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

ENVIRONMENTAL MONITORING AND AUDIT MONTHLY EM&A REPORT for OCTOBER 2007

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APPROVAL SHEET

DOCUMENT DATE: 31 October 2007	
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EXECUTIVE SUMMARY

This is the sixteenth 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 October 2007.

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

Water spraying by water truck on site area for dust mitigation was observed. Insufficient manual wheel washing was observed at Road C. The Contractor was reminded to provide sufficient manual labour for wheel washing at Road C.

No substantial noise impact was noted by ET during weekly environmental site walks. Landfill gas monitoring was carried out at site; measurement results were within the Action and Limit Levels in accordance with the EM&A Manual.

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.

As Tenant Lot T7 was handed over, oil and chemical waste storage cabinets were relocated to the position of Road A CH90 on 17 October 2007.

The top of oil and chemical waste storage cabinets was improperly covered with tarpaulin sheet. The Contractor rectified by properly covering the top of storage cabinets with tarpaulin sheet to prevent the accumulation of rainwater.

Waste was found beside Marine Frontage Management Office. The Contractor rectified by removing waste for better house keeping.

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

The planned activities for November 2007 and December 2007 with regard to development of EcoPark consist of:

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

1. BASIC PROJECT INFORMATION

1.1 Introduction

This is the sixteenth 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 October 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).

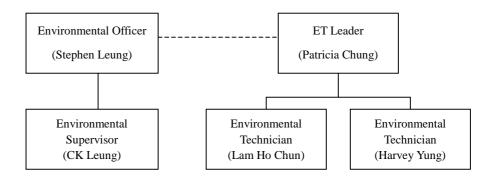
Phase 1 of the construction works has already commenced in July 2006 and is anticipated to complete in January 2008.

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	Table 2.1 Work Activities for October 2007			
Item	Work Activities & Location	Date of Occurrence		
1	Site formation works, excavation works & roadworks	1 October 2007 – 31 October 2007		
2	Construction of drainage & sewerage	1 October 2007 – 31 October 2007		
3	Finishing works, fitting outs & building services installation for administration building & marine frontage management office	1 October 2007 – 31 October 2007		

	Machineries		
	Equipment/ Plant	Quantity	
1	Mobile Crane	1	
2	Excavator	10	
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 three months (November 2007 – January 2008). The anticipated environmental issues are summarized as follow:

Table	Table 2.2 Construction Program and Anticipated Environmental Issues			
Item	Works	Anticipated Environmental Issues		
1	Site formation works, excavation works & roadworks	 Haul road should be sprayed regularly, by truck or sprinkler Stagnant water should be removed Mosquito mitigation measures should be implemented 		
2	Construction of drainage	 Generation of C&D Waste; excavated material should be reused as much as practicable Dust may be generated; the wheel washing should be in operation 		
3	Finishing works, fitting outs & building services installation for administration building & marine frontage management office	- Generation of waste from packaging materials and C&D wastes		
4	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 (November 2007) is designated on 7, 14, 21 and 28 November 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 3, 10, 17, 24 and 31 October 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:

Table 3.1	Table 3.1 Summary of Site Inspections				
Date	Observations	Advice from ET	Outcome	Closing Date	
03 October 07	The top of oil and chemical waste storage cabinets was improperly covered with tarpaulin sheet	top of oil and chemical waste storage cabinets	The top of oil and chemical waste storage cabinets was properly covered with tarpaulin sheet	10 Oct 07	
10		I	Manual labour for	17 Oct 07	
October	washing at Road C was	labour for wheel	wheel washing was		
07	observed	washing at Road C	provided at Road C		
17, 24	Waste was found beside	To remove waste for	Waste was removed	31 Oct 07	
October	Marine Frontage	better house keeping			
07	Management Office				

3.2 Air Dust

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

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 manual wheel washing at Road C was observed. The Contractor was reminded to provide frequent manual labour for wheel washing at Road C.

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 (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.

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

As Tenant Lot T7 was handed over, oil and chemical waste storage cabinets were relocated to the position of Road A CH90 on 17 October 2007.

