

Issue No. : Issue 1
Issue Date : January 2016
Project No. : 1260

ECOPARK OPERATION

ANNUAL ENVIRONMENTAL MONITORING & AUDIT REPORT 2015

Prepared By:

ALLIED ENVIRONMENTAL CONSULTANTS LTD.

COMMERCIAL-IN-CONFIDENCE

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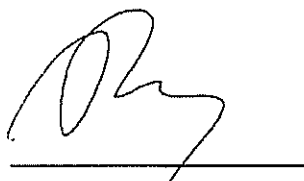
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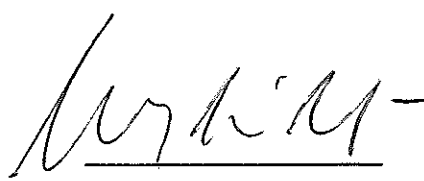
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EXECUTIVE SUMMARY

General

EcoPark is a key element in the Government's waste management policy that aims at promoting the local recycling industry by providing long-term land at affordable rents, thereby encouraging investment in advanced technology and value-added recycling processes. EcoPark is being developed in two phases in Tuen Mun Area 38 as shown in *Figure 1.1*. The contract for the management of EcoPark – Contract No. *EP/SP/71/13 Provision of Management Services for EcoPark 2014* was awarded to Urban Property Management Limited (UPML) by Environmental Protection Department (EPD) effective from 30th October 2014.

UPML, the “Operator” of EcoPark, appointed Allied Environmental Consultants Ltd. (AEC) as the Environmental Team (ET) to carry out the Environmental Monitoring and Audit (EM&A) works for the operation of EcoPark as required by the EM&A Manual and in accordance with the conditions of the Environmental Permit (EP) (EP-226/2005/C).

This is the ninth (9th) annual EM&A report prepared for the operation phase of EcoPark and covers the calendar year of 2015.

There are fifteen tenants in EcoPark Phase 1 and Phase 2 in 2015. Nine tenants have commenced full recycling activities within their lots, namely Champway, Shiu Wing, Hung Wai, Li Tong, Telford, Yan Oi Tong, St. James's Settlement, K.Wah and South China. One tenant (Chung Yue) carries out trial commissioning; one tenant (E.Tech) carries out machinery testing; one tenant (SSK) carries out plant design; one tenant (On Fat Lung) carries out plant construction work; one tenant (Alba IWS) carries out ground investigation work/plant planning and design work and construction of temporary site office; and one tenant (Cosmos) is under tenancy termination.

Throughout the reporting year, monthly site inspections and monthly random site inspections were conducted by the ET and the IEC respectively, while quarterly joint site inspection was carried out by the Operator, the IEC and the ET. Observations and recommendations were made during site inspections.

Throughput of Materials / Waste Generated

The throughputs of the ten active tenants in the reporting year are summarised below. Please note that product output plus waste disposal does not necessarily equal the waste input, due to material losses during processing and material retained within the lots.

Material Type	Waste Input (tonnes)	Product Output ⁽⁴⁾ (tonnes)	Waste Disposed ⁽⁴⁾ (tonnes)
Waste Organic Food	9,905	3,123	5,569
Waste Ferrous Metals	89,623	87,673	-
Waste Wood	327	442	-
Waste Electronics	1,638	1,318	92
Waste Plastics	5,449	5,045	877
Waste Glass	1,265	42,672	105
Construction Waste	25,455		

Notes:

- 1) The throughput data presented above is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) All waste materials were processed for product output. The total product output may not be the same as the waste input due to processing of materials that were received before the reporting quarter and were stored within the lots.
- 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
- 4) Since the recycling of waste glass and construction waste is combined to produce concrete block at K.Wah, the product output and waste disposal from both processes are combined.

Exceedances of Any Measured Action / Limit Levels

The northern part of EcoPark is located within the 250m Landfill Gas (LFG) Consultation Zone of Shiu Lang Shui Landfill. LFG monitoring was carried out quarterly at five locations (three in Phase 1 and two in Phase 2) in the reporting year. The LFG monitoring in Phase 2 (EP2-1 and EP2-2) was commenced in January 2011.

In the reporting year, LFG monitoring was undertaken on 17th March, 24th June, 22nd September and 16th December 2015. Exceedances of Action and Limit Levels were recorded at Station EP2-2 on 24th June 2015 and are summarised as below.

Parameter	Recorded Level	Action Level	Limit Level	Status
Carbon Dioxide (% v/v)	1.4	> 0.5%	> 1.5%	Exceedance of Action Level
Methane (% LEL)	34	> 10%	> 20%	Exceedance of Limit Level
Oxygen (% v/v)	14.2	< 19%	< 18%	Exceedance of Limit Level

Tenants and workers near Station EP2-2 were notified. As advised by the Operator, no underground work was being carried out within EcoPark. Besides, non-detectable level of methane (i.e. <0.1%) was detected from Shiu Lang Shui Landfill. The chamber was ventilated and “no smoking” signs were erected in the vicinity of Station EP2-2 in accordance with the Event and Action Plan.

Additional LFG monitoring was conducted by ET on 3rd July and 18th August 2015 in the presence of representatives from the Operator and EPD. The level of methane was dropped by approximately 50% on 3rd July 2015 in comparison with the LFG monitoring results on 24th June 2015. After the cleaning of HGC broadband utility pipes and underground chambers by the Operator, the concentrations of carbon dioxide, methane and oxygen had returned to a non-exceedance level during the monitoring on 18 August 2015.

Exceedances of Action and Limit Levels were recorded at Station EP2-2 on 22nd September 2015 and are summarised in the table below.

Parameter	Recorded Level	Action Level	Limit Level	Status
Carbon Dioxide (% v/v)	1.5	> 0.5%	> 1.5%	Exceedance of Action Level
Oxygen (% v/v)	16.6	< 19%	< 18%	Exceedance of Limit Level

In the presence of IEC and the Operator, no apparent source of carbon dioxide generation or oxygen consumption was identified within the underground chamber during investigation. Ventilation enhancement was carried out to restore the concentrations of carbon dioxide and oxygen to non-exceedance level. Nonetheless, the Operator was recommended to remind tenants to ensure adequate

ventilation in indoor environment. The LFG concentrations had returned to non-exceedance levels during the LFG monitoring on 16th December 2015 and routine quarterly LFG monitoring will be continued.

Summary of Complaints, Summons and Prosecutions

One complaint about odour nuisance from South China's Lot was received from Tuen Mun Area 38 Fill Bank via phone on 29 December 2015. The complaint is under investigation and will be followed up in the next report.

No environmental summon or successful prosecution was recorded in the reporting year.

Reporting Changes

There is no reporting change in the reporting year.

Future Key Issues

It is anticipated that more tenants in Phase 2 will commence recycling activities in 2016. Operation phase LFG monitoring in Phase 1 and Phase 2 will be continued with no exceedance anticipated.

Conclusions of Annual Review

In terms of interpretation of EM&A data, the outcome of quarterly monitoring is considered as sufficient and effective according to *Section 8.7.11* of the EIA Report and *Section 6.4.4* of the EM&A Manual.

In terms of the environmental acceptability of EcoPark, no critical environmental deficiencies were identified at various tenants' lots in EcoPark in the reporting year. Therefore, the operation of EcoPark in environmental terms is considered as acceptable.

In terms of the practicality and effectiveness of the EIA process and the EM&A programme, the mitigation measures proposed in the EIA Study are effective and efficient. The use of the Process Review mechanism to assess incoming processes, processes not assessed in the EIA, or processes with greater throughputs than EIA assumption, is considered to work well and is fully in accordance with the EP conditions, the recommendations of EIA and the requirements of the EM&A programme.

1 PROJECT BACKGROUND

1.1 Project Overview

- 1.1.1 In the document "A Policy Framework for the Management of Municipal Solid Waste (2005 –2014)", the government set out a comprehensive policy to support the recycling industry. This included allocating suitable land, encouraging research and development, introducing environmental legislation and providing effective support measures. In May 2013, the Environment Bureau launched “Hong Kong Blueprint for Sustainable Use of Resources 2013 – 2022”, which promised continuing support for the recycling industry.
- 1.1.2 EcoPark was developed to support the local recycling industry by providing long-term land at affordable rents, thereby encouraging investment in advanced technology and value-added recycling processes.
- 1.1.3 EcoPark, as shown in *Figure 1.1*, has been developed in Tuen Mun Area 38 in two phases (Phase 1 and Phase 2) under Contract *EP/SP/52/06 Development of EcoPark in Tuen Mun Area 38*, which was awarded to Kaden Construction Ltd by the Environmental Protection Department (EPD) in June 2006. Phase 1 construction was completed in July 2009 and Phase 2 construction was completed in November 2010.
- 1.1.4 The contract for the management of EcoPark – Contract No. *EP/SP/71/13 Provision of Management Services for EcoPark 2014* was awarded to Urban Property Management Limited (UPML) by Environmental Protection Department (EPD) effective from 30th October 2014.
- 1.1.5 UPML, the “Operator” of EcoPark, has appointed Allied Environmental Consultants Ltd. (AEC) as the Environmental Team (ET) to carry out the Environmental Monitoring and Audit (EM&A) works for the operation of EcoPark as required by the EM&A Manual and in accordance with the conditions of the Environmental Permit. Mott MacDonald Hong Kong Limited (MottMac) has been appointed by the EPD as the Independent Environmental Checker (IEC) for the Project. The ET and the IEC carry out the EM&A works for EcoPark as required by the EM&A Manual and in accordance with the conditions of the Environmental Permit (EP).

1.2 Operation Programme

- 1.2.1 By the end of the reporting year, there were a total of fifteen tenants in EcoPark comprising:
- Ten active tenants (Champway, Shiu Wing, Li Tong, Telford, Yan Oi Tong, St. James’ Settlement, Hung Wai, Chung Yue, K.Wah and South China) who have continued full recycling operations or are under trial commissioning;
 - One tenant (E.Tech) carried out machinery testing;
 - Waste Management Policy Group (WMG) of EPD has taken possession of Lot Nos. P2, P3 and P4 and handed over to Alba IWS to carry out ground investigation work/ plant planning and design work, and construction of temporary site office;

- One tenant (SSK) who is carrying out plant design and planning;
- One tenant (On Fat Lung) who is carrying out plant construction;
- One tenant (Cosmos) who is now under legal process for termination of the lease agreement.

1.3 Project Organization and Contact Personnel

1.3.1 Key personnel and contact particulars are summarised in *Table 1.1*.

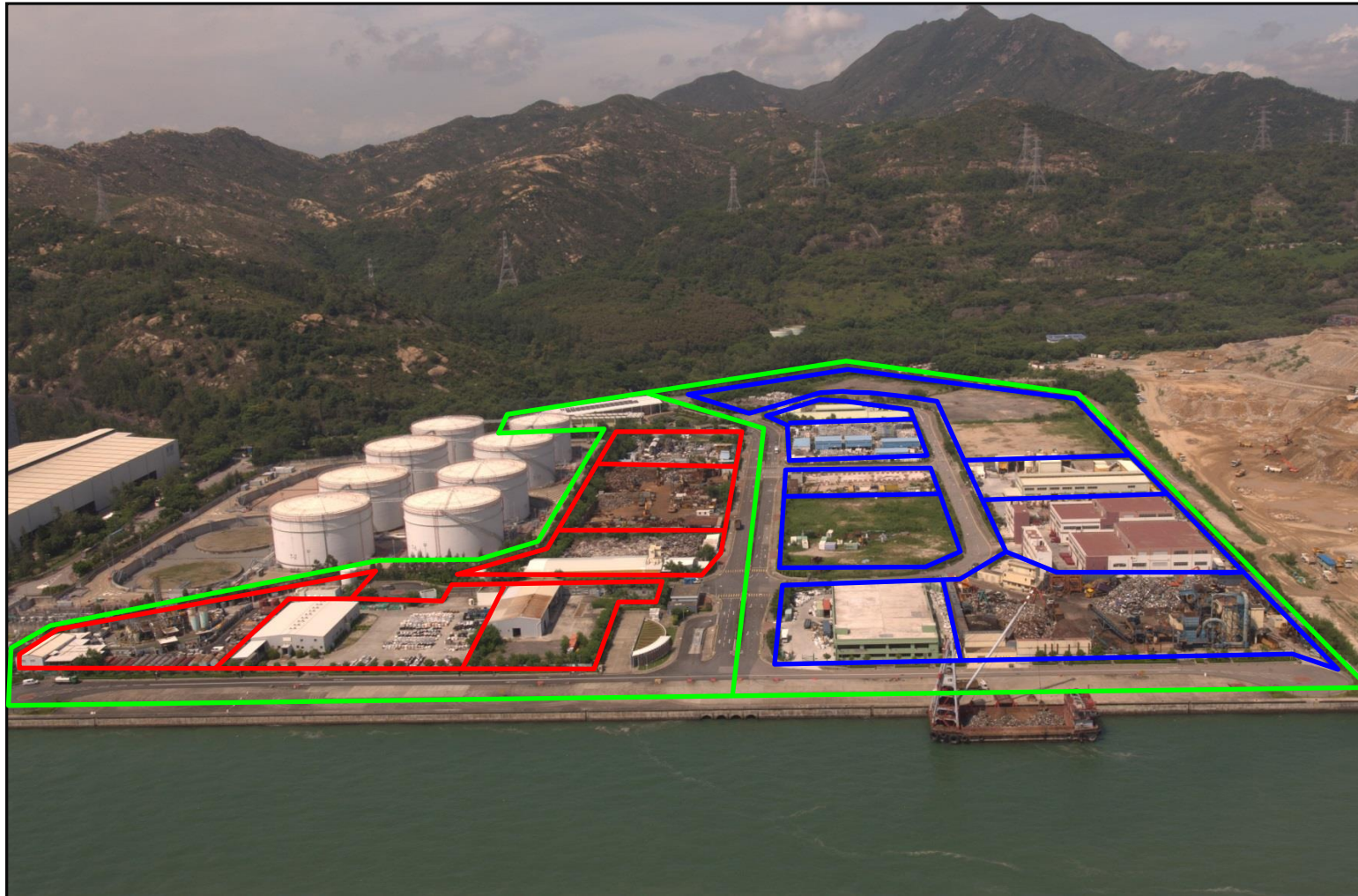
Table 1.1 EM&A Personnel Contact Details

