MONTHLY EM&A REPORT

OSCAR Bioenergy Joint Venture

Contract No. EP/SP/61/10 Organic Resources Recovery Centre (Phase 1): *Fortieth Monthly EM&A Report*

1 September 2018 – 30 September 2018

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Meinhardt Infrastructure and Environment Limited

Organic Resources Recovery Centre, Phase I

Monthly EM&A Report

(1 September 2018 – 30 September 2018)

(December 2018)

Verified by: Helen Cochrane

Position: Independent Environmental Checker

Date: 21 Dec 2018

MONTHLY EM&A REPORT

OSCAR Bioenergy Joint Venture

Contract No. EP/SP/61/10 Organic Resources Recovery Centre (Phase 1): *Fortieth Monthly EM&A Report*

1 September 2018 – 30 September 2018

Reference 0279222

For and on behalf of ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed:

Position: Partner

Certified by:
(Environmental Team Leader – Mandy To)

Certified by:
(Registered Landscape Architect No. R-150 - Albert Chung)

Date: 20 December 2018

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LIST OF TABLES

LIST OF ANNEXES

EXECUTIVE SUMMARY

The construction works of ***No. EP/SP/61/10 Organic Resources Recovery Centre Phase 1 (the Project)*** commenced on 21 May 2015. This is the 40th monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 30 September 2018 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during the Reporting Month

Works undertaken in the reporting month included:

- Building 1 – ABWF/finishing works and BS installation;
- Building 2 & 3 – ABWF/finishing works and BS installation;
- Electrical installation (cable trays, Local Control panels/switch installation, general cabling works, instrumentation and control installation, lighting , ELV and SCADA installation);
- BS works (MVAC, FS, P/D);
- Landscaping works;
- Systems being operated – waste reception, pre-treatment, CAPC extraction, the digesters, the centrifuge, the desulphurisation, the emergency flare, the CHPs, the ASP and the biological wastewater treatment plant; and
- Process commission in progress-waste reception, pre-treatment, CAPC extraction, the digesters, the centrifuge, the composting tunnels, the desulphurisation, the emergency flare, the CHPs, the ASP and the biological waste water treatment plant (about 60-80 t/d SSOW input).

Environmental Monitoring and Audit Progress

A summary of the monitoring activities undertaken in this reporting period is listed below:

- Joint Environmental Site Inspections 4 times
- Landscape & Visual Inspections 2 times

Odour

Odour patrol were conducted by representatives of the Contractor, the ER and Employer (EPD Project Team) on 3, 5, 7, 10, 12, 14, 17, 19, 21, 24, 26 and 28 September 2018. The Independent Odour Patrol Team, ALS Technichem (HK) Pty Ltd (ALS), has also joined the odour patrols on 10 and 28 September 2018. No Level 2 Odour Intensity was recorded during odour patrols.

On 31 August 2018, air samples were also collected from the outlet of the CAPC unit by an independent laboratory (ALS) for olfactometry analysis at the laboratory. The odour levels of the samples exceeded the odour limit stated in Table 2.2 of the EM&A Manual. An investigation of the cause of the exceedance has been carried out.

No air samples was collected from the outlet of the CAPC unit for measurement of the Odour Intensity in September 2018.

Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials (public fill) and non-inert C&D materials (construction wastes).

Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated spoil. In total, 765.70 tonnes of inert C&D material were generated from the Project, of which 325.00 tonnes were reused in this Contract. The 440.70 tonnes of inert C&D material were disposed of as public fill to the Fill Banks at Tuen Mun Area 38.

Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. 10,600.00 kg of metals, 4,500.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period. 41.82 tonnes of general refuse was disposed of at the landfill.

0.00 L of chemical waste was collected by licenced waste collector.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, ER, IC and the ET. The IEC was also present at the joint inspection on 19 September 2018. Details of the audit findings and implementation status of the mitigation measures are presented in *Section 6.1*.

Landscape & Visual

On-site inspections on landscape and visual mitigation measures were performed on 3 and 17 September 2018. Details of the audit findings and implementation status of the mitigation measures are presented in *Sections 6.2*.

Environmental Exceedance/Non-conformance/Compliant/Summons and Prosecution

One exceedance related to odour was recorded during the reporting period.

No non-compliance event related to odour was received during the reporting period.

No summon/prosecution was received in this reporting period but one odour complaint was received.

Future Key Issues

Works to be undertaken in the next reporting month include:

- Building 1 - ABWF/finishing works and BS installation;
- Building 2 & 3 - ABWF/finishing works and BS installation;
- Electrical installation (cable trays, Local Control panels/switch installation, general cabling works);
- BS works (MVAC, FS, P/D);
- Landscaping works;
- Continue testing and process commissioning works.

Environmental impacts arising from the above construction activities are mainly associated with odour, construction noise, site runoffs, waste management and landscaping issues.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by OSCAR Bioenergy Joint Venture (the Contractor) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme for the ***Contract No. EP/SP/61/10 of Organic Waste Treatment Facilities Phase I,*** which the project name has been updated to ***Organic Resources Recovery Centre (Phase I) (the Project)*** since November 2017.

1.1 PURPOSE OF THE REPORT

This is the 40th EM&A report which summarises the monitoring results and audit findings for the EM&A programme during the reporting period from **1** to **30 September 2018**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1: **Introduction**
It details the scope and structure of the report.

Section 2: **Project Information**
It summarises the background and scope of the Project, site description, project organization, construction programme, construction works undertaken and status of the Environmental Permits (EP)/licences over the construction phase of the Project.

Section 3: **Environmental Monitoring Requirements**
It summarises the environmental monitoring requirements including monitoring parameters, programmes, methodologies, frequency, locations, Action and Limit Levels, Event/Action Plans, environmental mitigation measures as recommended in the EM&A Manual and approved EIA report.

Section 4: **Implementation Status on Environmental Mitigation Measures**
It summarises the implementation of environmental protection measures during the reporting period.

