

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

**ENVIRONMENTAL MONITORING AND AUDIT**

**MONTHLY EM&A REPORT for**

**APRIL 2007**

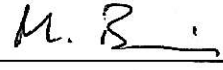
## APPROVAL SHEET

DOCUMENT DATE: 30 April 2007

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

Signature:   
Miss Patricia Chung

Date: 21 MAY 2007

Verified by:   
IEC

Date: 22 MAY 2007

\* IEC – Independent Environmental Checker

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## **EXECUTIVE SUMMARY**

This is the tenth 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 April 2007.

The site activities in the reporting period mainly consisted of site formation, excavation works, construction of administration building, marine front management office and drainage and sewerage and finishing works, fitting outs and building services installation for administration building and marine front management office.

Water spraying by water truck on site area was observed for dust mitigation.

Excavation work at Road F near site office was observed. The Contractor reopened the site exit at Road A where manual wheel washing was used. The site exit at Road F remained and manual wheel washing was used. As informed by the Engineer's Representative, no adverse comment to wheel washing of the Site has been received. The Contractor was advised to relocate the facility at a suitable location.

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

Soak-away method was used for discharging underground water accumulated in the trench FMH49 – FMH1012932 and no water was discharged at manhole.

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

Disposal of inert C&D material was recorded. Water and oil were found accumulated at the bottom of oil and chemical waste storage cabinets and were required to be removed.

General waste and packaging materials were found in site area near marine front and beside storage area for empty oil containers respectively. The Contractor was reminded to remove these wastes for better house keeping.

The Contractor has removed unused wooden pallets found along Road A for recycling and reuse.

Landfill gas monitoring was carried out at site, after the calibration of the LFG monitoring instrument; oxygen measurement results on 11, 17 and 24 April 2007 exceeded Action Level in accordance with the EM&A Manual. The Contractor was reminded to carry out the actions suggested in the EM&A Manual correspondingly for mitigation measure.

There were no notifications of summons or successful prosecution during April 2007.

The planned activities for May 2007 and June 2007 with regard to development of EcoPark consist of:

- 1) Excavation Works, Site Formation Works and Roadworks
- 2) Construction of Drainage, Sewerage and Watermain
- 3) Construction of Administration Building
- 4) Construction of Marine Front Management Office
- 5) Finishing Works, Fitting Outs and Building Services Installation for Administration Building and Marine Front Management Office

## **1. BASIC PROJECT INFORMATION**

### **1.1 Introduction**

This is the tenth 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 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 April 2007. 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).

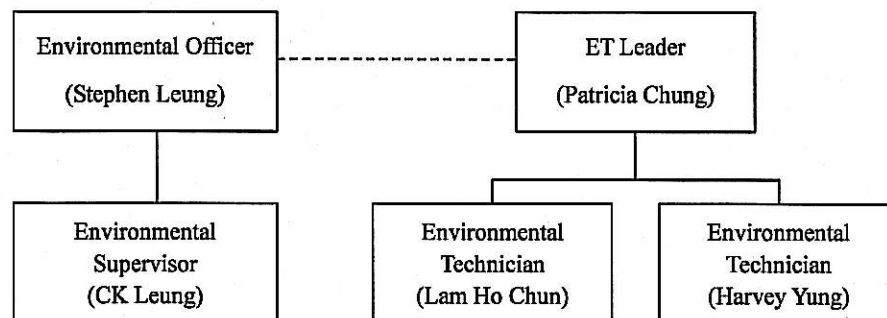
Phase 1 of the construction works has already commenced in July 2006 and is anticipated to complete in June 2007.

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.

Table 2.1 Work Activities for April 2007		
Item	Work Activities & Location	Date of Occurrence
1	Site formation works, excavation works & roadworks	1 April 2007 – 30 April 2007
2	Construction of administration building and marine front management office	1 April 2007 – 30 April 2007
3	Construction of drainage, sewerage & water mains	1 April 2007 – 30 April 2007
4	Finishing works, fitting outs & building services installation for administration building & marine front management office	1 April 2007 – 30 April 2007

Machineries		
	Equipment/ Plant	Quantity
1	Mobile Crane	2
2	Excavator	14
3	Generator	4
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	2

**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 three months (May 2007 – July 2007). The anticipated environmental issues are summarized as follow:



