

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

ENVIRONMENTAL MONITORING AND AUDIT

MONTHLY EM&A REPORT for

March 2008

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APPROVAL SHEET

DOCUMENT DATE: 31 March 2008

Prepared and Certified by: ET Leader (Environmental Pioneers & Solutions Limited)

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Date: _____

Verified by: _____
IEC

Date: _____

* IEC – Independent Environmental Checker

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EXECUTIVE SUMMARY

This is the twenty-first monthly Environmental Monitoring and Audit (EM&A) Report for the Environmental Protection Department Contract No. EP/SP/52/06 entitled “Development of 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 March 2008.

The site activities in the reporting period mainly consisted of landscaping works and finishing works, fitting outs and building services installation for administration building and marine frontage management office.

Insufficient cover to stockpile of planting soil found beside Site Office was observed. The Contractor was reminded to properly cover stockpile of planting soil with tarpaulin sheet for better dust mitigation. Accumulated water found at the bottom of oil and chemical storage cabinet should be removed.

No substantial noise impact was noted by ET during weekly environmental site walks.

The Contractor has used the temporary storage tank to store the effluent of aerobic wastewater treatment system and the stored effluent was pumped away regularly. As checked by the ET, there was no effluent discharge into the stormwater drain. Sewage was trapped in the terminal manholes at the administration building causing odor nuisance in mid-March and the Contractor was ordered to pump away the sewage effluent.

Landfill gas monitoring was carried out at site; measurement results were within the Action and Limit Levels in accordance with the EM&A Manual.

There were no notifications of summons or successful prosecution during March 2008.

The planned activities for April 2008 with regard to development of EcoPark consist of:

- 1) Finishing Works, Fitting Outs and Building Services Installation for Administration Building and Marine Frontage Management Office
- 2) Landscaping Works

1. BASIC PROJECT INFORMATION

1.1 Introduction

This is the twenty-first monthly Environmental Monitoring and Audit (EM&A) Report for the Environmental Protection Department Contract No. EP/SP/52/06 entitled “Development of EcoPark in Tuen Mun Area 38”. The site layout plan is 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 March 2008. 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).

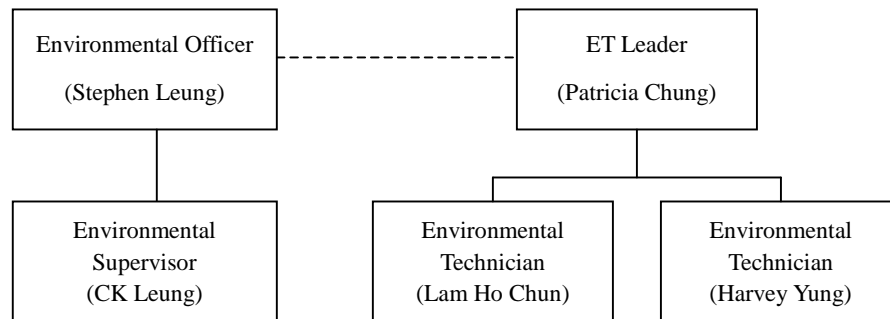
Phase 1 of the construction works has commenced in July 2006 and is anticipated to complete in April 2008.

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.

Table 2.1 Work Activities for March 2008		
Item	Work Activities & Location	Date of Occurrence
1	Landscaping works	1 March 2008 – 31 March 2008
2	Finishing works, fitting outs & building services installation for administration building & marine frontage management office	1 March 2008 – 31 March 2008

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

Remarks:

- As informed by the Contractor, most equipment are mobile at 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 month (April 2008). The anticipated environmental issues are summarized as follow:

Table 2.2 Construction Program and Anticipated Environmental Issues		
Item	Works	Anticipated Environmental Issues
1	Finishing works, fitting outs & building services installation for administration building & marine frontage management office	- Generation of waste from packaging materials and C&D wastes
2	Landscaping Works	<ul style="list-style-type: none"> - Dust may be generated; the wheel washing should be in operation - Stagnant water should be removed - Mosquito mitigation measures should be implemented - Stockpiles of excavated material should be covered with tarpaulin sheet

The site inspection schedule for the next month (April 2008) is designated on 2, 9, 16, 23 and 30 April 2008.

