

**Territory Development Department
NT EAST Development Office**


**Tseung Kwan O Development, Phase II
Contract No. TK57/02**

Grade Separated Interchange T1/P1/P2

**Environmental Monitoring and Audit
Monthly Report (Version 1.0)**

April 2003

Certified By


(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
TSP	Total Suspended Particulates
TDD	Territory Development Department
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan

EXECUTIVE SUMMARY

Introduction

This is the eleventh monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the “Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2” (the Project). This report documents the findings of EM&A Works conducted in April 2003 (26th of each month as the cut-off day).

The construction activities undertaken in the reporting month were:

- Piles & substructure works
- Mobilization & work area set up for bored piles
- Site clearances works
- Drainage works
- Erection of steel frame of noise barrier type E
- Pile cap construction

Environmental Monitoring Works

Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

Air Quality

1-hour TSP Monitoring

All 1-hour TSP monitoring was conducted as scheduled and no Action and Limit Level exceedance was recorded during the reporting month.

24-hour TSP Monitoring

All 24-hour TSP monitoring was conducted as scheduled. All 24-hour TSP results complied with the Action and Limit Levels in the reporting month.

Construction Noise

All construction noise monitoring was conducted as scheduled. One action level exceedance of construction noise (noise complaint, log ref.: 30422-1) was recorded on 22nd April 2003. A resident living near Po Shun Road complaint about construction noise after 7:00pm (Refer to Section “Complaints and Prosecutions” for details).

Environmental Licensing and Permitting

License/Permits granted to the Project include the Environmental Permit (EP) for the Project, water discharge licenses, Construction Noise Permit and Waste Disposal (Chemical Waste) license.

Prosecutions and Complaints

No environmental prosecution was received during the reporting month. A total of 14 complaints have been received since the commencement of the Project.

Following up the complaint (log ref.: 30308-1), which was raised by a resident at Chung Ming Court complaining on Sunday construction noise, complaint investigation was carried out by ET. According to the Works Supervisor's Daily Reports on Sundays of February and March 2003 provided by the ER, there was no construction activity at the concerned location on Sundays of February and March 2003. The Contractor later confirmed that no power mechanical equipment was used and no prescribed work was carried out during Sundays. The complaint was therefore considered as invalid. ET has submitted the investigation report for the complaint to the Engineer and EPD.

Two new complaints related to the Project works was reported during the month. One of the complaints is about construction dust (log ref.: 30321-1). The complaint was received by EPD on 21st March 2003 and was referred to the ET Leader on 31st March 2003. Complaint investigation was carried out by ET. Since King Lam Estate and Chung Ming Court are not any of the designated air quality monitoring stations for the Project, there is no dust monitoring data for a quantitative complaint investigation. The complaint was therefore investigated qualitatively. ET carried out a regular site inspection on 21st March 2003 with observations that the works may have posted dust nuisance to the surrounding. On the other hand, based on the Contractor's explanation on the concerned subject, a site visit was made by the representatives of EPD, the ER and the Contractor on 21st March 2003. No obvious dust emission was identified during the site visit, yet the EPD's representatives reminded the Contractor to keep spraying water during hacking off concrete. Nevertheless, the Contractor indicated that they would prevent construction dust arising from their work by:

- Keep spraying water during hacking off concrete and
- Cover any stockpile of dusty material by tarpaulin sheets.

ET has submitted the investigation report for the complaint to the Engineer and EPD.

The other complaint (log ref.: 30422-1) is concerning the construction noises from the construction site at Po Shun Road after 7:00 pm on 17th April 2003. In addition, the complainant said that he found muddy water leaking from the hoarding of the above site on both sides of the road. The complaint was received by EPD on 22nd April 2003 and was referred to the ET Leader on 24th April 2003. Complaint investigation was carried out by ET. The ET has requested ER to provide information on the construction activities undertaken on 17th April 2003 and confirm whether there was muddy water leaking from the hoarding of the above site. The investigation is still undergoing by the end of the reporting month.

