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

**Monthly Environmental
Monitoring & Audit Report**

Report No. 5

October 2005

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 fifth monthly EM&A report for the Project which summarises the monitoring results and audit findings during the reporting period from 1st to 31st October 2005.

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:

- Site inspections were undertaken jointly with the Contractor and Engineer's Representative (ER) on 6th, 13th, 20th and 27th October 2005. The Independent Environmental Checker (IEC) joined the site inspection on 27th October 2005.
- Noise monitoring at three designated monitoring stations was undertaken on 6th, 12th, 18th and 26th October 2005 during the normal hours, and 2nd, 9th, 16th, 23rd and 30th October 2005 during the restricted hours.
- Visual site surveillance for water quality was undertaken 3 days per week.
- Site inspections for landscape and visual resources were undertaken on 19th and 31st October 2005.

Breaches of Action and Limit Levels

There were three environmental exceedances recorded during the restricted hours noise monitoring on 2nd, 9th and 23rd October 2005 during this reporting period. The mentioned exceedances were, however proved not to have been caused by the site activities of the Contractor.

Complaint Log

There were no environmental complaints 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 both North and South Divisions will be continued in November 2005.

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;
- Pre-drilling works;
- Laying of drainage pipes;
- Tree felling and transplantation;
- Implementation of temporary traffic arrangement schemes;
- Bored piling works;
- Temporary platform formation;
- Trench works;
- Subway extension;
- Driven H-pile installation; and
- Sheet piling

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.

Two Construction Noise Permits (CNP) were issued in October 2005. Details of the CNP are summarised in Table 1.1.

Table 1.1 Details of Permits and Licences issued in October 2005

Permit / License	Reference No.	Issue Date	Expiry Date
Construction Noise Permit	GW-RN0494-05	7 th October 2005	23 rd October 2005
Construction Noise Permit	GW-RN0506-05	26 th October 2005	25 th December 2005

1.3 Environmental Document Submissions to EPD

A summary of the status of the submissions specified in the Project EP as provided during the month of October 2005 is presented in Table 1.2. The Quarterly EM&A Summary Report No. 1, prepared as per the requirement of the EM&A Manual, was submitted to EPD on 3rd October 2005.

Table 1.2 Summary of Submissions Specified in Project EP in October 2005

Item No.	Document Title	Date of Submission
1	Monthly EM&A Report No. 4 for September 2005	14 th October 2005

1.4 Environmental Monitoring Locations

Noise monitoring was undertaken at three monitoring stations and 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 October 2005 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 in this reporting period but three 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
6 th October 2005	64	69	62
12 th October 2005	63	68	62
18 th October 2005	64	70	64
26 th October 2005	68	70	66

Remark: * 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
2 nd October 2005	61	<u>66</u>	57
9 th October 2005	62	<u>67</u>	56
16 th October 2005	58	65	57
23 rd October 2005	61	<u>68</u>	58
30 th October 2005	61	65	54

Remark: Underlined figure indicates exceedance of Limit Level (65 dB(A)).

* a positive correction of 3dB(A) has been applied to the measured noise level at CM2 according to EPD's guideline

3.2 Water Quality Monitoring

Visual site surveillances for water quality were undertaken for 3 days per week. Based on the visual inspection results, the Contractor has followed all necessary practices for the maintenance of the site drainage system, including (1) regular removal of accumulated sediment trapped by sandbag barriers; (2) backfilling of temporary ditch to avoid stagnant water pool; and (3) coverage of exposed slope to prevent soil erosion. The inspection results were found to be acceptable. The details of the water quality visual inspection reports are provided in Annex E.

3.3 Landscape & Visual Resources

Site inspection on the landscape & visual resources were undertaken two times during October 2005. The Contractor continued tree transplantation during this reporting period. During the inspections, it was found that the temporary nursery was not properly surrounded by sandbags. The Contractor was reminded to provide sufficient sandbags to the nursery area to avoid potential erosion of soil from the roots. Overall, the transplanted trees were found to be in a fair condition.

Some trees were found to be without category labels. The Contractor was reminded to label all trees according to the tree felling plan, and fence off all trees that are to be retained to avoid accidental tree felling. 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 October 2005

Waste Type	Destination	No. of Trips	Quantity
C & D Waste	NENT	13	65 m ³
C & D Waste	WENT	1	5 m ³
Building debris	CEDD's Tuen Mun Area 38 Fill Bank	158	790 m ³
Chemical Toilet Waste	Collected by Proenvironmental Services Ltd.	20	-
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 6th, 13th, 20th October 2005, and jointly with the IEC on 27th October 2005. Specific locations within the site were identified during the inspection for improvements in proper implementation of the environmental mitigation measures. These included:

- Regular maintenance of equipment should be undertaken to prevent oil / fuel leaking and drip trays should be provided as an intermediate measure;
- Equipment refuelling should be conducted with care (e.g., with drip tray) to prevent spillage;
- Regular maintenance of the site drainage system should be undertaken, e.g. removal of debris from temporary ditches, clearing of stagnant water pools and accumulated sediments trapped by sandbag barriers;

- Frequent water spraying should be applied to unpaved areas during the dry season for fugitive dust control;
- Root ball for the trees to be transplanted to be properly formed with sufficient soil.

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 three exceedances of the Limit Level recorded during the restricted hours noise monitoring at monitoring station CM2.

Further to investigation and discussion with the ER, the project-related works being undertaken during the measurement period were located further to the North 2 Division area, which is far (over 300m) away from the monitoring stations. The exceedances were therefore due to the high ambient background noise caused by road traffic on San Tin Highway. Thus, the noise exceedances recorded on 2nd, 9th and 23rd October 2005 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

No environmental complaints and no prosecution or summons were received during the reporting period. 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;
- Temporary support works;
- Subway extension works;
- Band drains installation;
- Drainage pipe laying works;
- Demolition works; and
- Pier construction

5.2 Monitoring Schedules for the Next Month

The schedule for the normal hours noise monitoring in November 2005 is provided in Table 5.1. Noise monitoring during the restricted hours will be undertaken on a weekly basis, when there will be construction activities scheduled during these periods.

Table 5.1 Noise Monitoring Schedule for November 2005

Date	Noise Monitoring Station
2 nd November 2005 (Wednesday)	CM1, CM2 & CM3
9 th November 2005 (Wednesday)	CM1, CM2 & CM3
16 th November 2005 (Wednesday)	CM1, CM2 & CM3
23 rd November 2005 (Wednesday)	CM1, CM2 & CM3
30 th November 2005 (Wednesday)	CM1, CM2 & CM3

6 CONCLUSION

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

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

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