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

**Monthly Environmental
Monitoring & Audit Report**

Report No. 10

March 2006

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 21st June 2005. This report is the tenth monthly EM&A report for the Project which summarises the monitoring results and audit findings during the reporting period from 1st to 31st March 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 2nd, 9th, 16th, 23rd and 30th March 2006. The Independent Environmental Checker (IEC) joined the site inspection on 30th March 2006.
- Noise monitoring at three designated monitoring stations was undertaken on 1st, 7th, 14th, 21st and 28th March 2006 during normal hours, and 5th, 12th, 19th and 26th March 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 7th and 18th March 2006.

Breaches of Action and Limit Levels

There were totally five environmental exceedances recorded during this reporting period in which four were recorded during the restricted hours noise monitoring on 5th, 12th, 19th and 26th March 2006, and one was recorded on 23rd March 2006 regarding the excavation within the boundary of the potentially contaminated site E prior to the approval of Contamination Assessment Plan (CAP) by EPD and respective site investigation works.

For the restricted hours noise monitoring, the exceedances were proved not to have been caused by the site activities of the Contractor.

According to Section 8.3 and the Implementation Schedule of Proposed Mitigation Measures specified in the Project EM&A Manual, Contamination Assessment Plan (CAP) is required to be submitted to EPD for endorsement prior to any site investigation works at the two potential contaminated zones, namely site A and site E. The CAP, which has been certified by the ETL and verified by the IEC, was submitted to EPD on 6th March 2006. However, excavation was seen to have been taken place within the boundary of site E prior to EPD's endorsement on the CAP. The Contractor has been required to undertake necessary remedial measures to properly handle the potentially contaminated materials.

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 April 2006. Site investigation works for land contamination of site A will commence in April 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 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 March 2006. Details of the CNP are summarised in Table 1.1.

Table 1.1 Details of Permits and Licenses issued in March 2006

Permit/ License	Reference No.	Issue Date	Expiry Date
Construction Noise Permit for general construction work	GW-RN0095-06	8 th March 2006	9 th September 2006
Construction Noise Permit for general construction work	GW-RN0097-06	9 th March 2006	9 th September 2006
Construction Noise Permit for general construction work	GW-RN00144-06	28 th March 2006	28 th 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 March 2006 is presented in Table 1.2.

Table 1.2 Summary of Environmental Submissions to EPD in March 2006

Item No.	Document Title	Date of Submission
1	Contamination Assessment Plan (CAP) for sites A & E	6 th March 2006
2	Monthly EM&A Report No. 9 for February 2006	14 th March 2006
3	Quarterly EM&A Summary Report No. 3 for December 2005 to February 2006	21 st March 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.

According to Section 8.3 and the Implementation Schedule of Proposed Mitigation Measures specified in the Project EM&A Manual, Contamination Assessment Plan (CAP) is required to be submitted to EPD for endorsement prior to any site investigation works at the two potential contaminated zones, namely site A and site E. The CAP, which has been certified by the ETL and verified by the IEC, was submitted to EPD on 6th March 2006. However, during the weekly site inspection conducted on 23rd March 2006, excavation was seen to have been taken place within the boundary of site E prior to EPD's endorsement on the CAP. A notification of the event was then issued to the RE, Contractor, IEC and EPD. The Contractor is required to undertake remedial measures to properly handle the potentially contaminated materials. These include:

- Notify all workers about the possible land contamination at this area and establish and implement a Health and Safety Plan;
- Provide protective clothes, masks and personal protective equipment to workers who work in this area and when handling the excavated material;
- Properly store and contain the material excavated from this location;

The Contractor was seen to have fenced off and covered the stockpile with tarpaulin sheet. Warning sign has also been posted at the stockpile area. The Contractor is further reminded to provide sandbag barriers around the stockpile to ensure that the soil stockpile is properly contained.

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 March 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
1 st March 2006	68	72	67
7 th March 2006	67	71	71
14 th March 2006	69	72	66
21 st March 2006	68	71	62
28 th March 2006	68	72	66

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 $L_{eq(15\text{ minutes})}$ noise		
	CM1	CM2	CM3
5 th March 2006	61	<u>70</u>	61
12 th March 2006	61	<u>69</u>	57
19 th March 2006	61	<u>68</u>	59
26 th March 2006	61	<u>67</u>	60

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:

- Proper control of surface runoff generated from drilling activities such as placing sandbags around the drilling works area and pumping the drilled water to sedimentation tank.
- Disposal of scummy water held in the sedimentation tank by septic truck to ensure compliance of requirements of the discharge license.
- Regular removal of stagnant water at drip trays, U-channel and pile cap to prevent mosquito breeding.