Table 2.2 Construction Program and Anticipated Environmental Issues		
Item	Works	Anticipated Environmental Issues
1	Site formation works, excavation works & roadworks	<ul style="list-style-type: none"> <li>- Generation of C&amp;D Waste; excavated material should be reused as much as practicable</li> <li>- Dust may be generated; the wheel washing machine should be in operation</li> <li>- Haul road should be sprayed regularly, by truck or sprinkler</li> <li>- Stagnant water should be removed</li> <li>- Mosquito mitigation measures should be implemented</li> </ul>
2	Construction of Administration Building and Marine Front Management Office	<ul style="list-style-type: none"> <li>- Generation of waste from packaging materials and C&amp;D wastes</li> </ul>
3	Construction of drainage, sewerage & water mains	<ul style="list-style-type: none"> <li>- Generation of C&amp;D Waste; excavated material should be reused as much as practicable</li> <li>- Dust may be generated; the wheel washing machine should be in operation</li> </ul>
4	Finishing works, fitting outs & building services installation for administration building & marine front management office	<ul style="list-style-type: none"> <li>- Generation of waste from packaging materials and C&amp;D wastes</li> </ul>

The site inspection schedule for the next month (May 2007) is designated on 2, 9, 16, 23 and 30 May 2007.

### 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, 17 and 24 April 2007.

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
04 Apr 07 11 Apr 07	General waste was found at site area near marine front	Remove the waste for better house keeping	General waste was removed from site area near marine front	17 Apr 07
04 Apr 07	Used wooden pallets were found along Road A	Recycle and reuse wooden pallets	Wooden pallets were removed for recycling and reuse	11 Apr 07
17 Apr 07	Packaging materials were found in front of storage area for empty oil containers beside chemical waste storage area	Remove these packaging materials for better house keeping	Packaging materials were removed	24 Apr 07
24 Apr 07	Water and oil were found accumulated at the bottom of oil and chemical waste storage cabinets	To remove water and oil in order to prevent spillage	Removal of water and oil should be inspected in the next reporting period	--

#### 3.2 Air Dust

Water spraying by water truck on site area such as Road A and unpaved site area beside marine front was observed for dust mitigation.

Excavation work at Road F near site office was observed. The Contractor reopened the site exit at Road A where manual wheel washing was used. The site exit at Road F remained and manual wheel washing was used. As informed by the Engineer's Representative, no adverse comment to wheel washing of the Site has been received. The Contractor was advised to relocate the wheel washing facility at a suitable location as an effective mitigation measure and specified in PS Clause 1.16A.

### 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 Construction Noise Permit was issued to the Contractor on 02 March 2007.

### 3.4 Surface Water Quality

The usage of soak-away method to discharge underground water accumulated in the trench FMH49 – FMH1012932 was observed on 04, 11, 17 and 24 April 2007 and no water was discharged at the manhole.

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 (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 Effluent Discharge Licence was issued to the Contractor on 20 November 2006.

### 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

Water and oil were found accumulated at the bottom of oil and chemical waste storage cabinets. The Contractor was reminded to regularly remove water and oil in order to prevent spillage.

General waste was found in site area near marine front. Packaging materials were found in front of storage area for empty oil containers beside chemical waste storage area. The Contractor was reminded to remove general waste and packaging materials for better house keeping.

Used wooden pallets were found along Road A. The Contractor was reminded to remove wooden pallets for recycling and reuse.

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 site layout plan for refuse collection points as shown in Appendix 3.

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 (4 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. 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 April 2007. 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 April 2007			
Type of Waste	Disposal Site	Quantity	Remarks
General Waste	WENT Landfill	56.65 tonnes	-
Inert C&D Material	Public Fill Facility	1884.2 tonnes	-

### 3.7 Landfill Gas

Landfill gas (LFG) monitoring was carried out on site at six (6) locations on 11 April 2007 and seven (7) locations on 17 and 24 April 2007, as instructed by the Engineer's Representative. LFG measurements are summarized in Table 3.5, and original field measurement sheets with measurement locations are appended in Appendix 4. Oxygen measurement results on 11, 17 and 24 April 2007 exceeded the Action Level in accordance with the EM&A Manual, as shown in Table 3.6. The Contractor was reminded to conduct the actions suggested in the EM&A Manual correspondingly for mitigation measures.

Table 3.5 Summary of LFG Measurement for April 2007						
Sampling Location	Date of Measurement	Sampling Time	Weather Condition	Methane (CH <sub>4</sub> ) %LEL	Carbon Dioxide (CO <sub>2</sub> ) %LEL	Oxygen (O <sub>2</sub> )
Point A	11 Apr 07	1445	Cloudy	0.0%	0.0%	18.3%
Point B1	11 Apr 07	1454	Cloudy	0.0%	0.0%	18.2%
Point B2	11 Apr 07	1451	Cloudy	0.0%	0.0%	18.2%

