

Development of EcoPark in Tuen Mun Area 38

Contract No. EP/SP/52/06
EM&A Report No. 20 (February 2008)

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

ENVIRONMENTAL MONITORING AND AUDIT

MONTHLY EM&A REPORT for

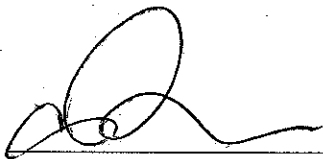
FEBRUARY 2008

Environmental Pioneers & Solutions Limited
8/F, Chaiwan Industrial Centre Building
20 Lee Chung Street, Chaiwan, Hong Kong
Tel: 2889 0569 Fax: 2856 2010


APPROVAL SHEET

DOCUMENT DATE: 29 February 2008

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

Signature: 
Miss Patricia Chung

Date: 19 MAR 2008

Verified by: 
IEC

Date: - 2 APR 2008

* IEC – Independent Environmental Checker

TABLE OF CONTENTS

| | |
|---|----|
| EXECUTIVE SUMMARY | 4 |
| 1. BASIC PROJECT INFORMATION | 6 |
| 2. SUMMARY OF WORK ACTIVITIES AND CONSTRUCTION STATUS..... | 8 |
| 3. STATUS OF ENVIRONMENTAL PROTECTION AND SITE INSPECTIONS. | 10 |
| 4. SUMMARY OF ENVIRONMENTAL PERMIT AND LICENCES..... | 14 |
| 5. CUMULATIVE LOG OF COMPLAINTS AND REMEDIAL ACTION..... | 15 |
| 6. CUMULATIVE LOG OF NOTIFICATION OF SUMMONS AND PROSECUTIONS..... | 15 |
| 7. CONCLUSION..... | 15 |
| APPENDIX 1 - SITE LAYOUT PLAN..... | 16 |
| APPENDIX 2 - THE CONTACT PERSONS, TELEPHONE NUMBERS OF KEY PERSONNEL FOR DEVELOPMENT OF ECOPARK IN TUEN MUN AREA 38 | 17 |
| APPENDIX 3 – REVISED SITE LAYOUT PLAN FOR REFUSE COLLECTION POINTS..... | 18 |
| APPENDIX 4 - ORIGINAL LANDFILL GAS FIELD MEASUREMENT RECORDING SHEETS..... | 19 |
| APPENDIX 5 – CUMULATIVE LOG OF COMPLAINTS | 23 |

EXECUTIVE SUMMARY

This is the twentieth 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 February 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.

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 February 2008.

The planned activities for March 2008 and 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 twentieth 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 February 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).

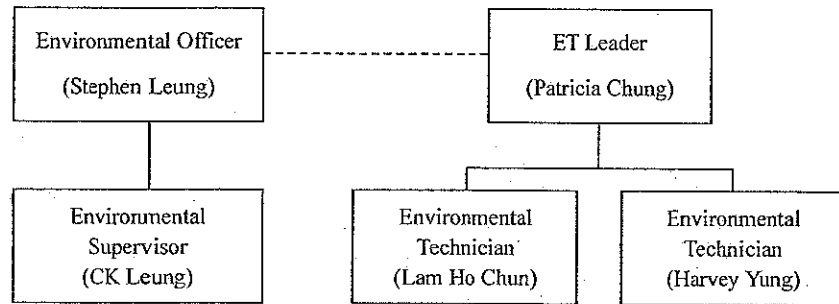
Phase 1 of the construction works has already commenced in July 2006 and is anticipated to complete in April 2008.

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.

| Item | Work Activities & Location | Date of Occurrence |
|------|--|------------------------------------|
| 1 | Landscaping works | 1 February 2008 – 29 February 2008 |
| 2 | Finishing works, fitting outs & building services installation for administration building & marine frontage management office | 1 February 2008 – 29 February 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 two months (March 2008 – April 2008). The anticipated environmental issues are summarized as follow:

| 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 | - 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 (March 2008) is designated on 5, 12, 19 and 26 March 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 6, 13, 20 and 27 February 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:

| Date | Observations | Advice from ET | Outcome | Closing Date |
|------------------------|---|---|---|----------------|
| 6 February 08 | Insufficient cover to stockpile of planting soil found beside Site Office | The Contractor was reminded to properly cover stockpile of planting soil with tarpaulin sheet | Action taken as advised by ET | 20 February 08 |
| 13, 20, 27 February 08 | Accumulated water found at the bottom of oil and chemical storage cabinet | Water should be removed ASAP | To be observed in the next reporting period | -- |
| 20, 27 February 08 | Dust and mud are found at Road F | Clean Road F and provide more efficient wheel washing facility | 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 Licence 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.

