

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

**ENVIRONMENTAL MONITORING AND AUDIT**

**MONTHLY EM&A REPORT for**

**SEPTEMBER 2006**

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## APPROVAL SHEET

DOCUMENT DATE: 30 September 2006

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Date: 17 OCT 2006

Verified by:   
IEC

Date: 18 OCT 2006

\* IEC – Independent Environmental Checker

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## **EXECUTIVE SUMMARY**

This is the third 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 September 2006.

The site activities in the reporting period mainly consisted of site clearance, site formation, excavation works, and construction of administration building, electric stations and site office.

Accumulative rainwater is found in some locations at site during the site inspections. Disposal of inert C&D material was recorded. No substantial noise impact was noted by ET during weekly environmental site walks. The contractor was reminded to continuously service the silt curtain and other de-silting devices (such as sand-bags) for surface run-off treatment prior to discharge. Landfill Gas monitoring was carried out at site on 20 and 27 September; measurements are within Action/ Limit Level in accordance with the EM&A Manual

An environmental complaint against dust nuisance was recorded on 1 September 06 at EcoPark site. An investigation was subsequently carried out to determine the cause of the problem. The Contractor had carried out necessary mitigation measures for dust control as recommended in the investigation report.

Only minor deficiencies were found during the site inspections of September 2006. There were no notification of summons or successful prosecution during September 2006.

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



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

## **1. BASIC PROJECT INFORMATION**

### **1.1 Introduction**

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

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

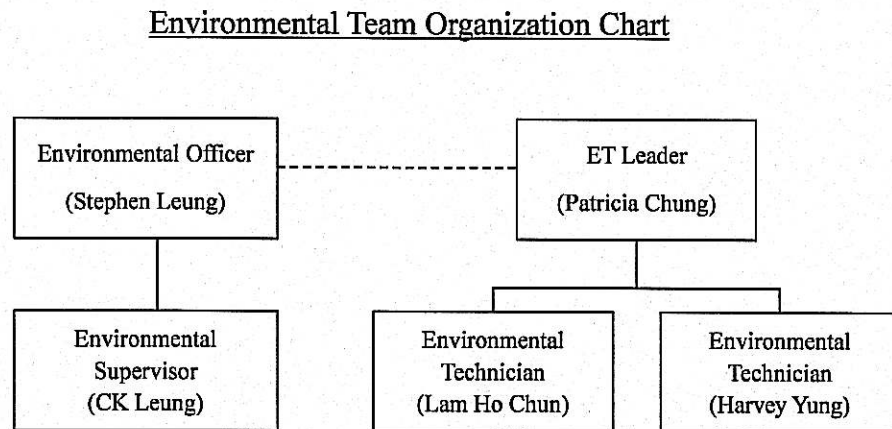
Phase 1 of the construction works has already commenced in July 2006 and is anticipated to complete on June 2007.

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

### **1.2 Project Organization and Management**

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

Figure 1.1 Organization Chart of Environmental Team



## 2 SUMMARY OF WORK ACTIVITIES AND CONSTRUCTION STATUS

### 2.1 Works undertaken during the month

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

Table 2.1 Work Activities for September 2006

Item	Work Activities & Location	Date of Occurrence
1	Excavation and site formation works	1 September – 30 September 2006
2	Construction of Electrical Sub-stations	1 September – 30 September 2006
3	Construction of Drainage & sewerage	1 September – 30 September 2006
4	Construction of Administration Building	1 September – 30 September 2006
5	Construction and fitting out of site office	1 September – 20 September 2006

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

Remarks:

- As informed by the Contractor, most equipment are mobile 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 (October – December 2006). The anticipated environmental issues are summarized as follow:



Table 2.2 Construction Program and Anticipated Environmental Issues		
Item	Works	Anticipated Environmental Issues
1	Excavation and site formation works	<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 Electrical Sub-stations	<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	<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	Construction of Administration Building	<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 (October 2006) is designated on 4, 11, 18, and 25 October 2006.

### 3 STATUS OF ENVIRONMENTAL PROTECTION AND SITE INSPECTIONS

#### 3.1 Environmental Site Inspections

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

Site inspections were conducted on 7, 13, 20 and 27 September 2006.