Position	Name	Email Address	Phone No.
<i>Project Proponent – EPD</i>			
Senior EPO	Mr. W. Y. WONG	wywang@epd.gov.hk	2872 1647
<i>Operator – UPML</i>			
Project Manager	Ms. Raindy YIP	raindy.py.yip@urban.com.hk	2212 5900
Park Manager	Ms. May WU	may.sm.wu@urban.com.hk	2212 5920
<i>IEC – Mott MacDonald</i>			
IEC	Mr. Terence KONG	terence.kong@mottmac.com.hk	2828 5757
	Ir. Eric CHING	eric.ching@mottmac.com.hk	2828 5757
<i>ET – AEC</i>			
ET Leader	Dr. James WONG	jw@aechk.com	2815 7028

* Mr. Terence KONG was replaced by Ir. Eric CHING with effective from November 2015.

1.3.2 The organisational structure and lines of communication for the operation of EcoPark with respect to environmental management is given in *Figure 1.2* and *Figure 1.3* respectively.

Figure 1.1 Location of EcoPark in Tuen Mun Area 38



Site Boundary



Phase 1 Lots



Phase 2 Lots

Figure 1.2 Organization Chart of UPML

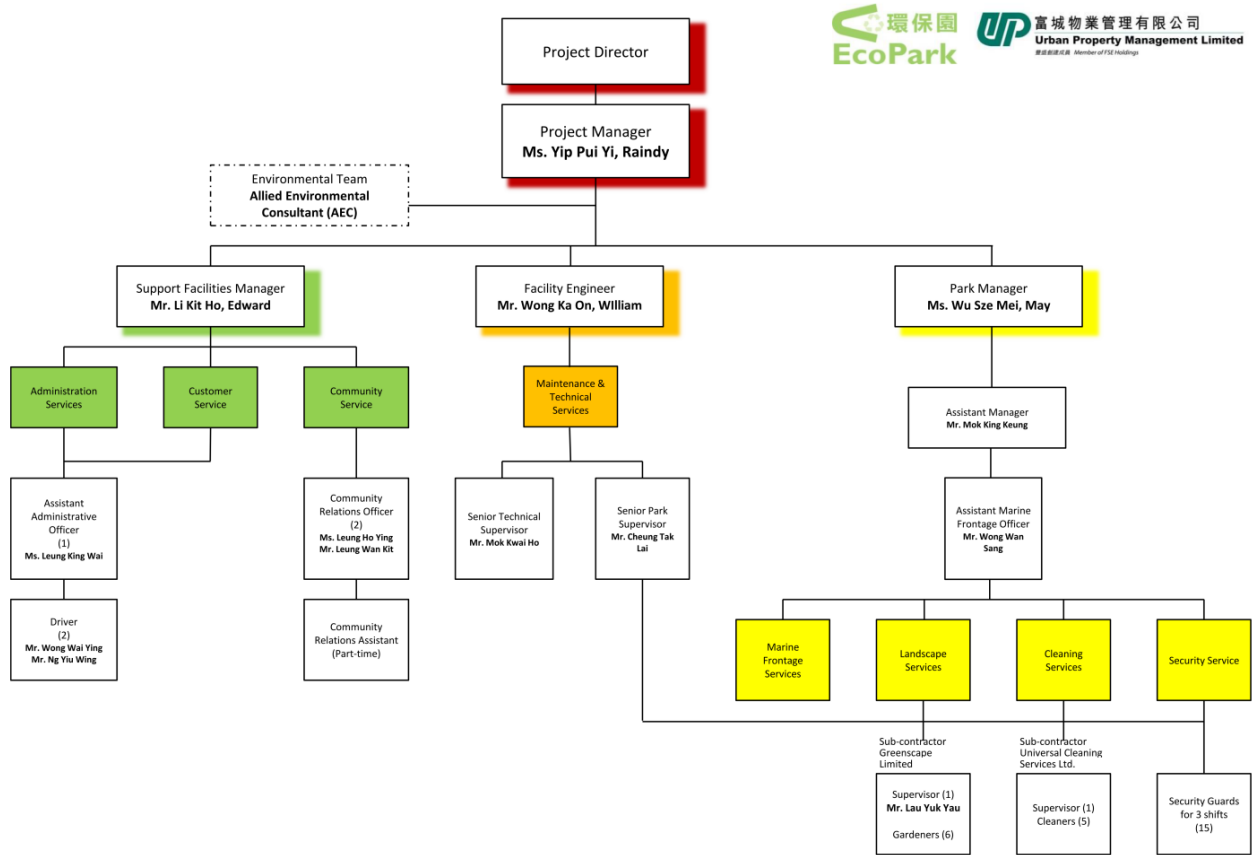
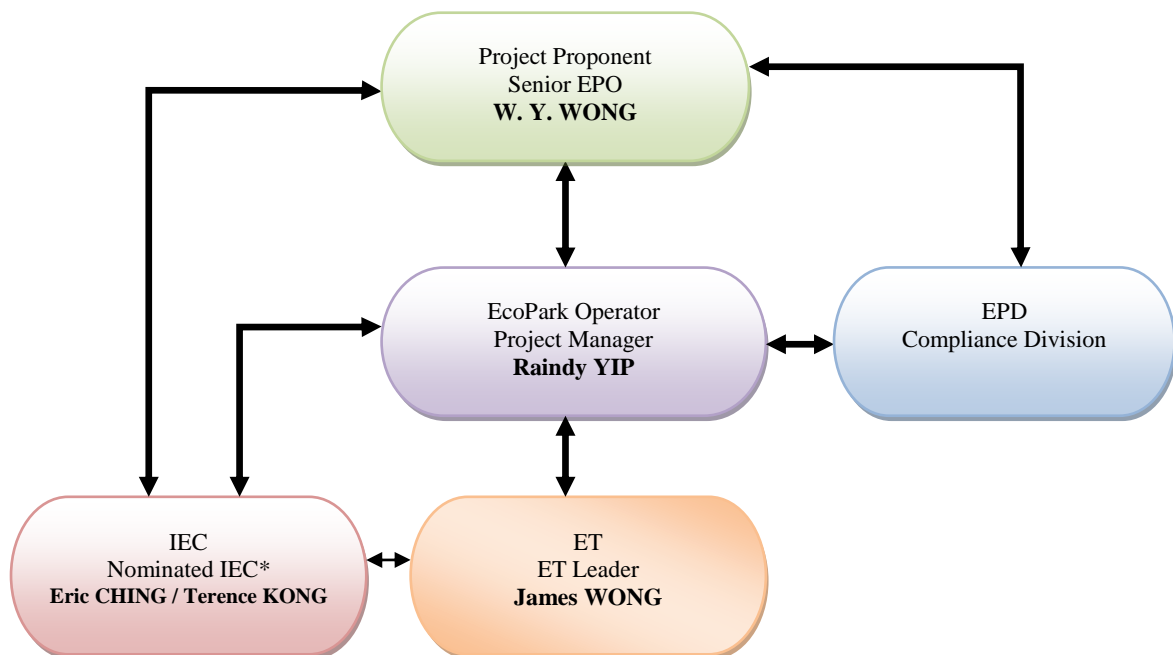


Figure 1.3 Organization Chart of EM&A Works (Operation)



* Mr. Terence KONG was replaced by Ir. Eric CHING with effective from November 2015.

2 SUMMARY OF EM&A REQUIREMENT

2.1 Monitoring Parameters

- 2.1.1 Landfill Gas (LFG) is required to be monitored quarterly at service voids and utility boxes within EcoPark because the northern part of EcoPark lies within the 250m LFG Consultation Zone for Siu Lang Shui Landfill, which is located to the north of EcoPark.
- 2.1.2 Operational LFG monitoring has been carried out in Phase 1 after completion of construction in July 2009, commencing in the August to October 2009 quarter. In Phase 2, monitoring has been carried out after completion of construction in November 2010, commencing in the November 2010 to January 2011 quarter.
- 2.1.3 The location for LFG monitoring was not specified in the EM&A Manual since the final design of EcoPark was not available when the EM&A Manual was approved. Therefore, during a joint site inspection on 27th July 2009, three monitoring locations were identified and agreed as suitable monitoring locations by the former ET (SMEC), IEC (Atkins) and the Operator (SGJV). Subsequently, two more monitoring locations in Phase 2 were proposed by the former ET Leader and agreed by the IEC and Operator via email in January 2011. These five monitoring locations are listed in **Table 2.1** and shown in **Figure 2.1**.

Table 2.1 Operation Phase LFG Monitoring Locations in EcoPark

Monitoring Station ID	Type	Locations
EP1-1	LFG vent pipe	Inside the landscaping area of Administration Building
EP1-2	Service void	PCCW below-ground chamber outside Lot EP08-01
EP1-3	Service void	HGC Broadband below-ground chamber outside Lot EP08-03
EP2-1	Service void	HGC Broadband below-ground chamber outside Lot P1
EP2-2	Service void	HGC Broadband below-ground chamber outside Lot P3

- 2.1.4 Routine LFG monitoring has been carried out on a quarterly basis. Should EPD alert the Operator that high LFG levels have been detected during monthly monitoring under the Siu Lang Shui Landfill restoration contract, the Operator may be required to increase LFG monitoring to monthly until such time as EPD inform the Operator that quarterly monitoring can be resumed. To-date, no detection of high LFG levels under Siu Lang Shui Landfill restoration contract was received from EPD.

2.2 Environmental Quality Performance Limits and EAP

- 2.2.1 The Action/Limit Levels and Event Action Plan (EAP) for LFG are shown in **Table 2.2** below. These refer to LFG detected in excavations, utilities and any enclosed on-site areas. No other A/L Levels or EAPs are specified in the EM&A Manual for the operation phase EM&A.

Table 2.2 Action Levels, Limit Levels and Event and Action Plan for LFG

Parameter	Level	Action
Oxygen (O ₂)	Action Level <19% O ₂	<ul style="list-style-type: none"> Ventilate trench/void to restore O₂ to >19%
	Limit Level <18% O ₂	<ul style="list-style-type: none"> Stop works Evacuate personnel/prohibit entry Increase ventilation to restore O₂ to >19%
Methane (CH ₄)	Action Level >10% LEL	<ul style="list-style-type: none"> Post "No Smoking" signs Prohibit hot works Increase ventilation to restore CH₄ to <10% LEL
	Limit Level >20% LEL	<ul style="list-style-type: none"> Stop works Evacuate personnel/prohibit entry Increase ventilation to restore CH₄ to <10% LEL
Carbon Dioxide (CO ₂)	Action Level >0.5% CO ₂	<ul style="list-style-type: none"> Ventilate to restore CO₂ to <0.5%
	Limit Level >1.5% CO ₂	<ul style="list-style-type: none"> Stop works Evacuate personnel/prohibit entry Increase ventilation to restore CO₂ to <0.5%

2.3 Environmental Audit of Non-Monitored Parameters

2.3.1 Site inspections provide a direct means to trigger and enforce the environmental protection and pollution control measures specified in the Environmental Impact Assessment (EIA) Report. To examine operational practice, site inspections are to be undertaken by the ET once per month. The monthly inspection shall join with the random site inspection by the IEC where possible. A joint inspection by ET and IEC will be carried out at least once per quarter. Ad hoc site inspections are also carried out if significant environmental problems are identified. In addition, inspections may be required subsequent to receipt of environmental complaint, or as part of the investigation work, as specified in the EAP.

