

Contract No. : EP/SP/52/06
Development of an EcoPark in Tuen Mun Area 38

ENVIRONMENTAL MONITORING AND AUDIT

MONTHLY EM&A REPORT for

OCTOBER 2006

APPROVAL SHEET

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Date: 15-11-2006

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EXECUTIVE SUMMARY

This is the fourth monthly Environmental Monitoring and Audit (EM&A) Report for the Environmental Protection Department Contract No. EP/SP/52/06 entitled "Development of an EcoPark in Tuen Mun Area 38". (Environmental Permit No. EP-226/2005)

This report contains the results and findings of site inspection activities and EM&A works carried out by the Environmental Team (ET) of the Works Contractor as required in the contract during October 2006.

The site activities in the reporting period mainly consisted of site formation, excavation works, and construction of administration building, electrical sub-stations and drainage and sewerage.

Disposal of inert C&D material was recorded. No substantial noise impact was noted by ET during weekly environmental site walks. The Contractor was reminded to continuously service the silt curtain. Landfill gas monitoring was carried out at site; measurement results are within Action/ Limit Level in accordance with the EM&A Manual.

ET performed dust monitoring in October 2006. The result of dust monitoring on 11 October 2006 exceeds the hourly level of Total Suspended Particulates (TSP) stipulated on Annex 4 of Technical Memorandum of Environmental Impact Assessment Ordinance. ET suggested 2 more dust monitoring to monitor the implementation of mitigation measures by the Contractor for dust control.

Muddy water discharge at manhole was still observed even after the treatment by using sedimentation tank. As a result, muddy water was found at discharge point bounded by silt curtain. The Contractor was reminded to treat muddy water more properly by using more sedimentation facilities before discharging into manhole and to cease the dewatering process until muddy water is properly treated.

Only minor deficiencies were found during the site inspections of October 2006. There

were no notification of summons or successful prosecution during October 2006.

The planned activities for November and December 2006 with regard to development of EcoPark consist of:

- 1) Excavation and Site Formation Works
- 2) Construction of Electrical Sub-stations
- 3) Construction of Drainage and Sewerage
- 4) Construction of Administration Building
- 5) Construction of Marine Office

1. BASIC PROJECT INFORMATION

1.1 Introduction

This is the fourth monthly Environmental Monitoring and Audit (EM&A) Report for the Environmental Protection Department Contract No. EP/SP/52/06 entitled "Development of an EcoPark in Tuen Mun Area 38". The site layout plan was shown in Appendix 1. The report was prepared by the Environmental Team, Environmental Pioneers & Solutions Limited, of the Works Contractor, Kaden Construction Limited. The report is to be submitted to the Works Contractor, the Engineer and the Environmental Protection Department for the project.

This report presents the results of the environmental monitoring of the project activities conducted during the month of October 2006. This included regular site inspections once per week for verification of implementation of the mitigation measures as recommended in the EM&A Manual and the Contractor's Environmental Management Plan (EMP).

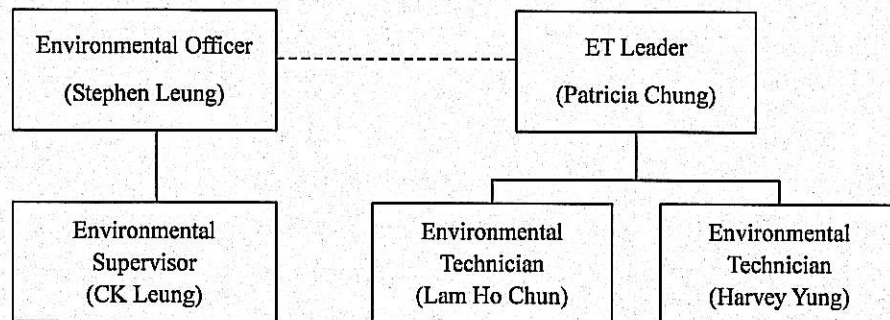
Phase 1 of the construction works has already commenced in July 2006 and is anticipated to complete on June 2007.