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 5, 12, 19 and 25 March 2008

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:

Table 3.1 Summary of Site Inspections				
Date	Observations	Advice from ET	Outcome	Closing Date
05 Mar 08	Construction materials regularly found between hoardings of Road D	The Contractor was reminded to regularly tidy up the area	Action taken as advised by ET	12 Mar 08
05 Mar 08	Accumulated water found at the bottom of oil and chemical waste storage cabinet	Water should be removed ASAP	Action taken as advised by ET	12 Mar 08
12 Mar 08	Rubbish bin beside Marine Frontage Management Office was full	The Contractor was reminded to clear waste inside rubbish bin and properly cover rubbish bin.	Action taken as advised by ET	19 Mar 08
12, 19 Mar 08	Some labels for chemical waste storage cabinet were missing	The cabinet will be removed from the construction site due to completion of related construction works.	To be observed in the next reporting period	--
12 Mar 08	Dust and mud were still found in Road F near site office and the road near Refuse Collection Point	The Contractor was reminded to regularly tidy up the area	Action taken as advised by ET	19 Mar 08
19, 25 Mar 08	Sewage was trapped in the terminal	The Contractor was advised to call	To be observed in the next reporting	--

	manhole at the administration building causing odour nuisance.	licensed contractor to pump the effluent out ASAP	period	
19, 25 Mar 08	Uncovered stockpile of sand was found in certain points around the administration building	The Contractor was reminded to properly cover the materials with tarpaulin sheets for better dust mitigation	To be observed in the next reporting period	- -

3.2 Air Dust

Excavation work at Road F near site office was finished and the site exit at Road F was closed. The site exit at Road A remained and manual wheel washing was used.

Insufficient cover to stockpile of planting soil found beside Site Office was observed. The Contractor was reminded to properly cover stockpile of planting soil with tarpaulin sheet for better dust mitigation.

3.3 Noise

The major noise source was vehicle movement, machinery and rock excavation in the EcoPark. Since the nearby NSRs were remote, the noise impact was minimal. There was no specific observation noted regarding noise issue. The Contractor has obtained the Construction Noise Permit on 07 August 2007.

3.4 Surface Water Quality

Since there was no water discharge at manhole, the Contractor removed the silt curtain installed at discharge point on 4 April 2007, as agreed by the Engineer's Representative. No muddy water was observed at discharge point.

Chemical toilets (3 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 Effluent Discharge License was issued to the Contractor on 20 November 2006.

The temporary storage tank was used to store the effluent of aerobic wastewater treatment system and the stored effluent was pumped away regularly. As checked by the ET, there was no effluent discharge into the stormwater drain. However, the temporary storage tank was found to be fully filled in mid-March. This caused odor problem along the corridor in the administration hall. Problems had been solved after the licensed contractor had pumped sewage effluents out.

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 were relocated to be replanted for landscaping in the future in EcoPark.

3.6 Waste / Chemical Waste

The Contractor implemented visual inspection and distributed flyers/ notices to ensure all dump trucks have mechanical covers closed when leaving EcoPark site.

Separate waste collection bins were made available for collecting aluminum cans, waste paper and plastic bottles etc. The Contractor has provided the revised site layout plan for refuse collection points as shown in Appendix 3.

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 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. The Contractor was reminded to comply with the requirements and conditions for disposal at public fill facility and all oversized aggregates should be crushed to less than 250mm before delivering to the public fill.

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.

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

Table 3.4 provides a summary table of waste disposal in March 2008. The Contractor has been reminded to keep good record at site in order to have a clear presentation of waste disposal.

