

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

ENVIRONMENTAL MONITORING AND AUDIT

MONTHLY EM&A REPORT for

September 2009

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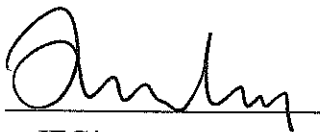
APPROVAL SHEET

DOCUMENT DATE: 30 September 2009

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Signature: 
Miss Patricia Chung

Date: 28 OCT 2009

Verified by: 
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Date: 30 OCT 2009

* IEC – Independent Environmental Checker

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EXECUTIVE SUMMARY

This is the thirty-ninth 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/A).

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 2009.

The site activities in the reporting period mainly consisted of excavation and site formation works and construction of drainage in Phase II construction site.

Several environmental issues, such as muddy water brought to Road A by vehicles exiting construction site, accumulated water in excavation pits near the waterfront and temporary removal of hoardings, have been identified by ET during weekly site inspections in the reporting month. Contractor has implemented some mitigation measures to address those problems as advised by ET. Some of the measures taken by the contractor were considered as effective to minimize negative impact to the environment. On-going investigation will be carried out to observe performance and effectiveness of those measures. Outstanding environmental items will be inspected in the following month.

Weekly LFG monitoring on points S3 and Site Exit (for location please refer to appendix 1, adjacent to lot P5) are being carried out for most of the reporting month. Monitoring point at Site Exit is closed due to completion of excavation works, since 18 September 2009. The measurement results from ET shown in Table 3.5 were within Action and Limit Levels in accordance with EM&A manual.

There were no notifications of summons or successful prosecution during September 2009.

Planned activities for October 2009 with regard to development of EcoPark consist of:

- 1) Site formation works,
- 2) Excavation works,
- 3) Road formation works and
- 4) Construction of drainage, sewerage & water mains

1. BASIC PROJECT INFORMATION

1.1 Introduction

This is the thirty-ninth 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 September 2009. 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).

The construction works of Phase I have already commenced in July 2006 and have been completed in November 2008.

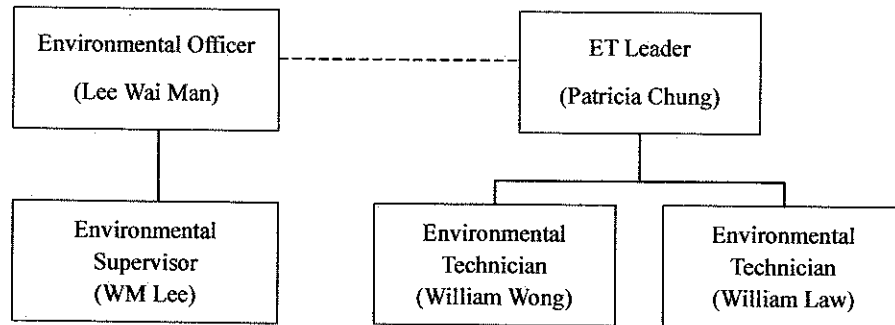
The construction works of Phase II commenced in December 2008 and is anticipated to be completed in December 2009.

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	Site formation works	01 September 2009 – 30 September 2009
2	Excavation works	01 September 2009 – 30 September 2009
3	Road Formation works	01 September 2009 – 30 September 2009
4	Construction of drainage	01 September 2009 – 30 September 2009

Machineries		
	Equipment/ Plant	Quantity
1	Mobile Crane	0
2	Excavator	6
3	Generator	2
4	Air Compressor	1
5	Roller	0
6	Loader	1
7	Grab Lorry	0
8	Crane Lorry	1
9	Water Truck	1
10	Dump Truck	1

Remarks:

- As informed by the Contractor, most equipment is mobile at site subject to work progress.
- Refer to Appendix 1 – Site layout plan for location of construction activities.