The contact person and telephone number of key personnel for the captioned project are shown in Appendix 2.

1.2 Project Organization and Management

The Works Contractor has commissioned Environmental Pioneers & Solutions Limited as the Environmental Team, which comprises the environmental team leader and the environmental technicians to undertake the environmental monitoring and audit work for this project. The project Organization Chart of Environmental Team is shown in Figure 1.1.

Figure 1.1 Organization Chart of Environmental Team



2. SUMMARY OF WORK ACTIVITIES AND CONSTRUCTION STATUS

2.1 Works Undertaken during the Month

A summary of the site installation works in this month, with the information of locations, activities, equipment/materials and dates of occurrence, is provided by the Contractor, as shown in Table 2.1.

Item	Work Activities & Location	Date of Occurrence
1	Excavation and Site Formation Works	1 October – 31 October 2006
2	Construction of Electrical Sub-stations	1 October – 31 October 2006
3	Construction of Drainage & Sewerage	1 October – 31 October 2006
4	Construction of Administration Building	1 October – 31 October 2006

Machineries		
	Equipment/ Plant	Quantity
1	Mobile Crane	2
2	Excavator	23
3	Generator	8
4	Air Compressor	2
5	Roller	6
6	Loader	2
7	Grab Lorry	2
8	Crane Lorry	2
9	Water Truck	1
10	Dump Truck	5

Remarks:

- As informed by the Contractor, most equipment are mobile site subject to work progress.
- Refer to Appendix 1 – Site layout plan for location of construction activities.

2.2 Future Key Issues

The Contractor has provided an updated construction program in Table 2.2 to show the planned activities for the coming three months (November 2006 – January 2007). The anticipated environmental issues are summarized as follow:

Item	Works	Anticipated Environmental Issues
1	Excavation and Site Formation Works	<ul style="list-style-type: none"> - Generation of C&D Waste; excavated material should be reused as much as practicable - Dust may be generated; the wheel washing machine should be in operation - Haul road should be sprayed regularly, by truck or sprinkler - Stagnant water should be removed - Mosquito mitigation measures should be implemented
2	Construction of Electrical Sub-stations	<ul style="list-style-type: none"> - Generation of waste from packaging materials and C&D wastes
3	Construction of Drainage & Sewerage	<ul style="list-style-type: none"> - Generation of C&D Waste; excavated material should be reused as much as practicable - Dust may be generated; the wheel washing machine should be in operation
4	Construction of Administration Building	<ul style="list-style-type: none"> - Generation of waste from packaging materials and C&D wastes

The site inspection schedule for the next month (November 2006) is designated on 1, 8, 15, 22 and 29 November 2006.

3. STATUS OF ENVIRONMENTAL PROTECTION AND SITE INSPECTIONS

3.1 Environmental Site Inspections

Environmental site inspections are required to inspect the construction activities of the Development of EcoPark in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented.

Site inspections were conducted on 4, 11, 18 and 25 October 2006.

A detailed checklist of each site inspection together with comments, relevant photos and maps have been filed and kept.

The findings and results of site inspections are provided in Table 3.1:

Date	Observations	Advice from ET	Outcome	Closing Date
4 Oct 06	Some muddy discharge was observed flowing into gullies near wheel washing facility	To block up 6 numbers of gullies to prevent muddy discharge	6 numbers of gullies are blocked up	11 Oct 06
11 Oct 06	Improper maintenance of silt curtain at discharge point	To maintain silt curtain more properly to prevent muddy discharge into the sea	Silt curtain is maintained properly	25 Oct 06
18 Oct 06	Muddy water was found at discharge point bounded by silt curtain	To treat muddy water before discharging at discharge point	No muddy water is found at discharge point	25 Oct 06
18 Oct 06	After the treatment of muddy water by using sedimentation tank, muddy discharge at manhole was still observed	To increase the desilting volume by using more desilting / sedimentation facilities for better treatment of muddy water and to cease the dewatering process until muddy water is properly treated	No muddy water is discharged at manhole and muddy water is settled in sedimentation tank	25 Oct 06