Table 3.4 Summary of Waste Disposal in March 2008			
Type of Waste	Disposal Site	Quantity	Remarks
General Waste	WENT Landfill	3.16 tonnes	-
Inert C&D Material	Public Fill Facility	0 tonnes	-

3.7 Landfill Gas

Landfill gas (LFG) monitoring was carried out on site at three (3) locations, as instructed by the Engineer's Representative. LFG measurements on 5, 12, 19, and 25 March 2008 are summarized in Table 3.5, and original field measurement sheets with measurement locations are appended in Appendix 4. Measurement results are within the Action / Limit Levels in accordance with the EM&A Manual, as shown in Table 3.6.

Table 3.5 Summary of LFG Measurement for the reporting month						
Sampling Location	Date of Measurement	Sampling Time	Weather Condition	Methane (CH ₄) %LEL	Carbon Dioxide (CO ₂) %LEL	Oxygen (O ₂)
Point A	05 March 08	1414	Fine	0	0	20.9%
Point J	05 March 08	1415		0	0	20.9%
Point K	05 March 08	1421		0	0	20.9%
Point A	12 March 08	1415	Sunny	0	0	20.9%
Point J	12 March 08	1416		0	0	20.9%
Point K	12 March 08	1417		0	0	20.9%
Point A	19 March 08	1350	Sunny	0	0	20.9%
Point J	19 March 08	1352		0	0	20.9%
Point K	19 March 08	1355		0	0	20.9%
Point A	25 March 08	1125	Overcast	0	0	20.9%
Point J	25 March 08	1129		0	0	20.9%
Point K	25 March 08	1135		0	0	20.7%
Remarks:						
1) As instructed by the Engineer's Representative, the landfill gas measurements were carried out with two instruments : one for the measurements of methane and carbon dioxide, another for the measurement of oxygen.						

Table 3.6 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 LICENCES

ET has checked with the Contractor for the status of all environmental permits and licenses for this project as at March 2008, 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/ Licences				
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-RW0402-07	07-Aug-2007	28-Feb-2008	Expired
Effluent Discharge Licence	EP760/421/011762/I	20-Nov-2006	1-Dec-2011	Issued

5. CUMULATIVE LOG OF COMPLAINTS AND REMEDIAL ACTION

The cumulative log of complaints is referred in Appendix 5.

6. CUMULATIVE LOG OF NOTIFICATION OF SUMMONS AND PROSECUTIONS

No notification of summons and no prosecutions occurred during March 2008.

7. CONCLUSION

There is no summon nor prosecutions reported during March 2008.

Effluent of aerobic wastewater treatment system was temporarily stored in the storage tank and pumped away. As checked by the ET, there was no effluent discharge into the stormwater drain although the tank was fully filled for a few weeks during the period.

