

Issue No.: Issue 1
Issue Date: January 2021
Project No.: 1616



EcoPark Operation

Annual Environmental Monitoring & Audit Report 2020

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Allied Environmental Consultants Limited

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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 at site in Tuen Mun Area 38 as shown in *Figure 1.1*. The contract for the management of EcoPark – Contract No. *EP/SP/102/17 Provision of Management Services for EcoPark 2018* was awarded to Urban Property Management Limited (UPML) by Environmental Protection Department (EPD) effective from 30th October 2018.

UPML, the “Operator” of EcoPark, have 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/F).

This is the fourteenth (14th) annual EM&A report prepared for the operation phase of EcoPark and covers the calendar year of 2020.

In 2020, there were twelve tenants in EcoPark Phase 1 and Phase 2, one operator of the Lot T7 in EcoPark Phase 1, and WEEE.PARK in EcoPark Phase 2. Eight tenants, namely Champway, HK Biomass, HP Telford, South China, Chung Yue, K.Wah, E. Tech and On Fat Lung, were carrying out full recycling activities within their lots.

Food Waste Management Group (FWMG) of EPD in Lot 7 was without any site operation. Hong Kong Battery Recycling Centre Ltd. (HKBRC) in Lots P9 & P10 was without any site operation. Baguio has carried out building works, but without any site operation. 3R is undergoing reinstatement work process without any site operation. Rocsky was under pre-construction works and EPD is resolving the lease matter with Rocsky. South China was conducting recycling at their site and EPD is resolving the lease matter with South China.

In the reporting year, neither process review nor DA were approved. Full set of the completed PRCs and DAs are submitted separately to relevant authorities in EPD.

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 WEEE.PARK, the operator of Lot T7, and the eight 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	16,299	8,781	3,608
Waste Ferrous Metals	115,770	111,727	816
Waste Wood	1,313	848	-
Waste Electronics	25,634	21,972	3,086
Waste Plastics	1,924	1,370	0
Construction Waste	14,009	73,550	44
Waste Glass	3,464		
Waste Rubber Tyres	1,374	648	0

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) The total product output may not be the same as the waste input due to processing of materials that were received before the reporting year 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.
- 5) “-” in the column of waste disposal denotes zero quantity; while “n/a” denotes unavailable information.

Exceedances of Any Measured Action / Limit Levels

The northern part of EcoPark is located within the 250m Landfill Gas (LFG) Consultation Zone of Siu 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 19th March 2020, 26th June 2020, 25th August 2020, 25th November 2020 at five locations (three in Phase 1 and two in Phase 2). No exceedance of any parameter was recorded.

Summary of Complaints, Summons and Prosecutions

No complaint, notifications of summons and successful prosecutions related to recycling activities was received in the reporting year.

Reporting Changes

There is no change in the reporting year.

Future Key Issues

No key issues are anticipated in the next reporting year.

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 general.

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 2018 was awarded to Urban Property Management Limited (UPML) by Environmental Protection Department (EPD) effective from 30th October 2018.
- 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. Ove Arup & Partners Hong Kong Ltd. (Arup) was appointed by the EPD as the Independent Environmental Checker (IEC). 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 twelve tenants in EcoPark, one operator of WEEE.PARK, and one operator of Lot T7 comprising:
- Alba Integrated Waste Solutions (Hong Kong) Ltd. (Alba IWS) for WEEE.PARK, Food Waste Management Group (FWMG) of EPD for Lot T7, and seven active tenants
 - HKBRC was without any site operation;
 - Baguio was carrying out building works but without any site operation;
 - 3R was undergoing reinstatement work process without any site operation;
 - Rocsky and South China are resolving lease matter with EPD;

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>			
Principal EPO	Mr. Gary C. W. Tam	garytam@epd.gov.hk	3690 7860
<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 – Ove Arup</i>			
IEC	Mr. Sam Tsoi	sam.tsoi@arup.com	2268 3208
<i>ET – AEC</i>			
ET Leader*	Ir. Dr. James WONG	jw@aechk.com	2815 7028
	Ms. Grace Kwok	gk@aechk.com	2815 7028

*Dr. James WONG was replaced by Ms. Grace KWOK with effective from the mid-May 2020.

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 Tenants



Phase 2 Tenants

Figure 1.2 Organization Chart of UPML

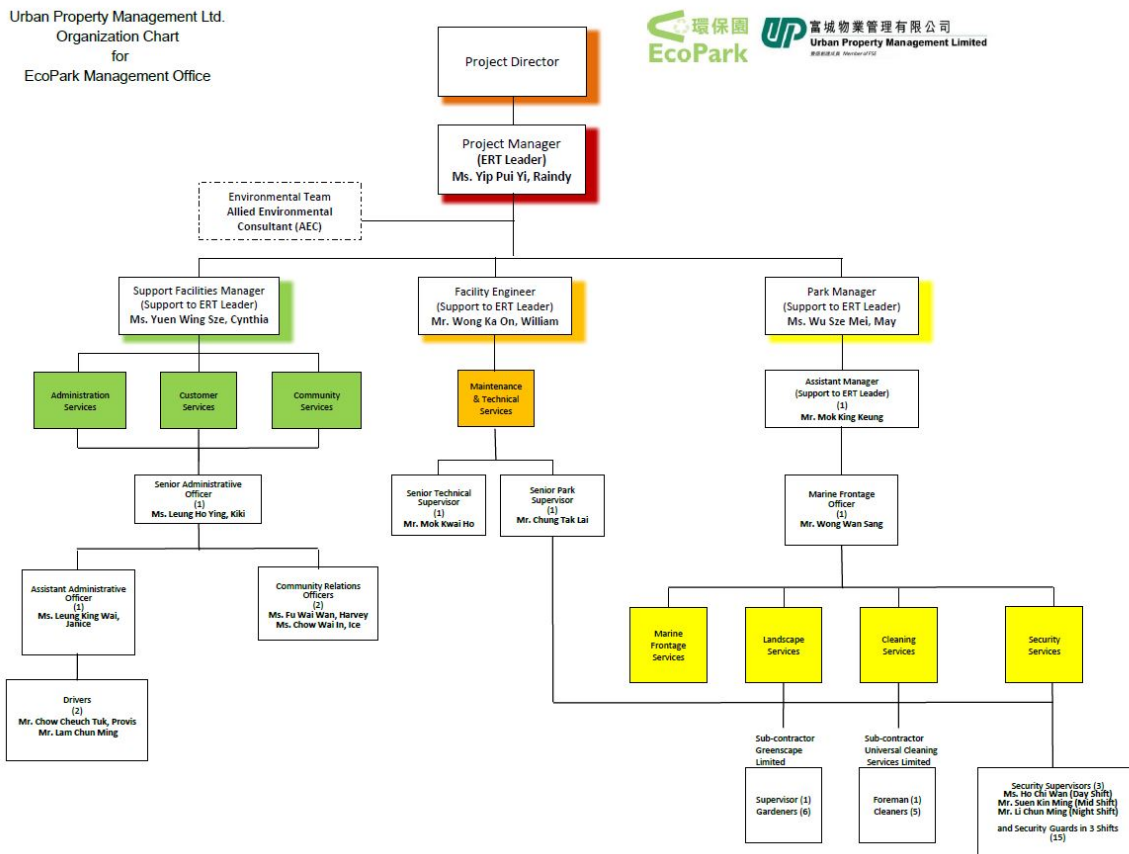
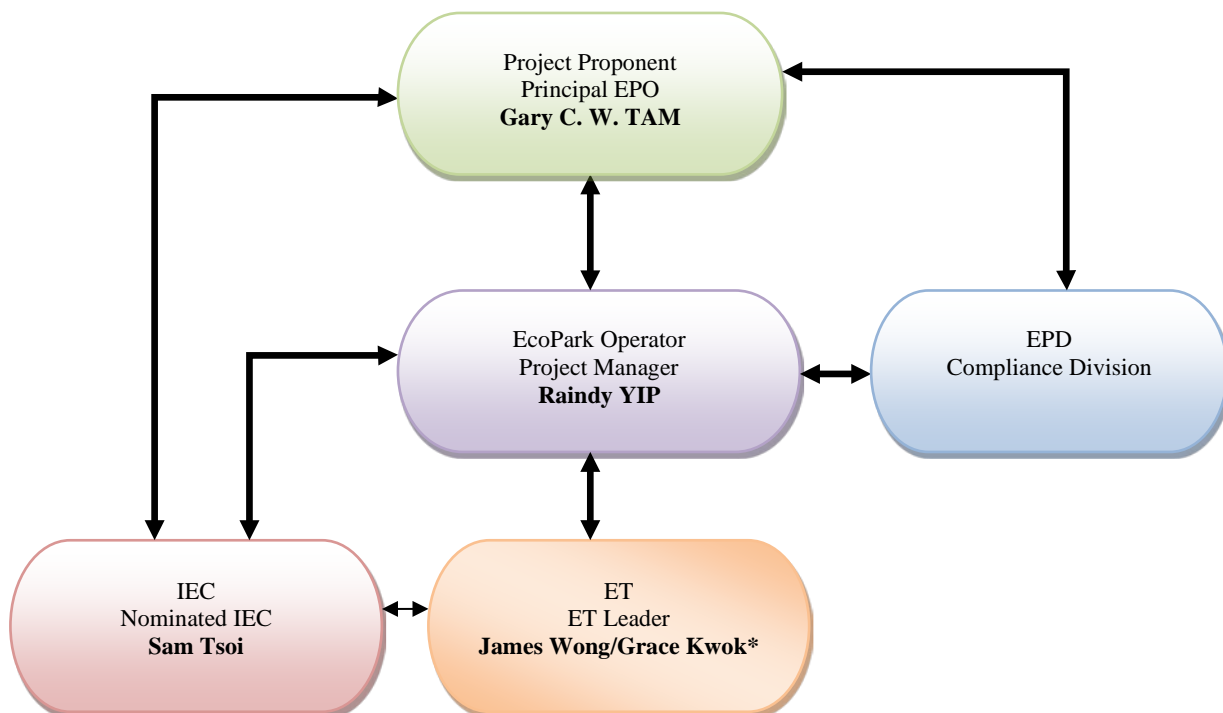


Figure 1.3 Organization Chart of EM&A Works (Operation)



*Dr. James WONG was replaced by Ms. Grace KWOK with effective from the mid-May 2020.