3.2 Air Dust

The dust monitoring program was performed by ET to monitor the implementation of mitigation measures by the Contractor for dust control. In accordance with Annex 4 of Technical Memorandum of Environmental Impact Assessment Ordinance, the result of dust monitoring on 11 October 2006 exceeded 1-hour Total Suspended Particulates (TSP) level. ET suggested 2 more dust monitoring to be carried out on 25 October 2006 and 01 November 2006. The table below lists the revised schedule of dust monitoring :

Monitoring Date	Monitoring Location	Parameter to be measured
20 September 2006	The Entrance of the EcoPark	1-hour Total Suspended Particulates (TSP) in $\mu\text{g}/\text{m}^3$
27 September 2006		
04 October 2006		
11 October 2006		
25 October 2006		
01 November 2006		

* High Volume Air Sampler model: Tisch MFC TE-5170 will be used for monitoring.

The results of dust monitoring are shown in Appendix 3.

The location plan and photos of High Volume Air Sampler are shown in Appendix 4.

ET will continue to monitor and audit the implementation of mitigation measures by the Contractor for dust control.

3.3 Noise

The major noise source was vehicle movement, machinery, rock excavation and breaking in the EcoPark. Since the nearby NSRs were remote, the noise impact was minimal. There was no specific observation noted regarding noise issue. The Construction Noise Permit was issued to the Contractor at 29 August 2006.

3.4 Surface Water Quality

After the treatment of muddy water by using the sedimentation tank, muddy discharge at manhole was still observed. As a result, muddy water was found at discharge point

bounded by silt curtain. The Contractor was reminded to treat muddy water more properly by using more sedimentation / desilting facilities and to cease the dewatering process until muddy water is properly treated.

Silt curtain was installed at the discharge point at Marine Front. The Contractor was reminded to regularly service the silt curtain to maintain its treatment function.

Chemical toilets (5 nos.) have been provided by a licensed contractor, of which sewage generated is collected every three to five days without causing contamination on surface water. The Contractor is currently applying for the Effluent Discharge License.

3.5 Visual and Landscape Impact

Hoarding was erected at the site egress and aligned along the site boundary along Lung Mun Road. Hoardings were specially designed to be movable for future re-use in other locations.

During site clearance, trees are relocated to be replanted for landscaping in the future in EcoPark.

3.6 Waste / Chemical Waste

As advised by the Contractor, there was no disposal of chemical waste in the reporting month. Separate waste collection bins were made available for collecting aluminum cans, waste paper and plastic bottles etc.

Two waste dumpers were used for the collection and storage of general waste. Temporary storage areas for waste metals and waste tyres were established.

The Contractor has provided sufficient drip trays for all (8 nos.) temporary electricity generators at site. These drip trays should be covered by tarpaulin sheet to minimize rainfall accumulation.

Excavated materials are reused as back-fill material to balance cut and fill and hence reduce the generation of materials. Surplus materials are returned to stock in centralized

area with suitable protective measures.

Materials are recycled and re-used at site as much as practicable to minimize waste generation. Timbers are recycled to make temporary tools and access ladders etc. Excavated rocks, concrete and asphalts are stored for future re-use in land formation and structural construction etc. Wasted tree branches are collected for recycling in future in processes such as mulching.

Registered waste collectors will be arranged to collect and transport the wastes whenever necessary.

Table 3.3 provides a summary table of waste disposal in October 2006. The Contractor has been reminded to keep good record at site in order to have a clear presentation of waste disposal.

Type of Waste	Disposal Site	Quantity	Remarks
General Waste	WENT Landfill	26.2 tonnes	-
Inert C&D Material	Public Fill Facility	44321.3 tonnes	-

3.7 Landfill Gas

The ET has carried out, on 4, 11 and 18 October 06, landfill gas (LFG) monitoring at six (6) locations on site as instructed by the Engineer's Representative. All LFG measurements as well as LFG monitoring result from the Contractor on 25 October 2006 are summarized in Table 3.4, and original field measurement sheets are appended in Appendix 5. Measurement locations are shown in Appendix 6. Measurement results are within Action/ Limit Level in accordance with the EM&A Manual, as shown in Table 3.5.