2.3.2 The following parameters are required to be audited as part of the operation phase EM&A program:

- Air Quality
- Water Quality
- Waste Management
- Land Contamination

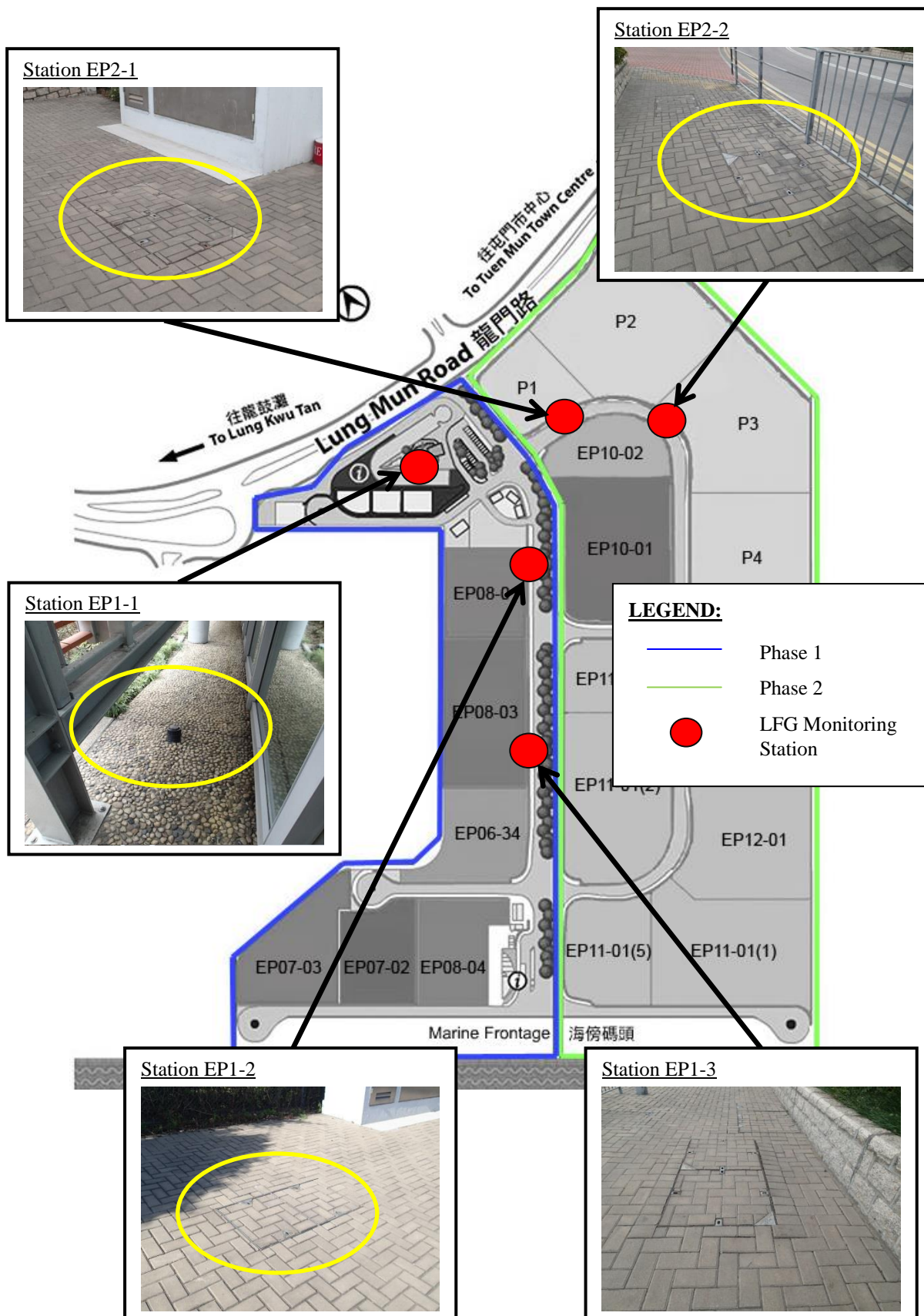
2.4 Environmental Mitigation Measures

2.4.1 Environmental mitigation measures applicable to the operation phase EM&A as stated in the Implementation Schedule are summarised in *Appendix 1*.

2.5 Environmental Requirements in Tenancy Agreements

2.5.1 Environmental requirements specified in tenancy agreements are provided in *Appendix 2*.

Figure 2.1 LFG Monitoring Locations within EcoPark



3 OPERATION STATUS

3.1 General

3.1.1 The location of lots within EcoPark, the tenancy numbers and tenant names are shown in *Figure 3.1*. A summary of waste throughputs is provided in *Section 3.11*.

3.1.2 In the reporting year:

- Chung Yue continued trial commissioning;
- South China commenced operation from May 2015;
- E.Tech carried out machinery testing;
- Waste Management Policy Group (WMPG) of EPD has taken possession of Lot Nos. P2, P3 and P4 and handed over to Alba IWS to carry out ground investigation work/plant planning and design work and construction of temporary site office;
- On Fat Lung carried out plant construction works; and
- SSK continued plant design and planning.

3.2 Champway Technology Limited

- **Tenancy No.:** EP07-03 (Phase 1)
- **Lot Size:** Approx. 6,000m²
- **Activity:** Recycling of Organic Waste (Waste Cooking Oil)
- **Recycling Process:** Turn waste cooking oil into biodiesel by extraction, neutralisation, separation and distillation

3.2.1 Recycling of waste cooking oil was carried out in the reporting year.

3.3 Shiu Wing Steel Limited

- **Tenancy No.:** EP08-03 (Phase 1)
- **Lot Size:** Approx. 9,500m²
- **Activity:** Recycling of Waste Metals
- **Recycling Process:** Turn waste metals into light ferrous scrap and heavy ferrous scrap by sorting, baling and shearing

3.3.1 Recycling of waste metal was carried out in the reporting year.

3.4 Hong Kong Hung Wai Wooden Board Company

- **Tenancy No.:** EP06-34 (Phase 1)
- **Lot Size:** Approx. 5,000m²

- **Activity:** Recycling of Waste Wood
- **Recycling Process:** Recycle waste wood to wood fuel pellets. Ferrous metals will be separated by magnets.

3.4.1 Recycling of waste wood was carried out in the reporting year.

3.5 Li Tong Group

- **Tenancy No. :** EP07-02 (Phase 1)
- **Lot Size:** Approx. 6,500m²
- **Activity:** Recycling of WEEE
- **Recycling Process:** Manually dismantling of WEEE into metals (ferrous materials, aluminium, etc.) and non-metals (fibres, plastics, etc.). Manually dismantling of Cathode Ray Tube (CRT) glass and Liquid Crystal Display (LCD) panels would be carried out upon request.

3.5.1 Recycling of WEEE was carried out in the reporting year.

3.5.2 A supplementary process review for the recycling of household electrical appliances was approved on 30 December 2015.

3.6 Hong Kong Telford Envirotech Group Limited

- **Tenancy No. :** EP08-01 (Phase 1)
- **Lot Size:** Approx. 5,000m²
- **Activity:** Recycling of Waste Plastics
- **Recycling Process:** Sorting, shredding and baling of waste plastics

3.6.1 Recycling of waste plastic was carried out in the reporting year.

3.7 Yan Oi Tong EcoPark Plastic Resources Recycling Centre

- **Tenancy No. :** EP10-01 (Phase 2)
- **Lot Size:** Approx. 9,000 m²
- **Activity:** Recycling of waste plastics
- **Recycling Process:** Convert mixed waste plastics into pellets/flake/baled materials by pre-washing/sterilization, sorting, flaking, washing, drying, extrusion and chipping.

3.7.1 Recycling of waste plastic was carried out in the reporting year.

3.8 St. James Settlement WEEE GO GREEN

- **Tenancy No.:** EP10-02 (Phase 2)
- **Lot Size:** Approx. 5,000 m²
- **Activity:** Recycling of WEEE
- **Recycling Process:** WEEE will be sorted on site first. WEEE suitable for reuse will be repaired and refurbished, whilst those irreparable / not suitable for repair will be manually dismantled to recover the reusable parts and recyclable materials.

3.8.1 Recycling of WEEE was carried out in the reporting year.

3.9 Chung Yue Steel Group Company Limited

- **Tenancy No.:** EP11-01(1) (Phase 2)
- **Lot Size:** Approx. 100,000 m²
- **Activity:** Recycling of Waste Metals
- **Recycling Process:** Turn waste metals into non-ferrous scrap, light ferrous scrap and heavy ferrous scrap by sorting, baling and shearing.

3.9.1 Trial commissioning of waste metal recycling was carried out in the reporting year.

3.10 K.Wah Construction Products Ltd.

- **Tenancy No.:** EP11-01(3) (Phase 2)
- **Lot Size:** Approx. 10,000 m²
- **Activity:** Recycling of Waste Construction Materials/ Waste Glass
- **Recycling Process:** Waste construction materials and waste glass will be crushed and delivered to the concrete mixing plant for blending and poured into block machine for casting. The blocks will then be cured, washed and packaged.

3.10.1 Recycling of waste glass and construction materials were carried out in the reporting year.

3.11 South China Reborn Resources (Zhongshan) Company Ltd.

- **Tenancy No.:** EP12-01 (Phase 2)
- **Lot Size:** Approx. 9,000 m²
- **Activity:** Recycling of Organic Waste (Food Waste)
- **Recycling Process:** Food waste will be segregated. The recyclable portion will undergo deodorisation, dewatering, shredding, fermentation and drying to produce high protein animal feed for livestock farming and aquaculture.

3.11.1 Recycling of food waste was carried out in this reporting year.

3.12 Throughput Statistics

- 3.12.1 For the active recyclers, most of the incoming waste materials and outgoing products were delivered by land transportation, except for the metals from Chung Yue were delivered by both marine and land transportation.
- 3.12.2 The throughputs of the ten active tenants in the reporting year are provided in *Appendix 3* and summarised in *Table 3.1*. Please note that product output plus waste disposal does not necessarily equal the waste input, due to material losses during processing and material retained within the lot.

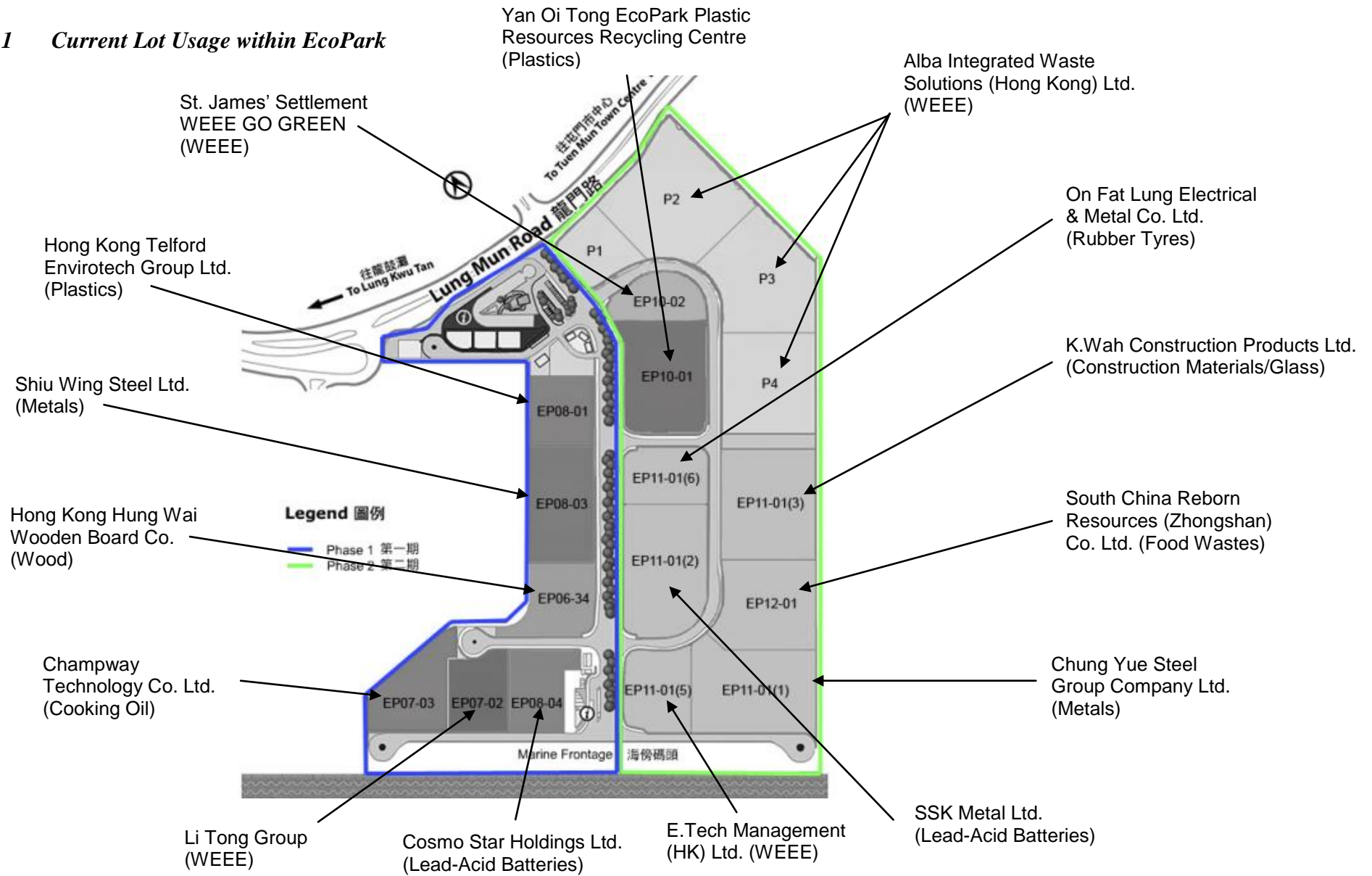
Table 3.1 Throughput Statistics for the Reporting Year

Material Type	Waste Input (tonnes)	Product Output ⁽⁴⁾ (tonnes)	Waste Disposed ⁽⁴⁾ (tonnes)
Waste Organic Food	9,905	3,123	5,569
Waste Ferrous Metals	89,623	87,673	-
Waste Wood	327	442	-
Waste Electronics	1,638	1,318	92
Waste Plastics	5,449	5,045	877
Waste Glass	1,265	42,672	105
Construction Waste	25,455		

Notes:

- 1) The throughput data presented above is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) All waste materials were processed for product output. The total product output may not be the same as the waste input due to processing of materials that were received before the reporting quarter and were stored within the lots.
- 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
- 4) Since the recycling of waste glass and construction waste is combined to produce concrete block at K.Wah, the product output and waste disposal from both processes are combined.