Future Key Issues

Bored pile & substructure works and noise barrier erection will be the major construction site activities for the coming month. The anticipated environmental impact will be mainly on dust and noise due to piling and earthworks.

1. INTRODUCTION

Background

- 1.1 Cinotech Consultants Limited (hereinafter called the “ET”) was appointed by Territory Development Department (TDD) (hereinafter called the "Project Proponent") via Maunsell Consultants Asia Limited (hereinafter called the “Engineer/ Engineer’s Representative) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project “Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2” (the Project).
- 1.2 The scopes of works for the Project include upgrading the existing at-grade interchange at Roads T1/P1/P2 junction at Tseung Kwan O to a grade separated interchange, and to widen the section of Road P2 between Po Hong Road and Po Ning Road. Figure 1 shows the location and the site boundary of the Project. The works have been commenced under Contract No. TK 57/02 – “Grade Separated Interchange T1/P1/P2”.
- 1.3 The Project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 449) and an environmental impact assessment report titled “Tseung Kwan O Development Contract F – Grade Separated Interchange T1/P1/P2, Environmental Impact Assessment (EIA) Study” (Register No. AEIAR – 017/1999) has been approved and deposited with Environmental Protection Department (EPD). An Environmental Permit (EP) No. EP-073/2000/B has been issued by EPD for the construction and operation of the proposed works under the Project.
- 1.4 The Project “Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2” was commenced on 14th June 2002. Under the requirements of Conditions 3 of the EP, EM&A programme as set out in the EM&A Manual is required to be implemented. In accordance with the EM&A Manual, environmental monitoring of air quality and noise are required for the construction phase of the Project.
- 1.5 This is the eleventh monthly EM&A report summarizes the EM&A works for the Project in April 2003 (26th of each month as the cut-off day).

Project Organizations

- 1.6 Different parties with different levels of involvement in the project organization include:
 - Project Proponent – TDD, NT East Development Office
 - Engineer or Engineer’s Representative (E/ER) – Maunsell Consultants Asia Limited (MCAL)
 - Environmental Team (ET) – Cinotech Consultants Limited
 - Independent Environmental Checker (IEC) – Ove Arup & Partners Hong Kong Limited
 - Contractor - China Civil Engineering Construction Corporation

- 1.7 The responsibilities of respective parties are detailed in Section 1.4 of the EM&A Manual and the project organization chart is presented in Figure 2.
- 1.8 The key contacts of the Project are shown in Table 1.1.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
TDD	Ms. Joanna Kwok	Permit Holder	23011384	27218630
	Mr. Clement Poon	Project Coordinator	23011374	27218630
MCAL	Mr. Ivan Tsang	The Engineer	26856514	26912649
	Mr. Peter Yue / Mr. Stephen Lai	The Engineer's Representative	27010811	27013155
ET	Dr. Priscilla Choy	The ET Leader	21512083	31071388
	Ms. Winniss Kong	Audit Team Leader	21512083	31071388
	Mr. Henry Leung	Monitoring Team Leader	21512083	31071388
IEC	Mr. Sam Tsoi	Independent Environmental Checker	22683208	22683950
Contractor	Mr. Tommy Leung	Project Manager	22718899	28274313

Construction Programme

- 1.9 The construction activities undertaken in the reporting month were:
- Piles & substructure works
 - Mobilization & work area set up for bored piles
 - Site clearances works
 - Drainage works
 - Erection of steel frame of noise barrier type E
 - Pile cap construction

Summary of EM&A Requirements

- 1.10 The EM&A programme requires construction phase monitoring for air quality and construction noise and environmental site audit. The EM&A requirements for each parameter are described in following sections, including:
- All monitoring parameters;
 - Action and Limit levels for all environmental parameters;
 - Event / Action Plans;
 - Environmental mitigation measures, as recommended in the project EIA study final report;
 - Environmental requirements in contract documents.
- 1.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of this report.