Sampling Location	Date of Measurement	Sampling Time	Weather Condition	Methane (CH ₄) %LEL	Carbon Dioxide (CO ₂) %LEL	Oxygen (O ₂)
Point A	04 Oct 06	1532	Sunny	0.0%	0.0%	19.6%
Point B1	04 Oct 06	1537	Sunny	0.0%	0.0%	19.3%
Point B2	04 Oct 06	1543	Sunny	0.0%	0.0%	19.3%
Point C1	04 Oct 06	1548	Sunny	0.0%	0.0%	19.3%
Point C2	04 Oct 06	1553	Sunny	0.0%	0.0%	19.5%
Point D	04 Oct 06	1559	Sunny	0.0%	0.0%	19.6%
Point A	11 Oct 06	1532	Sunny	0.0%	0.0%	19.6%
Point B1	11 Oct 06	1541	Sunny	0.0%	0.0%	19.4%
Point B2	11 Oct 06	1544	Sunny	0.0%	0.0%	19.3%
Point C1	11 Oct 06	1552	Sunny	0.0%	0.0%	19.3%
Point C2	11 Oct 06	1557	Sunny	0.0%	0.0%	19.3%
Point D	11 Oct 06	1604	Sunny	0.0%	0.0%	19.4%
Point A	18 Oct 06	1540	Fine	0.0%	0.0%	19.7%
Point B1	18 Oct 06	1547	Fine	0.0%	0.0%	19.5%
Point B2	18 Oct 06	1552	Fine	0.0%	0.0%	19.4%
Point C1	18 Oct 06	1557	Fine	0.0%	0.0%	19.3%
Point C2	18 Oct 06	1601	Fine	0.0%	0.0%	19.3%
Point D	18 Oct 06	1607	Fine	0.0%	0.0%	19.3%
Point A	25 Oct 06	1025	Fine	0.0%	0.0%	19.8%
Point B1	25 Oct 06	1035	Fine	0.0%	0.0%	19.6%
Point B2	25 Oct 06	1030	Fine	0.0%	0.0%	19.6%
Point C1	25 Oct 06	1040	Fine	0.0%	0.0%	19.5%
Point C2	25 Oct 06	1043	Fine	0.0%	0.0%	19.4%
Point D	25 Oct 06	1050	Fine	0.0%	0.0%	19.3%

Table 3.5 Action Levels, Limit Levels and Event and Action Plan for LFG (From EM&A Manual)

Parameter	Level	Action
Oxygen	Action Level < 19% O ₂	Ventilate trench/ void to restore O ₂ to > 19%
	Limit Level < 18% O ₂	Stop works Evacuate personnel/prohibit entry Increase ventilation to restore O ₂ to > 19%
Methane (CH ₄)	Action Level >10% LEL	Post "No Smoking" signs Prohibit hot works Increase ventilation to restore CH ₄ to <10% LEL
	Limit Level >20% LEL	Stop works Evacuate personnel/prohibit entry Increase ventilation to restore CH ₄ to <10% LEL
Carbon Dioxide (CO ₂)	Action Level >0.5% CO ₂	Ventilate to restore CO ₂ to < 0.5%
	Limit Level >1.5% CO ₂	Stop works Evacuate personnel/prohibit entry Increase ventilation to restore CO ₂ to < 0.5%

4. SUMMARY OF ENVIRONMENTAL PERMIT AND LICENSES

ET has checked with the Contractor for the status of all environmental permits and licenses for this project as at October 2006, which is summarized in Table 4.1. ET will follow the application process of the outstanding permits / licenses and will provide suitable assistance whenever appropriate.