Section 5: **Waste Management**
It summarises the quantity of public fill and construction waste generated in the reporting period

Section 6: **Environmental Site Inspection**
It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

Section 7: **Environmental Non-conformance**

It summarises any exceedance of environmental performance standard, environmental complaints and summons received within the reporting period.

Section 8: **Further Key Issues**
It summarises the impact forecast and monitoring schedule for the next reporting month.

Section 9: **Conclusions**

2 PROJECT INFORMATION

2.1 BACKGROUND

The Organic Resources Recovery Centre (ORRC) Phase I development (hereinafter referred to as "the Project") is to design, construct and operate a biological treatment facility with a capacity of about 200 tonnes per day and convert source-separated organic waste from commercial and industrial sectors (mostly food waste) into compost and biogas through proven biological treatment technologies.

The environmental acceptability of the construction and operation of the Project had been confirmed by findings of the associated Environmental Impact Assessment (EIA) Study completed in 2009. The Director of Environmental Protection approved this EIA Report under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) in February 2010 (Register No.: AEIAR-149/2010) (hereafter referred to as the approved EIA Report). Subsequent Report on Re-assessment on Environmental Implications and Report on Re-assessment on Hazard to Life Implications were completed in 2013, respectively.

An Environmental Permit (EP) (No. EP-395/2010) was issued by the Environmental Protection Department (EPD) to the EPD, the Permit Holder, on 21 June 2010 and varied on 18 March 2013 (No. EP-395/2010/A) and 21 May 2013 (No. EP-395/2010/B), respectively. The Design Build and Operate Contract for the ORRC Phase 1 (Contract No. EP/SP/61/10 Organic Resources Recovery Centre (Phase 1) (the Contract)) was awarded to SITA Waste Services Limited, ATAL Engineering Limited and Ros-Roca, Sociedad Anonima jointly trading as the OSCAR Bioenergy Joint Venture (OSCAR or the Contractor). A Further EP (No. FEP-01/395/2010/B) was issued by the EPD to the OSCAR on 16 February 2015. Variation to both EPs No. EP-395/2010/B and No. FEP-01/395/2010/B were made in December 2015. The latest EPs, No. EP-395/2010/C and No. FEP-01/395/2010/C, were issued by the EPD on 21 December 2015.

Under the requirements of Condition 5 of the EP (No. FEP-01/395/2010/C), an Environmental Monitoring and Audit (EM&A) programme as set out in the Agreement No. CE7/2008 (EP) EM&A Manual (hereinafter referred to as EM&A Manual) is required to be implemented. ERM-Hong Kong, Ltd (ERM) has been appointed by OSCAR as the Environmental Team (ET) to undertake the EM&A programme for the Contract.

The construction works commenced on 21 May 2015 and are scheduled for completion by October 2018.

2.2 GENERAL SITE DESCRIPTION

The Project Site is located at Siu Ho Wan in North Lantau with an area of about 2 hectares. The layout of the Project Site is illustrated in *Annex A*.

2.3 CONSTRUCTION ACTIVITIES

A summary of the major construction activities undertaken in the reporting period is shown in *Table 2.1*. The locations of the construction activities are shown in *Annex B*. The construction programme of the Project is presented in *Annex C*.

Table 2.1 Summary of Construction Activities Undertaken in the Reporting Period

Construction Activities Undertaken
• Building 1 – ABWF/finishing works and BS installation; • Building 2 & 3 – ABWF/finishing works and BS installation; • Electrical installation (cable trays, Local Control panels/switch installation, general cabling works, instrumentation and control installation, lighting , ELV and SCADA installation); • BS works (MVAC, FS, P/D); • Landscaping works; • Systems being operated – waste reception, pre-treatment, CAPCS extraction, the digesters, the centrifuge, the desulphurization, the emergency flare, the CHPs, the ASP and the biological waste water treatment plant; • Process commissioning in progress - waste reception, pre-treatment, CAPCS extraction, the digesters, the centrifuge, the composting tunnels, the desulphurisation, the emergency flare, the CHPs, the ASP and the biological waste water treatment plant (about 60-80 t/d SSOW input).

2.4 PROJECT ORGANISATION AND MANAGEMENT STRUCTURE

The project organisation chart and contact details are shown in *Annex D*.

2.5 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the valid permits, licences, and/or notifications on environmental protection for this Project is presented in *Table 2.2*.

Table 2.2 Summary of Environmental Licensing, Notification and Permit Status

Permit/ Licences/ Notification	**Reference**	**Validity Period**	**Remarks**
Environmental Permit	FEP-01/395/2010/C	Throughout the Contract	Permit granted on 21 December 2015
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	Ref No. 386715	Throughout the Contract	-
Effluent Discharge License	WT00021482-2015	21 May 2015 – 31 May 2020	Approved on 21 May 2015
Construction Noise Permit – P1&P2	GW-RW0229-18 (Superseded CNP GW- RW0637-17)	21 July 2018 - 20 January 2019	Approved on 19 June 2018
Construction Noise Permit – P3	GW-RW0184-18 (Superseded CNP GW-RW0565-17)	1 June 2018 – 30 November 2018	Approved on 17 May 2018

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Construction Noise Permit – P5 (Slope)	GW-RW0107-18	30 March 2018 – 29 September 2018	Approved on 20 March 2018
Construction Noise Permit – P5 (Slope)	GW-RW0347-18 (Superseded the GW-RW0107-18)	30 September 2018 – 29 March 2019	Approved on 15 August 2018
Chemical Waste Producer Registration	WPN 5213-961-O2231-01	Throughout the Contract	Approved on 29 April 2015
Waste Disposal Billing Account	Account number: 702310	Throughout the Contract	-

3 *ENVIRONMENTAL MONITORING REQUIREMENT, ENVIRONMENTAL MITIGATION MEASURES*

All the relevant environmental mitigation measures listed in the EIA Report and EM&A Manual are summarised in *Annex E*.

According to the EM&A Manual and EP requirement, no air quality, noise and water quality monitoring is required during the construction phase.