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 March 2006.

During the inspections, some of trees in transplantation nurseries were seen to be in poor growth conditions and some appeared to be dead. A tree to be transplanted, located at Kwu Tung Road was observed to have been felled. However, it is believed to have been rotten and dead before felling. The Contractor was reminded to properly maintain the trees' health and ensure that they are in healthy condition for transplantation. The Contractor was also reminded to compensate for the dead trees by replacement planting during the transplantation. No sandbags barrier was provided for transplantation nursery. Some soil inside the nursery have been washed away by rain. Sufficient sandbags should be provided to contain soil inside the nursery.

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 March 2006

Waste Type	Destination	No. of Trips	Quantity
C & D Waste	NENT	37	185 m ³
C & D Waste	WENT	1	5 m ³
Building debris	CEDD's Tuen Mun Area 38 Fill Bank	925	4,625 m ³
	CEDD's Tuen Mun Area 38 C&D Materials Recycling Facility	47	235 m ³
Chemical Waste	Collected by Dunwell Enviro-Tech (Holdings) Ltd.	2	1600 L
Chemical Toilet Waste	Collected by Proenvironmental Services Ltd.	14	-
Sewage Holding Tank Waste	Collected by Waylung Waste Services Ltd.	15	-

4 ENVIRONMENTAL AUDITS

4.1 Site Inspection and Audit

Site inspections were undertaken on 2nd, 9th, 16th, 23rd and 30th March 2006, and jointly with the IEC on 30th March 2006. Specific locations within the site were identified during the inspection for improvements in proper implementation of the environmental mitigation measures. These include:

- Placing generator with drip tray properly on to hard ground surface.
- Covering the stockpile of excavated soil properly to prevent dust emissions.
- Full coverage of exposed slope surface with tarpaulin to prevent dust emissions.
- Prompt removal of stagnant water pools to prevent mosquito breeding.
- Disposal of scummy water held in the sedimentation tank by septic truck to ensure compliance of requirements of the discharge license.
- Proper storage of chemical waste in designated storage area for disposal.
- Properly contain the potential contaminated soil to avoid the contaminants from escaping to the surroundings.

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

4.2 Environmental Exceedances

During the reporting period, there were totally five exceedances of the limit level were recorded. Four of them were noise exceedances of the Limit Level during the restricted hours noise monitoring at CM2, and one was recorded regarding the excavation within the boundary of the potentially contaminated site E prior to EPD's endorsement on the CAP and completion of investigation works.

For the noise exceedances, 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, 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 5th, 12th, 19th and 26th March 2006 were found not to be attributable to project works.

It was observed during the inspection on 23rd March 2006 that potential contaminated soil in site E have been excavated prior to the endorsement of the CAP by EPD and site investigation works. This was not in compliance with the requirements mentioned in Section 8.3 of the EM&A Manual.

The Contractor is required to implement the following mitigation measures:

- Notify all workers about the possible land contamination at this area and establish and implement a Health and Safety Plan;
- Provide protective clothes, masks and personal protective equipment to workers who work in this area and when handling the excavated material;
- Properly store and contain the material excavated from this location;

The Contractor was seen to have fenced off and covered the stockpile with tarpaulin sheet. Warning sign has also been posted at the stockpile area. The Contractor is further reminded to provide sandbag barriers around the stockpile to ensure that the soil stockpile is properly contained.

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;
- Erection of viaduct segments; and

Site investigation works for land contamination of site A will commence in April 2006.

5.2 Monitoring Schedules for the Next Month

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

Table 5.1 Tentative Noise Monitoring Schedule for April 2006

Date	Noise Monitoring Station
4 th April 2006 (Tuesday)	CM1, CM2 & CM3
11 th April 2006 (Tuesday)	CM1, CM2 & CM3
18 th April 2006 (Tuesday)	CM1, CM2 & CM3
25 th April 2006 (Tuesday)	CM1, CM2 & CM3

6 CONCLUSION

One environmental non-compliance attributable to the Project works during the reporting period with respect to the excavation in the potentially contaminated area (site E) prior to the endorsement of the CAP by EPD and site investigation works.

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.