Table 4.1 Summary of Environmental Permits/ Licenses

Description	License / Permit No.#	Date of Issue	Date of Expiry	Status/Remarks
Environmental Permit	EP-226/2005	9-Sept-2005	--	Issued
Registration of Waste Producer	5111-421-K2869-02	27-Jul-2006	--	Issued
Construction Noise Permit	GW-RW0471-06	29-Aug-2006	28-Feb-2007	Issued
Water Discharge Permit	--	--	--	In Progress

5. CUMULATIVE LOG OF COMPLAINTS AND REMEDIAL ACTION

There was no complaint received in association with site activities during October 2006. The cumulative log of complaints is referred in Appendix 6.

6. CUMULATIVE LOG OF NOTIFICATION OF SUMMONS AND PROSECUTIONS

No notification of summons and no prosecutions occurred during October 2006.

7. CONCLUSION

There is no summon nor prosecutions reported during October 2006.

ET performed the dust monitoring on October 2006. The result of dust monitoring on 11 October 2006 exceeds the hourly level of Total Suspended Particulates (TSP) stipulated on Annex 4 of Technical Memorandum of Environmental Impact Assessment Ordinance. ET suggested 2 more dust monitoring to monitor the implementation of mitigation measures by the Contractor for dust control.

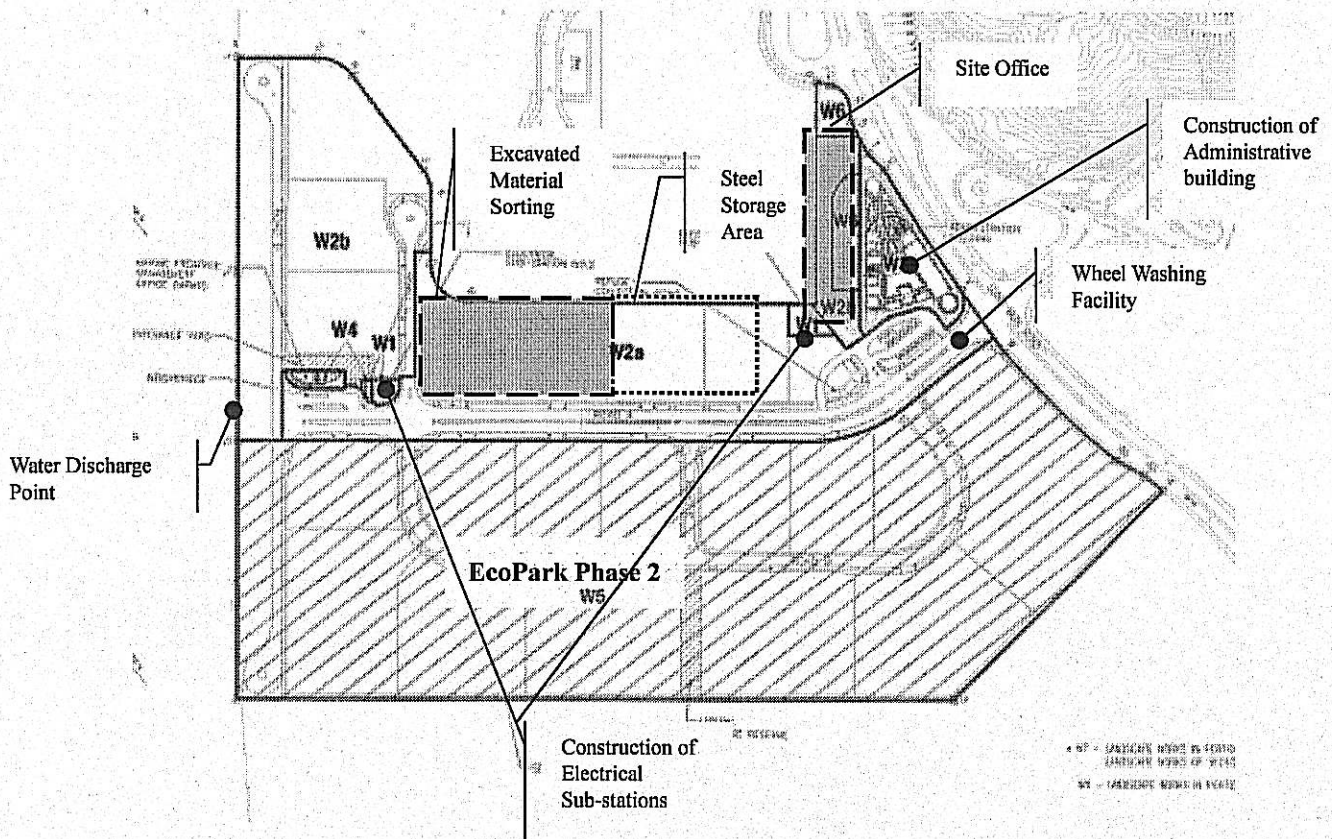
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Landfill gas monitoring carried out on site are within action and limit levels.