According to the EM&A Manual and EP requirement, odour monitoring is required during the commissioning phase.

The odour patrols shall be conducted by an odour patrol team. The odour patrol team will patrol and sniff along an odour patrol route at the site boundary. The implementation of the odour patrol shall be subject to the prevailing weather forecast condition and no odour patrol should be carried out during rainy day. The odour patrol team should be comprised of at least two independent trained personnel / competent persons, who should pass a set of screening tests.

Odour patrols were conducted by representatives of the Contractor, the ER and Employer (EPD Project Team) on 3, 5, 7, 10, 12, 14, 17, 19, 21, 24, 26 and 28 September 2018. The Independent Odour Patrol Team, ALS Technichem (HK) Pty Ltd (ALS), has also joined the odour patrols on 10 and 28 September 2018. According to the EM&A Manual and EP requirements, it is considered an exceedance if the odour intensity recorded by the panellists is Level 2 or above. During this reporting period, no Level 2 Odour Intensity was recorded. The odour patrol results are shown in *Annex H*.

On 31 August 2018, air samples were also collected from the outlet of the Centralised Air Pollution Control (CAPC) unit by ALS for measurement of the Odour Intensity by olfactometry analysis at the laboratory. According to the EM&A Manual and EP requirements, it is considered an exceedance if the odour level is more than 220 OU/Nm^3. During this reporting period, the odour level of the odour samples collected from the CAPC unit have exceeded the odour limits stated in Table 2.2 of the EM&A Manual. The monitoring results are shown in *Annex H*.

Investigation of the exceedance has been conducted. Odour emitting activities, including wastewater treatment plant and ammonia stripping plant (ASP) were operating on 31 August 2018. No organic waste were being processed the time the odour samples were being collected, due to pre-treatment line was stopped and only operated at mid night. The CAPC system was operating during the odour sampling. The contractor reported that the active carbon (AC) filter and the venturi scrubber in Building 2 were operating. The wet & chemical scrubbers were not operating at the time of the sampling as it is still under testing and commissioning. The exceedance could be due to saturation of the AC filter as an increase of VOCs concentration was observed.

The contractor has replaced all AC filter media in the last week of September 2018. To avoid saturation of the filter media, it is recommended that the contractor should test the medium regularly or indicator medium should be used to provide an indication of the condition of the media. The investigation report is shown in *Annex J*.

No air samples was collected from the outlet of the CAPC unit for measurement of the Odour Intensity in September 2018.

Bi-weekly landscape and visual audit is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the EIA Report are fully achieved.

4 *IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*

The Contractor has implemented environmental mitigation measures and requirements as stated in the approved EIA Report and EM&A Manual. The implementation status of the measures during the reporting period is summarised in *Annex E*.

Wastes generated from this Project include inert construction and demolition (C&D) materials (public fill) and non-inert C&D materials (construction waste). Construction waste comprises general refuse, metals and paper/cardboard packaging materials. Metals generated from the Project are also grouped into construction waste as the materials were not disposed of with others at public fill. Reference has been made to the Monthly Summary Waste Flow Table prepared by the Contractor (see *Annex F*). With reference to the relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 5.1*.

Table 5.1 Quantities of Waste Generated from the Project

Month / Year	Quantity			
	Total Inert C&D Materials Generated [a]	Non-inert C&D Materials [b]		
		C&D Materials Recycled [c]	C&D Waste Disposed of at Landfill [d]	Chemical Waste
September 2018	765.7 tonnes	15,100.00 kg	41.82 tonnes	0.00 L

Notes:

(a) Inert C&D materials (public fill) include bricks, concrete, building debris, rubble and excavated spoil. In total, 765.70 tonnes of inert C&D material were generated from the Project, of which 325.00 tonnes were reused in this Contract and the 440.70 tonnes were disposed as public fill to the Fill Bank at Tuen Mun Area 38. The detailed waste flow is presented in *Annex F*.

(b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill.

(c) 10,600.00 kg of metals, 4,500.00 kg of papers/ cardboard packing and 0.00 kg of plastics were sent to recyclers for recycling during the reporting period.

(d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at NENT Landfill by subcontractors.

6 ENVIRONMENTAL INSPECTIONS

6.1 WEEKLY SITE AUDITS

Joint site inspections were conducted by representatives of the Contractor, the ER, IC and the ET on 3, 11, 19 and 26 September 2018. The IEC was also present at the joint inspection on 19 September 2018. Follow-up actions resulting from the last site inspections were generally taken as reported by the Contractor.

Key observations during the reporting period are summarised as follows:

3 *September 2018*

- Stagnant water was observed on Building 1 roof and the Contractor was advised to remove the stagnant water to prevent mosquito breeding.

11 September 2018

- No particular observation during this reporting period.

19 September 2018

- The Contractor was reminded to remove the waste in waste skip more frequently to avoid or minimise odour and flies.

- Insufficient cleaning inside the Building 1 and many flies were observed near Building 1. The Contractor was advised to enhance the cleaning to improve the tidiness and hygiene of Building 1, and close the door of Building 1 properly to prevent the flies (if any) from escaping from the building. The Contractor should also increase the frequency of pest control if excessive number of flies were found.

- Leakage of wastewater was observed in Building 1, but the wastewater did not get to the surface channel. The Contractor was advised to enhance the prevention measures to avoid reoccurrence of such leakage and to prevent the wastewater from getting to the surface channel.

26 September 2018

- A used carbon filter was found on the ground near Building 2, and the Contractor was advised to remove the carbon filter to avoid potential contamination of surface runoff in the area if it rains.

6.2 LANDSCAPE AND VISUAL AUDIT

In accordance with the EM&A Manual, bi-weekly landscape and visual inspection is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures recommended in the EIA Report are fully achieved. On-site inspections of the landscape and visual mitigation measures were performed on 3 and 17 September 2018.

It was confirmed that the necessary landscape and visual mitigation measures as summarised in *Annex E* were generally implemented by the Contractor. No specific observation was found during site inspection on 3 September 2018. During the 17 September inspection, three trees (labelled T35, T10425 and T10448) were found felled down due to typhoon Mangkhtu on 16 September 2018, and they were subsequently removed by the Contractor.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance event was received during the reporting period.