Point C1	11 Apr 07	1456	Cloudy	0.0%	0.0%	18.2%
Point D	11 Apr 07	1500	Cloudy	0.0%	0.0%	18.1%
Point E	11 Apr 07	1447	Cloudy	0.0%	0.0%	18.3%
Point A	17 Apr 07	1611	Cloudy	0.0%	0.0%	18.5%
Point B1	17 Apr 07	1621	Cloudy	0.0%	0.0%	18.4%
Point C1	17 Apr 07	1625	Cloudy	0.0%	0.0%	18.2%
Point F	17 Apr 07	1609	Cloudy	0.0%	0.0%	18.4%
Point G	17 Apr 07	1616	Cloudy	0.0%	0.0%	18.6%
Point H	17 Apr 07	1613	Cloudy	0.0%	0.0%	18.5%
Point I	17 Apr 07	1615	Cloudy	0.0%	0.0%	18.5%
Point A	24 Apr 07	1531	Rainy	0.0%	0.0%	18.4%
Point B1	24 Apr 07	1548	Rainy	0.0%	0.0%	18.4%
Point C1	24 Apr 07	1551	Rainy	0.0%	0.0%	18.2%
Point F	24 Apr 07	1535	Rainy	0.0%	0.0%	18.3%
Point G	24 Apr 07	1543	Rainy	0.0%	0.0%	18.3%
Point H	24 Apr 07	1539	Rainy	0.0%	0.0%	18.3%
Point I	24 Apr 07	1537	Rainy	0.0%	0.0%	18.4%

**Remarks:**

As informed by the Contractor, the LFG measurement instrument was under calibration and therefore no LFG measurement was recorded on 4 April 2007. The new calibration certification is attached in Appendix 5.

**Table 3.6 Action Levels, Limit Levels and Event and Action Plan for LFG (From EM&A Manual)**

<b>Parameter</b>	<b>Level</b>	<b>Action</b>
Oxygen	Action Level < 19% O <sub>2</sub>	Ventilate trench/ void to restore O <sub>2</sub> to > 19%
	Limit Level < 18% O <sub>2</sub>	Stop works Evacuate personnel/prohibit entry Increase ventilation to restore O <sub>2</sub> to > 19%
Methane (CH <sub>4</sub> )	Action Level > 10% LEL	Post "No Smoking" signs Prohibit hot works Increase ventilation to restore CH <sub>4</sub> to < 10% LEL
	Limit Level > 20% LEL	Stop works Evacuate personnel/prohibit entry Increase ventilation to restore CH <sub>4</sub> to < 10% LEL
Carbon Dioxide (CO <sub>2</sub> )	Action Level > 0.5% CO <sub>2</sub>	Ventilate to restore CO <sub>2</sub> to < 0.5%
	Limit Level > 1.5% CO <sub>2</sub>	Stop works Evacuate personnel/prohibit entry Increase ventilation to restore CO <sub>2</sub> 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 April 2007, 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-RW0080-07	02-Mar-2007	28-Aug-2007	Issued
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 6.

#### 6. CUMULATIVE LOG OF NOTIFICATION OF SUMMONS AND PROSECUTIONS

No notification of summons and no prosecutions occurred during April 2007.

#### 7. CONCLUSION

There is no summon nor prosecutions reported during April 2007.

Water spraying by water truck on site area was observed for dust mitigation.

Excavation work at Road F near site office was observed. The site exit at Road F remained and manual wheel washing was used. The Contractor reopened the site exit at Road A where manual wheel washing was used. As informed by the Engineer's Representative, no adverse comment to wheel washing of the Site has been received. The Contractor was advised to relocate the facility at a suitable location.



The soak-away method was utilized to discharge underground water accumulated in the trench FMH49 – FMH1012932 and no water was discharged at manhole.

As no water discharge at manhole was observed, the Contractor removed the silt curtain installed at discharge point, as agreed by the Engineer's Representative. No muddy water was found at discharge point.

Daily landfill gas monitoring was carried out by the Contractor on site and some results of oxygen measurement exceeded Action and Limit levels in accordance with EM&A Manual. The Contractor was reminded to conduct the actions suggested in the EM&A Manual correspondingly for mitigation measure. The LFG measurement instrument was checked and calibrated during the reporting month.

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.

Water and oil were found accumulated at the bottom of oil and chemical waste storage cabinets. The Contractor was reminded to remove water and oil from cabinets.