Figure 3.1 Current Lot Usage within EcoPark



4 IMPLEMENTATION STATUS OF ENVIRONMENTAL PROTECTION MEASURES

- 4.1.1 Environmental mitigation measures applicable to the operation phase EM&A as stated in the implementation schedule are summarised in *Appendix 1*. Environmental requirements specified in tenancy agreements are summarised in *Appendix 2*.
- 4.1.2 By the end of the reporting year, nine tenants (Champway, Shiu Wing, Li Tong, Yan Oi Tong, Telford, St. James' Settlement, Hung Wai, K.Wah and South China) were under full operation; one tenant (Chung Yue) was under trial commissioning and one tenant (E.Tech) was under machinery testing.
- 4.1.3 Appropriate environmental protection measures are in place at all lots.

5 MONITORING RESULTS

5.1 Monitoring Date, Time, Frequency and Duration

5.1.1 As described in *Section 2.1*, operational LFG monitoring is conducted quarterly at five monitoring locations, three in Phase 1 and two in Phase 2. LFG monitoring was carried out on 17th March, 24th June, 22nd September and 16th December 2015. Monitoring details are shown *Table 5.1* below.

Table 5.1 Sampling Schedule for LFG Monitoring

Station ID	Sampling Date	Time	Duration	Ambient Air Temp.	Weather
EP1-1	17 th March 2015	14:45 – 14:48	3 minutes	23°C	Overcast
EP1-2		14:25 – 14:28	3 minutes	23°C	Overcast
EP1-3		14:15 – 14:18	3 minutes	23°C	Overcast
EP2-1		14:30 – 14:33	3 minutes	23°C	Overcast
EP2-2		14:35 – 14:38	3 minutes	23°C	Overcast
EP1-1	24 th June 2015	14:40 – 14:43	3 minutes	28°C	Sunny
EP1-2		14:20 – 14:23	3 minutes	28°C	Sunny
EP1-3		14:15 – 14:18	3 minutes	28°C	Sunny
EP2-1		14:25 – 14:28	3 minutes	28°C	Sunny
EP2-2		14:30 – 14:33	3 minutes	28°C	Sunny
EP1-1	22 nd September 2015	10:08 – 10:11	3 minutes	30°C	Sunny
EP1-2		09:56 – 09:59	3 minutes	30°C	Sunny
EP1-3		10:00 – 10:03	3 minutes	30°C	Sunny
EP2-1		09:42 – 09:45	3 minutes	30°C	Sunny
EP2-2		09:52 – 09:55	3 minutes	30°C	Sunny
EP1-1	16 th December 2015	14:50 – 14:53	3 minutes	17°C	Sunny
EP1-2		14:45 – 14:48	3 minutes	17°C	Sunny
EP1-3		14:40 – 14:43	3 minutes	17°C	Sunny
EP2-1		14:30 – 14:33	3 minutes	17°C	Sunny
EP2-2		14:35 – 14:38	3 minutes	17°C	Sunny

5.2 Monitoring Methodology, Parameters and Equipment

5.2.1 The LFG monitoring requirement and methodology are stipulated in *Section 6* of the EM&A Manual. The LFG monitoring parameters and their measurement ranges are detailed in *Table 5.2* below.

Table 5.2 Parameters and Measurement Ranges for LFG Monitoring

Parameters	Measurement Ranges
Methane (CH ₄)	0 – 100% LEL & 0-100% v/v
Oxygen (O ₂)	0 – 25% v/v
Carbon Dioxide (CO ₂)	0 – 100% v/v
Barometric Pressure	mBar (absolute)

5.2.2 LFG monitoring shall be carried out using intrinsically-safe, portable multi-gas monitoring instruments. The gas monitoring equipment shall:

1. Where possible, comply with BS 6020 and be approved by BASEEFA as intrinsically safe, suitable for use in a Zone 2 are to BS 5345;
2. Be capable of continuous barometric pressure and gas pressure measurements;
3. Normally operate in diffusion mode unless required for spot sampling, when it should be capable of operating by means of an aspirator or pump;
4. Have low battery, fault and over range indication incorporated;
5. Store monitoring data, and shall be capable of being down-loaded directly to a PC; and
6. Measure in the following ranges:
 - Methane 0 – 100% LEL & 0 - 100% v/v
 - Oxygen 0 – 25% v/v
 - Carbon dioxide 0 – 100% v/v
 - Barometric pressure mBar (absolute)

5.2.3 The monitoring equipment shall alarm (both audibly and visually) in the event that the concentrations of the following are exceeded:

1. Methane: rise to 10% LEL;
2. Oxygen: fall to 18% by volume; and
3. Carbon monoxide: maximum short term (1-hour) exposure of 300ppm with long term average (8-hours) not to exceed 50ppm.

5.3 Results and Graphical Plots of Monitoring Parameters

5.3.1 One InfraRed Gas Analyser Model GA5000 (serial number G501982) was used for LFG measurements. The gas analyser is calibrated every 6 months. The calibration records of the monitoring equipment were provided in the quarterly EM&A reports.

5.3.2 LFG monitoring results are summarised in *Table 5.3* and compared with the Action and Limit Levels tabulated in *Table 2.2*. Graphical plots of the monitoring results are also provided in *Appendix 4*.

Table 5.3 LFG Monitoring Results

Station ID	Sampling Date	Monitoring Results				
		CH ₄ (% v/v)	CH ₄ (% LEL)	O ₂ (% v/v)	CO ₂ (% v/v)	Barometric Pressure (mBar)
EP1-1	17 th March 2015	0.0	0	20.7	0.0	1013
EP1-2		0.0	0	20.5	0.0	1014
EP1-3		0.0	0	20.4	0.0	1014
EP2-1		0.0	0	20.3	0.1	1014
EP2-2		0.0	0	19.8	0.2	1013
EP1-1	24 th June 2015	0.0	0	20.0	0.0	1004
EP1-2		0.0	0	19.6	0.2	1004
EP1-3		0.0	0	20.2	0.0	1004
EP2-1		0.0	0	19.6	0.3	1004
EP2-2		1.7	34	14.2	1.4	1004
EP1-1	22 nd September 2015	0.0	0	19.7	0.0	1011
EP1-2		0.0	0	19.8	0.2	1011
EP1-3		0.0	0	19.9	0.1	1011
EP2-1		0.1	2	20.3	0.2	1011
EP2-2		0.0	0	16.6	1.5	1011
EP1-1	16 th December 2015	0.0	0	20.4	0.1	1021
EP1-2		0.0	0	20.4	0.0	1021
EP1-3		0.0	0	20.2	0.1	1021
EP2-1		0.0	0	20.2	0.2	1021
EP2-2		0.0	0	20.5	0.0	1021

5.3.3 Exceedances of Action and Limit Levels were recorded at Station EP2-2 in the reporting year. The status of exceedance are summarised in *Table 5.4*.

Table 5.4 Summary of LFG Monitoring Exceedance

Date	Parameter	Recorded Level	Status
24 th Jun 2015	CO ₂ (% v/v)	1.4	Exceedance of Action Level
	CH ₄ (% LEL)	34	Exceedance of Limit Level
	O ₂ (% v/v)	14.2	Exceedance of Limit Level
22 nd Sept 2015	CO ₂ (% v/v)	1.5	Exceedance of Action Level
	O ₂ (% v/v)	16.6	Exceedance of Limit Level

5.4 Follow-up Actions for Monitoring Exceedances

- 5.4.1 Upon the record of exceedances on 24th June 2015, tenants and workers near Station EP2-2 were notified and reminded to be aware of any ignition activities. As advised by the Operator, no underground work was being carried out within EcoPark. The chamber was ventilated immediately and “no smoking” signs were erected in the vicinity of Station EP2-2 in accordance with the Event and Action Plan. In order to minimise the impact from the exceedance of carbon dioxide and oxygen, the Operator was also recommended to remind tenants to ensure adequate ventilation in closed environment.
- 5.4.2 As part of the investigation, an additional LFG monitoring for Station EP2-2 was conducted by ET on 3rd July 2015 in the presence of representatives from the Operator and Project Proponent. Exceedance of methane was still recorded at EP2-2 but the level was dropped by approximately 50% in comparison with the LFG monitoring on 24th June 2015 as shown in **Table 5.5**. The cover of the underground chamber was opened for investigation and ventilation enhancement after the monitoring to restore the concentrations of carbon dioxide, methane and oxygen to non-exceedance level. No apparent source of oxygen consumption, carbon dioxide and methane generation was identified during the investigation.
- 5.4.3 Due to the close proximity of Siu Lang Shui Landfill (SLSL) to EcoPark, EPD was approached to request for the monthly LFG monitoring data under SLSL restoration contract. As advised by EPD, non-detectable level of methane (i.e. <0.1%) was recorded at the monitoring points facing EcoPark during the routine monitoring at SLSL on 15th May, 19th June and the additional monitoring on 30th June 2015. As there is no direct evidence indicating the leakage and migration of LFG from SLSL, the source of methane is believed to be localised, which the potential source may be the organic decaying activities within the underground chamber and utility pipe.
- 5.4.4 In view of the results of the additional monitoring and the investigation, the Operator had provided cleaning to the underground chambers and utility pipes on 8th July 2015 to prevent accumulation of organic matters inside the chambers and pipes.
- 5.4.5 A second additional LFG monitoring was carried out on 18th August 2015 in the presence of representatives from the Operator and Project Proponent to determine the effectiveness of the cleaning work. As shown in **Table 5.5**, no exceedance was recorded on 18th August 2015 at Station EP2-2 after the cleaning of underground chamber and utility pipes. LFG monitoring was also carried out at upstream and downstream of Station EP2-2, i.e. the underground chambers near Lots P2 and P4, for confirmation purpose and no exceedance of any parameter was recorded.

Table 5.5 LFG Monitoring Results at Station EP2-2 (Jun–Aug 2015)

Date	Methane (% LEL)	Oxygen (% v/v)	Carbon Dioxide (% v/v)	Barometric Pressure (mBar)
24 th Jun 2015	34	14.2	1.4	1004
3 rd Jul 2015	18	16.9	1.1	1002
18 th Aug 2015	0	20.3	0.1	1009

- 5.4.6 For the exceedances recorded on 22nd September 2015, the cover of the underground chamber was opened for investigation in the presence of IEC and the Operator. Ventilation enhancement was also carried out to restore the concentrations of carbon dioxide and oxygen to non-exceedance levels in accordance with Event and Action Plan. No apparent source of carbon dioxide generation or oxygen consumption was identified during the investigation. The Operator is recommended to remind tenants to ensure adequate ventilation in indoor environment.
- 5.4.7 The LFG levels were checked during the subsequent quarterly LFG monitoring in December 2015 and no further exceedance of any parameter was recorded.

6 SUMMARY OF ENVIRONMENTAL AUDIT

6.1 General

- 6.1.1 Among the fifteen tenants in EcoPark, only ten active tenants were under either full operation or trial commissioning and one tenant was under machinery testing. As such, specific site inspections were only carried out at the lots of these eleven tenants. For the lots of those tenants not currently in operation, general site inspections were conducted.
- 6.1.2 Environmental audits were conducted on a monthly basis based on the approved site inspection checklist. The completed audit checklists were provided in the quarterly EM&A Reports.
- 6.1.3 In the “status” column of the following tables, an observation will be indicated as “Closed” if it was resolved during the reporting month and no further follow-up is needed. If the observation is not resolved in the reporting month and would be followed-up in the following month, it will be indicated as “Outstanding”.