The top of oil and chemical waste storage cabinets was improperly covered with tarpaulin sheet. The Contractor rectified by properly covering the top of storage cabinets with tarpaulin sheet to prevent the accumulation of rainwater.

Waste was found beside Marine Frontage Management Office. The Contractor rectified by removing waste for better house keeping.

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

The Contractor has established refuse collection points with notice boards in Administration Building.

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 assess 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 October 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 October 2007				
Type of Waste	Disposal Site	Quantity	Remarks	
General Waste	WENT Landfill	35 m^3	-	
Inert C&D Material	Public Fill Facility	$416 \mathrm{m}^3$	-	

3.7 Landfill Gas

Landfill gas (LFG) monitoring was carried out on site at five (5) locations, as instructed by the Engineer's Representative. LFG measurements on 3, 10, 17, 24 and 31 October 2007 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 October 2007						
Sampling Location	Date of Measurement	Sampling Time	Weather Condition	Methane (CH ₄) %LEL	Carbon Dioxide (CO ₂) %LEL	Oxygen (O ₂)
Point A	03 October 07	1620	Fine	0.0%	0.0%	20.9%
Point F	03 October 07	1623	Fine	0.0%	0.0%	20.9%
Point G	03 October 07	1621	Fine	0.0%	0.0%	20.9%
Point H	03 October 07	1625	Fine	0.0%	0.0%	20.9%
Point I	03 October 07	1624	Fine	0.0%	0.0%	20.9%
				•		
Point A	10 October 07	1357	Fine	0.0%	0.0%	20.9%
Point F	10 October 07	1401	Fine	0.0%	0.0%	21.3%
Point G	10 October 07	1359	Fine	0.0%	0.0%	20.9%
Point H	10 October 07	1404	Fine	0.0%	0.0%	21.3%
Point I	10 October 07	1402	Fine	0.0%	0.0%	20.9%
Point A	17 October 07	1520	Fine	0.0%	0.0%	20.9%
Point I	17 October 07	1525	Fine	0.0%	0.0%	21.6%
Point A	24 October 07	1530	Fine	0.0%	0.0%	20.9%
Point I	24 October 07	1534	Fine	0.0%	0.0%	20.9%
1		T	T	T	,	
Point A	31 October 07	1559	Cloudy	0.0%	0.0%	20.9%
Point I	31 October 07	1602	Cloudy	0.0%	0.0%	20.9%

Remarks:

¹⁾ As agreed by the Engineer's Representative, the landfill gas measurements on October 2007 were carried out with two instruments: one for the measurements of methane and carbon dioxide, another for the measurement of oxygen.

²⁾ As agreed by the Engineer's Representative, landfill gas monitoring was carried out at 2 locations, started on 17 October 2007.

Table 3.6 Ac	ction Levels, Limit Levels and	d Event and Action Plan for LFG (From			
EM&A Man	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	Action Level >0.5% CO ₂	Ventilate to restore CO ₂ to < 0.5%			
(CO ₂)	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 October 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	Date of	Date of	Status/Remarks
	No.#	Issue	Expiry	
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	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 5.

6. CUMULATIVE LOG OF NOTIFICATION OF SUMMONS AND PROSECUTIONS

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

7. CONCLUSION

There is no summon nor prosecutions reported during October 2007.

Water spraying by water truck on site area was observed for dust mitigation. The Contractor was reminded to provide sufficient manual labour for wheel washing at Road C.

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.

As Tenant Lot T7 was handed over, oil and chemical waste storage cabinets were relocated to the position of Road A CH90 on 17 October 2007.

The top of oil and chemical waste storage cabinets was improperly covered with tarpaulin sheet. The Contractor rectified by properly covering the top of storage cabinets with tarpaulin sheet to prevent the accumulation of rainwater.

Waste was found beside Marine Frontage Management Office. The Contractor rectified by removing waste for better house keeping.