2.2 Future Key Issues

The Contractor has provided an updated construction program in Table 2.2 to show the planned activities for the coming month (October 2009). The anticipated environmental issues are summarized as follow:

Item	Works	Anticipated Environmental Issues
1	Site formation works, excavation works & road works	<ul style="list-style-type: none"> - Generation of C&D waste; excavated material should be reused as much as practicable. - Dust may be generated; the wheel washing machine should be in operation. - Haul road should be sprayed regularly, by truck or sprinkler. - Stagnant water should be removed. - Mosquito mitigation measures should be implemented. - Landfill gas monitoring should be carried out.
2	Construction of drainage, sewerage & water mains	<ul style="list-style-type: none"> - Generation of C&D waste; excavated material should be used as much as practicable - Dust may be generated; the wheel washing machine should be in operation

The site inspection schedule for the next month (October 2009) is designated on 2nd, 9th, 16th, 23rd and 30th of October 2009.

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. Regular site inspections should be carried out by the ET once per week during construction phase.

Outstanding issues at the end of August 2009 includes:

- 1) Road A near waterfront is covered with dirt and dust, due to the construction vehicles using the exit without any wheel washing facilities. Contractor was reminded to properly fence off the site entrances and exits without any wheel washing facilities.
- 2) The doors for the chemical waste storage were bent and did not close and lock properly. Contractor was reminded to monitor and maintain the chemical waste storage facilities.
- 3) Drip pan has not yet been provided for the three plastic chemical drums adjacent to the cooling tower in the administration building. ET was informed that a proper drip pan has been designed and will be constructed in September.

Site inspections for Phase II construction site were conducted on 4th, 11th, 18th and 25th of September 2009.

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	Action taken	Closing Date
21 August 09 28 August 09 11 September 09	Road A near waterfront is covered with dirt and dust, due to construction vehicles using the exit without any wheel washing facilities.	Contractor was reminded to properly fence off the site entrances and exits without any wheel washing facilities.	Contractor took action to block off the site entrance near waterfront to prevent heavy vehicle to pass through.	18 September 09
28 August 09 18 September 09 25 September 09	The doors for the chemical waste storage were bent and did not close and lock properly. Furthermore, A chemical storage cabinet was missing a lock.	Contractor was reminded to monitor and maintain the chemical waste storage facilities and properly to ensure the storage facilities are secured.	Contractor immediately appointed a worker to fix the doors.	To be followed in the next reporting month.
4 September 09 11 September 09	A few oil containers are found near the chemical drum storage cabinet without a drip tray.	Contractor was reminded to place chemical containers on a drip tray or inside the chemical drum storage cabinet immediately after use.	Contractor took action to place oil containers without a drip tray inside the chemical drum storage.	18 September 09
11 September 09	Muddy water runoff was observed at the waterfront.	Contractor was reminded to monitor the muddy water runoff from Phase II and consider using slit curtains when necessary.	Contractor continually to monitor muddy water runoff in heavy rain days. No muddy water runoff has been observed at the waterfront thereafter.	18 September 09
11 September 09 18 September 09 25 September 09	The automatic wheel washing machine malfunctioned on 11 September and found to be severely damaged on 18 September.	Contractor was reminded to repair the automatic wheel washing machine and instruct workers to properly wash wheels of construction vehicles by hand.	--	To be followed in the next reporting month.
18 September 09	Diesel overflowed into the drip tray for the power generator and surrounding areas.	Contractor was advised to monitor the diesel filling process and ensure the valves on the drip trays shuts completely.	--	To be followed in the next reporting month.
18 September 09	Sections of hoardings and fabric wraps along Road A were damaged by typhoon.	Contractor was reminded to repair the damaged hoardings and replace the fabric wraps to prevent dirt and dust being brought outside of the construction site by wind.	Contractor took action to replace the fabric wraps along the damaged sections.	To be followed in the next reporting month.

Date	Observations	Advice from ET	Action taken	Closing Date
25 September 09	Pools of stalled water are found near lot P10.	Contractor was reminded that accumulated water should be treated properly to meet requirements specified in the issued discharge license, if appropriate.	--	To be followed in the next reporting month.

3.2 Air Dust

Excavation work is being carried out in Phase II construction site. Dust problem may be arisen when stockpiles of excavated materials are not enclosed, covered or dampened during dry or windy conditions. Dust suppression measures such as water spraying and coverings with tarpaulin on stockpiles have been observed in the reporting month.