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

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

Table 3.1 Summary of Site Inspections				
Date	Observations	Advice from ET	Outcome	Closing Date
7 Sep 06	Inadequate cover of excavated material stockpile	To provide tarpaulin sheets to cover the stock pile	Tarpaulin sheets are provided and sprinkler system is installed for dust mitigation	13 Sep 06
7 Sep 06	Accumulating silt on haul road	Remove the silts regularly	Removed the silts	13 Sep 06
7 Sep 06	Ineffective water spraying of site haul/ access roads	To increase the spraying frequency to access roads and install sprinkler system	Sprinkler are installed near the site entrance, along haul road and for excavated material stockpile	13 Sep 06
13 Sep 06	Some muddy discharge was observed flowing into drainage pit	To install advanced desilting system to treat silted run-off	Sedimentation tank was installed at discharge pit #375	27 Sep 06
27 Sep 06	Muddy water spillover was observed near wheel washing machine (WWM) at site entrance	To regularly wash silt the roads near site entrance to prevent silt accumulation and to keep the WWM water clean	Road near site entrance is regularly cleaned. A wheel washing basin is constructed near the WWM as pre-treatment	4 Oct 06

### 3.2 Air Dust

The Environmental Team (ET) was informed by the Engineer concerning an environmental complaint against dust nuisance recorded on 1 Sept 06 at EcoPark site. An investigation jointly with the IEC, the Engineer, the Contractor and their representatives was carried out on 7 Sept 2006 to investigate the complaint and to assess whether the source of the problem is due to the construction activities being carried out at EcoPark. The causes of the problem has been identified as 1) inadequate cover of excavated material stockpile, 2) accumulating silt on haul road, and 3) ineffective water spraying of site haul/ access roads.

The ET has reminded the Contractor to carry out measures as follows:

1. Provide sprinkler system for areas that cannot be accessed by water truck, including along site boundary and entrance to Lung Mun Road.
2. To enhance and increase spraying frequency by water truck.
3. Silt deposited on main haul road should be removed regularly.
4. Stockpiles of excavated materials should be covered with tarpaulin sheets.
5. Use granular fill to pave access roads.

A dust monitoring program for one month on a weekly basis is proposed to investigate the improvement results. The tentative schedule is set for 20 Sept 06, 27 Sept 06, 4 Oct 06 and 11 Oct 06, subject to weather condition. The monitoring location is proposed at the entrance of the site, where vehicles drive in and out of the EcoPark. The table below lists the duration, location and parameter of the dust monitoring program.

Table 3.2 Dust Monitoring Program		
Monitoring Date	Monitoring Location	Parameter to be measured
20 September 2006	The Entrance of the EcoPark	1-hour Total Suspended Particulates (TSP) in $\mu\text{g}/\text{m}^3$
27 September 2006		
04 October 2006		
11 October 2006		

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

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

### 3.3 Noise



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

### 3.4 Surface Water Quality

Stagnant water was occasionally found in open area at site. The Contractor was reminded to fill the area or remove the stagnant water regularly in uneven surface and pits at site to prevent mosquito breeding. The said water was directed and discharged at sedimentation channel with coarse silt removal facilities.

The Contractor has provided silt removal sand bags at channels to enhance filtering of discharge. Silt curtain was installed at the discharge point at Marine Front. The Contractor was reminded to regularly service the silt curtain to maintain its treatment function.

Chemical toilets (5 nos.) have been provided by a licensed contractor, of which sewage generated is collected every three to four days without causing contamination on surface water. The contractor has transferred one (1 no.) of chemical toilet to the steel storage area. The Contractor is currently applying for the Effluent Discharge License.

### 3.5 Visual and Landscape Impact

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

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

### 3.6 Waste / Chemical Waste

As advised by the Contractor, there was no disposal of chemical waste in the reporting



month. Separate waste collection bins were made available for collecting aluminum cans, waste paper and plastic bottles etc.