6.2 January 2015

- 6.2.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 21st–22nd January 2015. IEC random site audit was also carried out on 21st January 2015. Audit observations are summarised in *Table 6.1*.

Table 6.1 Environmental Audit Findings in January 2015

Tenant	Item	Status
<i>Follow-up Observations from Previous Reporting Month</i>		
Telford	Empty plastic bottles were observed in the drainage channel near the lot entrance on 26 th Nov and 18 th Dec 2014.	The tenant had removed the plastic bottles as observed during site audit on 21 st Jan 2015. (Closed)
<i>New Observations from This Reporting Month</i>		
No critical issues were identified.		

6.3 February 2015

- 6.3.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET, the Operator and the IEC on 16th February 2015. General site inspection was carried out for Hung Wai due to site closure in Chinese New Year. Audit observations are summarised in *Table 6.2*.

Table 6.2 Environmental Audit Findings in February 2015

Tenant	Item	Status
No critical issues were identified.		

6.4 March 2015

- 6.4.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 17th March 2015. IEC random site audit was also carried out on 17th March 2015. Audit observations are summarised in **Table 6.3**.

Table 6.3 Environmental Audit Findings in March 2015

Tenant	Item	Status
No critical issues were identified.		

6.5 April 2015

- 6.5.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 30th April 2015. IEC random site audit was also carried out on 30th April 2015. Audit observations are summarised in **Table 6.4**.

Table 6.4 Environmental Audit Findings in April 2015

Tenant	Item	Status
No critical issues were identified.		

6.6 May 2015

- 6.6.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET, the Operator and the IEC on 27th May 2015. General site inspection was carried out for Hung Wai due to site closure. Audit observations are summarised in **Table 6.5**.

Table 6.5 Environmental Audit Findings in May 2015

Tenant	Item	Status
No critical issues were identified.		

6.7 June 2015

- 6.7.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 24th June 2015. IEC random site audit was also carried out on 24th June 2015. General site inspection was carried out for Hung Wai due to site closure. Audit observations are summarised in **Table 6.6**.

Table 6.6 Environmental Audit Findings in June 2015

Tenant	Item	Status
No critical issues were identified.		

6.8 July 2015

- 6.8.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 27th July 2015. IEC random site audit was also carried out on 27th July 2015. Audit observations are summarised in **Table 6.7**.

Table 6.7 Environmental Audit Findings in July 2015

Tenant	Item	Status
No critical issues were identified.		

6.9 August 2015

- 6.9.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET, the Operator and the IEC on 24th August 2015. Audit observations are summarised in **Table 6.8**.

Table 6.8 Environmental Audit Findings in August 2015

Tenant	Item	Status
K.Wah	Excessive dust generation was observed due to raw material transportation within work area on 24 th Aug 2015.	Due to heavy rain prior to the inspection on 21 st Sept 2015, the work area was dampened and dust generation was not observed during operation. According to the photo records dated 25 th Sept and 8 th Oct 2015 provided by the tenant, water spraying was provided to the works area. As noted during the site audit on 20 th Oct 2015, automatic sprinklers were installed in the works area to provide regular water spraying and dust generation was not observed. (Closed)

6.10 September 2015

- 6.10.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 21st–22nd September 2015. IEC random site audit was also carried out on 22nd September 2015. Audit observations are summarised in **Table 6.9**.

Table 6.9 Environmental Audit Findings in September 2015

Tenant	Item	Status
No critical issues were identified.		

6.11 October 2015

- 6.11.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 20th October 2015. IEC random site audit was also carried out on 20th October 2015. Audit observations are summarised in **Table 6.10**.

Table 6.10 Environmental Audit Findings in October 2015

Tenant	Item	Status
No critical issues were identified.		

6.12 November 2015

- 6.12.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET, the Operator and the IEC on 30th November 2015. Audit observations are summarised in **Table 6.11**.

Table 6.11 Environmental Audit Findings in November 2015

Tenant	Item	Status
No critical issues were identified.		

6.13 December 2015

- 6.13.1 Environmental audits of active tenants and general EcoPark condition were carried out by the ET and the Operator on 16th and 21st December 2015. IEC random site audit was also carried out on 16th December 2015. Audit observations are summarised in **Table 6.12**.

Table 6.12 Environmental Audit Findings in December 2015

Tenant	Item	Status
No critical issues were identified.		

7 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

- 7.1.1 No notification of summons or successful prosecution related to recycling activities was received in the reporting year.
- 7.1.2 One complaint about odour nuisance from South China's lot was received from Tuen Mun Area Fill Bank 38 by the Operator via phone on 29 December 2015. The Operator had approached the Fill Bank to discuss with the complainant on the same day and odour was detected during the meeting.
- 7.1.3 The Operator discussed with South China on 30 December 2015 and referred the complaint to ET via phone on 4 January 2016. The IEC was notified by ET via email on 4 January 2016. The complaint investigation is in progress and will be followed up in the next quarterly and annual report.

8 ANNUAL REVIEW

8.1 Interpretation of EM&A Data

8.1.1 Landfill gas (LFG) is the only parameter that is required to be monitored in the operation phase EM&A programme. Quarterly LFG monitoring has been carried out by the ET since 2009 following the completion of Phase 1 construction of EcoPark. Although exceedances of action and limit levels were recorded in the reporting year, the source of LFG is considered to be localised since non-detectable level of methane was detected at SLSL. In view that the LFG levels had returned to non-exceedance levels after the cleaning of underground chambers and utility pipes as mentioned in *Section 5.4.4*, the EM&A data is consistent with the assessment result in the EIA Report that the potential risk associated with LFG hazard remains low.

8.2 Environmental Acceptability of EcoPark

8.2.1 In the reporting year, ten tenants (Champway, Shiu Wing, Li Tong, Telford, Yan Oi Tong, St. James' Settlement, Hung Wai, Chung Yue, K.Wah and South China) have carried out recycling activities and one tenant (E.Tech) has carried out trial commissioning/machinery testing within their lots. With reference to *Section 6*, no critical environmental deficiencies were identified at tenants' lots in EcoPark in the reporting year. The operation of EcoPark in environmental terms is therefore considered as acceptable.

8.3 Monitoring Methodology

8.3.1 Quarterly LFG monitoring has been carried out since October 2009. Exceedances of action and limit levels were recorded in the reporting year. The monitoring methodology is considered as effective to detect the change of potential LFG hazard and trigger associated actions. Given that non-detectable level of methane was detected at SLSL and the LFG levels in EcoPark had returned to non-exceedance levels, quarterly monitoring of LFG is considered as sufficient. The frequency of LFG monitoring may increase upon detection of high LFG levels under the Siu Lang Shui Landfill restoration contract in accordance with *Section 8.7.11* of the EIA Report and *Section 6.4.4* of the EM&A Manual.

8.4 Practicality and Effectiveness of EIA Process and EM&A Programme

8.4.1 The use of Process Review mechanism to assess incoming processes, processes not assessed in the EIA, or processes with greater throughputs than assumed in the EIA, is considered to work well and is in accordance with the recommendations of the EIA, the requirements of the EM&A programme and the EP conditions.

8.4.2 The EM&A programme has been fully utilised throughout the reporting year and is practical and effective to monitor the operation status of tenants. The mitigation measures proposed in the EIA Study are effective and efficient. Recommendation of improvement in the EM&A programme is not needed at this stage.

9 CONCLUSIONS

- 9.1.1 This is the ninth (9th) annual EM&A report prepared for the operation phase of EcoPark and covers the calendar year of 2015. The tenants' recycling activities are audited on a monthly basis and the results are summarised in this report.
- 9.1.2 In the reporting year, there were fifteen tenants in EcoPark Phase 1 and Phase 2. Nine tenants have commenced full recycling activities within their lots, namely Champway, Shiu Wing, Hung Wai, Li Tong, Telford, Yan Oi Tong, St. James's Settlement, K.Wah and South China. One tenant (Chung Yue) carries out trial commissioning; one tenant (E.Tech) carries out machinery testing; one tenant (SSK) carries out plant design; one tenant (On Fat Lung) carries out plant construction work; one tenant (Alba IWS) carries out ground investigation work/plant planning and design work and construction of temporary site office; and one tenant (Cosmos) is under tenancy termination.
- 9.1.3 Throughout the reporting year, monthly site inspections and monthly random site inspections were conducted by the ET and IEC respectively, while quarterly joint site inspection was carried out by the Operator, the IEC and the ET. Observations and recommendations were made during site inspections.
- 9.1.4 The throughputs of the ten active tenants in the reporting year are summarised in **Table 9.1**. Please note that product output plus waste disposal do not necessarily equal the waste input, due to material losses during processing and material retained within the lots.

Table 9.1 Throughput Statistics for the Reporting Year

Material Type	Waste Input (tonnes)	Product Output ⁽⁴⁾ (tonnes)	Waste Disposed ⁽⁴⁾ (tonnes)
Waste Organic Food	9,905	3,123	5,569
Waste Ferrous Metals	89,623	87,673	-
Waste Wood	327	442	-
Waste Electronics	1,638	1,318	92
Waste Plastics	5,449	5,045	877
Waste Glass	1,265	42,672	105
Construction Waste	25,455		

Notes:

- 1) The throughput data presented above is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
 - 2) All waste materials were processed for product output. The total product output may not be the same as the waste input due to processing of materials that were received before the reporting quarter and were stored within the lots.
 - 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
 - 4) Since the recycling of waste glass and construction waste is combined to produce concrete block at K.Wah, the product output and waste disposal from both processes are combined.
- 9.1.5 LFG monitoring was undertaken on 17th March, 24th June, 22nd September and 16th December 2015 at five locations (three in Phase 1 and two in Phase 2). Exceedances of Action and Limit Levels were recorded at Station EP2-2 on 24th June 2015 and are summarised in **Table 9.2**.

Table 9.2 Summary of LFG Exceedances at EP2-2 on 24th June 2015

Parameter	Recorded Level	Action Level	Limit Level	Status
Carbon Dioxide (% v/v)	1.4	> 0.5%	> 1.5%	Exceedance of Action Level
Methane (% LEL)	34	> 10%	> 20%	Exceedance of Limit Level
Oxygen (% v/v)	14.2	< 19%	< 18%	Exceedance of Limit Level

- 9.1.6 Tenants and workers near Station EP2-2 were notified. As advised by the Operator, no underground work was being carried out within EcoPark. Besides, non-detectable level of methane (i.e. <0.1%) was detected from Shiu Lang Shui Landfill. The chamber was ventilated and “no smoking” signs were erected in the vicinity of Station EP2-2 in accordance with the Event and Action Plan.
- 9.1.7 Additional LFG monitoring was conducted by ET on 3rd July and 18th August 2015 in the presence of representatives from the Operator and EPD. The level of methane was dropped by approximately 50% on 3rd July 2015 in comparison with the LFG monitoring results on 24th June 2015. After the cleaning of HGC broadband utility pipes and underground chambers by the Operator, the concentrations of carbon dioxide, methane and oxygen had returned to a non-exceedance level during the monitoring on 18 August 2015.
- 9.1.8 Exceedances of Action and Limit Levels were recorded at Station EP2-2 on 22nd September 2015 and are summarised in **Table 9.3**.

Table 9.3 Summary of LFG Exceedances at EP2-2 on 22nd September 2015

Parameter	Recorded Level	Action Level	Limit Level	Status
Carbon Dioxide (% v/v)	1.5	> 0.5%	> 1.5%	Exceedance of Action Level
Oxygen (% v/v)	16.6	< 19%	< 18%	Exceedance of Limit Level

- 9.1.9 In the presence of IEC and the Operator, no apparent source of carbon dioxide generation or oxygen consumption was identified within the underground chamber during investigation. Ventilation enhancement was carried out to restore the concentrations of carbon dioxide and oxygen to non-exceedance level. Nonetheless, the Operator was recommended to remind tenants to ensure adequate ventilation in indoor environment. The LFG concentrations had returned to non-exceedance levels during the LFG monitoring on 16th December 2015 and routine quarterly LFG monitoring will be continued.
- 9.1.10 The quarterly monitoring of LFG is considered as sufficient and effective in accordance with *Section 6.4.4* of the EM&A Manual.
- 9.1.11 One complaint about odour nuisance from South China’s Lot was received from Tuen Mun Area 38 Fill Bank via phone on 29 December 2015. The complaint is under investigation and will be followed up in the next quarterly and annual report.
- 9.1.12 No environmental summon or successful prosecution was recorded in the reporting year.
- 9.1.13 There is no reporting change in the reporting year.

- 9.1.14 No critical environmental deficiencies were identified at tenants' lots in EcoPark in the reporting year. The operation of EcoPark in environmental terms is considered as acceptable.
- 9.1.15 The EM&A programme has been fully utilised throughout the reporting year and is practical and effective to monitor the operation status of tenants. The mitigation measures proposed in the EIA Study are effective and efficient. Recommendation of improvement in the EM&A programme is not needed at this stage.