The contractor was advised to pay more efforts on environmental concerns and awareness such as the accumulated rainwater or stagnant water found at site that could cause the problem of mosquito breeding.

The Contractor has established the waste management and record system including allocation of waste storage areas and set-up of trip ticket system as proposed in the Environmental Management Plan.

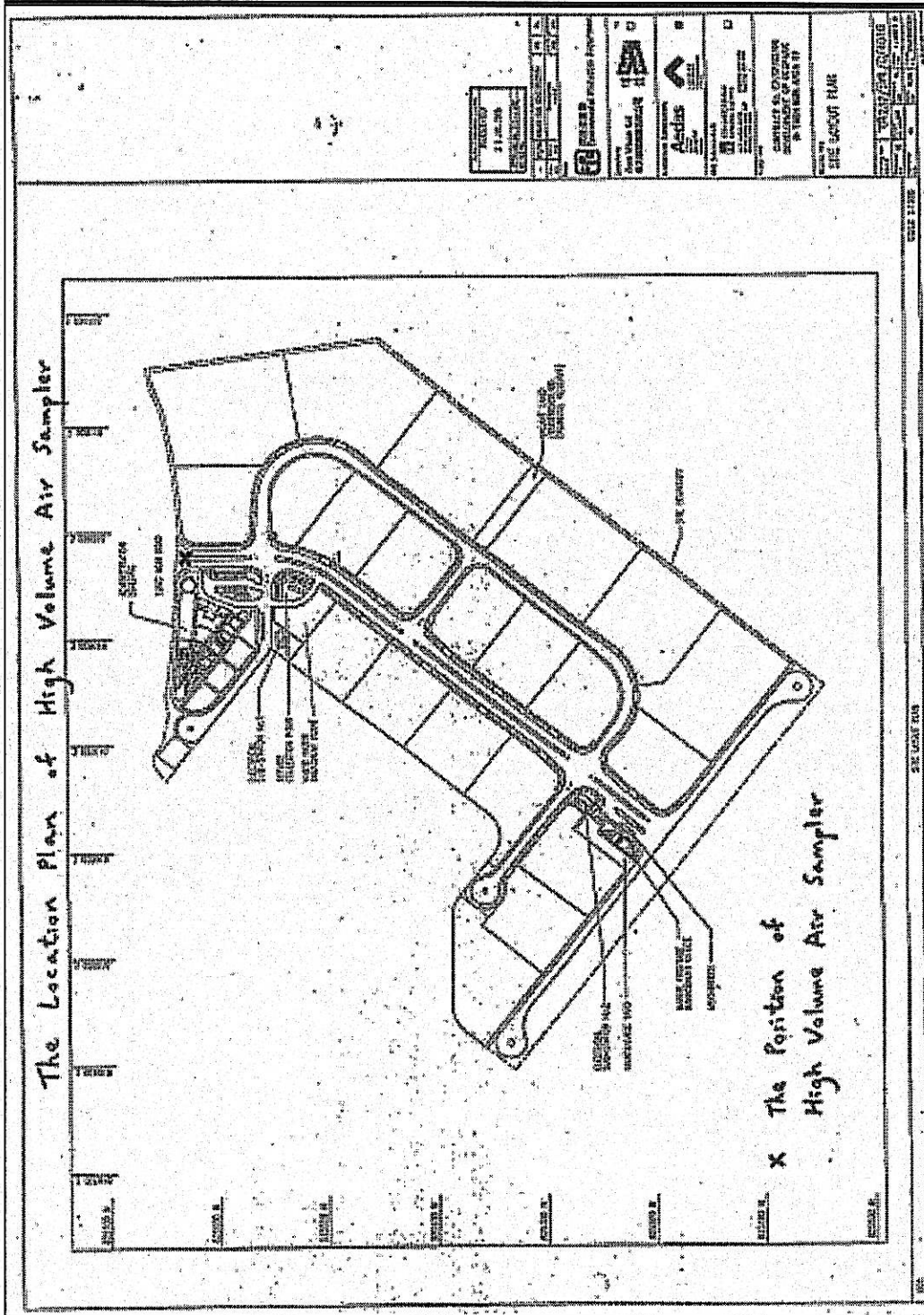
APPENDIX 1 - SITE LAYOUT PLAN



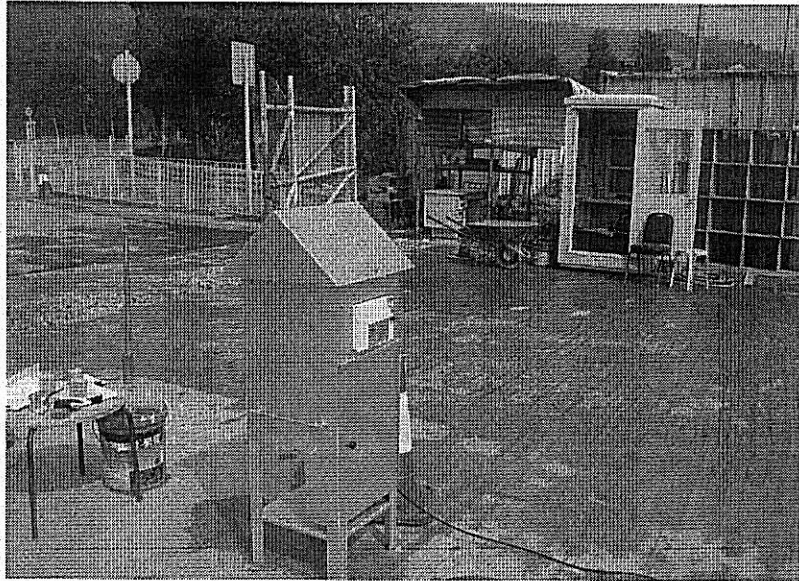
APPENDIX 2 - THE CONTACT PERSONS, TELEPHONE NUMBERS OF KEY PERSONNEL FOR DEVELOPMENT OF ECO PARK IN TUEN MUN AREA 38

Company/Department	Name	Position	Telephone
Scott Wilson Ltd.	Mike Bains	Independent Environmental Checker	--
Scott Wilson Ltd.	Mr. Michael Lo	Senior Resident Engineer	6290 8860
Scott Wilson Ltd.	Mr. Andy Cheung	Resident Engineer	6111 9703
Scott Wilson Ltd.	Mr. C S Lam	Senior Inspector of Works	9861 8011
Kaden Construction Limited	Mr. K M Book	Project Manager	9193 8680
Kaden Construction Limited	Mr. Stephen Leung	Section Agent	9071 7657
Environmental Pioneers & Solutions Limited	Miss. Patricia Chung	Environmental Team Leader	2185 0123
Environmental Pioneers & Solutions Limited	Mr. Harvey Yung	Environmental Technician	2185 0172
Environmental Pioneers & Solutions Limited	Mr. Lam Ho Chun	Environmental Technician	2185 0154