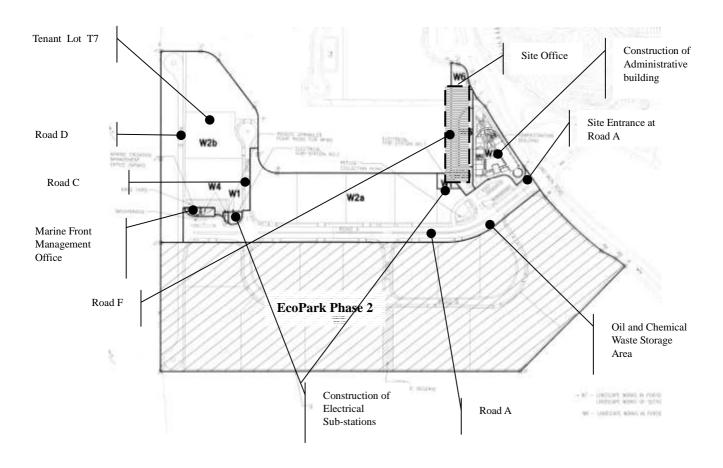
The Contractor has been using the waste management and record system including allocation of waste storage areas and the trip ticket system as proposed in the Environmental Management Plan.

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.

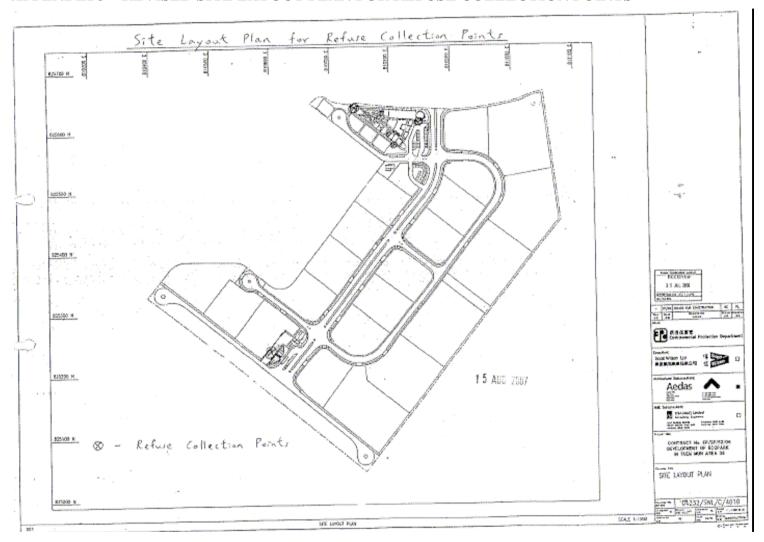
APPENDIX 1 - SITE LAYOUT PLAN



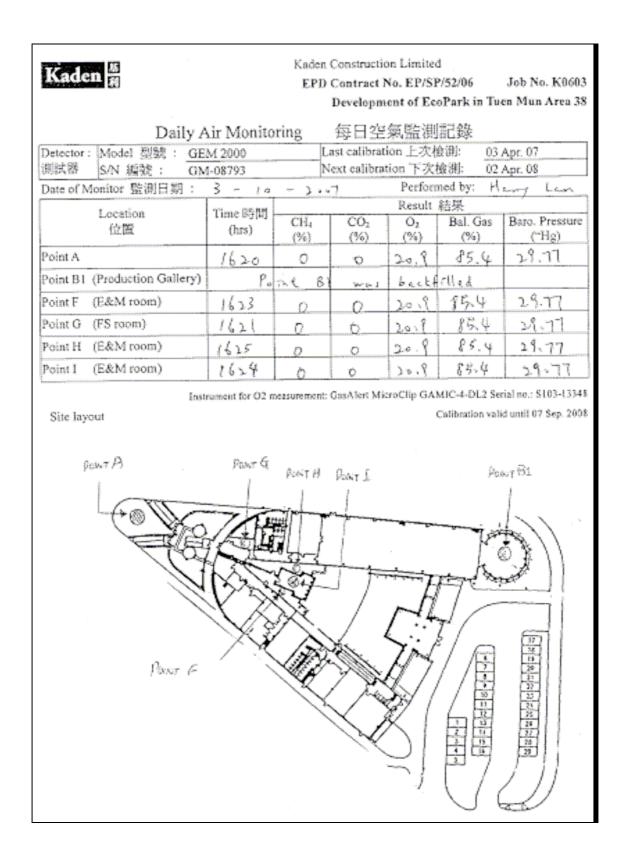
APPENDIX 2 - THE CONTACT PERSONS, TELEPHONE NUMBERS OF KEY PERSONNEL FOR DEVELOPMENT OF ECOPARK IN TUEN MUN AREA 38