Appendix 1

Environmental Mitigation Measures (from the Implementation Schedule)

EIA Ref.	EM&A Ref.	Environmental Protection Measures Identified in the Implementation Schedule that are Applicable to the Operation Phase of EcoPark	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Relevant Legislation and Guidelines
<i>General</i>					
5.5.23 to 5.5.25, 10.2.24 & 10.2.37	4.2.5 to 4.2.8	The Operator shall develop and implement an Emergency Response Plan (ERP) that lists the procedures to be followed in case of fire, fuel or chemical spillage or other emergency within the EcoPark.	Throughout the duration of the operation.	Operator	
12.2	7.2	No process shall be allowed to operate within EcoPark without approval from WFBU. Approval will be based on the ten-step Process Review, which may include a Design Audit if deemed to be necessary.	Throughout the duration of the operation.	ET IEC Project Proponent	
	8.1.2	All reports (including Process Review Checklists and any Design Audits) shall be prepared and certified by the ET, verified by the IEC and approved by the Project Proponent.	Throughout the duration of construction works until construction is substantially completed. Throughout the duration of the operation.	ET IEC Project Proponent	
12.3	7.3	The Operator shall prepare and implement an Environmental Management Plan (EMP) to define mechanisms for achieving the environmental requirements specified in the EIA, EP and in statutory regulations.	Throughout the duration of the operation.	Operator	
<i>Air Quality</i>					
13.2		The Operator shall ensure that EcoPark “base case” assumptions for air quality shown in Table 13.1 of the Final EIA Report are met by tenants, as a whole.	Throughout the duration of the operation.	Operator	Table 13.1 of the Final EIA Report
<i>Water Quality</i>					
5.4.11 & 5.6.7		To minimise the chance of accidental spillage during loading and unloading, and thereby reduce marine water quality impacts, well established cargo handling guidelines should be followed.	Adjacent to EcoPark marine frontage when loading or unloading goods.	Operator Operators of bulk carriers	Sections 5 & 6 of IMO Code of Practice for the Safe Loading/ Unloading of Bulk Carriers

EIA Ref.	EM&A Ref.	Environmental Protection Measures Identified in the Implementation Schedule that are Applicable to the Operation Phase of EcoPark	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Relevant Legislation and Guidelines
5.5.19		Contaminated water collected in the surface drainage systems shall be treated at the WTF or other appropriate treatment facility.	Within EcoPark throughout the life of the facility.	Operator	
5.5.23 to 5.5.25	4.2.5 to 4.2.7	An Emergency Response Plan (ERP) will be formulated to address various accident scenarios. The ERP will be certified by the Environmental Team (ET) and verified by the Independent Environmental Checker (IEC) under the operation EM&A programme.	Within EcoPark throughout the life of the facility.	Operator	
5.6.4		For uncovered areas where recovery process identified as causing potentially high level of contamination are located, stop-logs will be installed in the perimeter drainage system to isolate contamination.	Within EcoPark throughout the life of the facility.	Operator	
	4.2.2	The ET should develop an audit checklist, with the agreement of the IEC, to ensure that each mitigation measure is implemented when appropriate and operated correctly when implemented.	Within EcoPark throughout the life of the facility.	ET with IEC	
<i>Waste Management</i>					
6.8.7	5.2.4	The Operator should register with EPD as a chemical waste producer.	Within EcoPark throughout the life of the facility.	Operator	Waste Disposal (Chemical Waste) (General) Regulation
6.8.16		The dust collected by any air pollution control equipment installed by tenants must be tested to ensure compliance for landfill disposal.	Within EcoPark throughout the life of the facility.	Operator	Practice Note for disposal of dusty waste at landfills & Admission Ticket System
6.8.18 & 6.8.22	5.2.4	Sludge will be disposed of at WENT landfill, or at any future dedicated sludge treatment facility. Sludge will be collected by a Licensed collector at regular intervals, as determined by the operation of the WTF.	Within EcoPark throughout the life of the facility.	Operator	

EIA Ref.	EM&A Ref.	Environmental Protection Measures Identified in the Implementation Schedule that are Applicable to the Operation Phase of EcoPark	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Relevant Legislation and Guidelines
6.8.21	5.2.4	Chemical wastes shall be stored in appropriate containers in a covered area. "No Smoking" signs will be clearly displayed to prevent accidental ignition of flammable materials. Drip trays capable of storing 110% of the volume of the largest container will be used to mitigate possible leakage.	Within EcoPark throughout the life of the facility.	Operator	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
	5.2.3 & 5.2.5	The ET should develop an audit checklist, with the agreement of the IEC, to ensure that each mitigation measure is implemented when appropriate and operated correctly when implemented.	Within EcoPark throughout the life of the facility.	ET with IEC	
6.8.7	5.2.4	The Operator should register with EPD as a chemical waste producer.	Within EcoPark throughout the life of the facility.	Operator	Waste Disposal (Chemical Waste) (General) Regulation
<i>Prevention of Contaminated Land</i>					
7.3.1	5.3.2	Any spillages of contaminating material shall be cleaned up immediately through the use of an absorbent. Any such used material should then be considered chemical waste and disposed of appropriately.	Within EcoPark throughout the life of the facility.	Operator	
7.3.3		Any areas within the lot to be used for recycling processes shall be concrete paved before recycling activities commence.	Within EcoPark throughout the life of the facility.	Operator	
7.3.5	5.3.2	<p>During operation, the greatest risk of land contamination will come from storage of chemical wastes, therefore the measures should be followed :</p> <ul style="list-style-type: none"> All chemical storage areas shall be provided with locks and be sited on sealed areas. The storage areas shall be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil and chemicals from contaminating the ground. Chemical wastes will be collected, stored and disposed of in 	Within EcoPark throughout the life of the facility.	Operator	

EIA Ref.	EM&A Ref.	Environmental Protection Measures Identified in the Implementation Schedule that are Applicable to the Operation Phase of EcoPark	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Relevant Legislation and Guidelines
		<p>accordance with the Regulation. Disposal of other construction waste will be undertaken by licensed contractors in accordance with applicable statutory requirements in the WDO.</p> <ul style="list-style-type: none"> Chemical wastes shall be handled according to the relevant code of practice. Spent chemicals shall be stored and collected by an approved operator for disposal at a licensed facility in accordance with the relevant regulation. 			
<i>Landfill Gas</i>					
8.7.10 & 8.7.11	6.1.2	<ul style="list-style-type: none"> Alert workers and visitors of possible LFG hazards Prohibit smoking and open fires on site Conduct regular (quarterly) LFG monitoring at mobile offices, equipment stores, etc. 	Within EcoPark throughout the life of the facility.	Operator	
	6.4.3	Following construction, routine monthly monitoring may be required at service voids and utility boxes. The monitoring requirement and specific locations of monitoring points shall be established based on the findings of the monitoring carried out during construction (i.e. if no LFG is detected during construction then no routine monitoring is required). The need for continued monitoring shall, however, be reviewed through discussion with EPD.	Within EcoPark throughout the life of the facility.	Operator	
<i>Hazard to Life</i>					
10.4.3		Building height limit within EcoPark shall be applied to structures within which people may work at elevated levels.	Within EcoPark throughout the life of the facility.	Operator	EIA Report Table 10.2
<i>Landscape and Visual</i>					
9.4.4		It recommended that this commonality be promoted throughout EcoPark by the Operator and adopted by tenants, if practicable.	Within EcoPark throughout the life of the facility.	Operator	

Appendix 2

Environmental Requirements in Tenancy Agreements

Appendix 2.1
Environmental Requirements in Tenancy Agreements

Phase 1

GENERAL ENVIRONMENTAL RESPONSIBILITIES

- 9.1 The Tenant shall at its own cost(s) comply with and shall ensure that the Premises is used, designed, constructed, operated and maintained in accordance with:-
- (a) All relevant Ordinances, by-laws, regulations, statutory technical memorandums, codes of practice, rules, non-statutory guidance notes, schemes and abatement notices for the time being in force in Hong Kong including those relating to the environment and governing the control of any form of pollution (see specific Ordinances mentioned hereinbelow) and licensing requirements under relevant Ordinances and regulations.
 - (b) All information, mitigation measures, prohibitions, restrictions, recommendations and requirements under the Environmental Impact Assessment Report for Development of an EcoPark in Tuen Mun Area 38 with Appendices, i.e. the EIA Report (Register No.: AEIAR-086/2005) dated April 2005, the Final EM&A Manual dated April 2005, the application documents including all attachments (Application No. AEP-226/2005) and other relevant documents in the Register (or in any other places, any internet websites or by any other means as specified by the Director), including the prohibitions and mitigation measures for processes in Table 14.1 and the material throughputs, processes and remarks in Table B.1 of the EIA Report (in so far as applicable).
 - (c) All information, conditions, submissions, mitigation measures, orders, notices, requirements, prohibitions, restrictions and time limits under the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (including updated information about the Permit, any amended permit and any further permit) and all mitigation measures recommended and to be recommended in submissions that shall be deposited with or approved by the Director as a result of permit conditions contained in the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (including updated information about the Permit, any amended permit and any further permit). The Tenant shall refer to, inter alia, Conditions 4.1 to 4.14 (and Annexes A and B) and Conditions 3.7 and 3.8 (and Figures 2 and 3) of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 regarding measures to mitigate air quality impact, measures to mitigate hazard to life impact, measures to prevent land contamination, measures to mitigate landfill gas hazard, maintenance of landscape and visual measures (see also hereinbelow regarding Condition 5 of the Environmental Permit and specified Ordinances).
 - (d) All information, conditions, submissions, mitigation measures, orders, notices and requirements under on going surveillance and monitoring activities during all stages of the Project and during the tenancy under the Tenancy Agreement (e.g. any additional mitigation measures recommended and to be recommended under the Process Review and Design Audit (carried out and to be carried out in accordance with the EM&A Manual) for various environmental impacts including, but not limited to,

noise pollution, air quality, hazard to life, landfill gas hazard, landscape and visual measures, waste management and land contamination).

(e) All recommendations referred to in the documents of the EIAO Register which are not expressly referred to in Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 and any amended Environmental Permit (unless expressly excluded or impliedly amended in the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 and any amended Environmental Permit).

9.2 Further to Condition Nos. 6 and 8 hereinabove, the Tenant shall at its own cost provide relevant environmental monitoring data, information, documents and assistance to the Director and/or the Environmental Protection Department and shall permit authorised representatives of the Environmental Protection Department to access, inspect, take samples and monitor the Premises and operations for the Process Review and the Design Audit carried out and/or to be carried out pursuant to Conditions 4.1 and 5 of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (and any updated Permit, amended permit and further permit).

9.3 If the Tenant's operations (i.e. activities and facilities for recovery and/or recycling and/or reprocessing) are not covered by the EIA Report and/or deviate from the development parameters mentioned in inter alia the EIA Report, the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (including the parameters at Annex A) and/or any environmental licence (e.g. the Water Treatment Facility ("WTF") Discharge Licence), and if additional mitigation measures are not available or are not effective in the opinion of the Director, to ensure compliance with the EIA Report, the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (including any updated Permit, amended permit and further permit) and the relevant environmental licence(s), the Tenant shall comply with any modified parameters and/or the Tenant shall immediately modify its operations in such a way that the findings and requirements of the EIA Report, the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (including any updated Permit, amended permit and further permit) and the environmental licence(s) are complied with and shall immediately cease to continue the offending part of the operations or activity in question.

9.4 The Tenant shall at its own cost(s) apply for, obtain, renew, maintain and comply with all the relevant licences related to compliance with all relevant Ordinances, by-laws, regulations, statutory technical memorandums, codes of practice, rules, non-statutory guidance notes, schemes, abatement notices and the environmental permits for the time being in force in Hong Kong (including those relating to the environment and governing the control of any form of pollution). The Tenant shall obtain, renew and comply with all the said licences within the relevant time limits (in any event, within one (1) calendar month of the date of signing and/or execution of the Tenancy Agreement), shall comply with all abatement notices, orders, directions and requests of the relevant authorities and public officers and shall be responsible for paying all relevant fees, costs, fines and penalties.

- 9.5 The Tenant shall not do anything or omit to do anything which would cause, contribute to or involve a breach or potential breach by the Director relating to any of the matters mentioned in Conditions 9.1 to 9.4 hereinabove (and other Conditions hereinbelow).
- 9.6 The Tenant shall fully indemnify the Government and/or the Director for any fees, costs, damages, expenses, fines, penalties, losses and claims arising (a) out of any breach of any of the matters mentioned in inter alia Conditions 9.1 to 9.4 hereinabove (and other Conditions hereinbelow) or (b) from the use of the Premises or (c) out of any works carried out at any time during the term to or at the Premises or (d) out of anything now or during the term attached to or projecting from the Premises or (e) from any neglect or default by the Tenant or by its respective servants or agents or by any express licensee of the Tenant.