- 1.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely dust and noise levels and audit works for the Project in the reporting month.

2. AIR QUALITY

Monitoring Requirements

- 2.1 1-hour and 24-hour TSP monitoring was conducted to monitor the air quality. Appendix A shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

- 2.2 Two designated monitoring stations, A1 and A2 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figure 1.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Location
A1	Wan Lung Road Refuse Collection Station
A2	On Ning Garden

Monitoring Equipment

- 2.3 Table 2.2 summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in Appendix B.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	GMW 25	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	2
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	2

Monitoring Parameters, Frequency and Duration

- 2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period is shown in Appendix C.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meter were in accordance with the Manufacturer's Instruction Manual as follow:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSL.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meter:

- Check the meter at 3-month intervals and calibrate the meter at 1-year intervals throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.3 of the EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured

- horizontally was required.
- No furnaces or incineration flues were nearby.
 - Airflow around the sampler was unrestricted.
 - The sampler was more than 20 meters from the drip line.
 - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- 2.9 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- 2.10 For TSP sampling, fiberglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].
- 2.11 The power supply was checked to ensure the sampler worked properly.
- 2.12 On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.
- 2.13 The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- 2.14 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- 2.15 The shelter lid was closed and secured with the aluminum strip.
- 2.16 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- 2.17 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.
- 2.18 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

- 2.19 The following maintenance/calibration was required for the HVS.
- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary

power supply are in good working condition.

- High volume samplers were calibrated at 3-month intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

- 2.20 Dust monitoring was conducted as scheduled in the reporting.
- 2.21 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in Appendices D and E respectively. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website <http://www.cinotech.com.hk/TKO>.
- 2.22 Wind data monitoring equipment has been installed near the RE Office for logging wind speed and wind direction. Due to the power failure on 3rd April 2003, the wind data from 28th March 2003 to 3rd April 2003 was lost. The wind data of 27th March 2003, and between 4th April 2003 and the end of reporting month is summarized in Appendix G.
- 2.23 Key dust monitoring findings and observations are provided as below.
- 2.24 The weather during the monitoring session was mainly sunny or cloudy. Weather conditions are provided in Appendix D.

1-hour TSP Monitoring

- 2.25 All monitoring data complied with the Action and Limit Levels. No exceedance was reported.

24-hour TSP Monitoring

- 2.26 All monitoring data complied with the Action and Limit Levels. No exceedance was reported.
- 2.27 According to our field observations, the identified dust sources were mainly from roadside traffic.

3. NOISE

Monitoring Requirements

- 3.1 Noise monitoring was conducted in accordance with the EM&A Manual. Appendix A shows the established Action Limit Levels for the environmental monitoring works.

Monitoring Locations

- 3.2 In accordance with the EM&A Manual, noise monitoring was conducted at four monitoring stations, namely N1, N2, N5 and N7. Figure 1 shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Location
N1	Tseung Kwan O Public Library
N2	On Ning Garden
N5	Nam Fung Plaza
N7	Chung Ming Court

Monitoring Equipment

- 3.3 Integrating Sound Level Meters were used for noise monitoring. They were Type 1 sound level meters capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1).
- 3.4 Table 3.2 summarizes the noise monitoring equipment model being used. Copies of calibration certificates are attached in Appendix B.

