ noise |           |           |
|-----------------------------|--|-----------|-----------|
|                             | CM1  | CM2       | CM3       |
| 6 <sup>th</sup> April 2006  | <u>63</u>  | <u>69</u> | <u>52</u> |
| 11 <sup>th</sup> April 2006 | <u>64</u>  | <u>71</u> | <u>57</u> |
| 25 <sup>th</sup> April 2006 | <u>64</u>  | <u>70</u> | <u>60</u> |

**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 of 50dB (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 stagnant water accumulated in drip trays, U-channel and bored piling works area to prevent mosquito breeding.
- Emptying water in drip tray for holding chemical container to chemical waste storage for proper chemical waste disposal.
- Placing unused drip trays up-side-down to prevent water accumulation.
- Regular clearance of debris and maintenance for drainage channel to prevent blockage and ensure it can function effectively.

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 April 2006.

During the inspections, sandbags provided for transplantation nursery were seen to have been broken. Soil inside the nursery appeared to be fairly loose and some have been washed down by rain. The Contractor was reminded to provide sufficient sandbags for the transplantation nursery to contain the soil and prevent them from being washed down. Sufficient soils should also be provided for the nursery to hold the roots so as to ensure their survival. The details of the landscape & visual resources inspection reports 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 3.4.

**Table 3.4 Summary of Waste Disposal for April 2006**

| Waste Type                | Destination  | No. of Trips | Quantity             |
|---------------------------|--|--------------|----------------------|
| C & D Waste               | NENT   | 33           | 165 m <sup>3</sup>   |
| C & D Waste               | WENT   | 1            | 5 m <sup>3</sup>     |
| Building debris           | CEDD's Tuen Mun Area 38 Fill Bank                        | 263          | 1,315 m <sup>3</sup> |
|                           | CEDD's Tuen Mun Area 38 C&D Materials Recycling Facility | 16           | 80 m <sup>3</sup>    |
| Chemical Waste            | Collected by Dunwell Enviro-Tech (Holdings) Ltd.         | 2            | 1,100 L              |
| Chemical Toilet Waste     | Collected by Proenvironmental Services Ltd.              | 24           | -                    |
| Sewage Holding Tank Waste | Collected by Waylung Waste Services Ltd.                 | 12           | -                    |

## 4 ENVIRONMENTAL AUDITS

### 4.1 Site Inspection and Audit

Site inspections were undertaken on 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup>, and 27<sup>th</sup> April 2006. The IEC joined the inspection on 27<sup>th</sup> April 2006. Specific locations within the site were identified during the inspection for improvements in proper implementation of the environmental mitigation measures. These include:

- Full coverage of the potential contaminated soil stockpile with tarpaulin and provision of sandbags barrier around the edge of stockpile.
- Full coverage of all stockpiles of excavated materials with tarpaulin to avoid fugitive dust emissions.
- Cleaning up general refuse on site for good housekeeping.
- Proper storage of used timber in designated C&D waste storage area for disposal.
- Prompt removal of stagnant water pools to prevent mosquito breeding.
- Emptying water in drip tray for holding chemical container to chemical waste storage for proper chemical waste disposal.
- Placing unused drip trays up-side-down to prevent water accumulation.
- Regular clearance of debris and maintenance for drainage channel to prevent blockage and ensure it can function effectively.

The record of the weekly site inspection findings is provided in Annex G.

### 4.2 Environmental Exceedances

During the reporting period, there were five exceedances of the limit level during restricted hours noise monitoring recorded on 2<sup>nd</sup>, 6<sup>th</sup>, 11<sup>th</sup>, 23<sup>rd</sup> and 25<sup>th</sup> April 2006.

Further to investigation and discussion with the ER, the project-related works being undertaken during the measurement period were located at a distance away (at least over 150m) 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 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:

- Pre-bored H-piling works;
- Laying of drainage pipes;
- Road widening works;
- Bored piling works;
- Trench works;
- Sheet piling works;
- Pier construction;
- Storage and preparation of viaduct segments; and
- Erection of precast viaduct segments.

#### 5.2 Monitoring Schedules for the Next Month

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

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

| <b>Date</b>                         | <b>Noise Monitoring Station</b> |
|-------------------------------------|---------------------------------|
| 2 <sup>nd</sup> May 2006 (Tuesday)  | CM1, CM2 & CM3                  |
| 9 <sup>th</sup> May 2006 (Tuesday)  | CM1, CM2 & CM3                  |
| 16 <sup>th</sup> May 2006 (Tuesday) | CM1, CM2 & CM3                  |
| 23 <sup>rd</sup> May 2006 (Tuesday) | CM1, CM2 & CM3                  |
| 30 <sup>th</sup> May 2006 (Tuesday) | CM1, CM2 & CM3                  |

## **6 CONCLUSION**

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

There were five exceedances of the Limit Level recorded during the restricted hours 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.