7.2 SUMMARY OF ENVIRONMENTAL COMPLAINT

One odour complaint was received during the reporting period. During the odour patrol conducted by the ER and OSCAR at about 15:00 hrs on 7 September 2018 (Friday), the patrol team received a verbal compliant from a police officer (Mr Cho who works at the Hong Kong Police Siu Ho Wan Vehicle Examination Centre and Weigh Station next to ORRC1) regarding the odour nuisance, flies and mosquitos at the compound. The investigation report is presented in *Annex I*. The complaint was also registered in the cumulative environmental complaint log (see *Annex G*).

7.3 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

No summon/prosecution was received during the reporting period. The cumulative summons/prosecution log is shown in *Annex G*.

8 FUTURE KEY ISSUES

8.1 KEY ISSUES FOR THE COMING MONTH

Works to be undertaken for the coming reporting period are summarised in *Table 8.1*.

Table 8.1 Construction Works to be undertaken in the Next Reporting Period

Construction Activities Undertaken
• Building 1 – ABWF/finishing works and BS installation;
• Building 2 & 3 – ABWF/finishing works and BS installation;
• Electrical installation (cable trays, Local Control panels/switch installation, general cabling works);
• BS works (MVAC, FS, P/D);
• Landscaping works;
• Continue the testing and process commissioning works.

Potential environmental impacts arising from the above construction activities will be mainly associated with odour, construction noise, site runoffs, waste management and landscaping issues.

8.2 CONSTRUCTION PROGRAMME

The most up-to-date construction programme for the Project is presented in *Annex C*.

9 CONCLUSIONS

This EM&A Report presents the EM&A programme undertaken during the reporting period from 1 to 30 September 2018 in accordance with EM&A Manual and requirements of EP (FEP-01/395/2010/C).

No air quality, noise and water quality monitoring is required during the construction phase.

Odour patrols and monitoring are required during the commissioning phase. No exceedance of odour intensity limit for all odour patrol events. Air samples were also collected at the CAPC unit for olfactometry analysis at the laboratory on 31 August 2018. The odour level of the samples collected on 31 August 2018 have exceeded the odour limit. An investigation of the cause of the exceedance has been carried out.

No air samples was collected from the outlet of the CAPC unit for measurement of the Odour Intensity in September 2018.

Bi-weekly landscape and visual monitoring was conducted in the reporting period. The necessary landscape and visual mitigation measures recommended in the EIA Report were generally implemented by the Contractor. During typhoon Mangkhtu on 16 September 2018, three trees (labelled T35, T10425 and T10448) were impacted and felled. It was found on 17 September 2018 and the felled trees were subsequently removed.

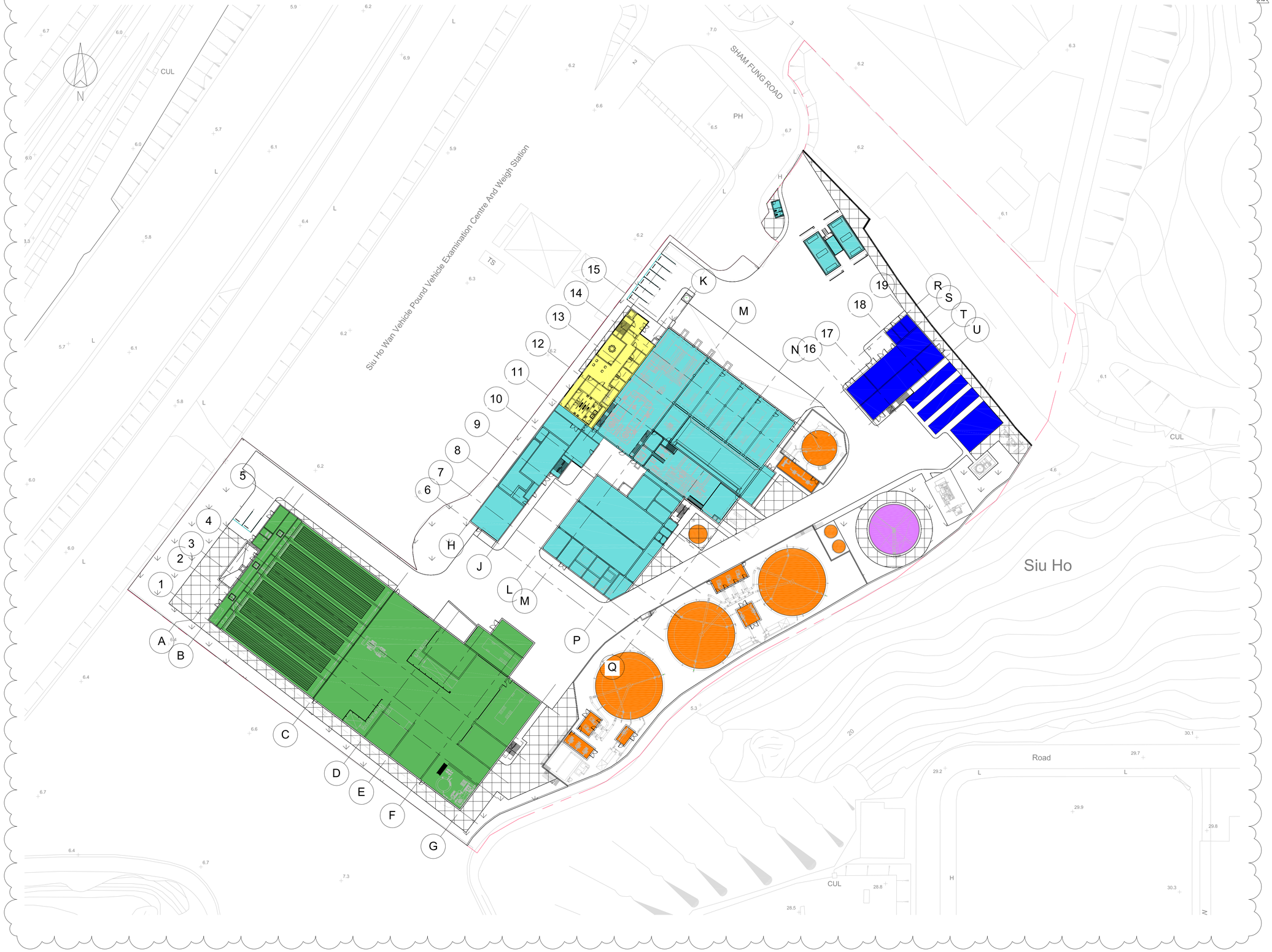
No non-compliance event related to odour was received during reporting period.