Table 3.2 Noise Monitoring Equipment

Equipment	Model	Quantity
Integrating Sound Level Meter	B&K 2238	5
Calibrator	B&K 4231	2
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

Monitoring Parameters, Frequency and Duration

- 3.5 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in Appendix C.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency	Measurement
N1	L ₁₀ (30 min.)dB(A) L ₉₀ (30 min.)dB(A) L _{eq} (30 min.)dB(A)	0700-1900 hrs. on weekdays	Once per week	Free Field
N2				Facade
N5				Facade
N7				Facade

Monitoring Methodology and QA/QC Procedures

- 3.6 The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- 3.7 For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- 3.8 The battery condition was checked to ensure the correct functioning of the meter.
- 3.9 Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
- frequency weighting : A
 - time weighting : Fast
 - time measurement : 30 minutes / 5 minutes
- 3.10 Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- 3.11 The wind speed was frequently checked with the portable wind meter.
- 3.12 At the end of the monitoring period, the L_{eq}, L₉₀ and L₁₀ were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- 3.13 Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- 3.14 Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

- 3.15 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.
- 3.16 The meter was sent to the supplier to check and calibrate on yearly intervals.

Results and Observations

- 3.17 Noise monitoring was performed at four designated locations during the daytime period (0700 to 1900) as scheduled. Results and graphical presentations are shown in Appendix F. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website <http://www.cinotech.com.hk/TKO>.
- 3.18 The weather during the monitoring sessions was mainly sunny or cloudy. Weather conditions are provided in Appendix F.
- 3.19 All construction noise monitoring data compiles with the Limit Level but one Action level exceedance of construction noise (complaint, log ref.: 30422-1) was recorded during the reporting month. A resident lives near Po Shun Road complaint about construction noise on 7:00pm on 22nd April 2003 (Refer to Section 4.30 for details).

4. ENVIRONMENTAL AUDIT

Site Audits

- 4.1 Site audits were carried out on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in Appendix H.
- 4.2 Site audits were conducted on 28th March 2003, 4th, 11th, 17th and 25th April 2003.

Review of Environmental Monitoring Procedures

- 4.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- 4.4 The monitoring team recorded all observations around the monitoring stations within and outside of the construction site.
- 4.5 The monitoring team recorded the temperature, air pressure and weather conditions on the monitoring day.

Noise Monitoring

- 4.6 The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- 4.7 Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licensing and Permitting

- 4.8 All permits/licenses obtained are summarized in Table 4.1.

Implementation Status of Environmental Mitigation Measures

- 4.9 During site inspections in the month, the following observations and recommendations were made.

Air Quality

- 4.10 During the audit session on 17th April 2003, black smoke was observed emitting from the air compressor at Po Shun Road near King Lam Estate. The situation has been rectified before the next audit session.
- 4.11 On 25th April 2003, the unpaved area was dry at Po Shun Road and Area 40. The Contractor was recommended to rectify the situation.

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-073/2000/B * a copy was attached in the monthly report of June 2002	08/02/02	N/A	Construction of widened Road P2 between Road D1 and D2, modified TKO Tunnel Road and Road P1 near Road P2 and Slip Road A to G, together with associated footpath, cycle tracks or amenity strips and retaining wall. Construction of 3 nos. vehicular bridges, a pedestrian subway and 2 extended pedestrian/cyclist subways. Erection of noise barriers and enclosure. Construction of drainage and utilities work.	Valid
Wastewater Discharge License				
TE/C1247/837/1 * a copy was attached in the monthly report of July 2002	12/7/02	31/7/07	Effluent arising from construction site.	Valid
TE/F1045/838/1 * a copy was attached in the monthly report of September 2002	6/8/02	N/A	Effluent arising from RE office at TKO Area 56.	Valid
Waste Disposal (Chemical Waste)				
WPN: 5213-837-C3070-07 * a copy was attached in the monthly report of July 2002	N/A	N/A	Disposal of chemical waste such as waste lubricating oil and diesel oil arising from construction work.	Valid
Construction Noise Permit				
PP-TE0006-03 * a copy was attached in the monthly report of March 2003	20/3/03	16/9/03	Permission was granted for carrying out percussive piling at specific time of designated days.	Valid

Water Quality

- 4.12 Stagnant water was occasionally observed within the site area. The Contractor was reminded to prevent accumulation of water.
- 4.13 The Contractor was recommended to avoid sandy water from overflowing into existing drainage system by using sand bags or other alternatives.