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 Asia Ltd.), IEC (Atkins China Ltd.) and the Operator (Serco Guardian Joint Venture). 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 T1
EP1-3	Service void	HGC Broadband below-ground chamber outside Lot T3
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 EPD informs 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

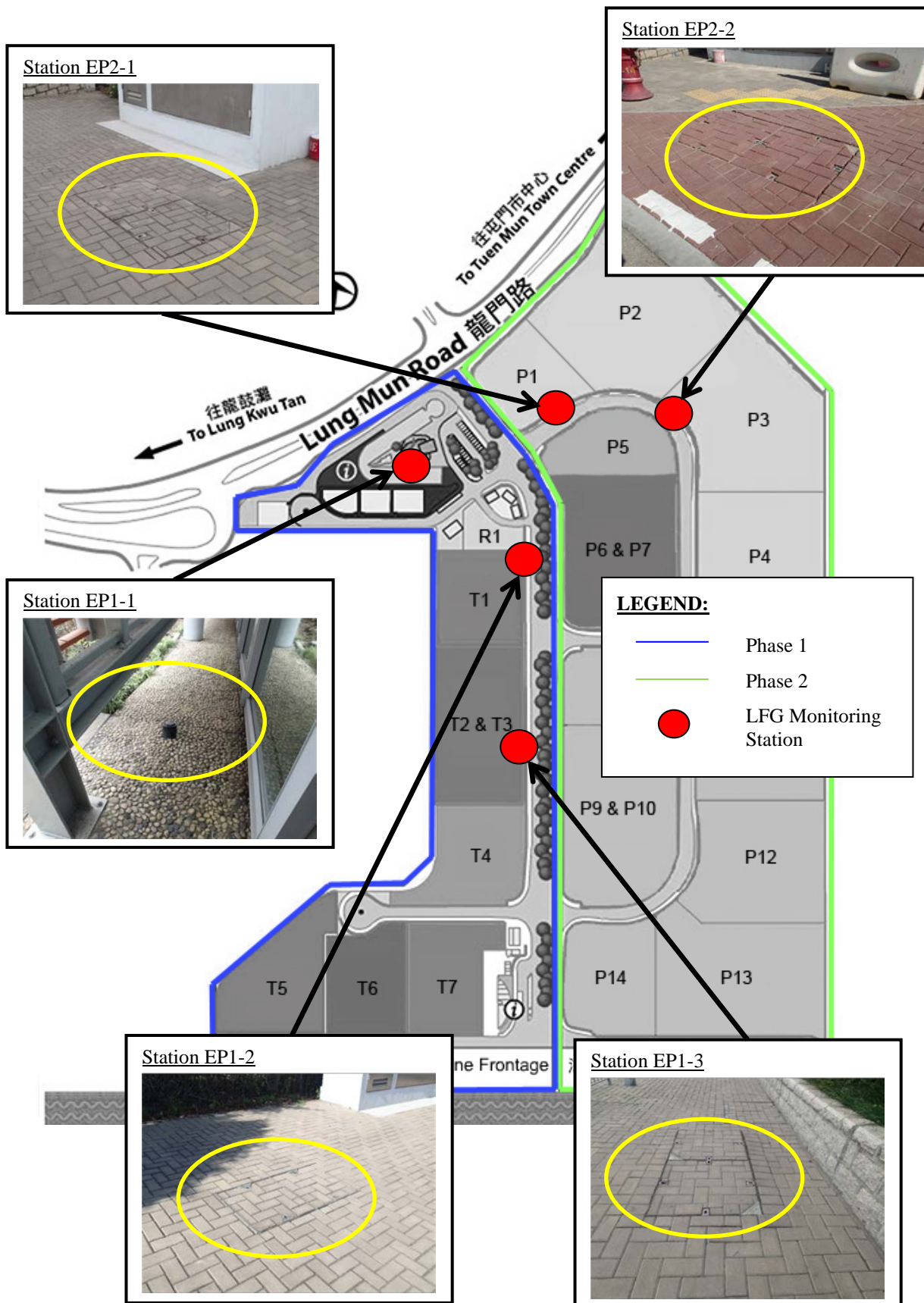
2.4 Environmental Mitigation Measures

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 3.14*. Brief descriptions of the active tenants are provided from *Section 3.2* to *3.10*.

3.1.2 In the reporting year:

- HKBRC was without any site operation;
- Baguio was carrying out building works;
- 3R was under pre-construction works and moved onto reinstatement work process;
- Rocsky was under pre-construction works and is now resolving lease matter with EPD
- South China was conducting recycling at their site and is now resolving lease matter with EPD

3.2 Champway Technology Limited

- **Lot No.:** T5 (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 In this reporting year, waste cooking oil was recycled. Bi-monthly samplings for effluent arising from producing biodiesel have been conducted to comply with the requirement of effluent discharge licence.

3.3 Hong Kong Biomass (Wood) Collect and Recycle Company Limited

- **Lot No.:** T4 (Phase 1)
- **Lot Size:** Approx. 5,000m²
- **Activity:** Recycling of Waste Woods
- **Recycling Process:** Recycle waste woods to wood fuel pellets. Ferrous metals will be separated by magnets.

3.3.1 In this reporting year, waste wood was recycled.

3.4 HP Telford Envirotech Group Limited

- **Lot No.:** T1 (Phase 1)
- **Lot Size:** Approx. 5,000m²

- **Activity:** Recycling of Waste Plastics
- **Recycling Process:** Sorting, shredding and baling of waste plastic

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

3.5 Chung Yue Steel Group Company Limited

- **Lot No. :** P13 (Phase 2)
- **Lot Size:** Approx. 10,000m²
- **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.

3.5.1 Recycling of waste metals was carried out in the reporting year.

3.6 K. Wah Construction Products Ltd.

- **Lot No. :** P11 (Phase 2)
- **Lot Size:** Approx. 10,000m²
- **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

3.6.1 Recycling of waste construction materials and waste glasses were carried out in the reporting year.

3.7 South China Reborn Resources (Zhongshan) Company Ltd.

- **Lot No. :** P12 (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.

3.7.1 Recycling of food waste was carried out in the reporting year. The tenant is now resolving lease matter with EPD.

3.8 WEEE.PARK

- **Lot No.:** P2, P3, P4 (Phase 2)
- **Lot Size:** Approx. 30,000 m²
- **Activity:** Recycling of WEEE
- **Recycling Process:** Four major types of WEEE (i.e. refrigerator and freezers, air conditioners, e-scrap, TV and computer screens) will be recycled. The recycling processes include separation of insulation/backlighting/plastics/various metals, recovery of screen/monitor stand/refrigerant/oil/hazardous materials, and shredding of casing.

3.8.1 WEEE recycling was carried out in the reporting year.

3.9 On Fat Lung Innovative Resources Ltd.

- **Lot No.:** P8 (Phase 2)
- **Lot Size:** Approx. 4,400 m²
- **Activity:** Recycling of Waste Rubber Tyres and WEEE
- **Recycling Process:** Waste rubber tyres will be shredded into rubber powder and processed to form rubber bricks. WEEE will be dismantled/shredded and recovered for reusable components.

3.9.1 Recycling of waste rubber tyres was carried out in the reporting year.

3.10 Food Waste Management Group (FWMG) of EPD

- **Lot No.:** T7 (Phase 1)
- **Lot Size:** Approx. 4,000 m²
- **Activity:** Temporary storage of wood chip and waste trees handling
- **Recycling Process:** Bulk reduction of waste tree by mechanical shearing and chipping.

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

3.11 E. Tech Management (HK) Limited

- **Lot No.:** P14 (Phase 2)
- **Lot Size:** Approx. 5,000 m²
- **Activity:** Recycling of WEEE
- **Recycling Process:** CRT, computer/electronics, white goods and florescent lamps will be recycled. The recycling processes include testing and dismantling of components, repair of refurbished equipment, sorting for reusable components and shredding for scrap.

3.11.1 Recycling of WEEE 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 WEEE.PARK, operator of the Lot T7 and the eight active tenants in the reporting year are 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. Detailed throughput figures of the reporting year are provided in Appendix 3.1. Updated throughput figures of the previous year based on the latest available data, and the updates to the throughput figures from the previous quarters in the reporting year are not significant. Updated throughput figures of the previous quarterlies and the previous year are presented in Appendix 3.1 and Appendix 3.2, respectively.

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	16,299	8,781	3,608
Waste Ferrous Metals	115,770	111,727	816
Waste Wood	1,313	848	-
Waste Electronics	25,634	21,972	3,086
Waste Plastics	1,924	1,370	0
Construction Waste	14,009	73,550	44
Waste Glass	3,464		
Waste Rubber Tyres	1,374	648	0

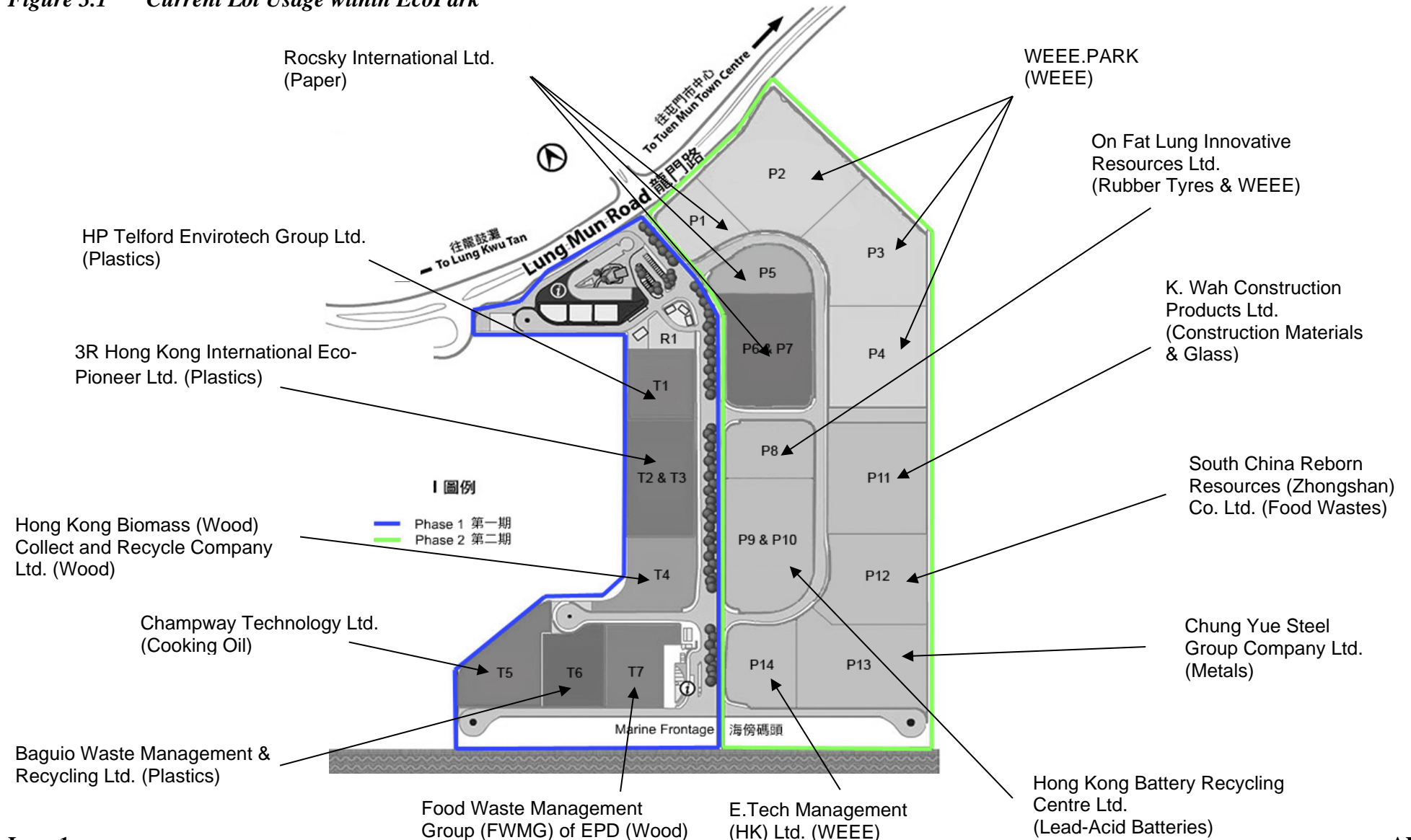
Notes:

- 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) The total product output may not be the same as the waste input due to processing of materials that were received before the reporting year 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.
- 5) “-” in the column of waste disposal denotes zero quantity; while “n/a” denotes unavailable information.