APPENDIX 4 - LOCATION PLAN AND PHOTOS OF HIGH VOLUME AIR SAMPLER



Photos of High Volume Air Sampler





Kaden Construction Limited 基利建築有限公司

EPD Contract No. EP/SP/52/06

Job No. K0603

環保署合約編號 EP/SP/52/06

工程編號 K0603

Development of EcoPark in Tuen Mun Area 38 屯門 38 區環保園

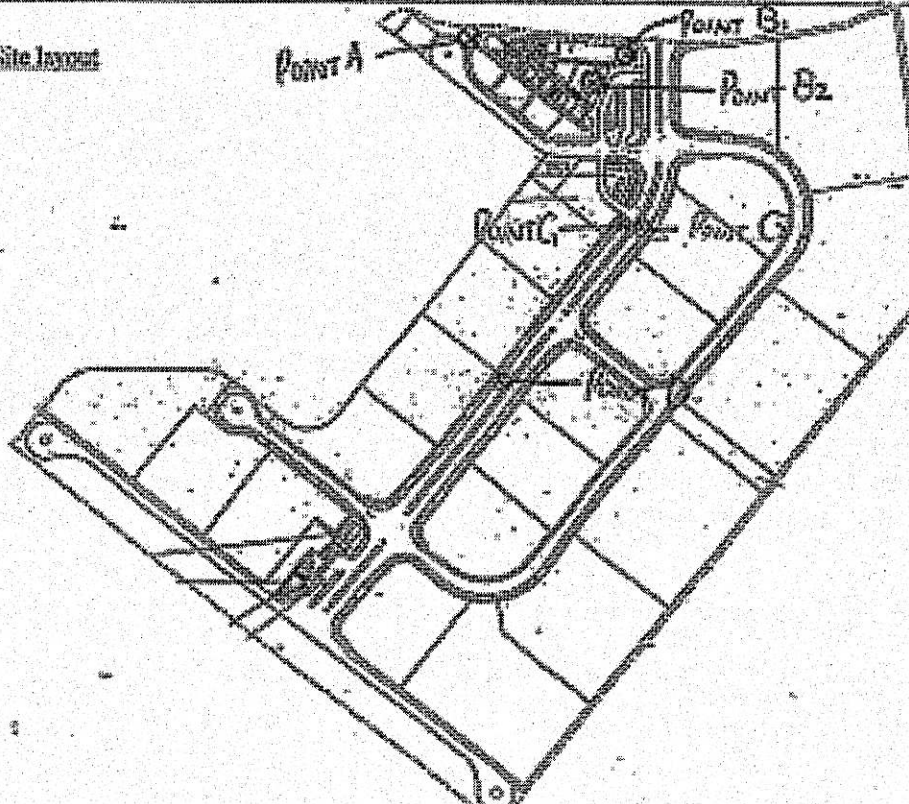
Daily Air Monitoring
每日空氣監測記錄

Detector: Model 型號: GEM 2000	Last calibration 上次檢測: 01 October 2006
S/N 編號: GM-08793	Next calibration 下次檢測: 01 April 2007

Date of Monitor 監測日期: 25-10-2006 Performed by: M.H. [Signature]

Location 位置	Time 時間 (hrs)	Result 結果				
		CO ₂ (%)	CO (%)	O ₂ (%)	Rel. Gas (%)	Baro. Pressure (hPa)
Point A	10:25	0	0	19.8	80	30.06
Point B1	10:35	0	0	19.6	80.3	30.06
Point B2 (Rainwater retention tank)	10:30	0	0	19.6	80.1	30.06
Point C1 (FMH041)	10:40	0	0	19.5	80.5	30.06
Point C2 (FMH040)	10:43	0	0	19.4	80.6	30.06
Point D	10:50	0	0	19.3	80.7	30.06
Point C1 (FMH041)						
Point C2 (FMH040)						

Site layout



APPENDIX 7 – CUMULATIVE LOG OF COMPLAINTS

Environmental Parameters	No. of Outstanding Complaints	No. of complaints received in October 2006	Cumulative no. of complaints received since the commencement of project
Air	0	0	1
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	1

DETAILS OF COMPLAINTS AND REMEDIAL ACTIONS

Log Ref.	Date of Complaint received	Location	Complainant /Date	Details of Complaint	Investigation /Mitigation Action	Investigated by/ Date
-	-	-	-	-	-	-