SPECIFIC ENVIRONMENTAL RESPONSIBILITIES

Air Pollution

10. Save with an appropriate exemption under the Air Pollution Control Ordinance (Cap. 311 of the Laws of Hong Kong) any regulations made thereunder and any amending legislation, the Tenant shall not install or permit or suffer to be installed upon the Premises or any part thereof or any building(s) or structure(s) or part of any building(s) or structure(s) erected or to be erected thereon any furnace, oven, chimney or flue or any other combustion equipment or use or permit or suffer to be used any fuel or any method or process of manufacture or treatment that might in any circumstance result in, cause or contribute to the discharge or emission of any pollutant or any noxious, harmful or corrosive matter, whether it be in the form of gas, smoke, liquid, solid or otherwise (including but not limited to air pollutant as defined in Section 2 of the Air Pollution Control Ordinance (Cap. 311 of the Laws of Hong Kong)), which exists or which is imminent, without the prior written approval of the Director.
11. No alteration to the installation and method of manufacture shall be made without the prior written consent of the Director. In any event, the Tenant shall at its own cost(s) comply with, inter alia, Conditions 4.2 to 4.7 and Annex A of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 regarding design, installation and operation of chimney, location of fresh air intakes and use of ultra-low sulphur or other cleaner fuel(s) as agreed by the Director (and the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate air quality impact), good practices and relevant provisions of the EIA Report and Final EM&A Manual.

Noise Pollution

12. The Tenant shall take all necessary measures as may be required by and to the satisfaction of the Director to ensure that the operation of all plant and equipment, installed or used on the Premises or in any building(s) or structure(s) or any part of any building(s) or structure(s) erected or to be erected thereon, will not result, not cause and/or will not contribute any noise (which exists or which is imminent) which disturbs or annoys the residents or occupiers of any adjoining or neighbouring lot or lots or premises, or causes and/or contributes to

disturbance to the general public under the Noise Control Ordinance (Cap. 400 of the Laws of Hong Kong) any regulations made thereunder and any amending legislation.

13. The decision of the Director as to whether any such plant and equipment are causing disturbance or annoyance as aforesaid shall be final and binding on the Tenant.

Waste Management

14. The Tenant shall not permit, allow or suffer any fuel or chemical and any sewage, waste water or effluent containing sand, cement, silt or any suspended or dissolved material to flow, escape or run from the Premises onto any adjoining land or allow any waste matter which does not form part of the recovery and/or recycling and/or reprocessing operation or is not part of the final product of such operation to be deposited, kept, held or stored anywhere within the Premises and other areas of EcoPark. The Tenant shall at its own cost(s) have all such matters and all waste arising from recycling activities, chemical waste arising from maintenance of plant and equipment, sewage sludge (from WTF) and general daily waste from the operation removed from the Premises or any building(s) or structure(s) or any part of any building(s) or structure(s) erected or to be erected thereon in a proper manner to the satisfaction of the Director.
15. In any event, the Tenant shall at its own cost(s) comply with, inter alia, Conditions 4.11 and 4.12 of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 regarding paving all areas of the Premises with concrete/using concrete hardstanding and siting all fuel tanks and chemical storage areas on the specified sealed areas, respectively (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to prevent land contamination). The Tenant shall at its own cost(s) comply with relevant provisions of the Waste Disposal Ordinance (Cap.354 of the Laws of Hong Kong) good practices and relevant provisions of the EIA Report and Final EM&A Manual.

Water Pollution

16. In the event that the Tenant produces, generates, permits, causes, allows or suffers any discharge which is subject to control under the Water Pollution Control Ordinance (Cap. 358 of the Laws of Hong Kong) any regulations made thereunder and any amending legislation, and is not covered by a WTF Discharge Licence issued under the Water Pollution Control Ordinance (Cap. 358 of the Laws of Hong Kong) the Tenant shall apply to the Director for a licence and comply with the terms and conditions stipulated in the licence and the WTF Discharge Licence at the Tenant's own cost(s). Otherwise, the Tenant is not allowed to discharge directly or indirectly or to produce, generate, permit, cause, allow or suffer any discharge into any public sewer, storm-water drain, channel, stream-course, sea or any area inside or outside the Premises any trade effluent or foul or contaminated water or cooling or hot water. Subject to the said licence from the Director and WTF Discharge Licence, the Tenant shall at its own cost(s) separate, collect, discharge and send all process or industrial wastewater to the WTF for treatment to the standard required for discharge into a sewer leading to the sewage treatment works at Pillar Point or other treatment works specified in the licence.

17. Subject to obtaining advance written approval of the Director, the Tenant shall at its own cost(s) provide, install, operate and maintain its own waste water pre-treatment plants within the Premises if such process or industrial wastewater could not meet the influent limits / exceeds the maximum influent criteria of the WTF (in accordance with paragraph 7.2.9 of the Final E&MA Manual). The Tenant shall at its own cost(s) separate, collect, discharge and send all domestic wastewater (i.e. other than process or industrial wastewater) to the Pillar Point Sewage Treatment Works directly for treatment or other treatment works specified in the licence.
18. In any event, the Tenant shall prevent any spilled materials from entering the surface water drainage system and prevent contamination of the sea at its own cost(s) by, inter alia, providing, installing, operating and maintaining stop-logs or interceptors in the surface water drainage system and at the marine frontage area, respectively, or as required by the licence. The Tenant shall at its own cost comply with relevant provisions of the Dumping at Sea Ordinance (Cap 466 of the Laws of Hong Kong) good practices and relevant provisions of the EIA Report and Final EM&A Manual.

Hazard to Life Impact

19. To mitigate hazard to life impact, the Tenant shall comply with, inter alia, Conditions 4.8 to 4.10 of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate hazard to life impact) and shall not:-
- (a) Bring, keep, store or transport chlorine within the Premises and other areas of EcoPark;
 - (b) Bring, keep, store, locate or transport dangerous goods, substances and fuels supporting combustion including oxygen, acetylene, hydrogen peroxide, rubber tyres and diesel within 10 metres from the boundary of the site of EcoPark; and
 - (c) Exceed the building height restrictions for buildings on the Premises which are on/near the western boundary of the site of EcoPark as mentioned in Annex B to the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 (including any updated Permit, amended permit and further permit).

Landfill Gas Hazard

20. To mitigate landfill gas hazard, the Tenant shall at its own cost(s) comply with, inter alia, Condition 4.13 of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 regarding raising clear of the ground all buildings and enclosed structures as specified in inter alia Condition 3.7 (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate hazard to life impact).

Landscape and Visual Impacts

21. To mitigate landscape and visual impacts, the Tenant shall at its own cost(s) comply with, inter alia, Condition 4.14 of the Environmental Permit No. EP-226/2005 as amended by the Variation of Environmental Permit – Application No.VEP-221/2006 regarding maintaining landscape, planting, treatment and mitigation measures as specified in inter alia Condition 3.8 and Figure 3 (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate landscape and visual impacts).

Appendix 2.2
Environmental Requirements in Tenancy Agreements

Phase 2

Compliance of Environmental Legislation

5. The Tenant shall comply with and observe all Ordinances, by-laws, regulations and rules for the time being in force in Hong Kong governing the control of any form of pollution, including air, noise, water and waste pollution, and for the protection of the environment.

Air Pollution

6. Save with an appropriate exemption under the Air Pollution Control Ordinance (Cap. 311) any regulations made thereunder and any amending legislation, the Tenant shall not install or permit or suffer to be installed upon the Premises or any part thereof or any building(s) or structure(s) or part of any building(s) or structure(s) erected or to be erected thereon any furnace, oven, chimney or flue or any other combustion equipment or use or permit or suffer to be used any fuel or any method or process of manufacture or treatment that might in any circumstance result in, cause or contribute to the discharge or emission of any pollutant or any noxious, harmful or corrosive matter, whether it be in the form of gas, smoke, liquid, solid or otherwise (including but not limited to air pollutant as defined in Section 2 of the Air Pollution Control Ordinance

(Cap. 311), which exists or which is imminent, without the prior written approval of the Director.

Water Pollution

7. (a) In the event that the Tenant produces, generates, permits, causes, allows or suffers any discharge which is subject to control under the Water Pollution Control Ordinance (Cap. 358) any regulations made thereunder and any amending legislation, the Tenant shall apply to the Director for a licence and comply with the terms and conditions stipulated in the licence at the Tenant's own cost(s). Otherwise, the Tenant is not allowed to discharge directly or indirectly or to produce, generate, permit, cause, allow or suffer any discharge into any public sewer, storm-water drain, channel, stream-course, sea or any area inside or outside the Premises any trade effluent or foul or contaminated water or cooling or hot water. Subject to the said licence from the Director, the Tenant shall at its own cost(s) separate, collect, and discharge all process or industrial wastewater which comply with the standard required for discharge into a sewer leading to the sewage treatment works at Pillar Point or other treatment works specified in the licence.
- (b) Subject to obtaining advance written approval of the Director, the Tenant shall at its own cost(s) provide, install, operate and maintain its own waste water pre-treatment plants within the Premises if such process or industrial wastewater could not meet the standard required for discharge into a sewer leading to the sewage treatment works at Pillar Point or other treatment works specified in the licence. The Tenant shall at its own cost(s) separate, collect, discharge and send all domestic wastewater (i.e. other than process or industrial wastewater) to the Pillar Point Sewage Treatment Works directly for treatment or other treatment works specified in the licence.
- (c) In any event, the Tenant shall prevent any spilled materials from entering the surface water drainage system and prevent contamination of the sea at its own cost(s) by, inter alia, providing, installing, operating and maintaining stop-logs or interceptors in the surface water drainage system and at the marine frontage area, respectively, or as required by the licence. The Tenant shall at its own cost comply with relevant provisions of the Dumping at Sea Ordinance (Cap. 466) good practices and relevant provisions of the EIA Report and Final EM&A Manual.

Waste Management

8. (a) The Tenant shall at its own cost(s) comply with relevant provisions of the Waste Disposal Ordinance (Cap. 354).
- (b) The Tenant shall not permit, allow or suffer any fuel or chemical and any sewage, waste water or effluent containing sand, cement, silt or any suspended or dissolved material to flow, escape or run from the Premises onto any adjoining land or allow any waste matter which does not form part of the recovery and/or recycling and/or reprocessing operation or is not part of the final product of such operation to be deposited, kept, held or stored anywhere within the Premises and other areas of EcoPark. The Tenant shall at its own cost(s) have all such matters and all materials arising from recycling activities, chemical materials arising from maintenance of plant and equipment, sewage sludge (from wastewater treatment facilities, if any) and general daily waste from the operation removed from the Premises or any building(s) or structure(s) or any part of any building(s) or structure(s) erected or to be erected thereon in a proper manner to the satisfaction of the Landlord and/or the Director.

Noise Pollution

9. (a) The Tenant shall take all necessary measures as may be required by and to the satisfaction of the Landlord and/or the Director to ensure that the operation of all plant and equipment, installed or used on the Premises or in any building(s) or structure(s) or any part of any building(s) or structure(s) erected or to be erected thereon, will not result, not cause and/or will not contribute any noise (which exists or which is imminent) which disturbs or annoys the residents or occupiers of any adjoining or neighbouring lot or lots or premises, or causes and/or contributes to disturbance to the general public under the Noise Control Ordinance (Cap. 400) any regulations made thereunder and any amending legislation.
- (b) The decision of the Landlord or the Director as to whether any such plant and equipment are causing disturbance or annoyance as aforesaid shall be final and binding on the Tenant.

Landfill Gas Hazard

10. To mitigate landfill gas hazard, the Tenant shall at its own cost(s) comply with, inter alia, Condition 4.13 of the Environmental Permit No. EP-226/2005/A regarding raising clear of the ground all buildings and enclosed structures as specified in inter alia

Condition 3.7 (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate hazard to life impact).

EcoPark Being Within the 250m Consultation Zone of Siu Lang Shui Landfill

11. (a) The Tenant acknowledges that the EcoPark is within the 250m Consultation Zone of the Siu Lang Shui Landfill and that the Premises may be affected by problems associated with migrating landfill gas and undertakes to provide suitable precautionary or protection measures at his own expense to control these potential hazards.
- (b) The Tenant shall ensure all personnel entering the Premises and all visitors to the Premises are aware of the potential hazards of the landfill gas by posting suitable warning notices of the potential hazards at his own expense.
- (c) All buildings and enclosed structures, including temporary offices, temporary stores and the administration building, within the 250m Consultation Zone of the Siu Lang Shui Landfill shall be provided with the following measure(s):
 - (i) buildings shall be raised clear of the ground with a clear separation distance (as measured from the highest point on the ground surface to the underside of the lowest floor joist) of at least 500mm; or
 - (ii) a low-gas permeability membrane shall be applied to the surface of any wall or floor slab that rests on or is below ground. A gravel-fill vent system shall be provided such that passive venting is achieved around the perimeter of the structure. In addition, other building materials, such as dense well-compacted concrete or steel shuttering which provide a measure of resistance to gas permeation, shall be used to achieve gas protection.
- (d) The Tenant shall ensure that the electrical equipment used on the Premises shall be intrinsically safe. Welding, flame-cutting or other hot works shall be confined to the open areas of the Premises and shall be at least 15m away from any ground-level confined space.
- (e) No drilling, trenching and excavation shall be allowed on the Premises. During any construction work, the Tenant shall observe the guidelines recommended in Chapter 8 of the "Landfill Gas Hazard Assessment Guidance Note" published by the Department of Environmental Protection. In particular, no smoking, naked

flames and all other sources of ignition shall be allowed within 15m of any ground-level confined space.