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

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

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

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

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

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

Table 3.3 Summary of Waste Disposal in September 2006			
Type of Waste	Disposal Site	Quantity	Remarks
General Waste	WENT Landfill	28.5 tonnes	-
Inert C&D Material	Public Fill Facility	34222.6 tonnes	-

### 3.7 Landfill Gas

The ET has carried out, on 20 and 27 September 06, landfill gas (LFG) monitoring at

four (4) locations on site as instructed by the Engineer. All LFG measurements are summarized in Table 3.4, and original field measurement sheets are appended in Appendix 3. Measurement locations are shown in Appendix 4. The results of measurement are within Action/ Limit Level in accordance with the EM&A Manual, as shown in Table 3.5.

Table 3.4 Summary of LFG Measurement for Sept 2006

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	20 Sept 06	15:28	Sunny	0.0%	0.0%	19.5%
Point B	20 Sept 06	15:33	Sunny	0.0%	0.0%	19.5%
Point C	20 Sept 06	15:40	Sunny	0.0%	0.0%	19.6%
Point D	20 Sept 06	15:50	Sunny	0.0%	0.0%	19.5%
Point A	27 Sept 06	15:40	Sunny	0.0%	0.0%	19.7%
Point B	27 Sept 06	15:46	Sunny	0.0%	0.0%	19.6%
Point C	27 Sept 06	15:50	Sunny	0.0%	0.0%	19.5%
Point D	27 Sept 06	16:05	Sunny	0.0%	0.0%	19.5%

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

Parameter	Level	Action
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 LICENSES

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

Table 4.1 Summary of Environmental Permits/ Licenses				
Description	License / Permit No.#	Date of Issue	Date of Expiry	Status/Remarks
Environmental Permit	EP-226/2005	9-Sept-2005	--	Issued
Registration of Waste Producer	5111-421-K2869-02	27-Jul-2006	--	Issued
Construction Noise Permit	GW-RW0471-06	29-Aug-2006	28-Feb-2007	Issued
Water Discharge Permit	--	--	--	In Progress

## 5 CUMULATIVE LOG OF COMPLAINTS AND REMEDIAL ACTION

There was one complaint received in association with site activities during September 2006. 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 September 2006.

## 7 CONCLUSION

There is no summon nor prosecutions reported during September 2006.

An environmental complaint against dust nuisance recorded on 1 Sept 06 at EcoPark site was received in the reporting month. The Contractor should continuously implement mitigation measures for site dust control, including measures such as enhance spraying of water on main haul road and access roads, both by means of water truck and sprinkler system; adequately cover for stockpiles of excavated materials with tarpaulin sheets; and use granular fill to pave roads whenever appropriate.

Landfill gas monitoring was carried out on 20 and 27 September 2006. LFG levels are within action and limit levels.