As observed during inspection in the reporting month, many of the stockpile materials have been used for backfilling. Contractor was reminded to continue routine dust suppression measures such as regular water spraying on site.

3.3 Noise

The major noise source was vehicle movement and machinery 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 19 August 2009 and it will be expire on 18 Jan 2010.

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. Muddy water was observed at discharge point for Phase I construction site on 14 August 2009. The contractor was reminded to consider using a slit curtain if the discharge continues. As informed by Engineer's Representative, there was no direct water discharge at manhole in Phase II construction site. No muddy water discharge is expected.

Chemical toilets (1 nos.) have been provided in Phase II construction site by a licensed contractor, of which sewage generated is collected every three to five days without causing contamination on surface water. The Effluent Discharge License was issued to the Contractor on 20 November 2006.

The temporary storage tank was used to store the effluent of aerobic wastewater treatment system and the stored effluent was pumped away regularly. As checked by the ET, there was no effluent discharge into the storm water drain. To avoid any sewage overflow, frequent checking is required after the commencement of Phase II construction works.

The automatic wheel washing machine was found to be severely damaged on 18 September 2009. Contractor was reminded to manually wash the vehicles leaving the construction site before automatic wheel washing machine is repaired or replaced. ET will continue to monitor in the coming month on this issue.

Road A near waterfront is covered with dirt and dust, due to construction vehicles using the exit without any wheel washing facilities. Contractor was reminded to properly fence off the site entrances and exits without any wheel washing facilities.

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. Some of the hoardings have been removed at the interface between Phase I and Phase II construction site. Re-installation has been completed as observed during inspection carried out on 24 April 2009.

During the reporting month, hoardings and fabric wraps in some sections have been damaged by the typhoon. As observed during inspection on 25 September 2009, contractor took action to replace the damaged sections.

3.6 Waste / Chemical Waste

The Contractor implemented visual inspection and distributed flyers/ notices to ensure

all dump trucks have mechanical covers closed when leaving EcoPark site.

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

Waste dumpers were used for the collection and storage of general waste. Temporary storage areas for waste metals and waste tires were established in Phase I construction site. For Phase II construction site, a designated refuse collection point has been established and location is shown in Appendix 3.

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.

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. As observed during inspection on 18 September 2009, diesel residue has been found inside one of the drip tray for power generator and the surrounding areas. The Contractor was reminded to use sand to remove the leaked diesel and maintain all drip trays and valves effective to prevent leakages as immediate remedial action. Furthermore, contractor was advised to monitor the diesel filling process and ensure the valves on drip trays are completely closed.

Table 3.4 provides a summary table of waste disposal in September 2009. The Contractor has been reminded to keep good record at site in order to have a clear presentation of waste disposal.

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

3.7 Landfill Gas

Monitoring point Site Exit is closed due to completion of excavation works, since 18 September 2009. However, point S3 is still being monitored.

Measurement results are summarized in Table 3.5. All results are within the Action / Limit Levels in accordance with the EM&A Manual, as shown in Table 3.6.

Sampling Location	Date of Measurement	Sampling Time	Weather Condition	Methane (CH ₄) %LEL	Carbon Dioxide (CO ₂) %LEL	Oxygen (O ₂)
S3	4 September 09	11:26	Sunny	0.00%	0.00%	19.9
Site exit	4 September 09	11:12	Sunny	0.00%	0.00%	20.3
S3	11 September 09	11:20	Sunny	0.00%	0.00%	21.3
Site exit	11 September 09	11:29	Sunny	0.00%	0.00%	21.1
S3	18 September 09	11:30	Sunny	0.00%	0.00%	20.1
Site exit	18 September 09	11:25	Sunny	0.00%	0.00%	20.3
S3	25 September 09	11:37	Sunny	0.00%	0.00%	20.4
Site exit	N/A	N/A	Sunny	N/A	N/A	N/A

Remarks: The excavation pit near Site Exit has been filled on 18th of September 2009. Hence, no LFG measurements are being done from that day onwards.

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 September 2009, 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/A	9-Sept-2005	--	Issued
Registration of Waste Producer	5111-421-K2869-02	27-Jul-2006	--	Issued
Construction Noise Permit	GW-RW0352-09	19-Aug-2009	18-Jan-2010	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 September 2009.