No summon/prosecution was received but one odour complaint was received during the reporting period. The investigation report is shown in *Annex I*.

The ET will keep track of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all the necessary mitigation measures in the coming periods.

Annex A

Project Layout



REV	DATE	BY	APP	DESCRIPTION
A01	05/03/15	CW	MB	IMTECH BACKGROUNDS UPDATED
A00	18/02/15	CW	MB	DRAFT ISSUE

CLIENT

ENVIRONMENTAL PROTECTION DEPARTMENT
GOVERNMENT OF THE HKSAR

CLIENT'S CONSULTANT

AECOM ASIA CO. LTD.

CONTRACTOR

OSCAR BIOENERGY JV

LEAD DESIGNER

ARUP
Ove Arup & Partners Hong Kong Limited

ENVIRONMENTAL TEAM

ERM HONG KONG LIMITED

INDEPENDENT CONSULTANTS

Meinhardt Infrastructure and Environment Limited
邁進基建環保工程顧問有限公司

PROJECT

ORGANIC WASTE TREATMENT FACILITIES
PHASE 1
EP/SP/61/10

STATUS

DRAFT ISSUE

DRAWING TITLE

SITE LAYOUT

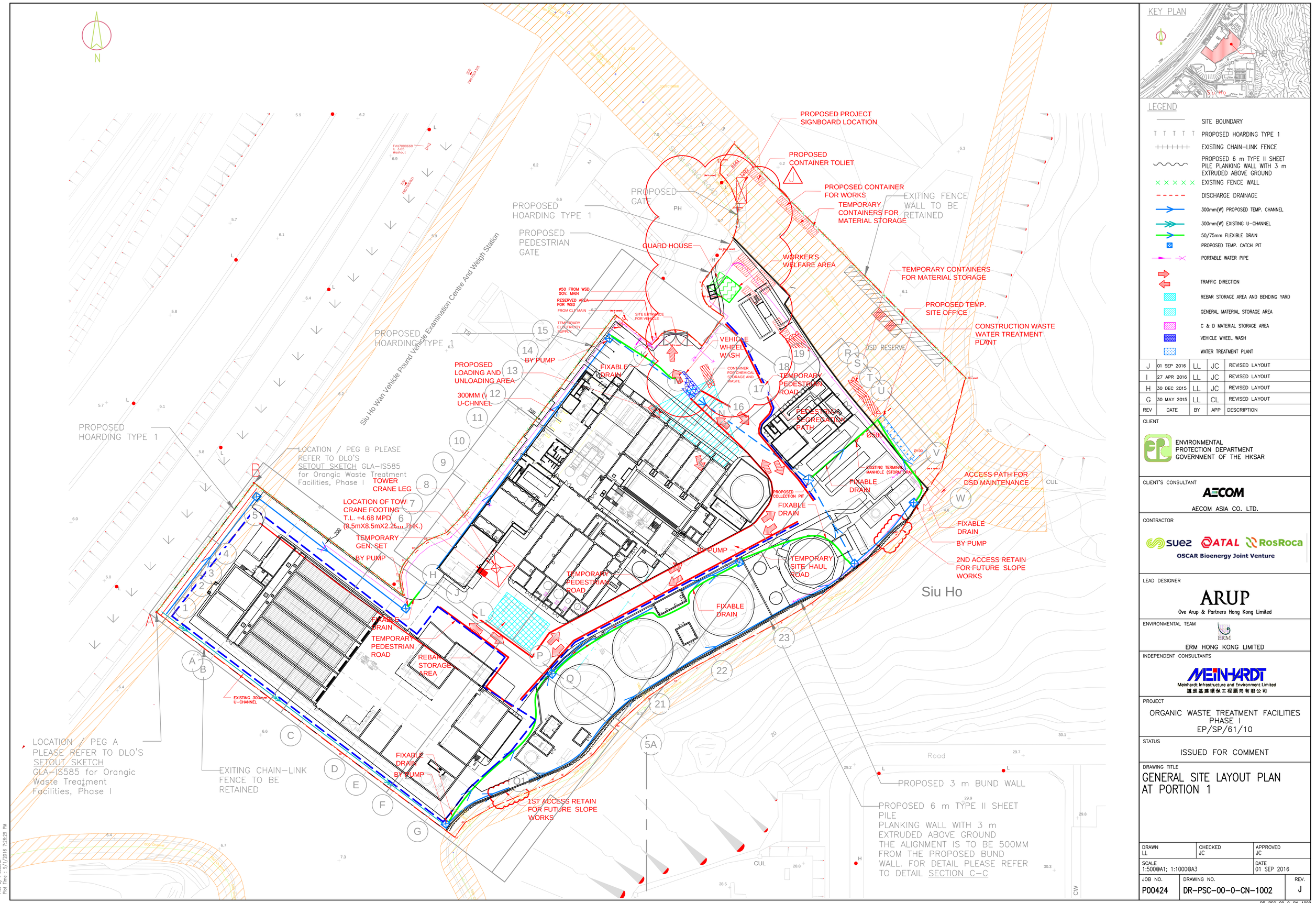
DRAWN	CHECKED	APPROVED
CW	RS	DP

SCALE	DATE
1:500@A1 / 1:1000@A3	12/02/15

JOB NO.	DRAWING NO.	REV.
239956	DR-OAP-20-0-CA-1001	A01

Annex B

Works Location



KEY PLAN

LEGEND

- SITE BOUNDARY
- PROPOSED HOARDING TYPE 1
- EXISTING CHAIN-LINK FENCE
- PROPOSED 6 m TYPE II SHEET PILE PLANKING WALL WITH 3 m EXTRUDED ABOVE GROUND
- EXISTING FENCE WALL
- DISCHARGE DRAINAGE
- 300mm(W) PROPOSED TEMP. CHANNEL