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

Accumulated water was found at the bottom of oil and chemical waste storage cabinet. The Contractor should rectify by removing accumulated water.

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 January 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 February 2008

| Type of Waste | Disposal Site | Quantity | Remarks |
|--------------------|----------------------|-------------|---------|
| General Waste | WENT Landfill | 11.1 tonnes | - |
| Inert C&D Material | Public Fill Facility | 0 tonnes | - |

3.7 Landfill Gas

Landfill gas (LFG) monitoring was carried out on site at two (2) locations, as instructed by the Engineer's Representative. LFG measurements on 6, 13, 20, and 27 February 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 | 06 February 08 | 1445 | Fine | 0 | 0 | 20.9% |
| Point J | 06 February 08 | 1448 | | 0 | 0 | 20.9% |
| Point K | 06 February 08 | 1452 | | 0 | 0 | 20.9% |
| Point A | 13 February 08 | 1455 | Fine | 0 | 0 | 20.9% |
| Point J | 13 February 08 | 1500 | | 0 | 0 | 20.9% |
| Point K | 13 February 08 | 1503 | | 0 | 0 | 20.9% |
| Point A | 20 February 08 | 1501 | Fine | 0 | 0 | 20.9% |
| Point J | 20 February 08 | 1504 | | 0 | 0 | 20.9% |
| Point K | 20 February 08 | 1506 | | 0 | 0 | 20.9% |
| Point A | 27 February 08 | 1520 | Fine | 0 | 0 | 20.9% |
| Point J | 27 February 08 | 1523 | | 0 | 0 | 20.9% |
| Point K | 27 February 08 | 1525 | | 0 | 0 | 20.9% |
| 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. | | | | | | |

| 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 February 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.

| 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 February 2008.

7. CONCLUSION

There is no summon nor prosecutions reported during February 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.

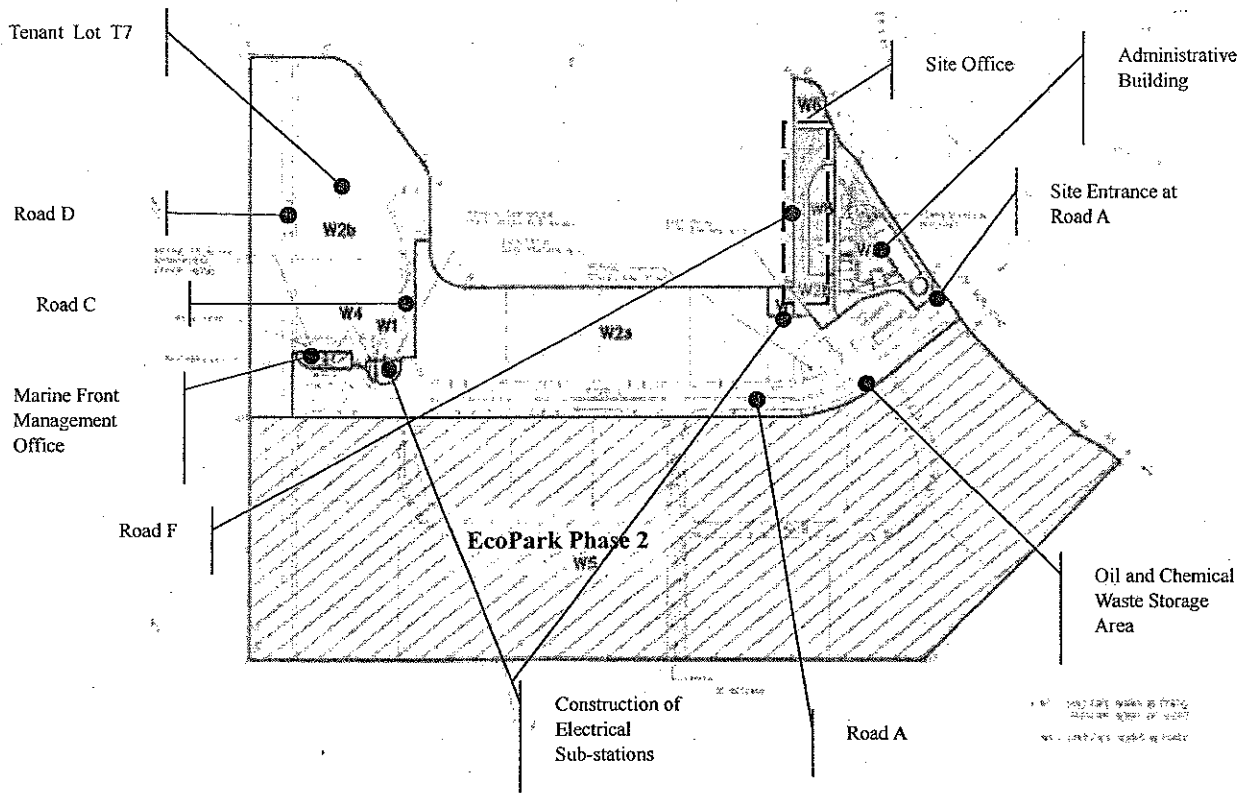
Accumulated water was found at the bottom of oil and chemical waste storage cabinet. The Contractor should rectify by removing accumulated water. Dust and mud found on Road F should be removed ASAP.