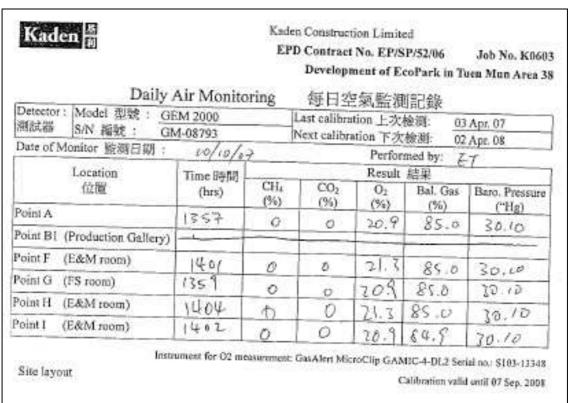
Company/Department	Name	Position	Telephone
Scott Wilson Ltd.	Mike Bains	Independent Environmental Checker	
Scott Wilson Ltd.	Mr. Michael Lo	Senior Resident Engineer	6290 8860
Scott Wilson Ltd.	Mr. Andy Cheung	Resident Engineer	6111 9703
Scott Wilson Ltd.	Mr. C S Lam	Senior Inspector of Works	9861 8011
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

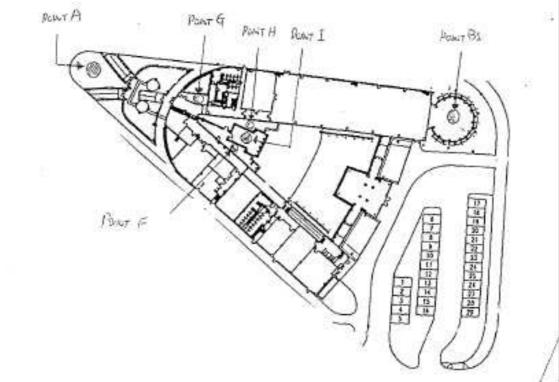
APPENDIX 3 – REVISED SITE LAYOUT PLAN FOR REFUSE COLLECTION POINTS

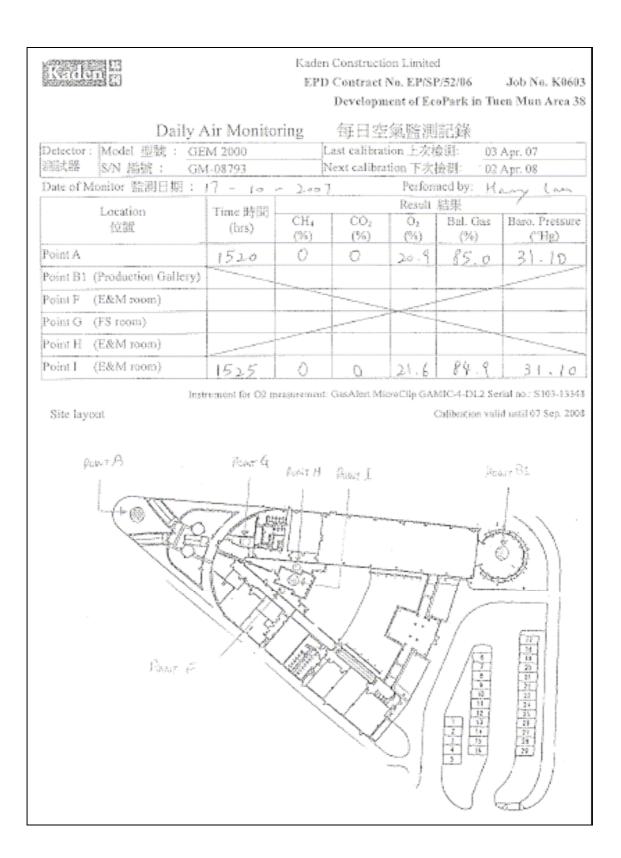