- 300mm(W) EXISTING U-CHANNEL
- 50/75mm FLEXIBLE DRAIN
- PROPOSED TEMP. CATCH PIT
- PORTABLE WATER PIPE
- TRAFFIC DIRECTION
- REBAR STORAGE AREA AND BENDING YARD
- GENERAL MATERIAL STORAGE AREA
- C & D MATERIAL STORAGE AREA
- VEHICLE WHEEL WASH
- WATER TREATMENT PLANT

REV	DATE	BY	APP	DESCRIPTION
J	01 SEP 2016	LL	JC	REVISED LAYOUT
I	27 APR 2016	LL	JC	REVISED LAYOUT
H	30 DEC 2015	LL	JC	REVISED LAYOUT
G	30 MAY 2015	LL	CL	REVISED LAYOUT

CLIENT

ENVIRONMENTAL PROTECTION DEPARTMENT
GOVERNMENT OF THE HKSAR

CLIENT'S CONSULTANT

AECOM
AECOM ASIA CO. LTD.

CONTRACTOR

SUEZ ATAL RosRoca
OSCAR Bioenergy Joint Venture

LEAD DESIGNER

ARUP
Ove Arup & Partners Hong Kong Limited

ENVIRONMENTAL TEAM

ERM
ERM HONG KONG LIMITED

INDEPENDENT CONSULTANTS

MEINHARDT
Meinhardt Infrastructure and Environment Limited
邁進基建環保工程顧問有限公司

PROJECT

ORGANIC WASTE TREATMENT FACILITIES
PHASE I
EP/SP/61/10

STATUS

ISSUED FOR COMMENT

DRAWING TITLE

GENERAL SITE LAYOUT PLAN AT PORTION 1

DRAWN	CHECKED	APPROVED
LL	JC	JC

SCALE	DATE
1:500@A1; 1:1000@A3	01 SEP 2016

JOB NO.	DRAWING NO.	REV.
P00424	DR-PSC-00-0-CN-1002	J

Plot by : LeoLAM
Plot Time : 9/1/2016 7:26:29 PM

DR-PSC-00-0-CN-1002

Annex C

Construction Programme of the Project

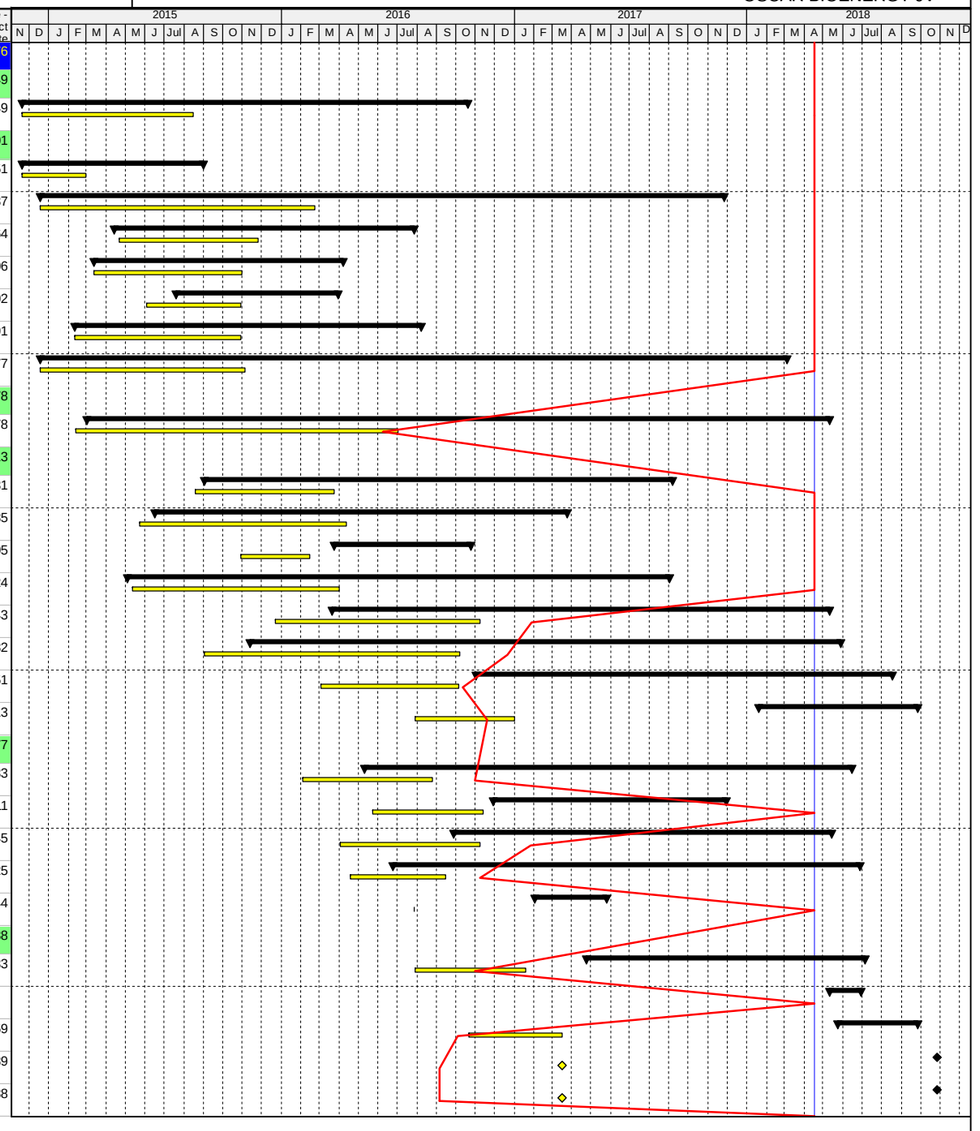
Environmental Protection Department
of the HKSAR