Chemical and Waste Management

- 4.14 Buckets of diesel oil/ old tanks were occasionally placed on bare ground. The Contractor was recommended to provide measures to ensure that no oil would be leaked out from the containers.

- 4.15 Oil dripping was observed at some of the plants. The Contractor was reminded to improve the situation.
- 4.16 During the site audits, oil spillage was observed at Area 40 and Wan Po Road. The Contractor was reminded to rectify the situation.
- 4.17 Rubbishes were accumulated at the site area. The Contractor was reminded to provide adequate rubbish bins within the site area and clear the refuse regularly.

Environmental Mitigation Implementation Schedule (EMIS)

- 4.18 According to the Environmental Permit and the EM&A Manual, the mitigation measures detailed in the documents are required to be implemented. An updated summary of the EMIS is presented in Appendix J.

Summary of Non-compliance of the Environmental Quality Performance Limit

- 4.19 No non-compliance was recorded during the reporting period.

Implementation Status of Event Action Plans

- 4.20 The Event Action Plans for air quality and noise are presented in Appendix I.

Air Quality

- 4.21 No exceedance of Action and Limit Levels was recorded for 1-hour TSP concentrations during the reporting month.
- 4.22 No exceedance of Action/Limit Levels for 24-hour TSP concentrations was reported in the month.

Noise

- 4.23 One Action Level exceedance (complaint, log ref.: 30422-1) was raised by a resident living at near Po Shun Road on 22nd April 2003. (Refer to Section 4.30 for details) No Limit Level exceedance was recorded in the month.

Summary of Complaints and Prosecution

- 4.24 No environmental prosecution was received during the reporting month.
- 4.25 A total of 14 complaints have been received since the commencement of the Project. The details of each of the complaint are summarized in Appendix L.
- 4.26 Following up the complaint (log ref.: 30308-1), which was raised by a resident at Chung Ming Court complaining on Sunday construction noise, complaint investigation was carried out by ET. According to the Works Supervisor's Daily Reports on Sundays of February and March 2003 provided by the ER, there was no

construction activity at the concerned location on Sundays of February and March 2003. The Contractor later confirmed that no power mechanical equipment was used and no prescribed work was carried out during Sundays. The complaint was therefore considered as invalid. ET has submitted the investigation report for the complaint to the Engineer and EPD. The copy of investigation report and the relevant correspondences are attached in Appendix N.

- 4.27 Two new complaints related to the Project works was reported during the month. One of the complaints is about construction dust (log ref.: 30321-1). The complaint was received by EPD on 21st March 2003 and was referred to the ET Leader on 31st March 2003. Complaint investigation was carried out by ET.
- 4.28 Since King Lam Estate and Chung Ming Court are not any of the designated air quality monitoring stations for the Project, there is no dust monitoring data for a quantitative complaint investigation. The complaint was therefore investigated qualitatively. ET carried out a regular site inspection on 21st March 2003 with observations that the works may have posted dust nuisance to the surrounding. On the other hand, based on the Contractor's explanation on the concerned subject, a site visit was made by the representatives of EPD, the ER and the Contractor on 21st March 2003. No obvious dust emission was identified during the site visit, yet the EPD's representatives reminded the Contractor to keep spraying water during hacking off concrete. Nevertheless, the Contractor indicated that they would prevent construction dust arising from their work by:
- Keep spraying water during hacking off concrete and
 - Cover any stockpile of dusty material by tarpaulin sheets.
- 4.29 ET has submitted the investigation report for the complaint to the Engineer and EPD. Copy of the investigation of the report is attached in Appendix N.
- 4.30 The other complaint (log ref.: 30422-1) is concerning the construction noises from the construction site at Po Shun Road after 7:00 pm on 17th April 2003. In addition, the complainant said that he found muddy water leaking from the hoarding of the above site on both sides of the road. The complaint was received by EPD on 22nd April 2003 and was referred to the ET Leader on 24th April 2003. Complaint investigation was carried out by ET. The ET has requested ER to provide information on the construction activities undertaken on 17th April 2003 and confirm whether there was muddy water leaking from the hoarding of the above site. The investigation is still undergoing by the end of the reporting month.
- 4.31 With regard to the recent complaints concerning construction activities after 7:00pm and during general holidays, a meeting was held among EPD, E, ER, ET, IEC, the Contractor and the relevant sub-contractors to discuss and establish strategies to mitigate the problem. The finalised notes of meeting will be enclosed in the monthly report of the next month.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key issues to be considered in the coming month include:

- Generation of dust from stockpiles, haul road and vehicles movement on-site.
- Noise from operation equipment and machinery on-site.
- Ineffective use of sand traps and/or baffles.
- Regular removal of mud, sand and silt along u-channel.
- Wastewater discharge from site.
- Storage of chemicals/fuel and chemical waste/waste oil on site.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedule for the next month is shown in Appendix C.

Construction Program for the Next Month

5.3 The construction program for the Project is shown in Appendix K.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring for the Project was performed as scheduled in the reporting month and all monitoring results were checked and reviewed.
- 6.2 No exceedance of Action and Limit Levels for 1-hour TSP and 24-hour TSP concentrations was recorded during the reporting month.
- 6.3 All construction noise monitoring was conducted as scheduled. One action level exceedance of construction noise was recorded during the reporting month. A resident living near Chung Ming Court (monitoring station N7) complaint about construction noise after 7:00pm (Refer to Section “6.6” for details).
- 6.4 Following up the complaint (log ref.: 30308-1), which was raised by a resident at Chung Ming Court complaining on Sunday construction noise, complaint investigation was carried out by ET. According to the Works Supervisor’s Daily Reports on Sundays of February and March 2003 provided by the ER, there was no construction activity at the concerned location on Sundays of February and March 2003. The Contractor later confirmed that no power mechanical equipment was used and no prescribed work was carried out during Sundays. The complaint was therefore considered as invalid. ET has submitted the investigation report for the complaint to the Engineer and EPD.
- 6.5 Two new complaints related to the Project works was reported during the month. One of the complaints is about construction dust (log ref.: 30321-1). The complaint was received by EPD on 21st March 2003 and was referred to the ET Leader on 31st March 2003. Complaint investigation was carried out by ET. Since King Lam Estate and Chung Ming Court are not any of the designated air quality monitoring stations for the Project, there is no dust monitoring data for a quantitative complaint investigation. The complaint was therefore investigated qualitatively. ET carried out a regular site inspection on 21st March 2003 with observations that the works may have posted dust nuisance to the surrounding. On the other hand, base on the Contractor’s explanation on the concerned subject, a site visit was made by the representatives of EPD, the ER and the Contractor on 21st March 2003. No obvious dust emission was identified during the site visit, yet the EPD’s representatives reminded the Contractor to keep spraying water during hacking off concrete. Nevertheless, the Contractor indicated that they would prevent construction dust arising from their work by:
- Keep spraying water during hacking off concrete and
 - Cover any stockpile of dusty material by tarpaulin sheets.
- ET has submitted the investigation report for the complaint to the Engineer and EPD.
- 6.6 The other complaint (log ref.: 30422-1) is concerning the construction noises from the construction site at Po Shun Road after 7:00 pm on 17th April 2003. In addition, the complainant said that he found muddy water leaking from the hoarding of the above site on both sides of the road. The complaint was received by EPD on 22nd April 2003 and was referred to the ET Leader on 24th April 2003. Complaint investigation was carried out by ET. The ET has requested ER to provide information on the

construction activities undertaken on 17th April 2003 and confirm whether there was muddy water leaking from the hoarding of the above site. The investigation is still undergoing by the end of the reporting month.