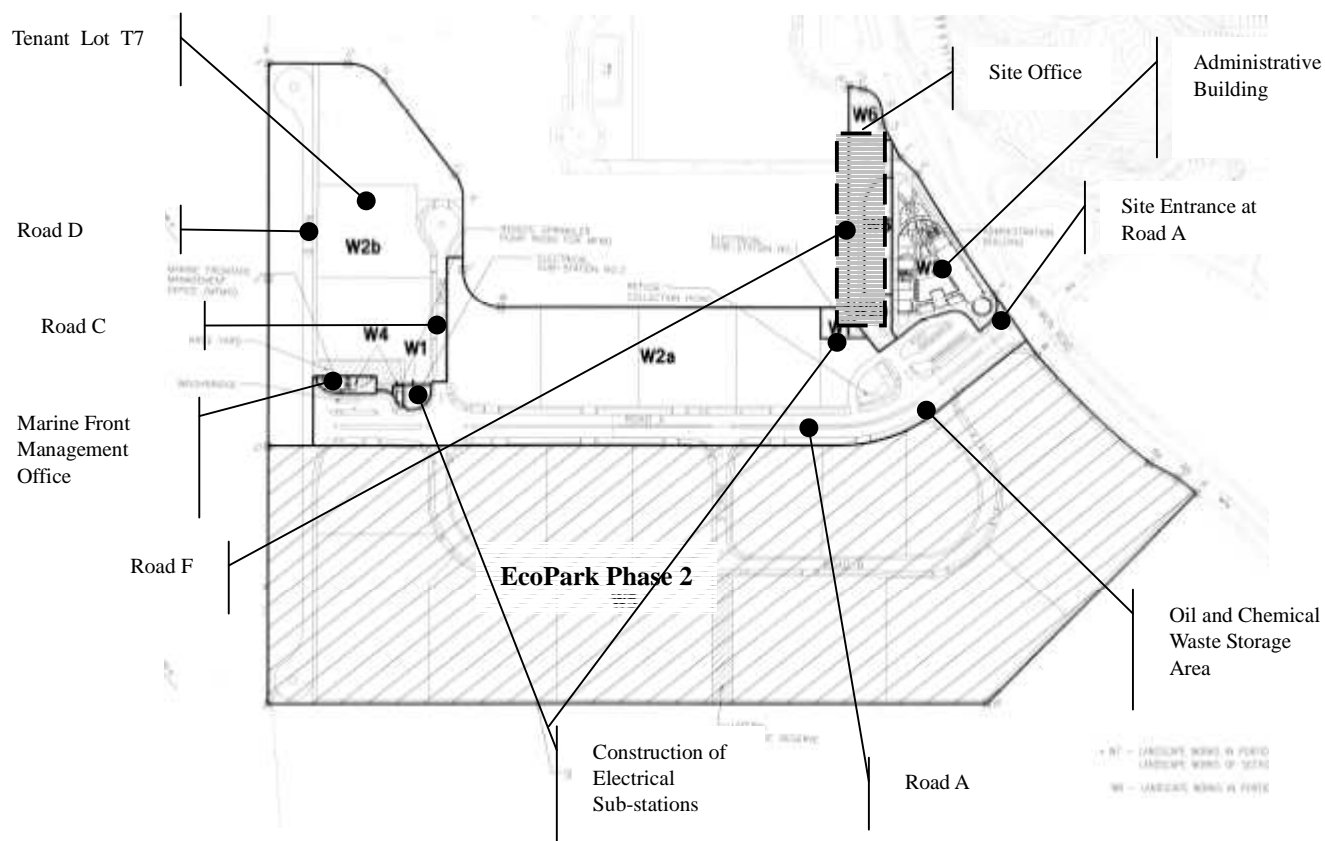
Accumulated water was no longer found at the bottom of oil and chemical waste storage cabinet after mid-March. Problem of occasional observation of dust and mud found on floor was improved after mid- March.

The Contractor has been using the waste management and record system including allocation of waste storage areas and the trip ticket system as proposed in the Environmental Management Plan.

In addition to the daily landfill gas monitoring carried out by the Contractor on site, weekly landfill gas monitoring was also carried out by the ET on site. The measurement results from ET shown in Table 3.5 were within Action and Limit levels in accordance with EM&A Manual.

As summer is approaching, water accumulated in ditch and artificial ponds was drained away in late March to avoid mosquito breeding in the interior garden of the administration building.

APPENDIX 1 - SITE LAYOUT PLAN



APPENDIX 2 - THE CONTACT PERSONS, TELEPHONE NUMBERS OF KEY PERSONNEL FOR DEVELOPMENT OF ECOPARK 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

Site Layout Plan for Refuse Collection Points

**APPENDIX 4 - ORIGINAL LANDFILL GAS FIELD MEASUREMENT
RECORDING SHEETS**

Kaden Construction Limited

EPD Contract No. EP/SP/52/06

Job No. K0603

Development of EcoPark in Tuen Mun Area 38

Daily Air Monitoring**每日空氣監測記錄**

Detector : Model 型號 : GEM 2000	Last calibration 上次檢測: 03 Apr. 07
測試器 S/N 編號 : GM-08793	Next calibration 下次檢測: 02 Apr. 08