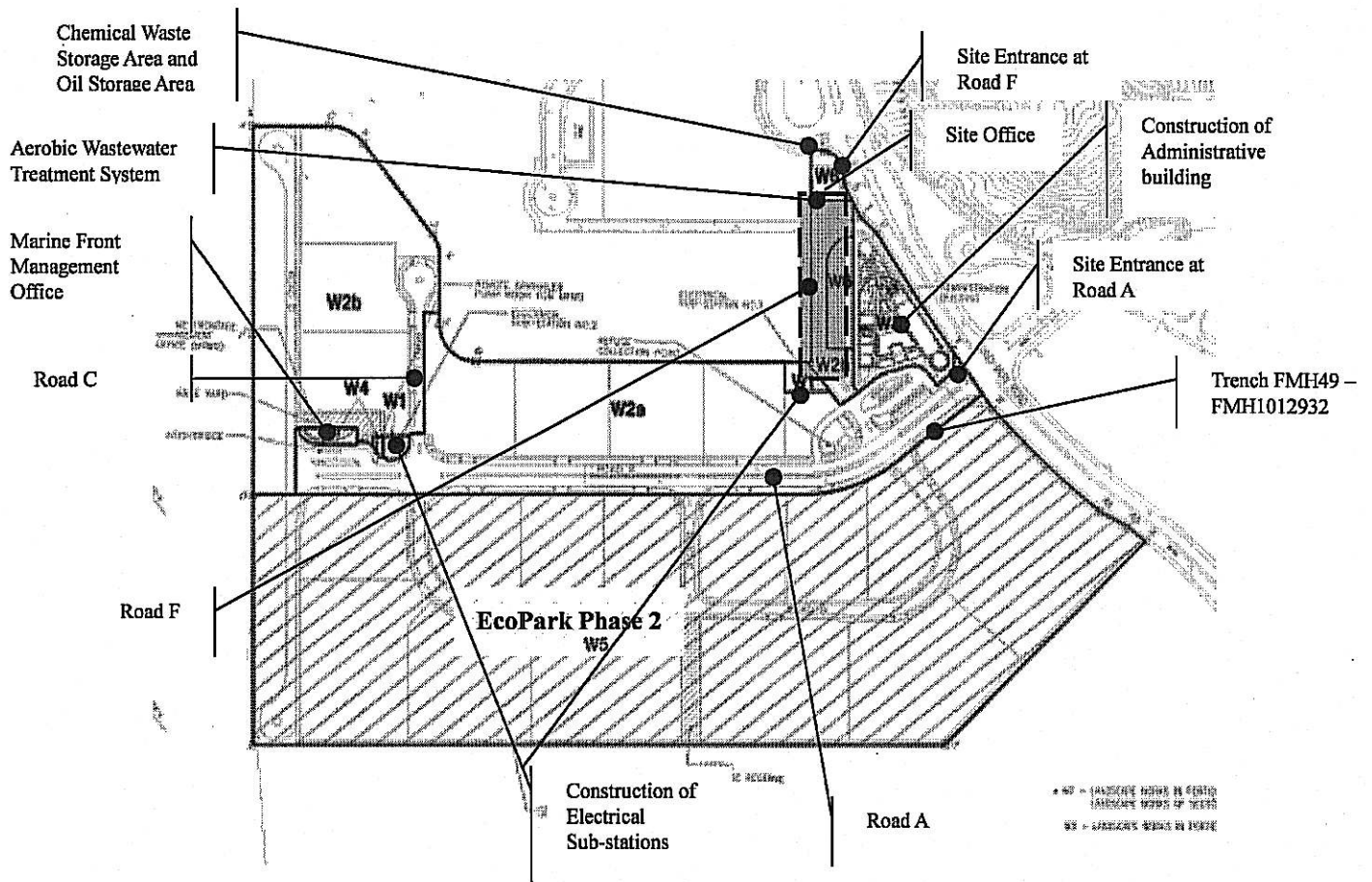
General waste and packaging materials were found in site area near marine front and beside storage area for empty oil containers respectively. The Contractor has to remove general waste and packaging materials for better house keeping.

Used wooden pallets were found along Road A. The Contractor removed these wooden pallets for recycling and reuse.

The Contractor was advised to pay more efforts on environmental concerns and awareness such as site tidiness and .



## APPENDIX 1 - SITE LAYOUT PLAN




**APPENDIX 2 - THE CONTACT PERSONS, TELEPHONE NUMBERS OF KEY PERSONNEL FOR DEVELOPMENT OF AN ECOPARK IN TUEN MUN AREA****38**

<b>Company/Department</b>	<b>Name</b>	<b>Position</b>	<b>Telephone</b>
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

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APPENDIX 4 - ORIGINAL LANDFILL GAS FIELD MEASUREMENT  
RECORDING SHEETS