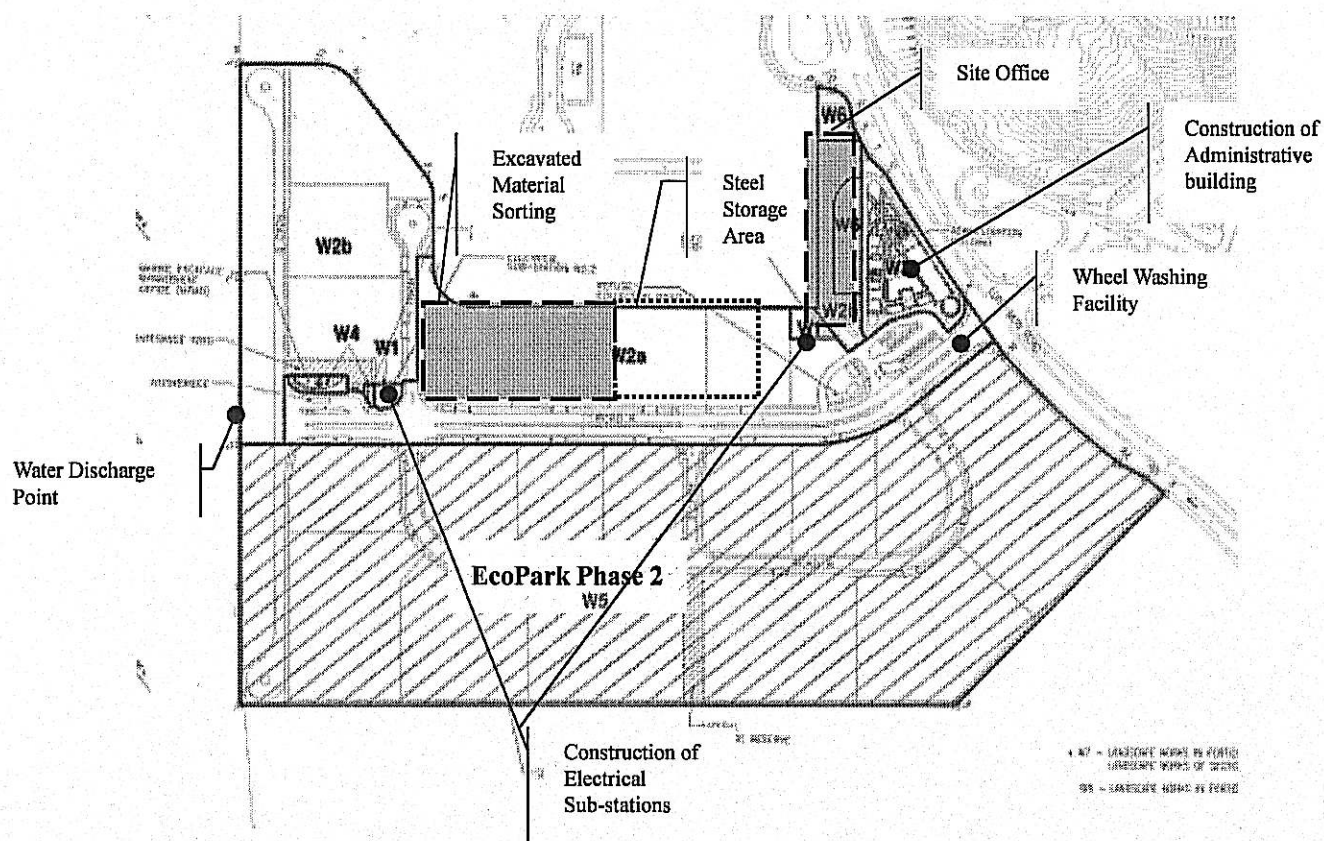
The contractor was advised to pay more efforts on environmental concerns and awareness such as the accumulated rainwater or stagnant water found at site that could cause the problem of mosquito breeding.

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



## APPENDIX 1

### SITE LAYOUT PLAN



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

## ORIGINAL LANDFILL GAS FIELD MEASUREMENT RECORD SHEETS

1. The first part of the document is a list of names and their corresponding addresses. The names are listed in a column on the left, and the addresses are listed in a column on the right. The names are: John Doe, Jane Smith, and Bob Johnson. The addresses are: 123 Main St, 456 Elm St, and 789 Oak St.

[illegible]

We tested instrument \_\_\_\_\_  
 Advertising Equipment: Am. Radio & Music Co. Serial #: GA01586 Calibration Date: 30 Sept 2006  
 (GA 2006)