Date of Monitor 監測日期 : 5-3-2008

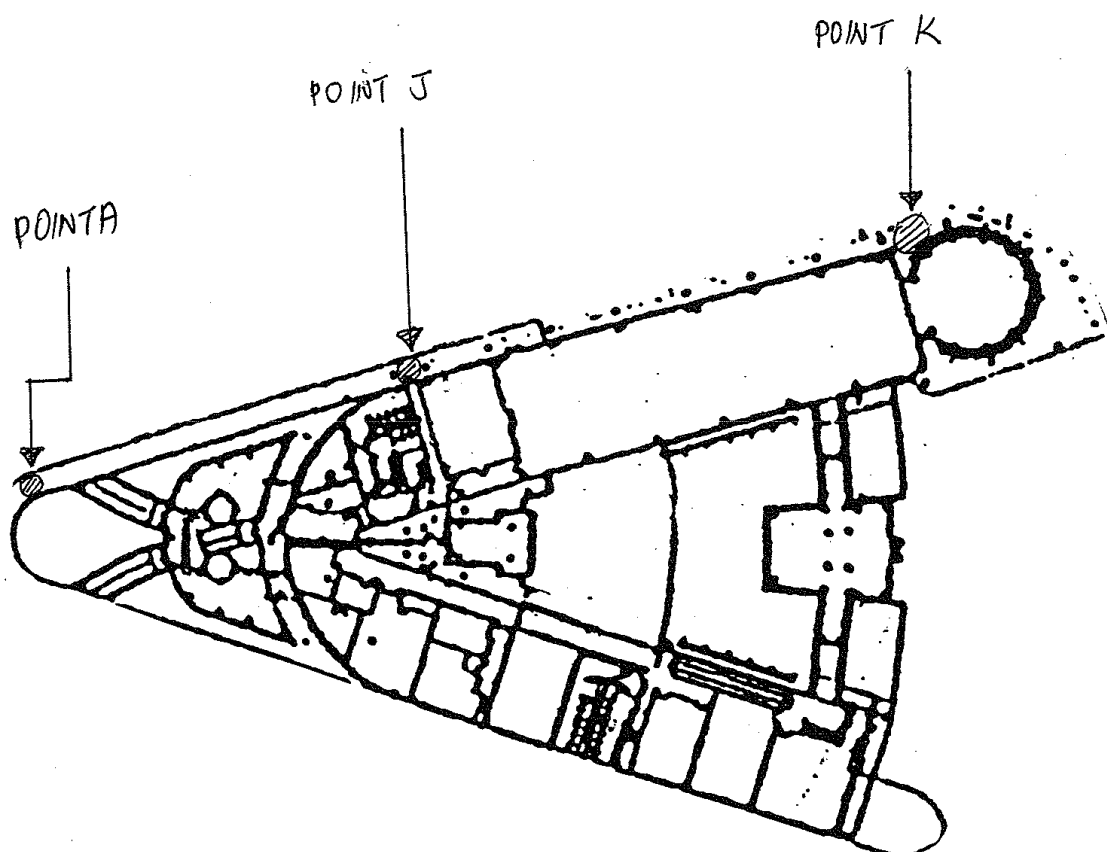
Performed by: Thomas Hong

Location 位置	Time 時間 (hrs)	Result 結果				
		CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Bal. Gas (%)	Baro. Pressure ("Hg)
Point A	14:14	0	0	20.9	84.8	30.09
Point J (Lung Mun Road)	14:15	0	0	20.9	84.8	30.09
Point K (Lung Mun Road nr production Gallery)	14:21	0	0	20.9	84.9	30.09

Instrument for O₂ measurement: GasAlert MicroClip GAMIC-4-DL2 Serial no.: S103-13348

Site layout

Calibration valid until 07 Sep. 2008





Kaden Construction Limited

EPD Contract No. EP/SP/52/06

Job No. K0603

Development of EcoPark in Tuen Mun Area 38

Daily Air Monitoring

每日空氣監測記錄

Detector: 測試器	Model 型號: GEM 2000	Last calibration 上次檢測: 03 Apr. 07
	S/N 編號: GM-08793	Next calibration 下次檢測: 02 Apr. 08