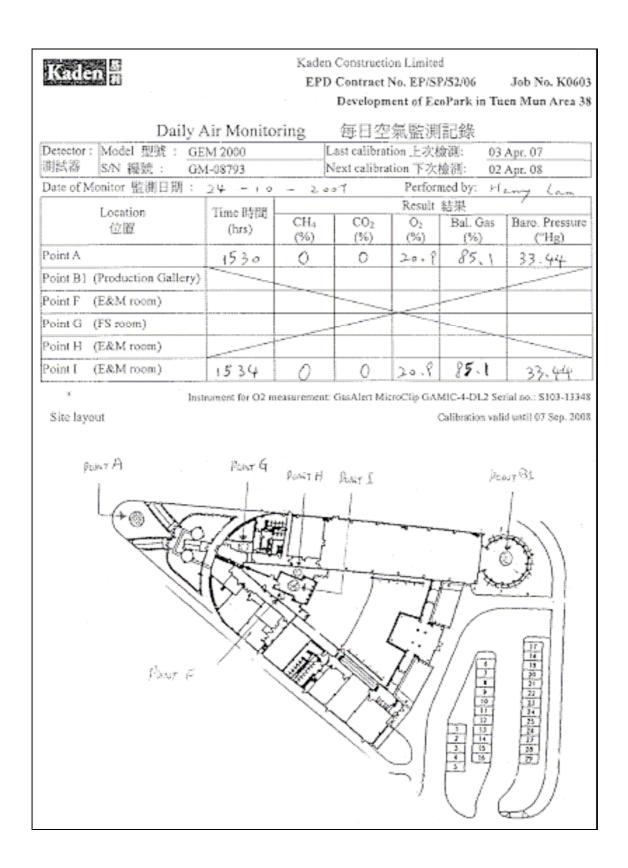
APPENDIX 4 - ORIGINAL LANDFILL GAS FIELD MEASUREMENT RECORDING SHEETS

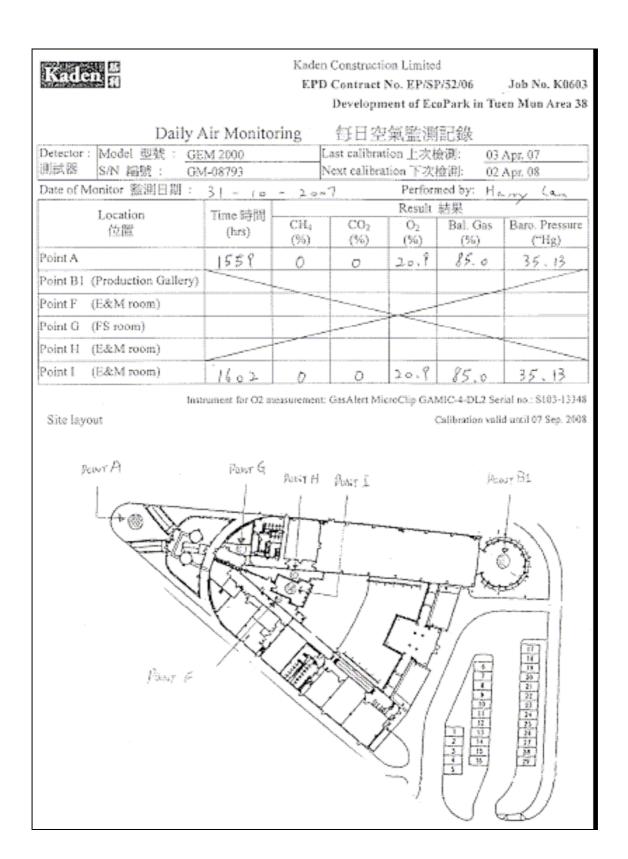












APPENDIX 5 – CUMULATIVE LOG OF COMPLAINTS

CUMULATIVE LOG OF COMPLAINTS

Environmental	No. of Outstanding	No. of complaints received in October 2007	Cumulative no. of complaints received since the
Parameters	Complaints		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 Compliant received	Location	Complainant /Date	Details of Complaint	Investigation /Mitigation Action	Investigated by/ Date
-	-	-	-	-	-	-