**Kaden**  **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

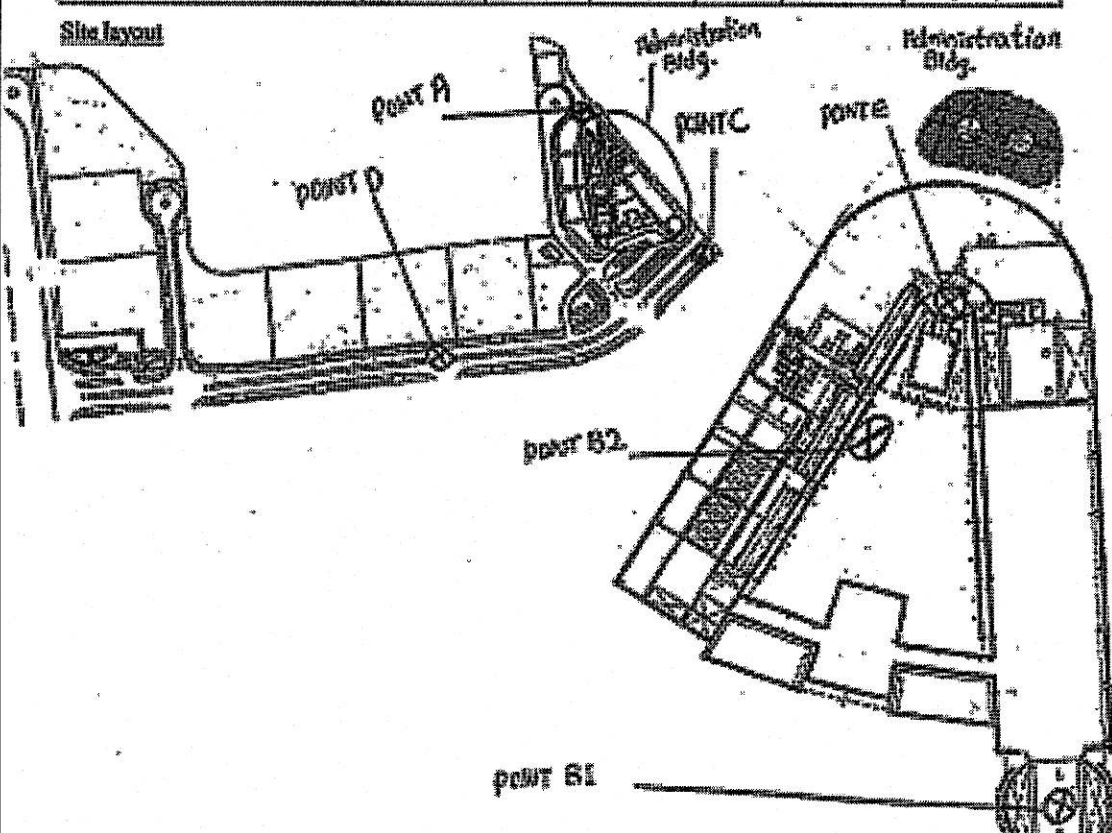
07 Apr 07

Detector: Model 型號: GEM 2000 Last calibration 上次校測: 01-October-2006  
測試器 S/N 編號: GM-08793 Next calibration 下次校測: 01-April-2007 02 Apr 07

Date of Monitor 監測日期: 11 - 4 - 2007 Performed by: Harry Lam

Location 位置	Time 時間 (hrs)	Result 結果				
		CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	Rel. Gas (%)	Baro. Pressure (mmHg)
Point A	1445	0.0	0.0	18.3	81.7	29.95
Point B1	1454	0.0	0.0	18.2	81.7	29.95
Point B2 (GL3-5/E)	1451	0.0	0.0	18.2	81.7	29.95
Point C1 (FMH044)	1456	0.0	0.0	18.2	81.8	29.95
Point D	1500	0.0	0.0	18.1	81.8	29.95
Point E (E&M room)	1447	0.0	0.0	18.3	81.6	29.95

**Site layout**



The site layout diagram illustrates the spatial arrangement of monitoring points. Point A is located near the top left, Point B1 and B2 are in the center, Point C1 is to the right, Point D is at the bottom left, and Point E is at the bottom right. The Administration Bldg. is shown as a large structure in the upper right, and a circular feature is visible in the lower right.