Contract No. EP/SP/61/10
Organic Resources Recovery Centre (Phase 1)

Executive Summary Programme Progress Updated on 17-Apr-18

OSCAR BIOENERGY JV

#	Activity ID	Activity Name	BL Project Duration	BL Project Start	BL Project Finish	Remaining Duration	Start	Finish	% Complete	Variance - BL Project Finish Date
1		**Contract No. EP/SP/61/10 - The Design & Construction Works**	688	20-Nov-14	17-Mar-17	159	20-Nov-14 A	27-Oct-18		-476
2		**Preliminary and Site Establishment**	217	20-Nov-14	15-Aug-15	0	20-Nov-14 A	19-Oct-16 A		-349
3	ESum110	Preliminary and Site Establishment	217	20-Nov-14	15-Aug-15	0	20-Nov-14 A	19-Oct-16 A	100%	-349
4		**Design**	372	20-Nov-14	23-Feb-16	0	20-Nov-14 A	05-Mar-18 A		-601
5	ESum120	Design Criteria and Design Preparation	80	20-Nov-14	27-Feb-15	0	20-Nov-14 A	01-Sep-15 A	100%	-151
6	ESum130	Detailed Design Submission (DDS) - General, Civil, ABWF and Landscape	289	19-Dec-14	23-Feb-16	0	18-Dec-14 A	27-Nov-17 A	100%	-437
7	ESum132	Detailed Design Submission (DDS) - Building 1	151	21-Apr-15	25-Nov-15	0	13-Apr-15 A	27-Jul-16 A	100%	-164
8	ESum134	Detailed Design Submission (DDS) - Building 2	158	12-Mar-15	30-Oct-15	0	12-Mar-15 A	07-Apr-16 A	100%	-106
9	ESum136	Detailed Design Submission (DDS) - Building 3	103	03-Jun-15	29-Oct-15	0	20-Jul-15 A	30-Mar-16 A	100%	-102
10	ESum138	Detailed Design Submission (DDS) - Auxilliary Buildings & Facilities	177	10-Feb-15	29-Oct-15	0	11-Feb-15 A	08-Aug-16 A	100%	-191
11	ESum140	Detailed Design Submission (DDS) - E&M and BS	216	18-Dec-14	04-Nov-15	0	18-Dec-14 A	05-Mar-18 A	100%	-577
12		**Procurement**	507	12-Feb-15	02-Jul-16	25	01-Mar-15 A	11-May-18		-678
13	ESum150	Procurement, Manufacturing, F.A.T., Shipment & Delivery of E&M Systems Equipment	507	12-Feb-15	02-Jul-16	25	01-Mar-15 A	11-May-18	99.94%	-678
14		**Construction**	489	13-May-15	31-Dec-16	135	04-May-15 A	26-Sep-18		-513
15	ESum160	Construction of Building #1 (Waste Receiving, Pre-treatment & Administration)	178	19-Aug-15	23-Mar-16	0	02-Sep-15 A	06-Sep-17 A	100%	-431
16	ESum170	Construction of Building #2 (Composting & Maturation, and Link Bridge)	262	23-May-15	11-Apr-16	0	16-Jun-15 A	24-Mar-17 A	100%	-285
17	ESum175	Construction of Building #3 (Energy Centre)	87	30-Oct-15	15-Feb-16	0	24-Mar-16 A	24-Oct-16 A	100%	-205
18	ESum180	Construction of Auxiliary Buildings & Facilities	263	13-May-15	31-Mar-16	0	04-May-15 A	02-Sep-17 A	100%	-424
19	ESum190	ABWF, Finishing and Fitting-out Works to Building #1, #2, #3 and Auxiliary Buildings & Facilities (excl. EEC)	259	23-Dec-15	08-Nov-16	21	21-Mar-16 A	11-May-18	97.1%	-443
20	ESum200	Sitewide, Boundary Wall and Roadworks	326	02-Sep-15	07-Oct-16	34	13-Nov-15 A	28-May-18	98.5%	-482
21	ESum210	Statutory and Utilities Works (excl. Lifting Platform)	148	04-Mar-16	06-Oct-16	102	02-Nov-16 A	17-Aug-18	99.4%	-551
22	ESum215	Green Roof and Landscaping	129	29-Jul-16	31-Dec-16	135	20-Jan-18 A	26-Sep-18	3%	-513
23		**E&M and Building Services Installation**	229	04-Feb-16	12-Nov-16	59	11-May-16 A	27-Jun-18		-477
24	ESum220	E&M Installation - Mechanical	164	04-Feb-16	25-Aug-16	50	11-May-16 A	15-Jun-18	99.6%	-533
25	ESum222	E&M Installation - Piping	144	24-May-16	12-Nov-16	0	28-Nov-16 A	30-Nov-17 A	100%	-311
26	ESum224	E&M Installation - Electrical, Instrumentation & Control	181	02-Apr-16	08-Nov-16	23	28-Sep-16 A	14-May-18	99.9%	-445
27	ESum226	Building Services Installation (excl. EEC)	125	18-Apr-16	14-Sep-16	59	24-Jun-16 A	27-Jun-18	86.9%	-525
28	ESum230	Energisation of Switchboards / MCC with SAT	1	28-Jul-16	28-Jul-16	0	02-Feb-17 A	26-May-17 A	100%	-244
29		**Testing & Commissioning and Completion**	232	29-Jul-16	17-Mar-17	193	24-Apr-17 A	27-Oct-18		-588
30	ESum240	Pre-Commissioning	144	29-Jul-16	19-Jan-17	81	24-Apr-17 A	06-Jul-18	61.2%	-533
31	ESum241	System Commissioning	0			50	11-May-18	29-Jun-18	0%	
32	ESum250	Process Commissioning, Performance & Acceptance Testing	119	22-Oct-16	16-Mar-17	127	23-May-18	26-Sep-18	0%	-559
33	KD100360	Completion of the Design and the Works including Testing and Commissioning (Extended Completion Date: 10-Jun-2017 noon)	0		16-Mar-17	0		26-Oct-18	0%	-589
34	KD100380	Commencement of the Operation	0	17-Mar-17		0	27-Oct-18*		0%	-588