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.

The Contractor was advised to pay more efforts on environmental concerns and awareness such as site tidiness and mosquito hazard from stagnant water at site.

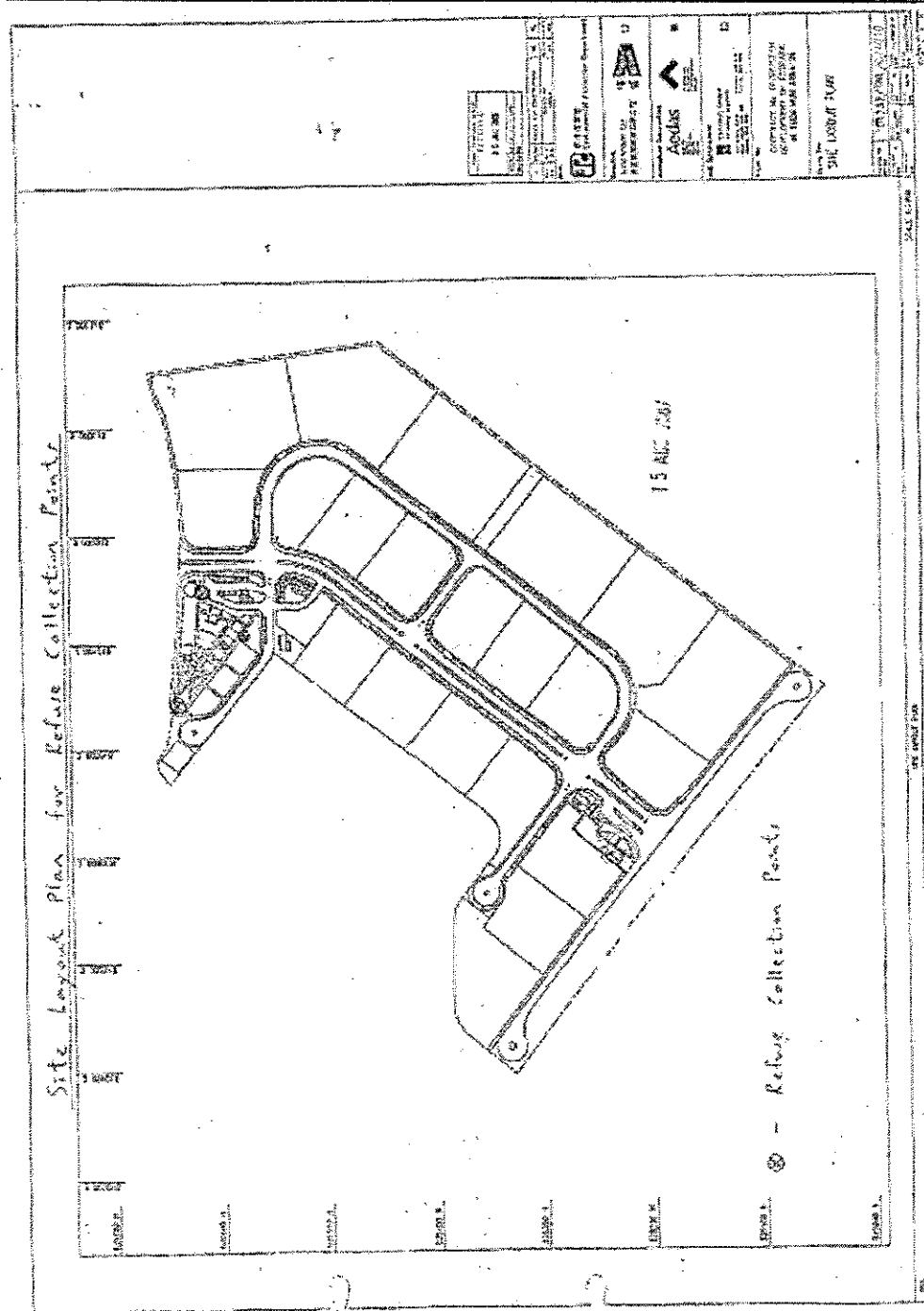
APPENDIX 1 - SITE LAYOUT PLAN



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 |

APPENDIX 3 – REVISED 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: 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 |