Date of Monitor 監測日期: 12-3-2008

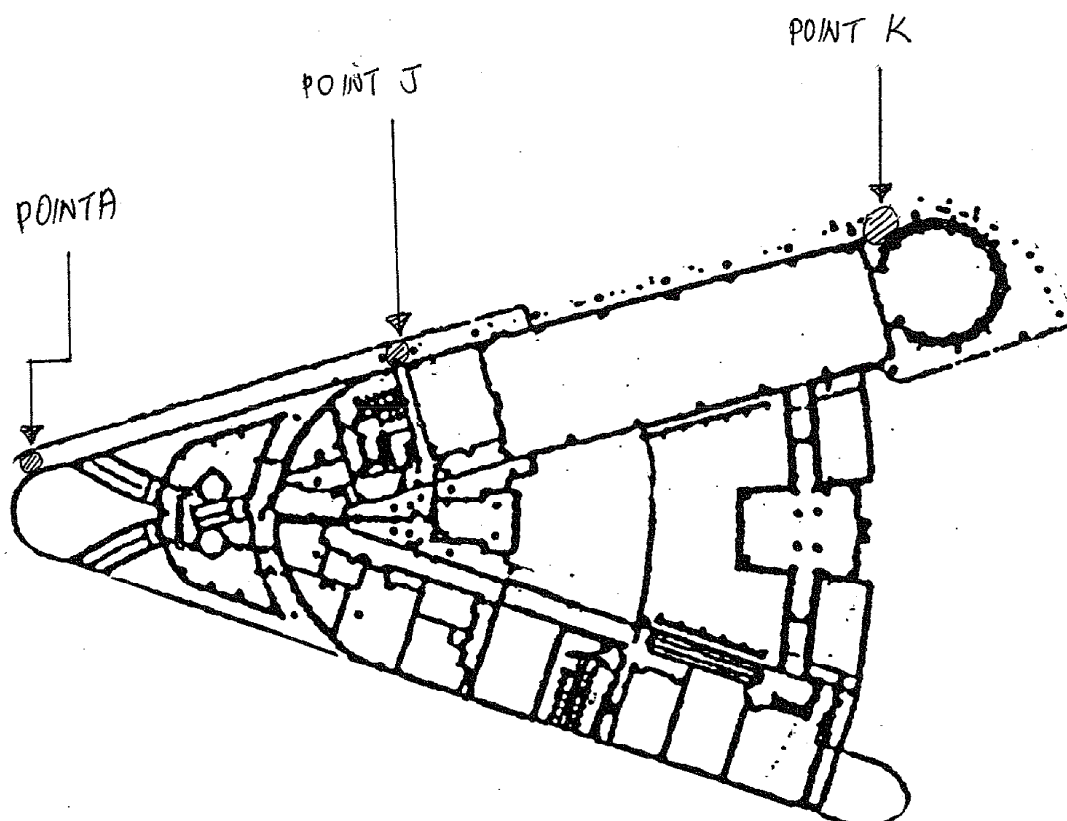
Performed by: *Thomas Wang*

Location 位置	Time 時間 (hrs)	Result 結果				
		CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Bal. Gas (%)	Baro. Pressure ("Hg)
Point A	14:15	0	0	20.9	84.9	29.91
Point J (Lung Mun Road)	14:16	0	0	20.9	84.8	29.91
Point K (Lung Mun Road nr production Gallery)	14:17	0	0	20.9	84.7	29.91

Instrument for O₂ measurement: GasAlert MicroClip GAMIC-4-DL2 Serial no.: S103-13348

Site layout

Calibration valid until 07 Sep. 2008





Kaden Construction Limited

EPD Contract No. EP/SP/52/06 Job No. K0603

Development of EcoPark in Tuen Mun Area 38

Daily Air Monitoring 每日空氣監測記錄

Detector : Model 型號 :	GEM 2000	Last calibration 上次檢測:	03 Apr. 07
測試器 S/N 編號 :	GM-08793	Next calibration 下次檢測:	02 Apr. 08