3.13 Process Review

- 3.13.1 Process Review, and maybe Design Audit (DA) where required, had been conducted for each recycling process to be operated within EcoPark to confirm its compliance with the findings and recommendations of the EIA report and the conditions of the EP.
- 3.13.2 Since 2008, twenty-four process reviews and three DAs had been approved. Among those, sixteen process reviews and three DAs are related to the current recycling processes in EcoPark as of December 2020. In the reporting period, neither process review nor DA were approved. Full set of the completed PRCs and DAs are submitted separately to relevant authorities in EPD.

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, WEEE.PARK, Lot T7 (FWMG of EPD) and seven tenants of the eight active tenants from the start of 2020 (Champway, HK Biomass, HP Telford, K. Wah, E. Tech, Chung Yue, and On Fat Lung) are under full operation.
- 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 19th March, 26th June, 25th August, 25th November in this reporting year. Monitoring details are shown in *Table 5.1* below.

Table 5.1 Sampling Schedule for LFG Monitoring

Station ID	Sampling Date	Time	Duration	Ambient Air Temp. (°C)	Weather
EP1-1	19 th Mar 2020	9:40	2 minutes	21	Overcast
EP1-2		10:00	2 minutes	21	Overcast
EP1-3		9:57	2 minutes	21	Overcast
EP2-1		9:50	2 minutes	21	Overcast
EP2-2		9:52	2 minutes	21	Overcast
EP1-1	26 th Jun 2020	9:10	2 minutes	30	Overcast
EP1-2		9:27	2 minutes	30	Overcast
EP1-3		9:23	2 minutes	30	Overcast
EP2-1		9:16	2 minutes	30	Overcast
EP2-2		9:19	2 minutes	30	Overcast
EP1-1	25 th Aug 2020	9:54	2 minutes	31	Sunny
EP1-2		10:07	2 minutes	31	Sunny
EP1-3		10:05	2 minutes	31	Sunny
EP2-1		9:58	2 minutes	31	Sunny
EP2-2		10:02	2 minutes	31	Sunny
EP1-1	25 th Nov 2020	10:03	2 minutes	24	Sunny
EP1-2		10:16	2 minutes	24	Sunny
EP1-3		10:13	2 minutes	24	Sunny
EP2-1		10:08	2 minutes	24	Sunny
EP2-2		10:10	2 minutes	24	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. Comply with BS 6020 and be approved by BASEEFA as intrinsically safe, suitable for use in a Zone 2 area to BS 5345;
2. Be capable of continuous monitoring of methane, oxygen and carbon dioxide;
3. Be capable of continuous barometric pressure and gas pressure measurements;
4. Normally operate in diffusion mode unless required for spot sampling, when it should be capable of operating by means of an aspirator or pump;
5. Have low battery, fault and over range indication incorporated;
6. Store monitoring data, and shall be capable of being down-loaded directly to a PC; and
7. 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 The Geotech GA5000 (serial number G501982) and EAGLE 2 Multi Gas Detector (serial number E2F694) were used for LFG measurements. The gas analyser is calibrated every 6 months. The calibration records of the monitoring equipment are provided in **Appendix 4**.
- 5.3.2 LFG monitoring results are summarized in and compared with the Action and Limit Levels tabulated in **Table 2.2**. Graphical plots of the monitoring results are also provided in **Appendix 5**.
- 5.3.3 No exceedances of Action level were recorded in the reporting year at any of the stations.

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	19 th Mar 2020	0.2	4	20.7	<0.1	1018
EP1-2		0.1	2	20.5	< 0.1	1018
EP1-3		0.1	2	20.5	< 0.1	1018
EP2-1		0.1	2	20.6	<0.1	1018
EP2-2		0.1	2	20.3	<0.1	1018
EP1-1	26 th Jun 2020	0.0	0	20.3	<0.1	1010
EP1-2		0.0	0	19.7	0.1	1010
EP1-3		0.0	0	19.9	< 0.1	1010
EP2-1		0.0	0	20.1	< 0.1	1010
EP2-2		0.0	0	20.0	<0.1	1010
EP1-1	25 th Aug 2020	0.0	0	20.9	< 0.1	1004
EP1-2		0.0	0	20.9	< 0.1	1004
EP1-3		0.0	0	20.9	< 0.1	1004
EP2-1		0.0	0	20.9	<0.1	1004
EP2-2		0.0	0	20.9	< 0.1	1004
EP1-1	25 th Nov 2020	0.0	0	20.9	< 0.1	1004
EP1-2		0.0	0	20.9	< 0.1	1004
EP1-3		0.0	0	20.9	< 0.1	1004
EP2-1		0.0	0	20.9	<0.1	1004
EP2-2		0.0	0	20.9	0.4	1004

6 SUMMARY OF ENVIROMENTAL AUDIT

6.1 General

- 6.1.1 In the reporting year, WEEE.PARK, the operator of the Lot T7, and eight active tenants were under full operation. Specific site inspections were only carried out at the lot of WEEE.PARK and the eight tenants. For the lots of those tenants that were not 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. The IEC conducted random site visits on a monthly basis and joint site visits on a quarterly basis.
- 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 period and no further follow-up is needed. If the observation is not resolved in the reporting period and would be followed-up in the next reporting period, it will be indicated as “Outstanding”.

6.2 Outstanding Observations recorded in 2019

- 6.2.1 Outstanding audit observations are summarized in *Table 6.1*.

Table 6.1 *Environmental Audit Findings in 2019*

Date	Tenant	Item	Status
19 th Mar 2019	Champway	No labelling is provided to the chemical waste and chemical waste storage area, which should also be provided with adequate ventilation.	As observed on 16 Jan 2020, a proper signage for the relocated chemical waste storage area at the northern part of the lot was provided by the tenant. The chemical container without securely attached chemical waste label was removed from the storage area. (CLOSED)

Date	Tenant	Item	Status
24 th Jul 2019	Champway	No chemical waste label is provided on one of the chemical waste containers which stored at the chemical waste storage area.	As observed on 16 Jan 2020, a proper signage for the relocated chemical waste storage area at the northern part of the lot was provided by the tenant. The chemical container without securely attached chemical waste label was removed from the storage area. (CLOSED)
24 th Jul 2019	K.Wah	Stockpiles of concrete block and earth materials are exposed and located on top of a stormwater drainage channel.	As observed on 19 Mar 2020, the remaining stockpiles were sufficiently watered during inspection. (CLOSED)
22 nd Oct 2019	Champway	The bi-monthly sampling record of effluent discharge for Sep 2019 was outstanding.	As observed on 16 Jan 2020, under the renewed discharge licence, bi-monthly sampling results complying with discharge limitations was provided by the tenant. (CLOSED)

Date	Tenant	Item	Status
22 nd Oct 2019	Champway	General refuse was observed in the perimeter drain next to the exhaust of carbon filter.	As observed on 18 Feb 2020, general refuse had been cleared from the perimeter drain next to the exhaust of carbon filter. (CLOSED)
22 nd Oct 2019	Champway	Grease was observed accumulated at the storage tank area.	As observed on 18 Feb 2020, no grease was observed in perimeter drain adjacent to filter press system. (CLOSED)
22 nd Oct 2019	Champway	Milky discharge was observed in the stormwater drain at the entrance area.	As observed on 22 Apr 2020, the milky oil discharge was removed from the stormwater drain. (CLOSED)
19 th Nov 2019	Champway	Oil spillage was found in adjacent to the chemical waste storage area owing to machinery repairment.	As observed on 16 Jan 2020, oil spillage adjacent to the chemical waste storage area owing to machinery repairment had been removed (CLOSED)
19 th Nov 2019	Chung Yue	A truck with transported materials was observed without covering.	As observed on 18 Feb 2020, no trucks with improper cover were observed during the inspection. (CLOSED)

Date	Tenant	Item	Status
19 th Nov 2019	E.Tech	Improper signage for Chemical Waste Storage Area was observed and could not meet the requirements as stipulated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	As observed on 16 Jan 2020, proper signage of chemical waste storage areas was provided. (CLOSED)
19 th Nov 2019	K.Wah	Some of the chemical waste containers which stored in the chemical waste storage area was observed without chemical waste labels.	As observed on 16 Jan 2020, chemical waste containers stored in the chemical waste storage area were provided with chemical waste labels. (CLOSED)
19 th Nov 2019	South China	Scum was observed in the stormwater drain.	As observed on 18 Feb 2020, the milky discharge and oil mixture in the stormwater drain has been removed. (CLOSED)

Date	Tenant	Item	Status
19 th Nov 2019	WEEE.PARK	Some of the chemical waste containers which stored in the chemical waste storage area was observed without chemical waste labels.	As observed on 16 Jan 2020, chemical waste containers stored in chemical waste storage areas had been provided with chemical waste labels. (CLOSED)
23 rd Dec 2019	Champway	Oil spillage was observed adjacent to the cooling tower.	As observed on 16 Jan 2020, the oil spillage adjacent to the cooling tower had been cleaned up. (CLOSED)
23 rd Dec 2019	Champway	Oil stain was found at the vehicular access.	As observed on 22 Apr 2020, all the oil stain was removed from the vehicular access. (CLOSED)
23 rd Dec 2019	K.Wah	Chemical containers were found above the perimeter drain near the site entrance.	As observed on 16 Jan 2020, the chemical containers above the perimeter drain near the site entrance had been removed. (CLOSED)
23 rd Dec 2019	South China	Scum was observed in the perimeter drain.	As observed on 18 Feb 2020, the scum in the perimeter basin has been removed. (CLOSED)

Date	Tenant	Item	Status
23 rd Dec 2019	On Fat Lung	Dusty stockpile was not entirely covered.	As observed on 16 Jan 2020, dusty stockpile on the ground was entirely covered with impervious sheeting. (CLOSED)

6.3 January 2020

6.3.1 Environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET and the Operator on 16th January 2020. IEC random site audit was also carried out on 16th January 2020. Audit observations are summarised in **Table 6.2**.

Table 6.2 Environmental Audit Findings in January 2020

Tenant	Item	Status
Champway	Two dark oil stains were observed on the floor between toilet and blower area.	As observed during the site inspection on 18 th Feb 2020, two dark oil stains observed on the floor between toilet and blower area was removed. (CLOSED)

6.4 February 2020

6.4.1 Joint environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET, the Operator and the IEC on 18th February 2020. Audit observations are summarised in **Table 6.3**.

Table 6.3 Environmental Audit Findings in February 2020

Tenant	Item	Status
Chung Yue	Smoke and dust emissions have been seen during the operation of the site.	As observed on 19 Mar 2020, water spraying was applied to the floor and a stockpile was covered by tarpaulin sheeting for dust suppression. (CLOSED)

6.5 March 2020

6.5.1 Environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET and the Operator on 19th March 2020, while IEC random site audit was carried out on 19th March 2020. Audit observation is summarised in **Table 6.4**.