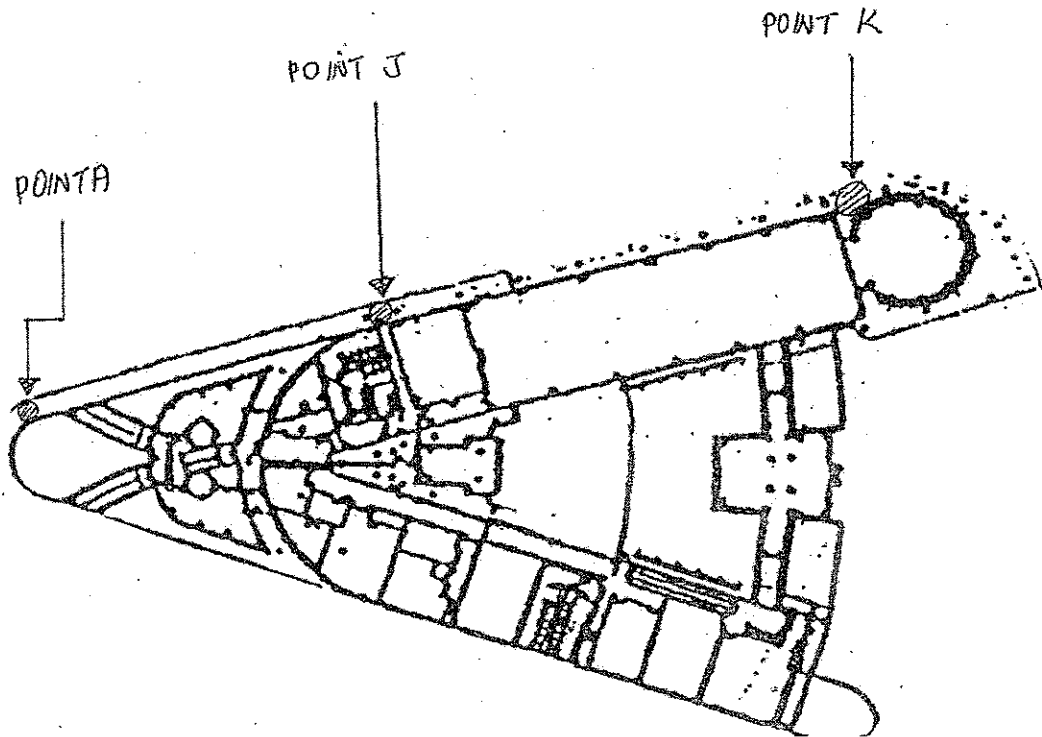
Date of Monitor 監測日期: 6-2-2008 Performed by: ET

| Location 位置 | Time 時間 (hrs) | Result 結果 | | | | |
|---|---------------|---------------------|---------------------|--------------------|--------------|----------------------|
| | | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | Bal. Gas (%) | Baro. Pressure ("Hg) |
| Point A | 1445 | 0 | 0 | 20.9 | 84.8 | 30.28 |
| Point J (Lung Mun Road) | 1448 | 0 | 0 | 20.9 | 84.7 | 30.28 |
| Point K (Lung Mun Road nr production Gallery) | 1452 | 0 | 0 | 20.9 | 84.6 | 30.28 |