Kaden

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

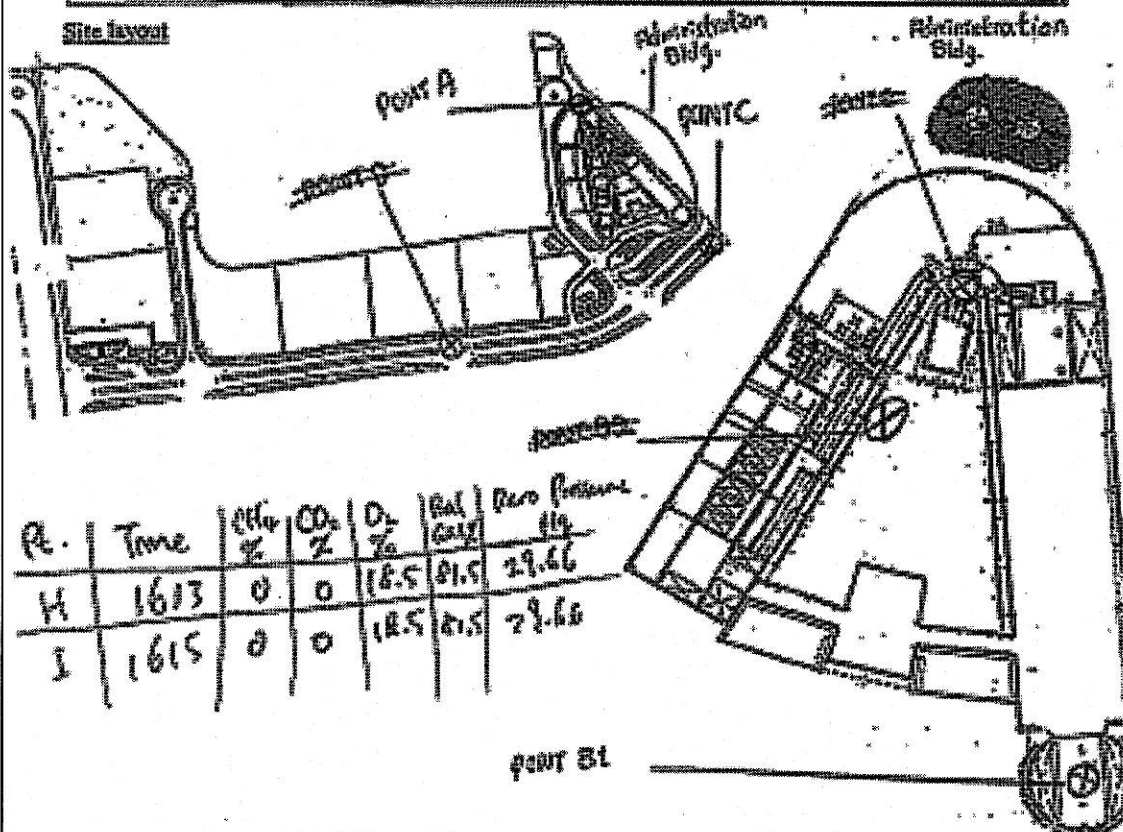
Development of EcoPark in Tuen Mun Area 38 屯門 38 區環保園