Table 6.4 Environmental Audit Findings in March 2020

Tenant	Item	Status
Champway	Oil spillage was observed nearby the tray of waste oil sludge stockpile.	As observed on 22 Apr 2020, the oil spillage was removed from the area around the tray of waste oil sludge stockpile. (CLOSED)
Hong Kong Biomass	Smoke and dust emission was seen during the operation of the site.	No smoke and dust emission were observed during the inspection on 22 Apr 2020. (CLOSED)

6.6 April 2020

6.6.1 Environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET and the Operator on 22nd April 2020. IEC random site audit was also carried out on 22nd April 2020. Audit observations are summarised in **Table 6.5**.

Table 6.5 Environmental Audit Findings in April 2020

Tenant	Item	Status
Champway	Milky oil discharge was observed in the perimeter drain near the filter press machine area	As observed on 20 May 2020, the milky oil discharge was removed from the perimeter drain near the filter press machine area. (CLOSED)
Champway	A pile of unused activated carbon powder was observed being spreaded over the area close to the perimeter drain.	As observed on 16 Jun 2020, the pile of unused activated carbon powder was cleared up. (CLOSED)
Chung Yue	Loads on trucks were observed to exceed the level of the tail and side boards.	Loads levels of trucks were observed to have reduced to within the levels of the sides and the tailboard during the inspection on 20 May 2020. (CLOSED)
South China	Suspected wastewater discharge was observed in the culvert at the perimeter drain at the site.	As observed on 16 Jun 2020, the suspected wastewater discharge was cleared from the culvert at the perimeter drain at the site. (CLOSED)

6.7 May 2020

6.7.1 Joint environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET, Operator and IEC on 20th May 2020. Audit observations are summarised in *Table 6.6*.

Table 6.6 Environmental Audit Findings in May 2020

Tenant	Item	Status
No new critical issue was identified.		

6.8 June 2020

6.8.1 Environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET and the Operator on 16th June 2020. IEC random site audit was also carried out on 16th June 2020. Audit observations are summarised in *Table 6.7*.

Table 6.7 Environmental Audit Findings in June 2020

Tenant	Item	Status
Champway	Milky discharge was observed in the stormwater drain outside the site entrance.	As observed on 23 Sep 2020, milky discharge in the stormwater drain outside the site entrance was cleared up. (CLOSED)
Champway	Oily spillage was observed at the refuse collection point next to the biodiesel processing plant.	As observed on 22 Jul 2020, the oily spillage at the refuse collection point next to the biodiesel processing plant was cleared up. (CLOSED)
Champway	Oily discharge was observed in the perimeter drain.	As observed on 25 Aug 2020, general refuse in the perimeter drain was cleared up. (CLOSED)
Chung Yue	Loads levels of trucks were observed to exceed the levels of the sides and the tailboard during the inspection.	As observed on 22 Jul 2020, the load levels of trucks were reduced. (CLOSED)
South China	Scattered wastes and loose organic materials were observed to be placed next to the perimeter drain.	As observed on 25 Aug 2020, scattered wastes and loose organic materials were cleared. (CLOSED)

Tenant	Item	Status
South China	Wastewater seepage was observed from the parked rubbish lorry at the weighbridge.	As observed on 22 Jul 2020, wastewater seepage from the rubbish lorry at the weighbridge area was cleared up during the inspection. (CLOSED)

6.9 July 2020

- 6.9.1 Environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET and the Operator on 22nd July 2020. IEC random site audit was also carried out on 22nd July 2020. Audit observations are summarised in **Table 6.8**.

Table 6.8 Environmental Audit Findings in July 2020

Tenant	Item	Status
Champway	Oily spillage was observed at the waste oil sludge stockpile area.	As observed on 25 Aug 2020, oily spillage at the waste oil sludge stockpile area was cleared up. (CLOSED)
Champway	Oily spillage was observed in the oil storage tank area opposite the biodiesel processing plant.	As observed on 20 Oct 2020, oil spillage and oil sheen at the oil storage tank area opposite the biodiesel processing plant was cleared up. (CLOSED)

6.10 August 2020

- 6.10.1 Joint environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET, Operator and IEC on 25th August 2020. Audit observations are summarised in **Table 6.9**.

Table 6.9 Environmental Audit Findings in August 2020

Tenant	Item	Status
Champway	Oil spillage was observed at the storage tank area near the filter press system area.	As observed on 23 Sep 2020, oil spillage at the storage tank area near the filter press system area was cleared up. (CLOSED)
Champway	Oil spillage was observed opposite to the waste collection point at the processing plant.	As observed on 23 Sep 2020, oil spillage opposite to the waste collection point at the processing plant was cleared up. (CLOSED)

Tenant	Item	Status
Champway	Oil stain was observed at the vehicular access.	As observed on 23 Sep 2020, oil spillage at the vehicular access was cleared up. (CLOSED)
K. Wah	Oil spillage was observed near the chemical waste storage area.	As observed on 23 Sep 2020, oil spillage near the chemical waste storage area was cleared up. (CLOSED)
WEEE.PARK	The sieve on the stormwater manhole opposite the chemical waste stores was backed up.	As observed on 23 Sep 2020, the plastic waste in the sieve on the stormwater manhole opposite the chemical waste stores was cleared up. (CLOSED)

6.11 September 2020

- 6.11.1 Environmental audits of WEEE.PARK, active tenants and general EcoPark condition were carried out by the ET and the Operator on 23rd September 2020. IEC random site audit was also carried out on 23rd September 2020. Audit observations are summarised in **Table 6.10**.

Table 6.10 Environmental Audit Findings in September 2020

Tenant	Item	Status
Baguio (General Inspection)	Mud debris was observed to have been flushed into the stormwater gully on the road outside the site entrance	As observed on 17 Dec 2020, mud debris was still observed in the surface channel. This item will be reviewed in the next inspection in Jan 2021. (OUTSTANDING)
Baguio (General Inspection)	Stockpile was observed to not be covered or watered.	As observed on 17 Dec 2020, temporary stockpile of C&D materials was still observed to not be covered or watered. This item will be reviewed in the next inspection in Jan 2021. (OUTSTANDING)
Champway	A broken oil pipe and oil spillage was observed under the plant building near site office.	As observed on 20 Oct 2020, The oil spillage under the plant building near site office was cleared up. The broken oil pipe under the plant building is no longer in use, and will be removed from underneath the plant building. (CLOSED)

Tenant	Item	Status
Champway	Oil sheen was observed on the perimeter drain at the oil storage tank area opposite the biodiesel processing plant.	As observed on 20 Oct 2020, the oil sheen on the perimeter drain at the oil storage tank area opposite the biodiesel processing plant was cleared up. (CLOSED)
Champway	Oil spillage was observed in the perimeter drainage next to the new filter press facility.	As observed on 20 Oct 2020, oil spillage in the perimeter drainage next to the new filter press facility was removed. (CLOSED)
Champway	Oil spillage was observed in the stormwater manhole at the vehicular access.	As observed on 20 Oct 2020, Oil spillage in the stormwater manhole at the vehicular access was cleared up. (CLOSED)
Champway	Oil spillage was observed at the stockpile area next to the processing plant.	As observed on 20 Oct 2020, Oil spillage at the stockpile area next to the processing plant was cleared up. (CLOSED)
Chung Yue	Loads levels of trucks were observed to exceed the levels of the sides and the tailboard during the inspection.	As observed on 20 Oct 2020, loads level of trucks were observed to be within the levels of the sides and the tailboard. (CLOSED)

6.12 October 2020

- 6.12.1 Environmental audits of WEEE.PARK, the operator of the Lot T7, active tenants and general EcoPark condition were carried out by the ET, Operator and IEC on 20th October 2020. Audit observations are summarised in *Table 6.11*.

Table 6.11 Environmental Audit Findings in October 2020

Tenant	Item	Status
Champway	Oily layer on sewage water was observed in the sewerage outside the site entrance.	As observed on 25 Nov 2020, Oily layer on sewage water in the sewerage outside the site entrance was cleared. (CLOSED)
K.Wah	C&D materials were observed in the surface channel near the stockpile area.	As observed on 25 Nov 2020, C&D materials in the surface channel near the stockpile area was observed to have been cleared. The tenant was reminded to cover the C&D materials to avoid future blockage. (CLOSED)
WEEE.PARK	The sieve on the stormwater manhole opposite the chemical waste stores was found to be filled by plastics debris.	As observed on 17 Dec 2020, Plastics debris in the sieve on the stormwater manhole opposite the chemical waste stores was observed to have been cleared. The tenant was reminded to take extra care to avoid future blockage. (CLOSED)

6.13 November 2020

- 6.13.1 Joint environmental audits of WEEE.PARK, the operator of the Lot T7, active tenants and general EcoPark condition were carried out by the ET and the Operator on 25th November 2020. IEC random site audit was also carried out on 25th November 2020. Audit observations are summarised in *Table 6.12*.

Table 6.12 Environmental Audit Findings in November 2020

Tenant	Item	Status
Champway	Oil stain was observed near the bins in the refuse area at the front of the processing plant.	As observed on 17 th Dec 2020, oil stain was still observed near the bins in the refuse area at the front of the processing plant. This item will be reviewed during the next inspection in Jan 2021. (OUTSTANDING)

Tenant	Item	Status
Champway	Oil stain was observed near the tanks in the stockpile area near the site office.	As observed on 17 th Dec 2020, oil stain was still observed near the tanks in the stockpile area near the site office. This item will be reviewed during the next inspection in Jan 2021. (OUTSTANDING)
Champway	The perimeter drainage was observed to have been blocked.	As observed on 17 th Dec 2020, the perimeter drainage was still observed to have been blocked. This item will be reviewed during the next inspection in Jan 2021. (OUTSTANDING)

6.14 December 2020

- 6.14.1 Environmental audits of WEEE.PARK, the operator of the Lot T7, active tenants and general EcoPark condition were carried out by the ET, Operator and IEC on 17th December 2020. Audit observations are summarised in **Table 6.13**.

Table 6.13 Environmental Audit Findings in December 2020

Tenant	Item	Status
Champway	Activated carbon was observed to have been spilled all over the floor.	This item will be reviewed during the next inspection in Jan 2021. (OUTSTANDING)
Chung Yue	Loads levels of trucks were observed to exceed the levels of the sides and the tailboard.	This item will be reviewed during the next inspection in Jan 2021. (OUTSTANDING)
K.Wah	C&D materials were observed to have blocked the parameter drain.	This item will be reviewed during the next inspection in Jan 2021. (OUTSTANDING)

7 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

7.1 Summary of Summons and Prosecutions

7.1.1 No complaint, notifications of summons or successful prosecutions related to recycling activities was received in the reporting year.

8 ANNUAL REVIEW

8.1 Background of Operation Activities

8.1.1 By the end of the reporting year, there were twelve tenants in EcoPark, one operator of WEEE.PARK, and one operator of Lot T7 comprising:

- Alba Integrated Waste Solutions (Hong Kong) Ltd. (Alba IWS) for WEEE.PARK, Food Waste Management Group (FWMG) of EPD for Lot T7, and seven active tenants
- HKBRC was without any site operation;
- Baguio was carrying out building works but without any site operation;
- 3R was undergoing reinstatement work process without any site operation;
- Rocsky and South China are resolving lease matter with EPD;

8.2 Interpretation of EM&A Data

8.2.1 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. The concentration reading for CO₂ at EP2-2 on 25th November 2020 was observed to be higher than the other stations at 0.4% v/v. No exceedance of CO₂ and methane was recorded at any monitoring location and there was no indication of the migration of LFG from SLSL. Therefore, the EM&A data is consistent with the assessment result in the EIA Report that the potential risk associated with LFG hazard remains low.