7. CONCLUSION

There is no summon nor prosecutions reported during September 2009.

Several environmental issues, such as muddy water brought to Road A by vehicles exiting construction site and muddy water runoff at the waterfront, have been identified by ET during weekly site inspections in the reporting month. Contractor has implemented some mitigation measures to address those problems as advised by ET. Some of the measures taken by the contractor were considered as effective to minimize negative impact to the environment. On-going investigation will be carried out to observe performance and effectiveness of those measures. Outstanding environmental

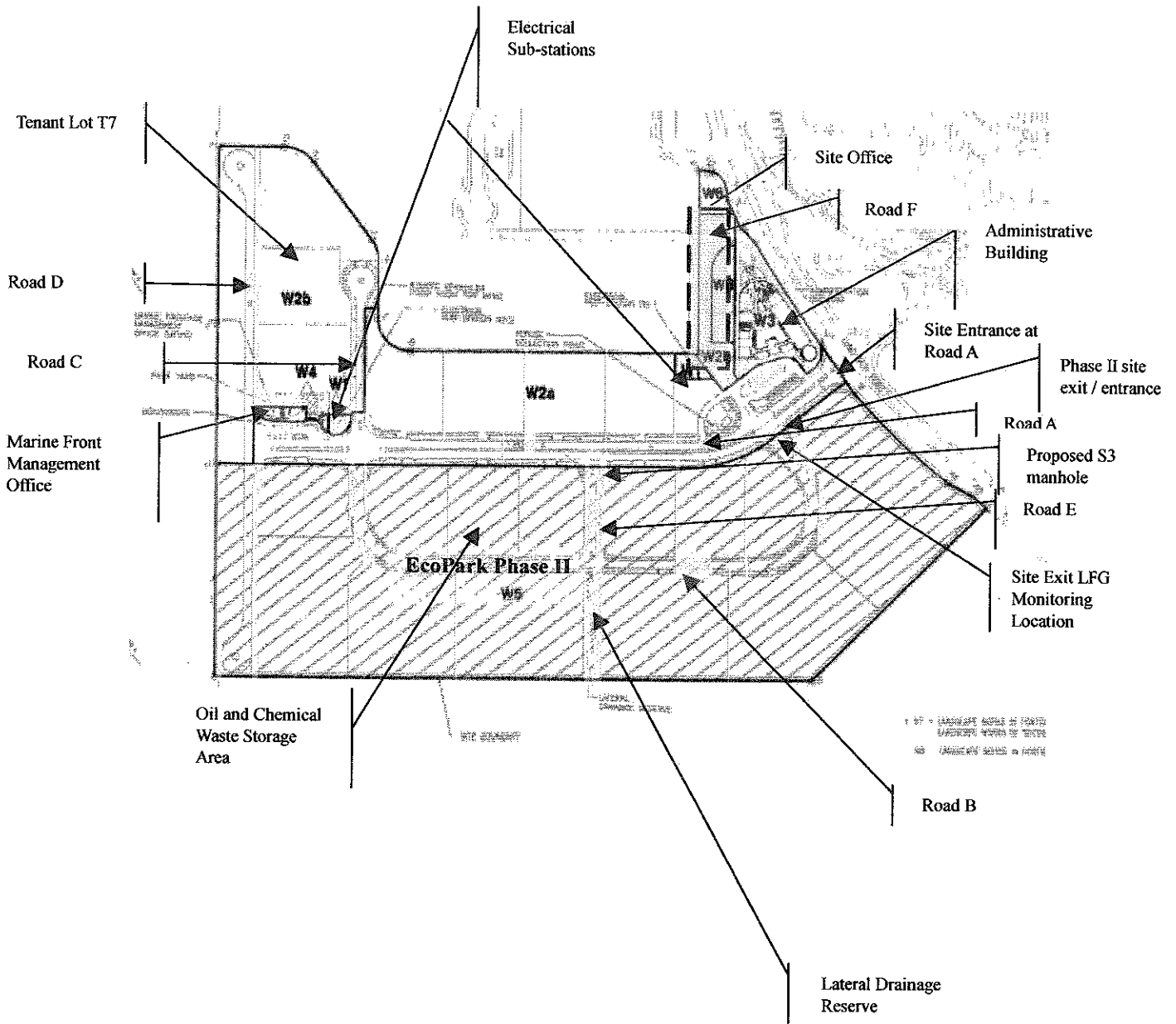
items will be inspected in the following month.