ER: Witnessed by Town Clerk.  
Contractor: Witnessed by \_\_\_\_\_



Contract No.: EP/SP/3206 - Development of EcoPark in Tuen Mun Area 38

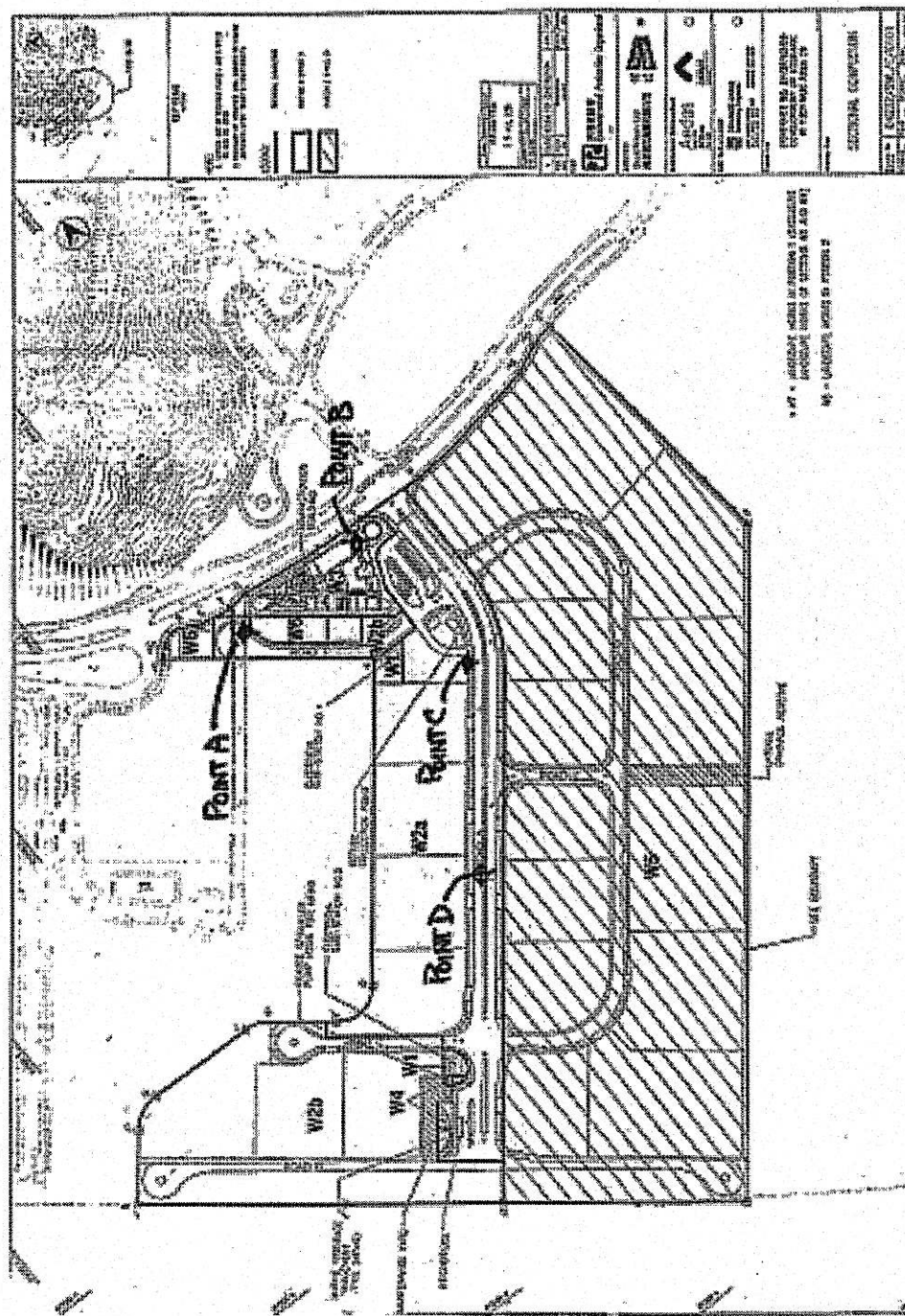
[illegible]

Monitoring Equipment: Geotechnical Serial #: GHO7586 Calibration Date: 21 September 2004  
per document  
 Any Quality Monitor  
 (QA 2.00)



# APPENDIX 4

## LANDFILL GAS MEASUREMENT LOCATIONS



## APPENDIX 5

### CUMULATIVE LOG OF COMPLAINTS

Environmental Parameters	No. of Outstanding Complaints	No. of complaints received in September 2006	Cumulative no. of complaints received since the commencement of project
Air	0	1	1
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	1	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
EP-C-01/06	5 Sept 06	Site Entrance	Dust / 1 Sept 06	Complaint against dust emission from vehicles driving in or out of EcoPark	<p>Causes of problems identify as:</p> <ol style="list-style-type: none"> <li>1) Inadequate cover of excavated material stockpile.</li> <li>2) Accumulating silt on haul road.</li> <li>3) Ineffective water spraying of site haul/ access roads</li> </ol> <p>Mitigation Actions:</p> <ol style="list-style-type: none"> <li>1) Provide sprinkler system for areas that cannot be accessed by water truck.</li> <li>2) To enhance and increase spraying frequency by water truck.</li> <li>3) Silt deposited on main haul road should be removed regularly.</li> <li>4) Stockpiles of excavated materials should be covered with tarpaulin sheets.</li> <li>5) Use granular fill to pave access roads.</li> </ol>	Environmental Team / 7 Sept 06