8.3 Environmental Acceptability of EcoPark

8.3.1 In the reporting year, WEEE.PARK, the operator of the Lot T7, and eight tenants (Champway, HP Telford, Hong Kong Biomass, Chung Yue, K.Wah, South China, E.Tech and On Fat Lung) have carried out recycling activities. With reference to *Section 6*, no critical environmental impacts were continuously identified at tenants' lots in EcoPark in the reporting year. The operation of EcoPark in environmental terms is therefore considered as acceptable in general.

8.4 Monitoring Methodology

8.4.1 Quarterly LFG monitoring has been carried out since October 2009. Exceedance of action level was not recorded in the reporting year. The monitoring methodology is considered as effective to detect the change of potential LFG hazard and trigger associated actions. 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.

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

- 8.5.1 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.
- 8.5.2 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.

9 CONCLUSIONS

- 9.1.1 This is the fourteenth (14th) annual EM&A report prepared for the operation phase of EcoPark and covers the calendar year of 2020. 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 twelve tenants in EcoPark Phase 1 and Phase 2, one operator of WEEE.PRAK in EcoPark Phase 2, and an operator of Lot T7. Seven active tenants (Champway, HK Biomass, HP Telford, Chung Yue, K.Wah, E. Tech and On Fat Lung), have commenced full recycling activities within their lots.
- 9.1.3 Food Waste Management Group of the EPD in Lot T7 was without any site operation. Hong Kong Battery Recycling Centre Ltd. (HKBRC) in Lots P9 & P10 was without any site operation. Baguio has carried out building works, but without any site operation. 3R has carried out reinstatement work process. Rocsky was under pre-construction works and EPD is resolving the lease matter with Rocsky. South China was conducting recycling at their site and EPD is resolving the lease matter with South China.
- 9.1.4 Throughout the reporting year, the ET has conducted monthly site inspections while the IEC has carried out full site inspection on quarterly basis and random site audits on monthly basis, and some general observations have been made. The approved checklist has been used in the monthly site inspections for various tenants.
- 9.1.5 The throughputs of WEEE.PARK, the operator of the Lot T7 and the eight 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	16,299	8,781	3,608
Waste Ferrous Metals	115,770	111,727	816
Waste Wood	1,313	848	-
Waste Electronics	25,634	21,972	3,086
Waste Plastics	1,924	1,370	0
Construction Waste	14,009	73,550	44
Waste Glass	3,464		
Waste Rubber Tyres	1,374	648	0

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) The total product output may not be the same as the waste input due to processing of materials that were received before the reporting year 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.

5) “-” in the column of waste disposal denotes zero quantity; while “n/a” denotes unavailable information.

- 9.1.6 LFG monitoring was undertaken on 19th March 2020, 26th June 2020, 25th August 2020, 25th Nov 2020 and at five locations (three in Phase 1 and two in Phase 2). The concentration reading for CO₂ at EP2-2 on 25th November 2020 was observed to be higher than the other stations at 0.4% v/v. No Exceedance of Action Level was recorded.
- 9.1.7 The quarterly monitoring of LFG is considered as sufficient and effective in accordance with *Section 6.4.4* of the EM&A Manual.
- 9.1.8 No complaint, notifications of summons or prosecutions related to recycling activities was received in the reporting year.
- 9.1.9 No critical environmental impacts were continuously identified at tenants’ lots in EcoPark in the reporting year. The operation of EcoPark in environmental terms is considered as acceptable in general.
- 9.1.10 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.

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	Implementation Status (✓ – Implemented; X – Not Implemented; / - To Be Implemented)
<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		✓

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	Implementation Status (✓ – Implemented; X – Not Implemented; / - To Be Implemented)
<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	✓
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		✓

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	Implementation Status (✓ – Implemented; X – Not Implemented; / - To Be Implemented)
	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		✓
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	✓

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	Implementation Status (✓ – Implemented; X – Not Implemented; / - To Be Implemented)
	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 accordance with the Regulation. Disposal of other construction waste will be undertaken by licensed contractors in accordance with applicable statutory requirements in the WDO. • 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. 	Within EcoPark throughout the life of the facility.	Operator		<p>✓</p> <p>✓</p> <p>✓</p>
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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	Implementation Status (✓ – Implemented; X – Not Implemented; / - To Be Implemented)
<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

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

Appendix 3.1

Material and Waste Throughputs of the Reporting Year

Table A3.1-1 Recycling of Waste Organic Food

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2020	983*	703	80
February 2020	954*	693	87
March 2020	938	527	98
April 2020	950*	639	156
May 2020	900*	583	186
June 2020	860	647	236
July 2020	803	768	162
August 2020	1,047	640	249
September 2020	1,558	640	395
October 2020	2,234	986	592
November 2020	2,332	932	623
December 2020	2742	1,021	7,46
Total	16,299	8,781	3,608

Table A3.1-2 Recycling of Waste Ferrous Metal

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2020	7,981	8,075	66
February 2020	8,146	4,290	62
March 2020	9,009	10,560	67
April 2020	7,875	7,990	61
May 2020	9,067	8,729	64
June 2020	8,512	9,061	61
July 2020	9,292	9,292	67
August 2020	10,110	10,720	65
September 2020	12,028	10,185	75
October 2020	9,628	7,235	72
November 2020	10,802	14,505	76
December 2020	13,320	11,085	81
Total	115,770	111,727	816

Table A3.1-3 Recycling of Waste Wood

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2020	65	12	-
February 2020	83	23	-
March 2020	143	32	-
April 2020	83	49	-
May 2020	61	46	-
June 2020	127	93	-
July 2020	98	66	-
August 2020	121	50	-
September 2020	163	137	-
October 2020	182	182	-
November 2020	187	159	-
December 2020	-	-	-
Total	1,313	848	-

Table A3.1-4 Recycling of Waste Electronics

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2020	1,876 *	1,494*	241 *
February 2020	1,858 *	1,642 *	271 *
March 2020	2,000 *	1,830 *	263*
April 2020	1,927	1,648	217
May 2020	2,435 *	2,076*	245*
June 2020	2,334	2,010	278
July 2020	2,470	2,166	283
August 2020	2,096 *	1,960*	262*
September 2020	2,237	1,982	263
October 2020	2,227*	1,780	249
November 2020	2,219	1,659	238
December 2020	1,955	1,515	254
Total	25,634	21,972	3,086

Table A3.1-5 Recycling of Waste Plastic

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2020	107	66	-
February 2020	140	78	-
March 2020	261	126	-
April 2020	215	183	-
May 2020	187	103	-
June 2020	180	130	-
July 2020	172	163	-
August 2020	148	106	-
September 2020	164	106	-
October 2020	156	107	-
November 2020	193	204	-
December 2020	-	-	-
Total	1,924	1,370	-

Table A3.1-6 Recycling of Waste Glass and Construction Waste

Date	Waste Input (tonnes)		Product Output (tonnes)	Waste Disposal (tonnes)
	Construction Waste	Glass		
January 2020	324	359	3,354	5
February 2020	1,466	465	4,296	0
March 2020	1,070	126	6,176	7
April 2020	479	491	6,083	3
May 2020	1,203	199	5,911	4
June 2020	897	183	7,585	0
July 2020	2,095	248	8,674	1
August 2020	2,019	217	8,498	5
September 2020	2,263	569	8,474	11
October 2020	710	392	7,323	3
November 2020	1,483	215	7,176*	5
December 2020	-	-	-	-
Total	14,009	3,464	73,550	44

Table A3.1-7 Recycling of Waste Rubber Tyres

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2020	51	40	-
February 2020	65	50	-
March 2020	56	21	-
April 2020	91	50	-
May 2020	83	42	-
June 2020	69	50	-
July 2020	149	60	-
August 2020	211	70	-
September 2020	205	120	-
October 2020	192	65	-
November 2020	201	80	-
December 2020	-	-	-
Total	1,374	648	-

Notes:

- 1) The throughput data presented in *Tables A3.1-1 to A3.1-7* 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 product output may not be the same as the waste input due to processing of materials that were received before the reporting year 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 in *Table A3.1-6*.
- 5) “-” in the column of waste disposal denotes zero quantity; while “n/a” denotes unavailable information.
- 6) The throughput data marked with “*” have been revised with updated data since submission of corresponding quarterly EM&A reports.

Appendix 3.2

Updates of Material and Waste Throughputs of the Previous Reporting Year

Table A3.2-1 Recycling of Waste Organic Food

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
January 2019	648	473	91
February 2019	637	477	69
March 2019	844	693	68
April 2019	818	607	57
May 2019	890	544	132
June 2019	886	653	73
July 2019	870	649	72
August 2019	932	689	584
September 2019	915	654	59
October 2019	919	776	74
November 2019	824	733	57
December 2019	924	692	62

Table A3.2-2 Recycling of Waste Electronics

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
December 2019	1,889	1,431	251

Table A3.2-3 Recycling of Waste Plastic

Date	Waste Input (tonnes)	Product Output (tonnes)	Waste Disposal (tonnes)
December 2019	204	199	-

Notes:

- 1) The throughput data in **Tables A3.2-1 to A3.2-3** supersede the same batch of the throughput data in previous Annual Environmental Monitoring & Audit Report. The presented 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 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.
- 5) The presented throughput is the best available data.
- 6) “-” in the column of waste disposal denotes zero quantity; while “n/a” denotes unavailable information.

Appendix 4

Calibration Certificate of Infrared Gas Analyser

REPORT ON CALIBRATION OF INFRA RED GAS ANALYSER

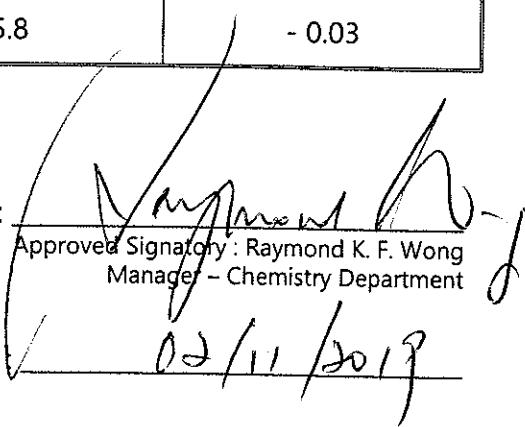
Client : Fugro Technical Services Limited
 Sample description : One sample of Infra Red Gas Analyser (GA5000)
 Sample identification : E / 084 / 2
 Serial number : G501982
 Test required : Calibration
 Date of calibration : 02/11/2019
 Next calibration date : 01/05/2020
 Method used : In-house method (Comparison with Standard Gas)

Results :

Parameters	Standard Gas Concentration, % volume	Infra Red Gas Analyser Reading, % volume	Deviation, % volume
Methane (CH ₄)	1.00	0.9	0.0
Carbon dioxide (CO ₂)	1.00	1.8	0.8
Oxygen (O ₂)	15.83	15.8	- 0.03

 Calibrated by : C. F. Leung

Certified by :


 Approved Signatory : Raymond K. F. Wong
 Manager - Chemistry Department

Date

** End of Report **

Note : This report refers only to the sample(s) tested.