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.

Weekly LFG monitoring on points S3 and Site exit are being carried out in the reporting month. Monitoring point Site Exit is closed due to completion of excavation works, since 18 September 2009. The measurement results from ET shown in Table 3.5 were within Action and Limit Levels in accordance with EM&A manual.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the EM&A Manual and Environmental Permit requirement.

APPENDIX 1 - SITE LAYOUT PLAN



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

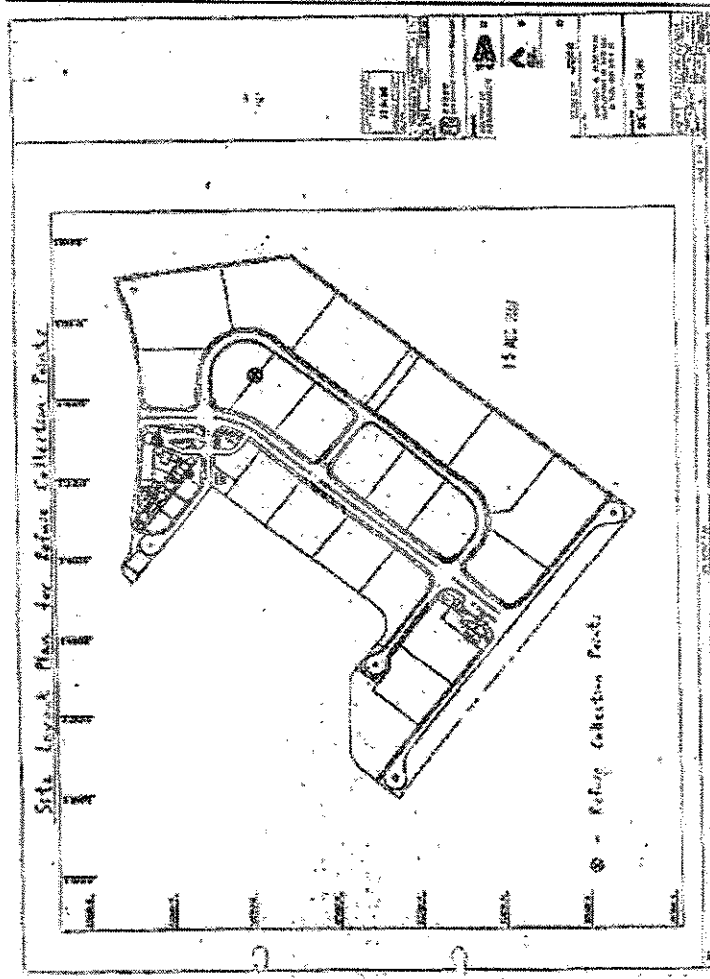
Company/Department	Name	Position	Telephone
Scott Wilson Ltd.	Harold Insley	Independent Environmental Checker	2410 3858
Scott Wilson Ltd.	Mr. Andy Cheung	Resident Engineer	6111 9703
Scott Wilson Ltd.	Mr. T W Wong	Inspector	6111 9705
Kaden Construction Limited	Mr. K M Book	Project Manager	9193 8680
Kaden 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. William Wong	Environmental Technician	2185 0154
Environmental Pioneers & Solutions Limited	Mr. William Law	Environmental Technician	2185 0172

APPENDIX 3 – REVISED SITE LAYOUT PLAN FOR REFUSE COLLECTION POINTS

Development of EcoPark in Tuen Mun Area 38

Contract No. EP/SP/52/06
EM&A Report No. 39 (December 2008)