Daily Air Monitoring  
每日空氣監測記錄

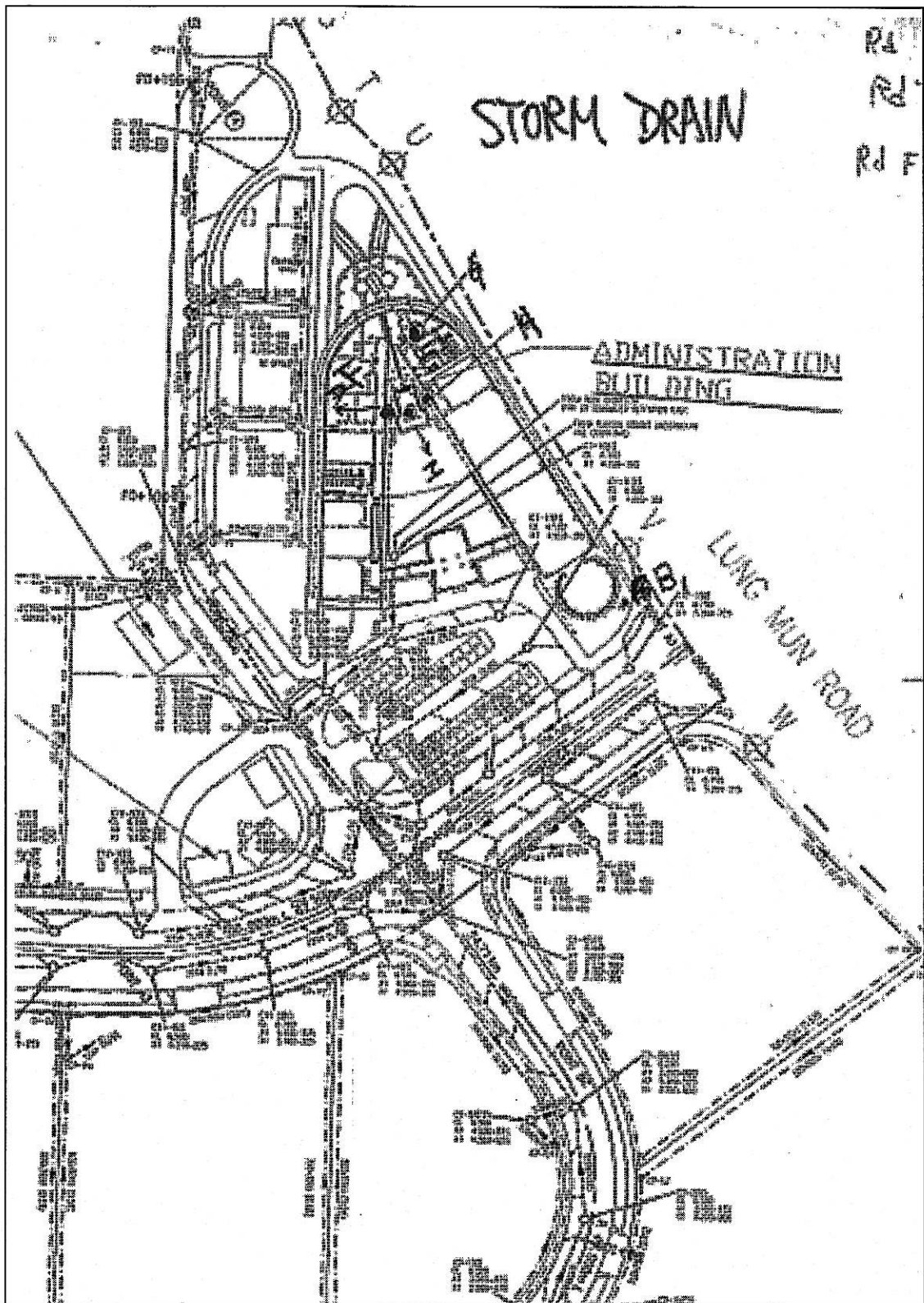
17 Apr 2007

Detector: Model 型號: GEM 2000		Last calibration 上次檢測: 03 Apr. 07				
測試器 S/N 編號: GM-05793		Next calibration 下次檢測: 02 Apr. 08				
Date of Monitor 監測日期: 17 Apr 2007		Performed by: H.K. (E)				
Location 位置	Time 時間 (hrs)	Result 結果				
		CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	Rel. Gas (%)	Baro. Pressure (H <sub>g</sub> )
Point A	1611	0	0	18.5	81.4	29.66
Point B1 (at the railway)	1621	0	0	18.4	81.5	29.66
Point B2 (at the gate)						
Point C1 (FMR044)	1625	0	0	18.2	81.7	29.66
Point D	1616	0	0	18.6	81.3	29.66
Point E (at the gate) F	1609	0	0	18.4	81.6	29.66

Site layout









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

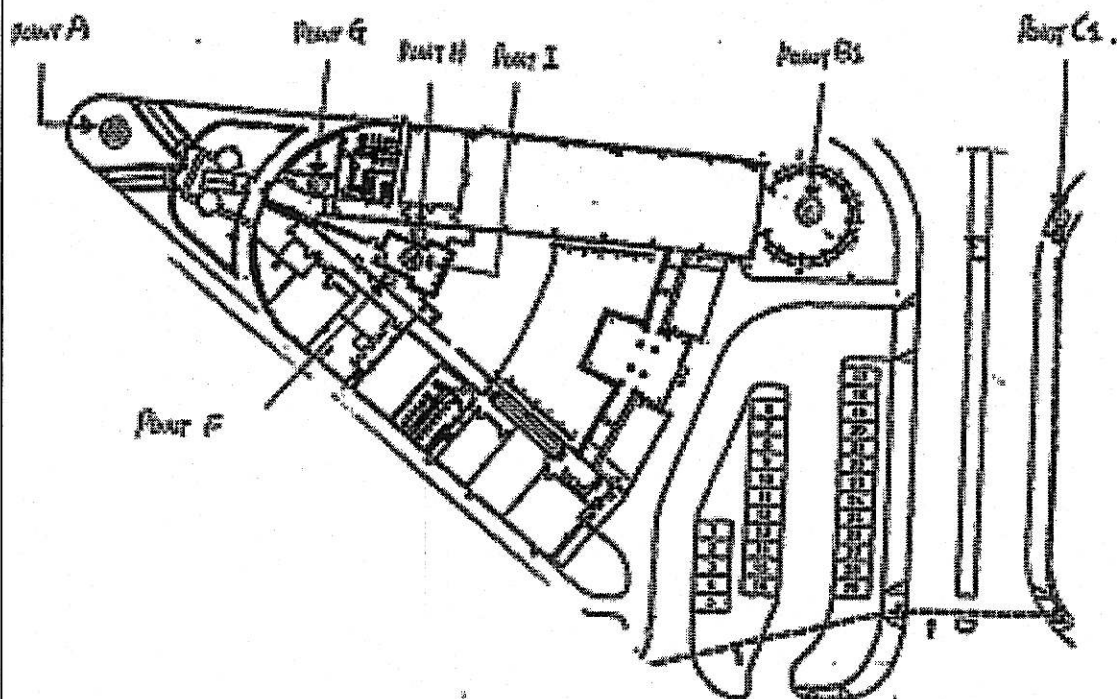
Detector: Model 型號: GEM 2000	Last calibration 上次檢測: 03 Apr. 07
測試器 SN 編號: GM-08793	Next calibration 下次檢測: 02 Apr. 08