Calibration Certificate

Information Provided by Customer

Customer : ETS – TESTCONSULT LIMITED
Address : 8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fo Tan, Hong Kong

Information of Unit-under test (UUT)

Description : Gas Detector Equipment I.D. No : ET/EA/005/01
Manufacturer : RKI Instruments EAGLE 2 Serial No. : E2F694
Type of gas : CO₂, O₂, CH₄

Laboratory Information

Procedure : In-house method Data of Receipt : 11-Jun-2020
Date of Calibration : 18-Jun-2020 Calibration Location : Environmental Laboratory
Date of issue : 19-Jun-2020

Calibration Condition

Ambient Temperature : (20 ± 3) °C Relative Humidity : (50 ± 20)%
Stabilizing Time : 30 minutes Warm-up Time : 30 minutes

Reference Equipment

- Reference Gas Detector, ET/EA/005/02

Calibration Specification

- To perform the calibration of gas below:
- CO₂ at 0, 3000 and 5000ppm
- O₂ at 10, 20 & 30vol%
- CH₄ at 0, 5 & 10%LEL

Calibration Result (CO₂)

Calibration Range (ppm)	Reference Equipment Reading (ppm)	*Corrected Value (ppm)	UUT Reading (ppm)	Deviation (ppm)
0	0.0	0.0	0.0	0.0
3000	3134.3	3071.6	3089.0	17.4
5000	5289.4	5183.6	5184.1	0.5

Remark 1. 2% indicator error of reference equipment is applied.

Measurement Result (CO₂)

Items	Results
Indication Error (%)	0
Repeatability (%)	0.8



Calibration Result (O₂)

Calibration Range (%vol)	Reference Equipment Reading (%vol)	*Corrected Value (%vol)	UUT Reading (%vol)	Deviation (%vol)
10	10.8	10.7	10.8	0.1
20	20.8	20.6	20.8	0.2
30	31.4	31.0	31.2	0.2

Remark 1. 1.0% indicator error of reference equipment is applied.

Measurement Result (O₂)

Items	Results
Indication Error (%)	1
Repeatability (%)	0.5

Calibration Result (CH₄)

Calibration Range (%LEL)	Reference Equipment Reading (%LEL)	*Corrected Value (%LEL)	UUT Reading (%LEL)	Deviation (%LEL)
0	0	0.0	0	0.0
5	5	5.1	5	0.1
10	10	10.2	10	0.2

Remark 1. -2% indicator error of reference equipment is applied.

Measurement Result (CH₄)

Items	Results
Indication Error (%)	-1
Repeatability (%)	2.5

Note: (*) Corrected Value = Reference Equipment Reading x Indicator Error of Reference Equipment

Remarks:

- The calibration results apply to the particular unit-under-test only.

Calibrated By: Ma
(Technician)

Approved Signatory: Gung

Appendix 5

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>19 March 2020</i>																	
EP1-1	Inside the landscaping area of Administration Building	Overcast	21	9:40	9:42	0.2	4	20.7	< 0.1	1018	> 10	< 19	> 0.5	> 20	< 18	> 1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot T1		21	10:00	10:02	0.1	2	20.5	< 0.1	1018							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot T3		21	9:57	9:59	0.1	2	20.5	< 0.1	1018							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		21	9:50	9:52	0.1	2	20.6	< 0.1	1018							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		21	9:52	9:54	0.1	2	20.3	< 0.1	1018							Nil
<i>26 June 2020</i>																	
EP1-1	Inside the landscaping area of Administration Building	Overcast	30	9:10	9:12	0.0	0	20.3	<0.1	1010	> 10	< 19	> 0.5	> 20	< 18	> 1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot T1		30	9:27	9:29	0.0	0	19.7	< 0.1	1010							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot T3		30	9:23	9:25	0.0	0	19.9	< 0.1	1010							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		30	9:16	9:18	0.0	0	20.1	< 0.1	1010							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		30	9:19	9:21	0.0	0	20.0	<0.2	1010							Nil
<i>25 August 2020</i>																	
EP1-1	Inside the landscaping area of Administration Building	Sunny	31	9:54	9:56	0.0	0	20.9	< 0.1	1004	> 10	< 19	> 0.5	> 20	< 18	> 1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot T1		31	10:07	10:09	0.0	0	20.9	< 0.1	1004							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot T3		31	10:05	10:07	0.0	0	20.9	< 0.1	1004							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		31	9:58	10:00	0.0	0	20.9	0.3	1004							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		31	10:02	10:04	0.0	0	20.9	< 0.1	1004							Nil
<i>25 November 2020</i>																	
EP1-1	Inside the landscaping area of Administration Building	Sunny	24	10:03	10:05	0.0	0	20.9	< 0.1	1004	> 10	< 19	> 0.5	> 20	< 18	> 1.5	Nil
EP1-2	PCCW below-ground chamber outside Lot T1		24	10:16	10:18	0.0	0	20.9	<0.1	1004							Nil
EP1-3	HGC Broadband below-ground chamber outside Lot T3		24	10:13	10:15	0.0	0	20.9	< 0.1	1004							Nil
EP2-1	HGC Broadband below-ground chamber outside Lot P1		24	10:08	10:10	0.0	0	20.9	< 0.1	1004							Nil
EP2-2	HGC Broadband below-ground chamber outside Lot P3		24	10:10	10:12	0.0	0	20.9	<0.2	1004							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
19 Mar 2020	4	10	20	20.7	19	18	< 0.1	0.5	1.5	1018
26 Jun 2020	0	10	20	20.3	19	18	< 0.1	0.5	1.5	1010
25 Aug 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004
25 Nov 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004

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
19 Mar 2020	2	10	20	20.7	19	18	< 0.1	0.5	1.5	1018
26 Jun 2020	0	10	20	19.7	19	18	0.1	0.5	1.5	1010
25 Aug 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004
25 Nov 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004

EP1-3

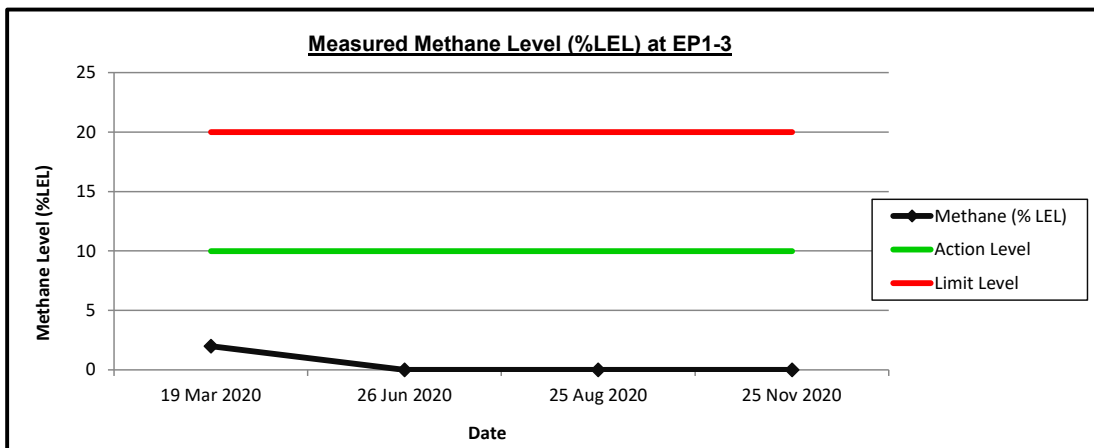
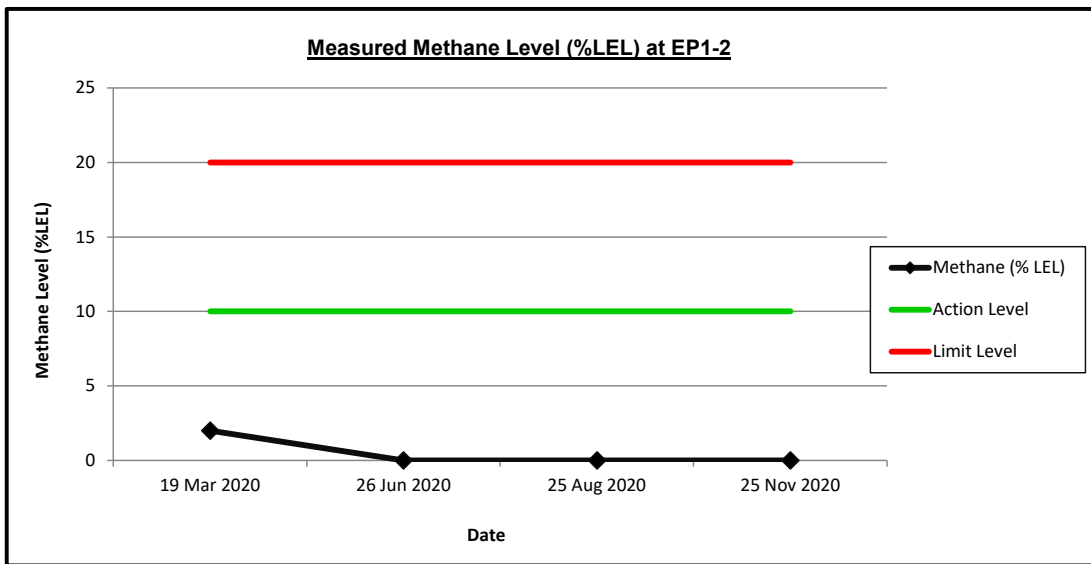
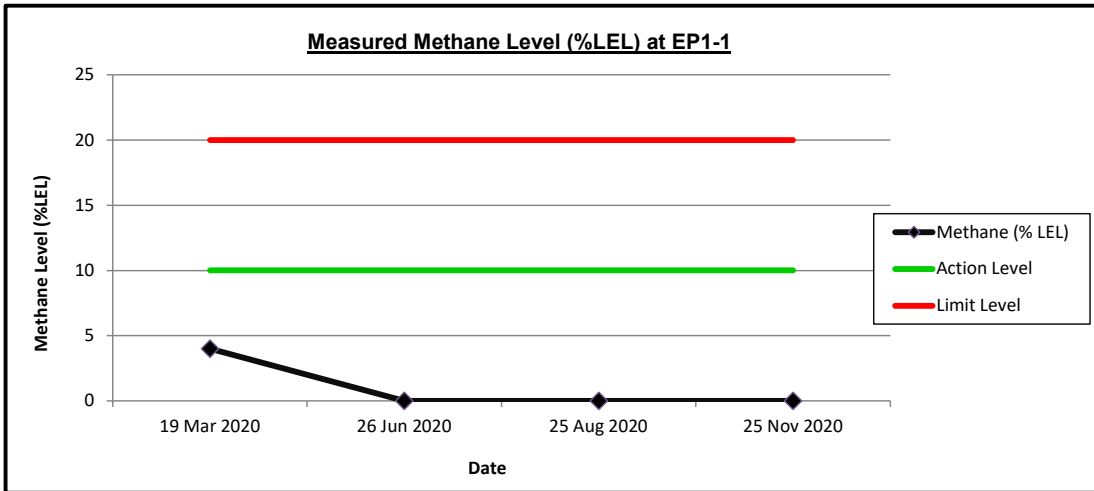
Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
19 Mar 2020	2	10	20	20.7	19	18	< 0.1	0.5	1.5	1018
26 Jun 2020	0	10	20	19.9	19	18	< 0.1	0.5	1.5	1010
25 Aug 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004
25 Nov 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004