APPENDIX 3 – REVISED SITE LAYOUT PLAN FOR REFUSE COLLECTION POINTS



APPENDIX 4 - ORIGINAL LANDFILL GAS FIELD MEASUREMENT RECORDING SHEETS

Environmental Pioneers and Solutions Limited

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

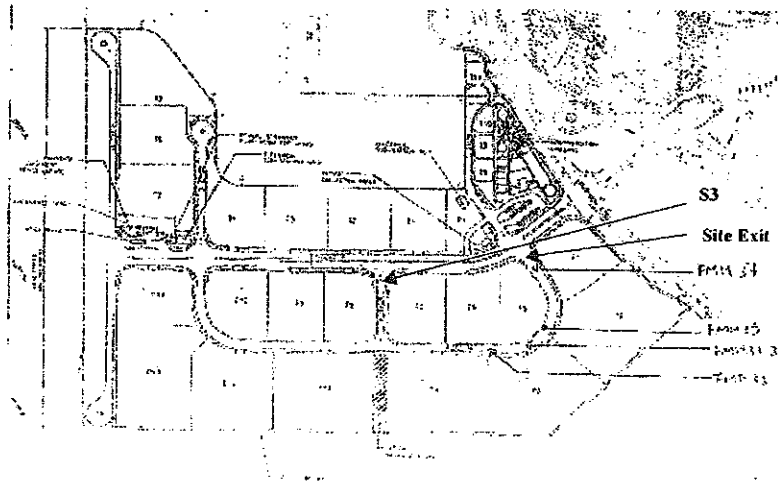
Landfill Gas Monitoring – Field Measurement Recording Sheet

Date of Monitoring: 4/19/2009
 Weather condition: Sunny
 Monitoring performed by: Chung Pui Suen
 Monitoring instrument:

Instruments	Model: GEM 2000	Last calibration:	03 April 2009
	S/N: GM-08793106	Next calibration:	02 April 2010

Monitoring results:

Location	Time	Results				
		Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Oxygen (O ₂) %	Bal. Gas %	Baro. Pressure %
S3	1126	00.0	00.0	19.4	80.0	29.62
Site exit	1112	00.0	00.0	20.3	79.8	29.62



Environmental Pioneers and Solutions Limited

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

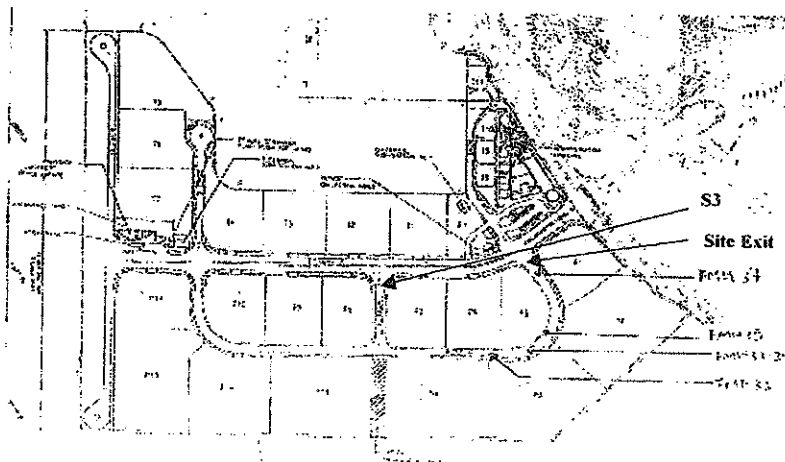
Landfill Gas Monitoring – Field Measurement Recording Sheet

Date of Monitoring: 11/09/09
 Weather condition: Rainy
 Monitoring performed by: William Wong
 Monitoring instrument:

Instruments	Model: GEM 2000	Last calibration:	03 April 2009
	S/N: GM-08793106	Next calibration:	02 April 2010

Monitoring results:

Location	Time	Results				
		Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Oxygen (O ₂) %	Bal. Gas %	Baro. Pressure %
S3	11:20	0.00	0.00	21.3	78.6	29.74
Site exit	11:29	0.00	0.04	21.1	78.8	29.74