Date of Monitor 監測日期 : 19-3-08

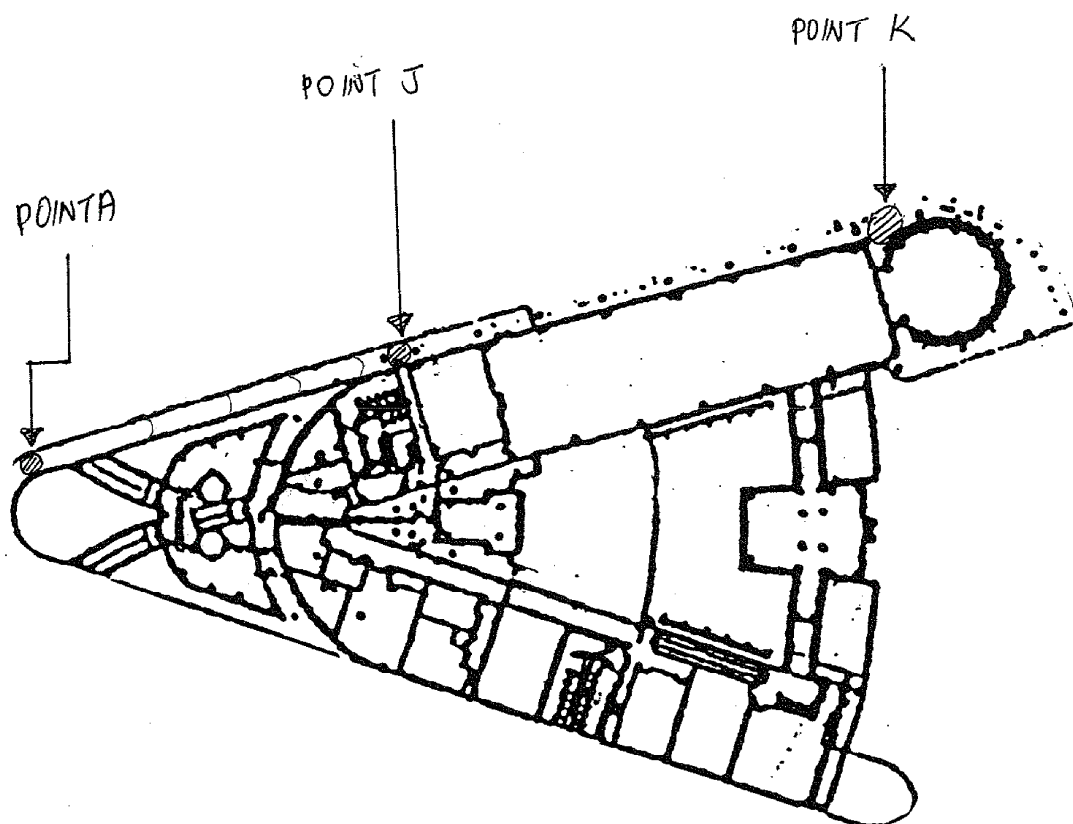
Performed by: Thomas Wang

Location 位置	Time 時間 (hrs)	Result 結果				
		CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Bal. Gas (%)	Baro. Pressure ("Hg)
Point A	1:50	0	0	20.9	84.8	29.82
Point J (Lung Mun Road)	1:52	0	0	20.9	84.8	29.82
Point K (Lung Mun Road nr production Gallery)	1:55	0	0	20.9	84.9	29.82

Instrument for O₂ measurement: GasAlert MicroClip GAMIC-4-DL2 Serial no.: S103-13348

Site layout

Calibration valid until 07 Sep. 2008





Kaden Construction Limited

EPD Contract No. EP/SP/52/06

Job No. K0603

Development of EcoPark in Tuen Mun Area 38

Daily Air Monitoring

每日空氣監測記錄

Detector: 測試器	Model 型號: GEM 2000	Last calibration 上次檢測: 03 Apr. 07
	S/N 編號: GM-08793	Next calibration 下次檢測: 02 Apr. 08