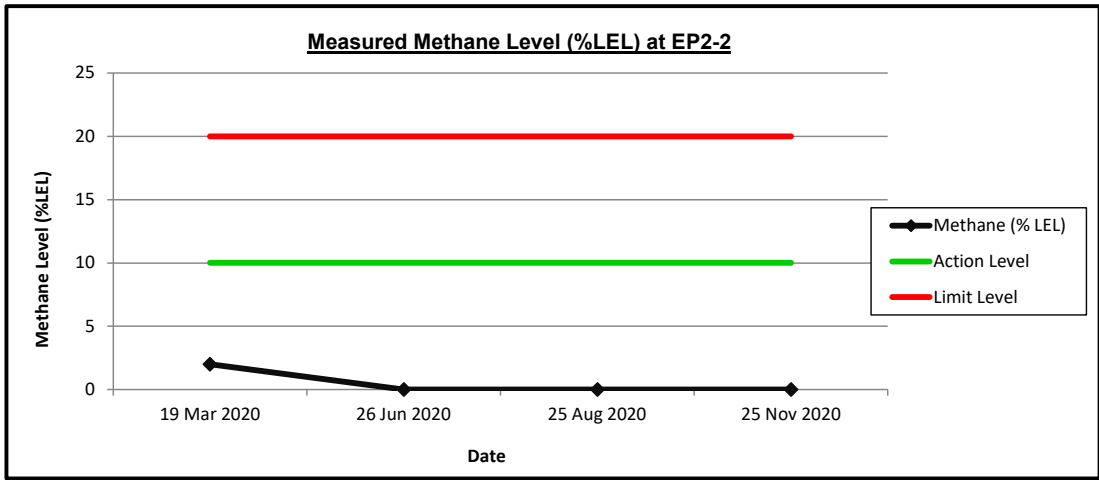
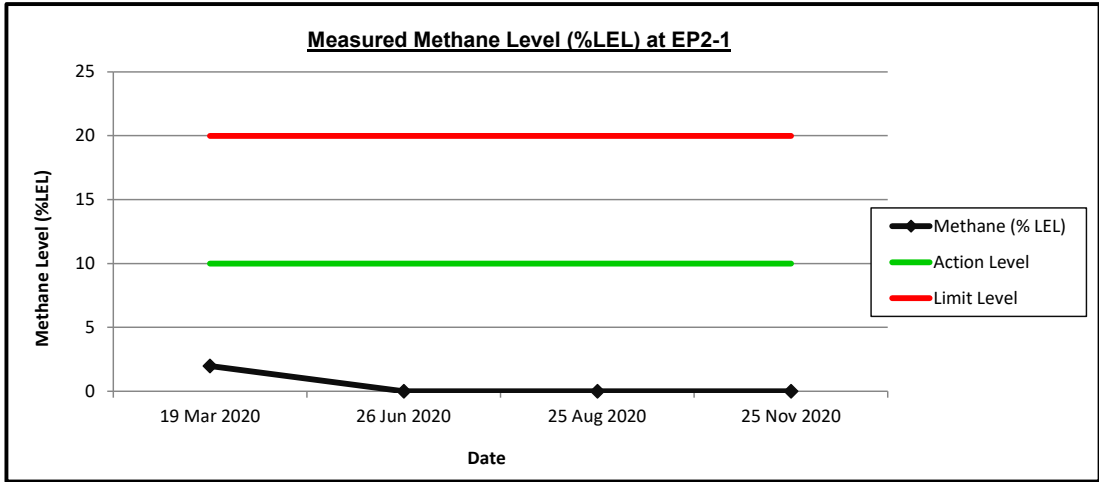
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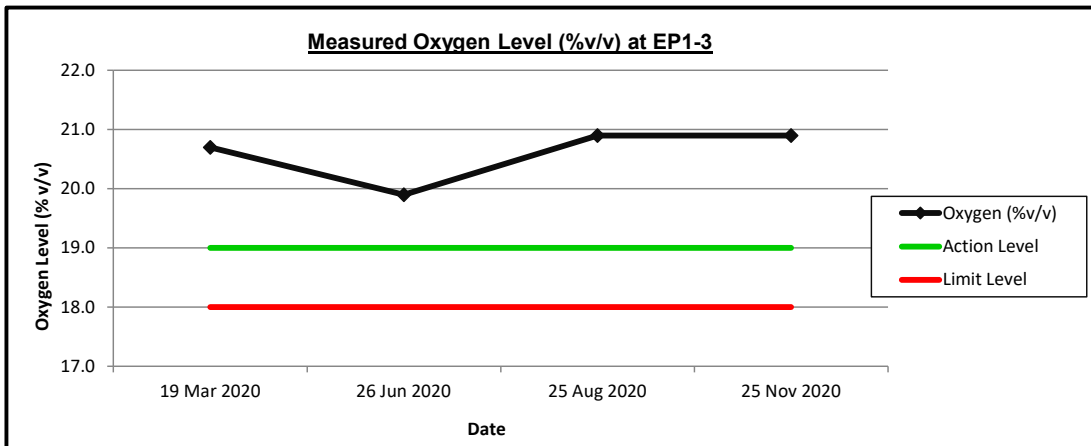
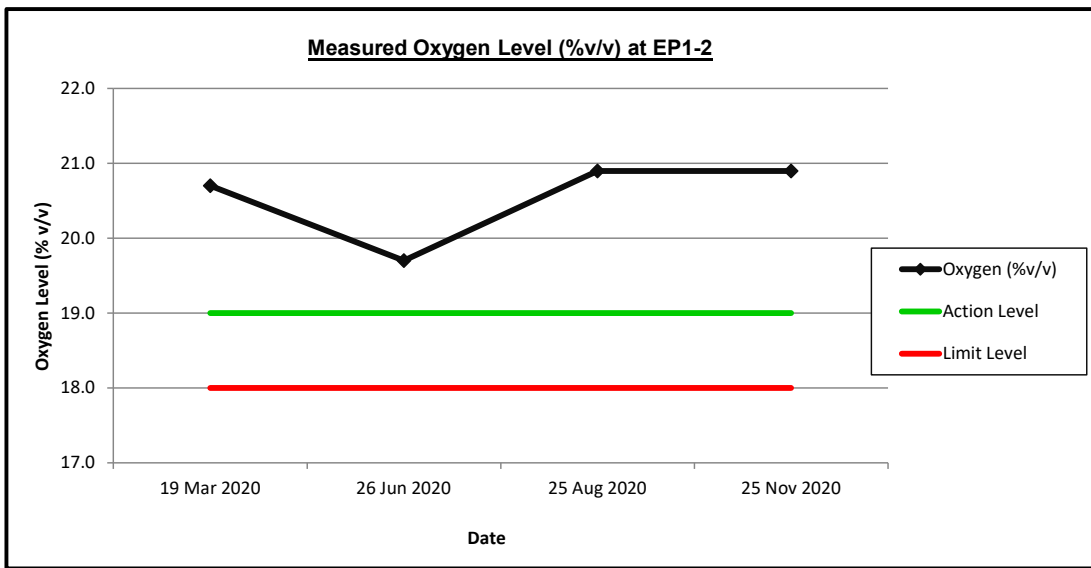
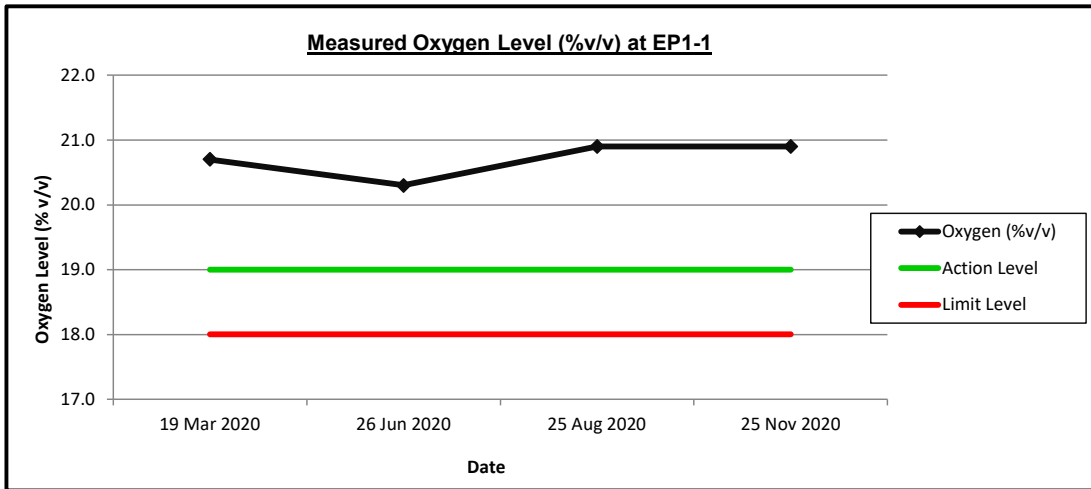
Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
19 Mar 2020	2	10	20	20.7	19	18	< 0.1	0.5	1.5	1018
26 Jun 2020	0	10	20	20.1	19	18	< 0.1	0.5	1.5	1010
25 Aug 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004
25 Nov 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004