Environmental Pioneers and Solutions Limited

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

Landfill Gas Monitoring – Field Measurement Recording Sheet

Date of Monitoring: 18/9/2009

Weather condition: SUNNY

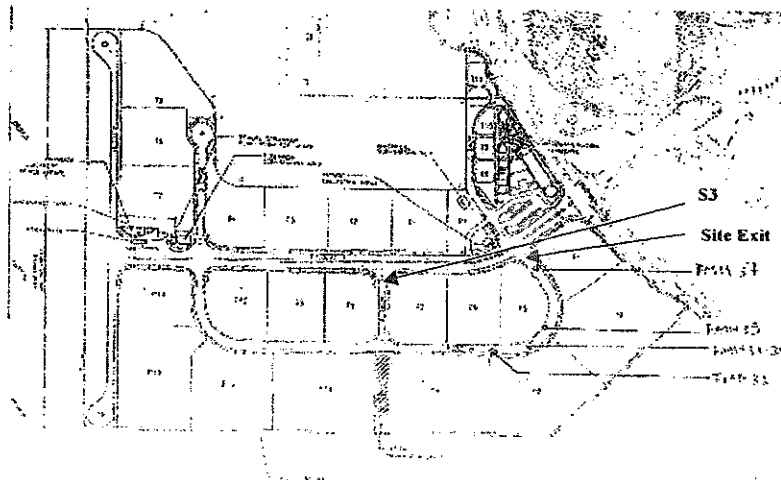
Monitoring performed by: WILLIAM LAW

Monitoring instrument:

Instruments	Model: GEM 2000	Last calibration:	03 April 2009
	S/N: GM-08793106	Next calibration:	02 April 2010

Monitoring results:

Location	Time	Results				
		Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Oxygen (O ₂) %	Bal. Gas %	Baro. Pressure %
S3	11:30	00.0	00.0	>0.1	79.9	29.81
Site exit	11:25	00.0	00.0	>0.3	79.7	29.81



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Landfill Gas Monitoring – Field Measurement Recording Sheet

Date of Monitoring: 25/9/2007

Weather condition: Sunny

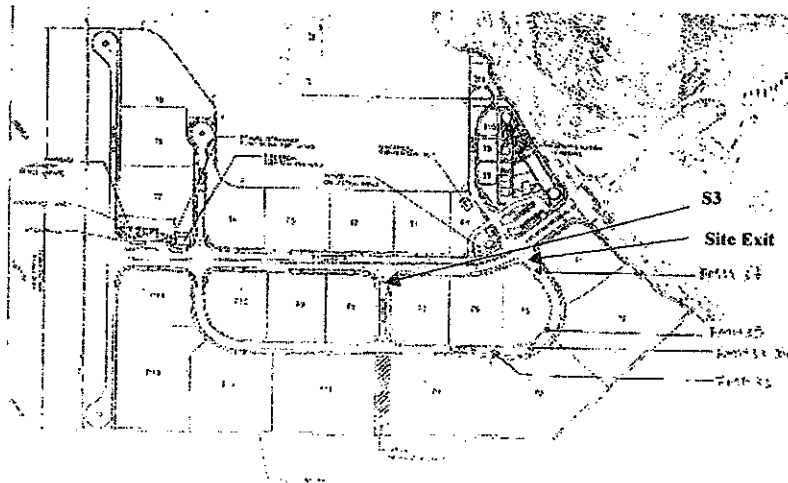
Monitoring performed by: WILLIAM LAW

Monitoring instrument:

Instruments	Model: GEM 2000	Last calibration:	03 April 2009
	S/N: GM-08793106	Next calibration:	02 April 2010

Monitoring results:

Location	Time	Results				
		Methane (CH ₄) %	Carbon Dioxide (CO ₂) %	Oxygen (O ₂) %	Bal. Gas %	Baro. Pressure %
S3	11:37	00.0	00.0	70.4	79.6	29.79
Site exit	N/A	N/A	N/A	N/A	N/A	N/A



APPENDIX 5 -- CUMULATIVE LOG OF COMPLAINTS**CUMULATIVE LOG OF COMPLAINTS**

Environmental Parameters	No. of Outstanding Complaints	No. of complaints received in September 2009	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 Compliant received	Location	Complainant /Date	Details of Complaint	Investigation /Mitigation Action	Investigated by/ Date
-	-	-	-	-	-	-