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

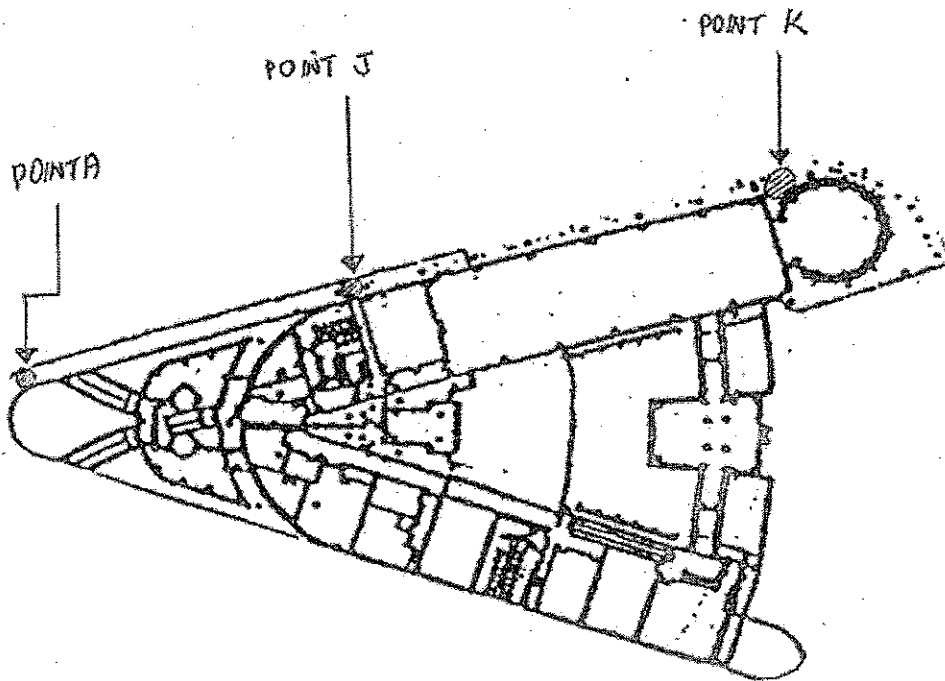
Daily Air Monitoring 每日空氣監測記錄

| Detector: 測試器 | Model 型號: GEM 2000 | SN 編號: GM-08793 | Last calibration 上次檢測: 03 Apr. 07 | Next calibration 下次檢測: 02 Apr. 08 | | |
|---|-------------------------|---------------------|-----------------------------------|-----------------------------------|--------------|---------------------|
| Date of Monitor 監測日期: 13 - 2 - 2008 | Performed by: Henry Lam | | | | | |
| Location 位置 | Time 時間 (hrs) | Result 結果 | | | | |
| | | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | Rel. Gas (%) | Baro. Pressure (Hg) |
| Point A | 1455 | 0 | 0 | 20.9 | 84.8 | 34.33 |
| Point J (Lung Mun Road) | 1500 | 0 | 0 | 20.9 | 84.8 | 34.33 |
| Point K (Lung Mun Road or production Gallery) | 1503 | 0 | 0 | 20.9 | 84.7 | 34.33 |

(Instrument for O₂ measurement: GasAlert MicroClip GAMBIC-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 |

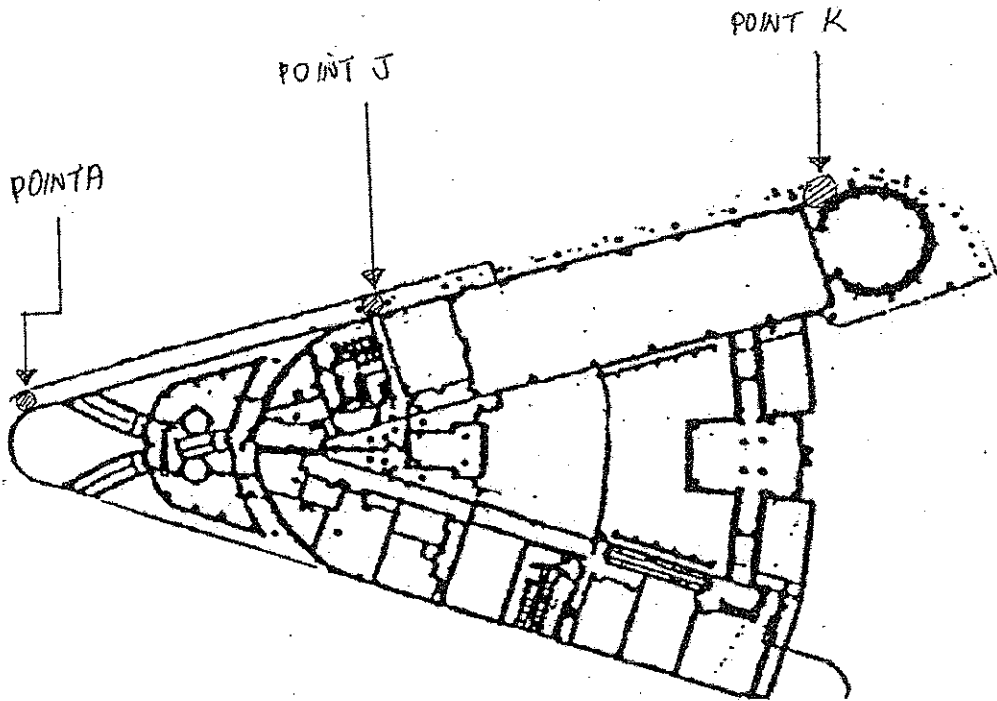
Date of Monitor 監測日期: 20-2-2008 Performed by: ET