Date of Monitor 監測日期: 24 - 4 - 2007

Performed by: Henry Lam

Location 位置	Time 時間 (hrs)	Result 結果				
		CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	Rel. Gas (%)	Baro. Pressure (mmHg)
Point A	1521	0	0	18.4	81.6	29.79
Point B1 (Production Gallery)	1548	0	0	18.4	81.6	29.79
Point C1 (FMB1049)	1551	0	0	18.2	81.7	29.79
Point F (E&M room)	1535	0	0	18.3	81.7	29.79
Point G (FS room)	1543	0	0	18.3	81.6	29.79
Point H (E&M room)	1539	0	0	18.3	81.7	29.79
Point I (E&M room)	1537	0	0	18.4	81.6	29.79

Site layout



**APPENDIX 5 – CALIBRATION CERTIFICATE FOR LANDFILL GAS MEASUREMENT INSTRUMENT**Hong Kong Calibration Ltd.  
香港校正有限公司**Calibration Certificate**

Certificate No. 71278

Page 1 of 2 Pages

Customer : Kaden

Address : 屯門38區環保園

Order No. : Q70501

Date of receipt : 26-Mar-07

**Item Tested**

Description : Gas Analyzer

Manufacturer : CES-LANDTEC

Model : GEM 2000 Plus

Serial No. : GM 08793

**Test Conditions**

Date of Test : 30-Mar-07

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

**Test Specifications**

Calibration check.

Calibration procedure : V06 &amp; Manufacturer's Manual.

**Test Results**

All results were within the manufacturer's specification.

The results are shown in the attached page(s).

**Main Test equipment used:**

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S158A(III)	Std. Gas	60217	28-Dec-08	NIST-USA
S158I	Std. Gas	65256	13-May-07	NIST-USA
S158L	Std. Gas	61398	29-Mar-08	NIST-USA

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).  
The test results apply to the above Unit-Under-Test only

Calibrated by :   
Y.Y. Cheuk

Approved by :

Steve Kwan

Date: 3-Apr-07

This Certificate is issued by:  
Hong Kong Calibration Ltd.  
Unit B8, 24/F, Wai Fung Industrial Centre, No. 58-78, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.  
Tel: 2425 8001 Fax: 2425 8046

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Hong Kong Calibration Ltd.  
香港校正有限公司

## Calibration Certificate

Certificate No. 71278

Page 2 of 2 Pages

### Results:

1. Appearance Check : Pass
2. Gas Sampling Tube Leak Check : Pass
3. Internal Pump Check : Pass
4. Gas Response

Applied Gas			UUT Reading		Mfr's Spec.
CH <sub>4</sub>	0.0	% Vol.	0.0	% Vol.	± 0.3 % Vol.
	0.50	% Vol.	0.5	% Vol.	
	2.50	% Vol.	2.5	% Vol.	
CO <sub>2</sub>	0.0	% Vol.	0.0	% Vol.	± 0.3 % Vol.
	0.49	% Vol.	0.5	% Vol.	
	4.86	% Vol.	5.0	% Vol.	
	14.37	% Vol.	14.0	% Vol.	± 1 % Vol.
	40.06	% Vol.	39.4	% Vol.	± 3 % Vol.
O <sub>2</sub>	0.0	% Vol.	0.0	% Vol.	± 1 % Vol.
	20.9	% Vol.	20.9	% Vol.	

5. 90 Response Time Check : Pass

Remarks : 1. UUT : Unit-Under-Test

2. Uncertainty : ± 0.5 % rdg., for a confidence probability of not less than 95%.

----- END -----

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**APPENDIX 6 – CUMULATIVE LOG OF COMPLAINTS****CUMULATIVE LOG OF COMPLAINTS**

Environmental Parameters	No. of Outstanding Complaints	No. of complaints received in April 2007	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
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