6.7 No environmental prosecution was received during the reporting month.

Recommendations

6.8 According to the environmental audit performed in the reporting month, the following recommendations were made:

Dust Impact

- To prohibit any open burning on site.
- To regularly maintain the machinery and vehicles on site.
- To follow up any exceedance caused by the construction works.
- To implement dust suppression measures on all haul roads, stockpiles and dry surfaces.

Noise Impact

- To inspect the noise sources from inside and outside of the site.
- To follow up any exceedance caused by the construction works.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers.
- To obtain a valid Construction Noise Permit for construction works using powered mechanical equipment (PME) during restricted hours as stipulated in the relevant Technical Memorandum under Noise Control Ordinance.

Water Impact

- To identify any wastewater discharges from site.
- To regularly maintain the condition of u-channel, catch pits and wheel washing facilities on site.
- To regularly maintain the sediment control measures after rainstorms.

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge of chemical waste or oil directly from the site.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
TDD	Ms. Joanna Kwok	Permit Holder	2301 1384	2721 8630
	Mr. Clement Poon	Project Coordinator	2301 1374	2721 8630
MCAL	Mr. Ivan Tsang	The Engineer	2685 6514	2691 2649
	Mr. Peter Yue / Mr. Stephen Lai	The Engineer's Representative	2701 0811	2701 3155
ET	Dr. Priscilla Choy	The ET Leader	2151 2083	3107 1388
	Ms. Winniss Kong	Audit Team Leader	2151 2083	3107 1388
	Mr. Henry Leung	Monitoring Team Leader	2151 2083	3107 1388
IEC	Mr. Sam Tsoi	Independent Environmental Checker	2268 3208	2268 3950
Contractor	Mr. Tommy Leung	Project Manager	2271 8899	2827 4313

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Location
A1	Wan Lung Road Refuse Collection Station
A2	On Ning Garden

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	GMW 25	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	2
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	2

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Location
N1	Tseung Kwan O Public Library
N2	On Ning Garden
N5	Nam Fung Plaza
N7	Chung Ming Court

Table 3.2 Noise Monitoring Equipment

Equipment	Model	Quantity
Integrating Sound Level Meter	B&K 2238	5
Calibrator	B&K 4231	2
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency	Measurement
N1	L ₁₀ (30 min.)dB(A) L ₉₀ (30 min.)dB(A) L _{eq} (30 min.)dB(A)	0700-1900 hrs. on weekdays	Once per week	Free Field
N2				Facade
N5				Facade
N7				Facade

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Environmental Permit				
EP-073/2000/B * a copy was attached in the monthly report of June 2002	08/02/02	N/A	Construction of widened Road P2 between Road D1 and D2, modified TKO Tunnel Road and Road P1 near Road P2 and Slip Road A to G, together with associated footpath, cycle tracks or amenity strips and retaining wall. Construction of 3 nos. vehicular bridges, a pedestrian subway and 2 extended pedestrian/cyclist subways. Erection of noise barriers and enclosure. Construction of drainage and utilities work.	Valid
Wastewater Discharge License				
TE/C1247/837/1 * a copy was attached in the monthly report of July 2002	12/7/02	31/7/07	Effluent arising from construction site.	Valid
TE/F1045/838/1 * a copy was attached in the monthly report of September 2002	6/8/02	N/A	Effluent arising from RE office at TKO Area 56.	Valid
Waste Disposal (Chemical Waste)				
WPN: 5213-837-C3070-07 * a copy was attached in the monthly report of July 2002	N/A	N/A	Disposal of chemical waste such as waste lubricating oil and diesel oil arising from construction work.	Valid
Construction Noise Permit				
PP-TE0006-03 * a copy was attached in the monthly report of March 2003	20/3/03	16/9/03	Permission was granted for carrying out percussive piling at specific time of designated days.	Valid