| Location 位置 | Time 時間 (hrs) | Result 結果 | | | | |
|---|---------------|---------------------|---------------------|--------------------|--------------|----------------------|
| | | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | Bal. Gas (%) | Baro. Pressure (°Hg) |
| Point A | 15:01 | 0 | 0 | 20.9 | 84.8 | 30.11 |
| Point J (Lung Mun Road) | 15:04 | 0 | 0 | 20.9 | 84.8 | 30.11 |
| Point K (Lung Mun Road nr production Gallery) | 15:06 | 0 | 0 | 20.9 | 84.8 | 30.11 |

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 |

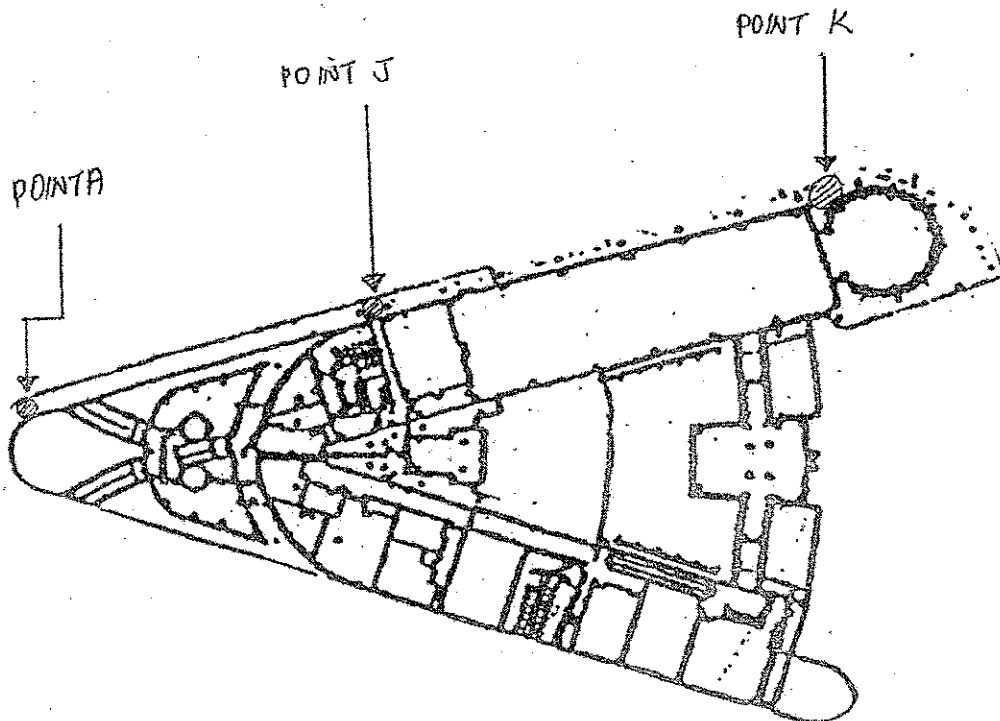
Date of Monitor 監測日期: 27-2-2008 Performed by: Thomas Wong

| Location 位置 | Time 時間 (hrs) | Result 結果 | | | | |
|---|---------------|---------------------|---------------------|--------------------|--------------|----------------------|
| | | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | Bal. Gas (%) | Baro. Pressure ("Hg) |
| Point A | 15:20 | 0 | 0 | 20.9 | 78.9 | 30.16 |
| Point J (Lung Mun Road) | 15:23 | 0 | 0 | 20.9 | 78.8 | 30.16 |
| Point K (Lung Mun Road nr production Gallery) | 15:25 | 0 | 0 | 20.9 | 78.8 | 30.16 |

Instrument for O₂ measurement: GasAlert MicroClip GAMIC-4-DL2 Serial no.: S103-13343

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 February 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 |
|----------|----------------------------|----------|-------------------|----------------------|----------------------------------|-----------------------|
| - | - | - | - | - | - | - |