Date of Monitor 監測日期: 25 Mar 08

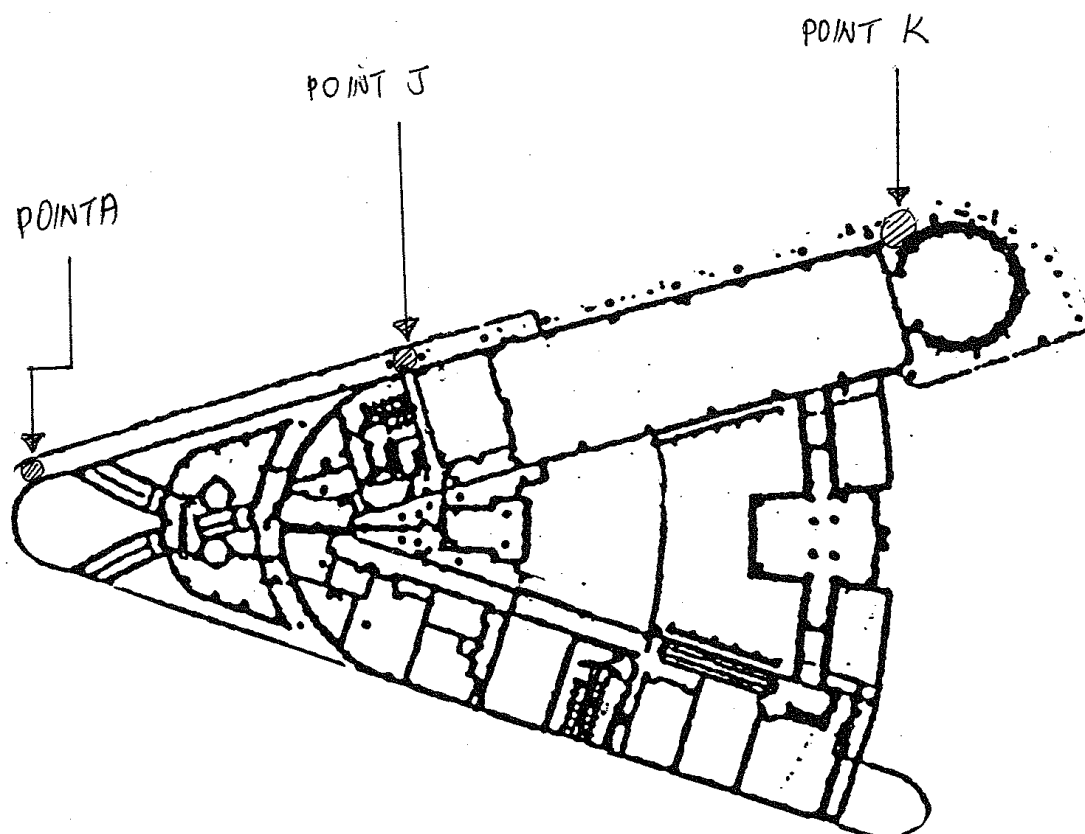
Performed by: William Wong

Location 位置	Time 時間 (hrs)	Result 結果				
		CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Bal. Gas (%)	Baro. Pressure ("Hg)
Point A	11:25	0	0	20.9	79.1	32.00
Point J (Lung Mun Road)	11:29	0	0	20.9	79.2	32.00
Point K (Lung Mun Road nr production Gallery)	11:35	0	0	20.7	79.2	32.00

Instrument for O₂ measurement: GasAlert MicroClip GAMIC-4-DL2 Serial no.: S103-13348

Site layout

Calibration valid until 07 Sep. 2008



APPENDIX 5 – CUMULATIVE LOG OF COMPLAINTS**CUMULATIVE LOG OF COMPLAINTS**

Environmental Parameters	No. of Outstanding Complaints	No. of complaints received in March 2008	Cumulative no. of complaints received since the commencement of project
Air	0	0	2
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	2

DETAILS OF COMPLAINTS AND REMEDIAL ACTIONS

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