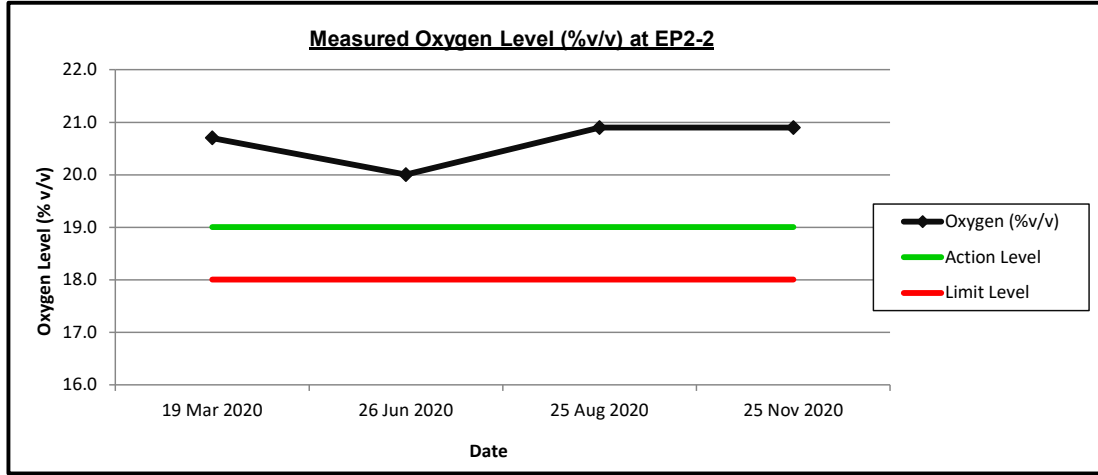
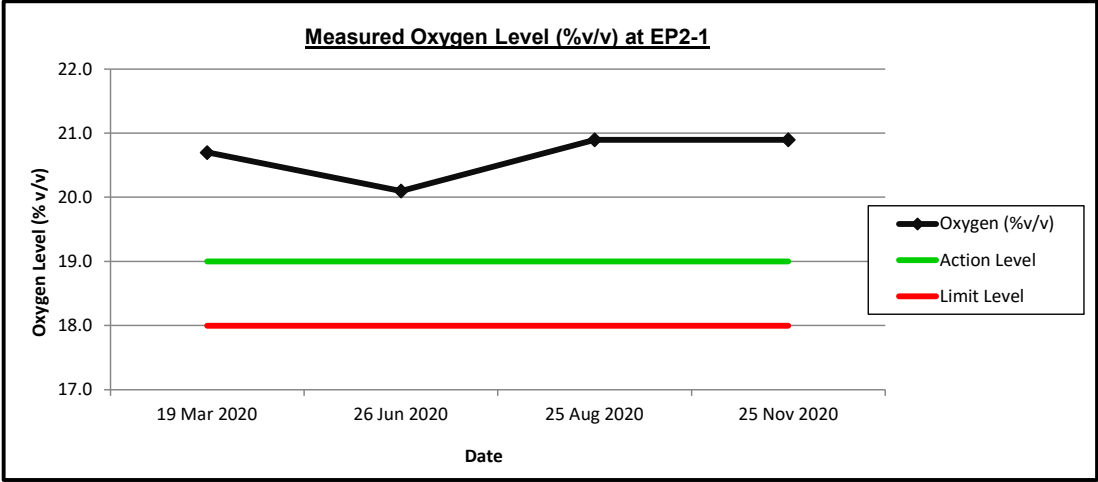
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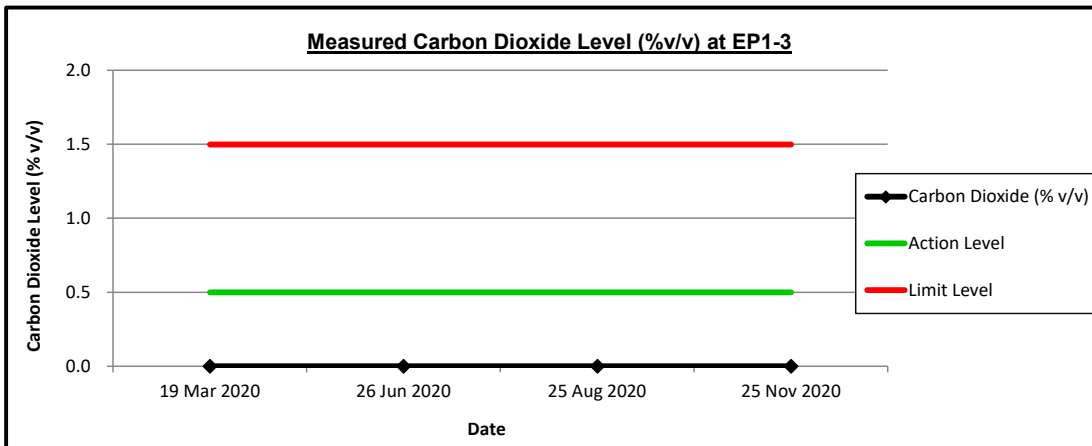
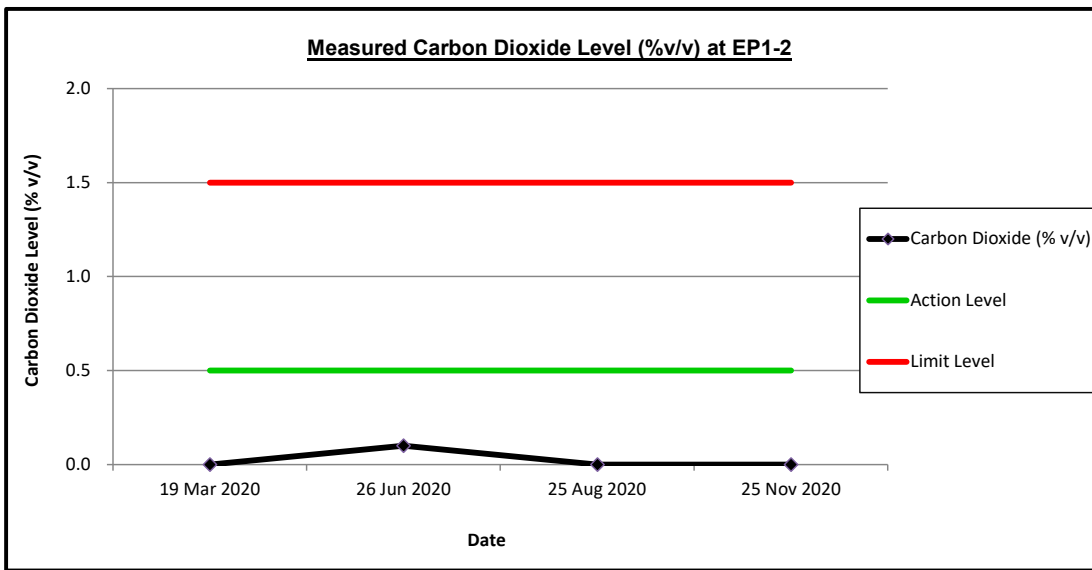
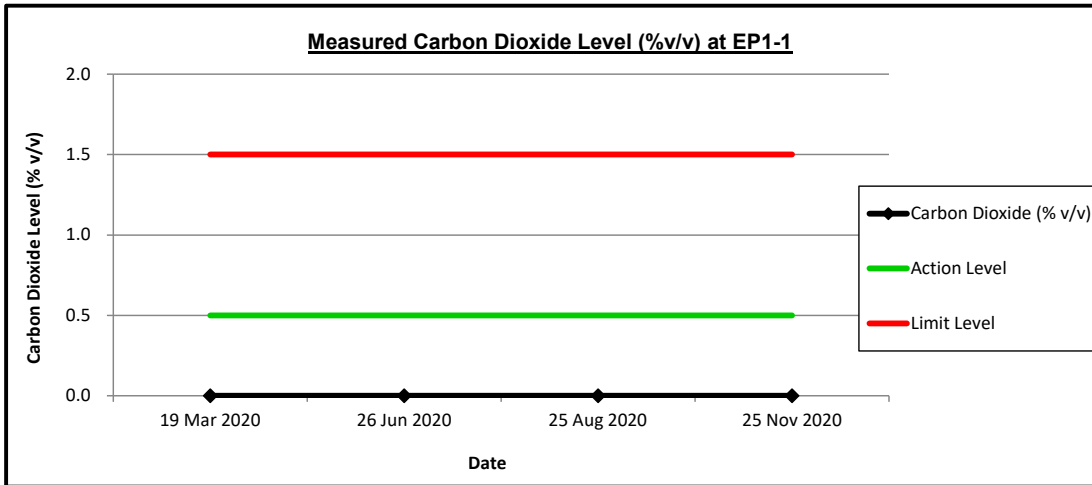
Date	Methane (% LEL)			Oxygen (% v/v)			Carbon Dioxide (% v/v)			Barometric Pressure (mBar)
	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement	Action Level	Limit Level	Measurement
19 Mar 2020	2	10	20	20.7	19	18	< 0.1	0.5	1.5	1018
26 Jun 2020	0	10	20	20.0	19	18	< 0.1	0.5	1.5	1010
25 Aug 2020	0	10	20	20.9	19	18	< 0.1	0.5	1.5	1004
25 Nov 2020	0	10	20	20.9	19	18	0.4	0.5	1.5	1004

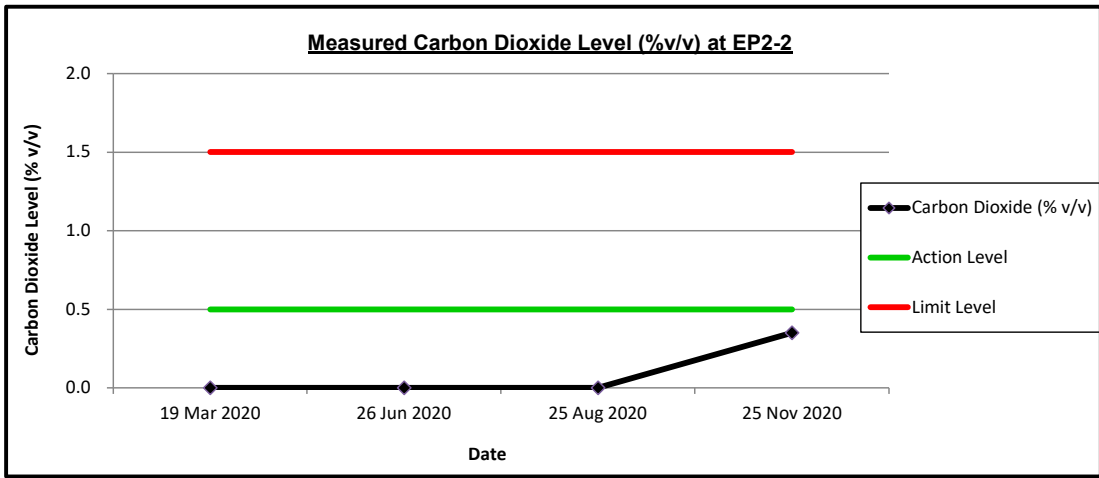
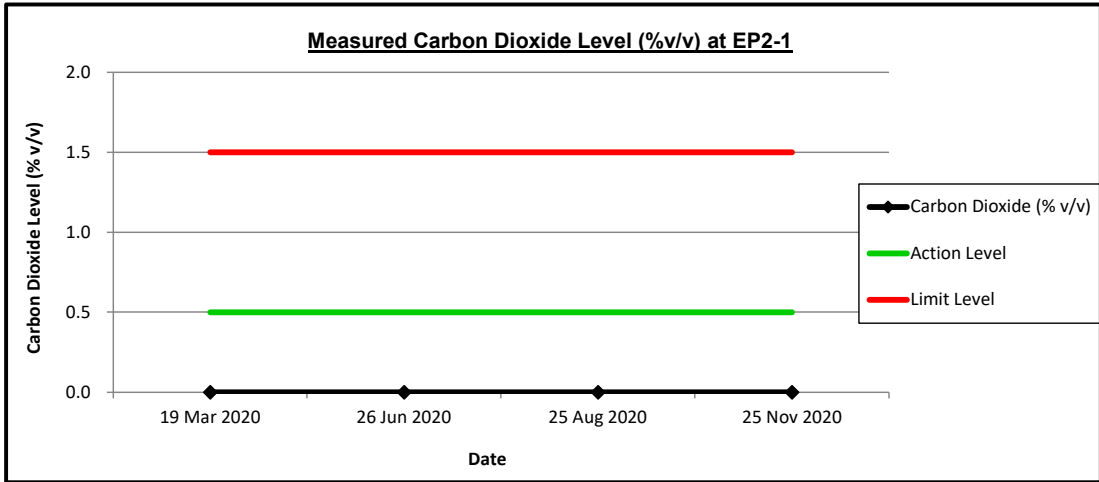












Remark: All <0.1%v/v for carbon dioxide is regarded as 0.0%v/v in graphical presentation