Hazard to Life Impact

12. To mitigate hazard to life impact, the Tenant shall comply with, inter alia, Conditions 4.8 to 4.10 of the Environmental Permit No. EP-226/2005/A (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate hazard to life impact) and shall not:-
- (a) bring, keep, store or transport chlorine within the Premises and other areas of EcoPark;
 - (b) bring, keep, store, locate or transport dangerous goods, substances and fuels supporting combustion including oxygen, acetylene, hydrogen peroxide, rubber tyres and diesel within 10 metres from the boundary of the site of EcoPark; and
 - (c) exceed the building height restrictions for buildings on the Premises which are on/near the western boundary of the site of EcoPark as mentioned in Annex B to the Environmental Permit No. EP-226/2005/A (including any updated Permit, amended permit and further permit).

Landscape and Visual Impacts

13. To mitigate landscape and visual impacts, the Tenant shall at its own cost(s) comply with, inter alia, Condition 4.14 of the Environmental Permit No. EP-226/2005/A regarding maintaining landscape, planting, treatment and mitigation measures as specified in inter alia Condition 3.8 and Figure 3 (and comply with the conditions of any updated Permit, amended permit and further permit regarding measures to mitigate landscape and visual impacts).

Environmental Permits Relating to EcoPark

14. The Tenant hereby declares, confirms and acknowledges that it is fully aware that, pursuant to the Environmental Impact Assessment Ordinance (Cap.499), the Director has the right to grant, amend or revoke environmental permit(s) or to grant further or amended environmental permit(s) relating to the lots comprising the EcoPark and any other lots but that such right may be challenged by third parties on justifiable grounds. The Tenant hereby undertakes to waive all its rights and remedies for any loss, damages, cost and expenses whatsoever which it may sustain and/or incur directly or

indirectly as a result of the grant, amendment or revocation of the environmental permit(s) or the consequential grant of further or amended environmental permit(s), including but not limited to any right to terminate this Lease and/or to make any claim against the Landlord and/or the Director for any compensation whatsoever.

Appendix 3

Material and Waste Throughputs

Table A3-1 Recycling of Waste Organic Food

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2015	780*	340*	481*
February 2015	589*	234*	350*
March 2015	850*	301*	544*
April 2015	811*	280*	516*
May 2015	1,263*	329*	696*
June 2015	1,215*	346*	687*
July 2015	1,239*	348*	727*
August 2015	1,216*	371*	714*
September 2015	858*	403*	291*
October 2015	544*	98*	277*
November 2015	540*	73*	286*
December 2015	n/a	n/a	n/a
Total	9,905	3,123	5,569

Notes:

- 1) The throughput data is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) The total throughput may be different from the sum of the presented monthly data due to data rounding.
- 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
- 4) The throughout data marked with "*" have been revised with updated data since submission of corresponding quarterly EM&A reports.

Table A3-2 Recycling of Waste Ferrous Metal

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2015	12,294	10,111	-
February 2015	6,190	8,374	-
March 2015	8,361*	8,584*	-
April 2015	11,130	10,118*	-
May 2015	7,941*	7,450*	-
June 2015	7,726*	7,102*	-
July 2015	7,654	7,623	-
August 2015	6,143	6,002	-
September 2015	6,104*	6,349*	-
October 2015	9,154	9,034	-
November 2015	4,021	4,021	-
December 2015	2,905*	2,905*	-
Total	89,623	87,673	-

Notes:

- 1) The throughput data is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) The total throughput may be different from the sum of the presented monthly data due to data rounding.
- 3) The throughout data marked with "*" have been revised with updated data since submission of corresponding quarterly EM&A reports.

Table A3-3 Recycling of Waste Wood

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2015	186*	-	-
February 2015	45*	-	-
March 2015	26*	-	-
April 2015	12*	-	-
May 2015	13*	-	-
June 2015	7*	-	-
July 2015	8*	-	-
August 2015	6*	-	-
September 2015	4*	-	-
October 2015	6	52	-
November 2015	14	390	-
December 2015	n/a	n/a	-
Total	327	442	-

Notes:

- 1) The throughput data is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) The total throughput may be different from the sum of the presented monthly data due to data rounding.
- 3) The tenant (Hung Wai) had suspended operation from February 2015 and resumed in October 2015.
- 4) The throughout data marked with "*" have been revised with updated data since submission of corresponding quarterly EM&A reports.

Table A3-4 Recycling of Waste Electronics

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2015	149*	26	2
February 2015	107*	80	3
March 2015	134*	145*	8*
April 2015	157	109*	13
May 2015	110*	178	3*
June 2015	130*	91*	15*
July 2015	122	175	15
August 2015	130*	82*	11*
September 2015	110*	121*	3*
October 2015	119*	74*	10*
November 2015	186*	132*	5*
December 2015	184*	105*	4*
Total	1,638	1,318	92

Notes:

- 1) The throughput data is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) The total throughput may be different from the sum of the presented monthly data due to data rounding.
- 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
- 4) The throughout data marked with "*" have been revised with updated data since submission of corresponding quarterly EM&A reports.

Table A3-5 Recycling of Waste Plastic

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2015	593*	522*	8
February 2015	388*	353*	10
March 2015	636	634	27
April 2015	599	559	33
May 2015	524*	469*	34
June 2015	483*	471*	21*
July 2015	490	463*	147*
August 2015	489*	451*	141*
September 2015	546*	507*	162*
October 2015	548	512	132
November 2015	153	104	162
December 2015	n/a	n/a	n/a
Total	5,449	5,045	877

Notes:

- 1) The throughput data is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) The total throughput may be different from the sum of the presented monthly data due to data rounding.
- 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
- 4) The throughout data marked with "*" have been revised with updated data since submission of corresponding quarterly EM&A reports.

Table A3-6 Recycling of Waste Glass and Construction Waste

Date	Waste Input (tonnes)		Product Output (tonnes)	Waste Disposal (tonnes)
	Glass	Construction Waste		
January 2015	218*	7,500*	2,293*	15*
February 2015	150*	7,500*	5,249*	15*
March 2015	250*	2,000*	7,405*	15*
April 2015	245*	2,000*	7,907*	15*
May 2015	133*	5,000*	7,389*	15*
June 2015	136*	805*	6,611*	15*
July 2015	133	650	5,818	15
August 2015	n/a	n/a	n/a	n/a
September 2015	n/a	n/a	n/a	n/a
October 2015	n/a	n/a	n/a	n/a
November 2015	n/a	n/a	n/a	n/a
December 2015	n/a	n/a	n/a	n/a
Total	1,265	25,455	42,672	105

Notes:

- 1) The throughput data is the best available data and has been rounded off to the nearest whole tonne for presentation. Unavailable data will be reported in the next EM&A report.
- 2) The total throughput may be different from the sum of the presented monthly data due to data rounding.
- 3) Waste disposal refers to the disposal of general refuse (i.e. packaging) and/or chemical waste.
- 4) The throughout data marked with "*" have been revised with updated data since submission of corresponding quarterly EM&A reports.
- 5) Since the recycling of waste glass and construction waste is combined to produce concrete block, the product output and waste disposal from both processes are combined.

Appendix 4

Graphical Plots of LFG Monitoring

Landfill Gas Monitoring Results

Monitoring Station ID	Monitoring Locations	Weather Conditions	Temperature (°C)	Start Time	End Time	Measurement Results					Action Level			Limit Level			Remarks
						Methane		Oxygen	Carbon Dioxide	Barometric Pressure	Methane	Oxygen	Carbon Dioxide	Methane	Oxygen	Carbon Dioxide	
						% v/v	% LEL	% v/v	% v/v	mBar (absolute)	% LEL	% v/v	% v/v	% LEL	% v/v	% v/v	
<i>17 March 2015</i>																	
EP1-1	Inside the landscaping area of Administration Building	Overcast	23	14:45	14:48	0.0	0	20.7	0.0	1013	>10	<19	>0.5	>20	<18	>1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot EP08-01		23	14:25	14:28	0.0	0	20.5	0.0	1014							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot EP08-03		23	14:15	14:18	0.0	0	20.4	0.0	1014							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		23	14:30	14:33	0.0	0	20.3	0.1	1014							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		23	14:35	14:38	0.0	0	19.8	0.2	1013							Nil
<i>24 June 2015</i>																	
EP1-1	Inside the landscaping area of Administration Building	Sunny	28	14:40	14:43	0.0	0	20.0	0.0	1004	>10	<19	>0.5	>20	<18	>1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot EP08-01		28	14:20	14:23	0.0	0	19.6	0.2	1004							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot EP08-03		28	14:15	14:18	0.0	0	20.2	0.0	1004							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		28	14:25	14:28	0.0	0	19.6	0.3	1004							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		28	14:30	14:33	1.7	<u>34</u>	14.2	<u>1.4</u>	1004							Nil
<i>03 July 2015</i>																	
EP2-2	Inside the landscaping area of Administration Building	Sunny	32	09:40	09:43	0.9	<u>18</u>	16.9	<u>1.1</u>	1002	>10	<19	>0.5	>20	<18	>1.5	Nil
<i>18 August 2015</i>																	
EP2-2	Inside the landscaping area of Administration Building	Sunny	31	09:45	09:48	0.0	0	20.3	0.1	1009	>10	<19	>0.5	>20	<18	>1.5	Nil
<i>22 September 2015</i>																	
EP1-1	Inside the landscaping area of Administration Building	Sunny	30	10:08	10:11	0.0	0	19.7	0.0	1011	>10	<19	>0.5	>20	<18	>1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot EP08-01		30	09:56	09:59	0.0	0	19.8	0.2	1011							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot EP08-03		30	10:00	10:03	0.0	0	19.9	0.1	1011							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		30	09:42	09:45	0.1	2	20.3	0.2	1011							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		30	09:52	09:55	0.0	0	16.6	<u>1.5</u>	1011							Nil
<i>16 December 2015</i>																	
EP1-1	Inside the landscaping area of Administration Building	Sunny	17	14:50	14:53	0.0	0	20.4	0.1	1021	>10	<19	>0.5	>20	<18	>1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot EP08-01		17	14:45	14:48	0.0	0	20.4	0.0	1021							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot EP08-03		17	14:40	14:43	0.0	0	20.2	0.1	1021							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		17	14:30	14:33	0.0	0	20.2	0.2	1021							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		17	14:35	14:38	0.0	0	20.5	0.0	1021							Nil

Notes:

- (1) Underlined figure indicates an exceedance of Action Level
- (2) Shaded area indicates an exceedance of Limit Level

EP1-1

Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
17 Mar 2015	0	10	20	20.7	19	18	0.0	0.5	1.5	1013
24 Jun 2015	0	10	20	20.0	19	18	0.0	0.5	1.5	1004
22 Sep 2015	0	10	20	19.7	19	18	0.0	0.5	1.5	1011
16 Dec 2015	0	10	20	20.4	19	18	0.1	0.5	1.5	1021

EP1-2

Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
17 Mar 2015	0	10	20	20.5	19	18	0.0	0.5	1.5	1014
24 Jun 2015	0	10	20	19.6	19	18	0.2	0.5	1.5	1004
22 Sep 2015	0	10	20	19.8	19	18	0.2	0.5	1.5	1011
16 Dec 2015	0	10	20	20.4	19	18	0.0	0.5	1.5	1021

EP1-3

Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
17 Mar 2015	0	10	20	20.4	19	18	0.0	0.5	1.5	1014
24 Jun 2015	0	10	20	20.2	19	18	0.0	0.5	1.5	1004
22 Sep 2015	0	10	20	19.9	19	18	0.1	0.5	1.5	1011
16 Dec 2015	0	10	20	20.2	19	18	0.1	0.5	1.5	1021

EP2-1

Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
17 Mar 2015	0	10	20	20.3	19	18	0.1	0.5	1.5	1014
24 Jun 2015	0	10	20	19.6	19	18	0.3	0.5	1.5	1004
22 Sep 2015	2	10	20	20.3	19	18	0.2	0.5	1.5	1011
16 Dec 2015	0	10	20	20.2	19	18	0.2	0.5	1.5	1021

EP2-2

Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
17 Mar 2015	0	10	20	19.8	19	18	0.2	0.5	1.5	1013
24 Jun 2015	34	10	20	14.2	19	18	1.4	0.5	1.5	1004
03 Jul 2015	18	10	20	16.9	19	18	1.1	0.5	1.5	1002
18 Aug 2015	0	10	20	20.3	19	18	0.1	0.5	1.5	1009
22 Sep 2015	0	10	20	16.6	19	18	1.5	0.5	1.5	1011
16 Dec 2015	0	10	20	20.5	19	18	0.0	0.5	1.5	1021