Project:V1.4_up_17Apr18-2
Ref.:WS-OSC-0-0-TM-0123-A, Date: 24-Apr-2018

◆ Milestone ◆ Actual Milestone ◇ Baseline Milestone
BL Summary Exe. Summary

Baseline: Contract Programme for The Design and Construction Works v1.4

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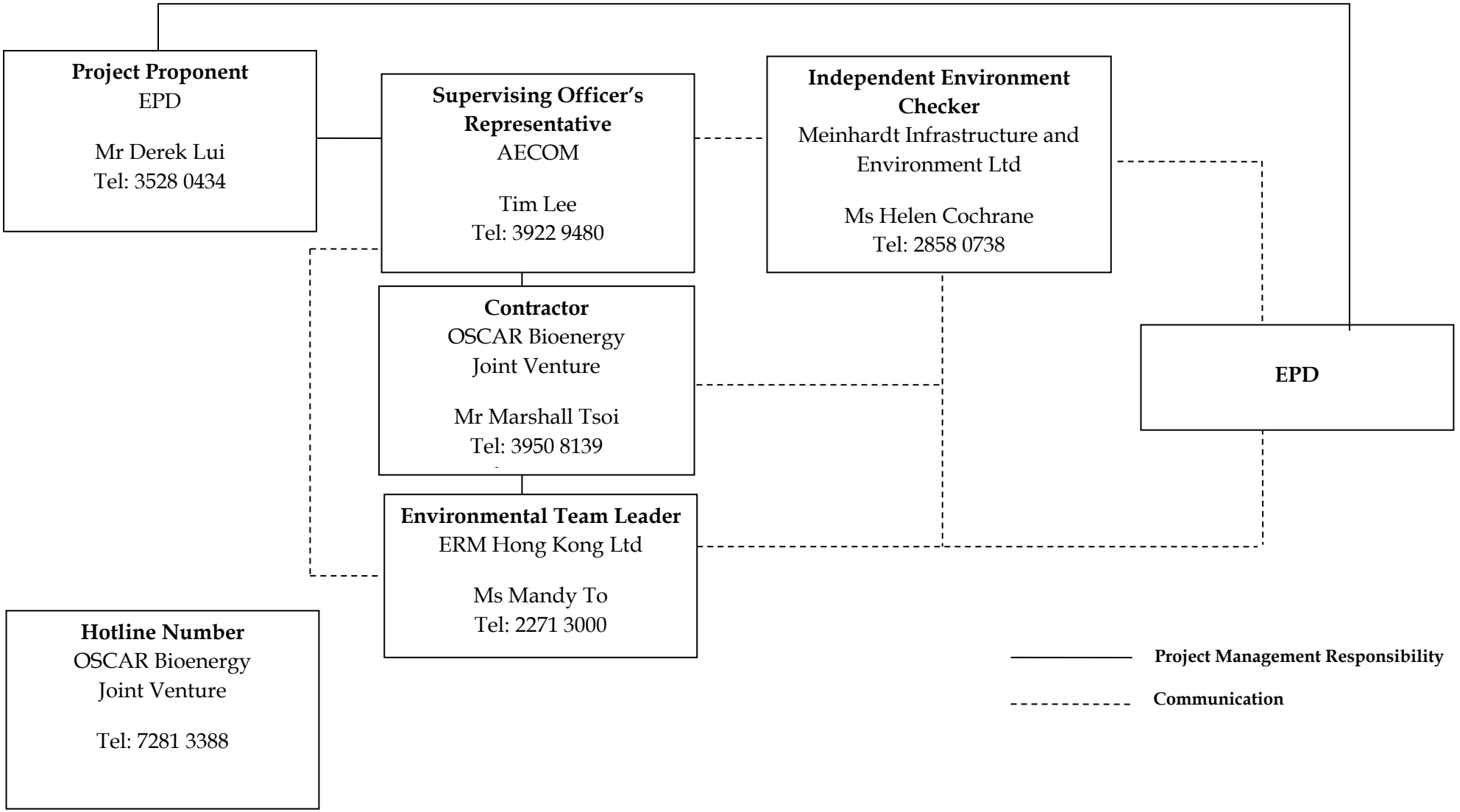
Annex D

Project Organization Chart with Contact Details

Project Organization During Construction Phase (with contact details)



Annex E

Implementation Schedule of Mitigation Measures

Annex E Summary of Mitigation Measures Implementation Schedule

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
Summary of Environmental Mitigation Measures in the EIA and EM&A Manual				
A. Air Quality				
3.73	2.5	<u>*Air Pollution Control (Construction Dust) Regulation & Good Site Practices*</u> • Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs. • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines. • Open stockpiles should be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. • Imposition of speed controls for vehicles on unpaved site roads. 8 kilometers per hour is the recommended limit. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.	Construction Site / During Construction Period	√
B. Hazard to Life				
4.102	3.3	<u>*Construction Phase*</u>	Construction Site / During	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		• The number of workers on site during construction stage should be kept at the same level as the assessment. • Construction works should be suspended when delivery of chlorine takes place. • 3m high fence should be constructed along the boundary facing the SHWWTW. • Emergency evacuation procedures should be formulated and the Contractor should ensure all workers on site should be familiar with these procedures as well as the route to escape in case of gas release incident. Relevant Departments, such as Fire Services Department (FSD), should be consulted during the development of Emergency procedures. Diagram showing the escape routes to a safe place should be posted in the site notice boards and at the entrance/exit of site. A copy of the latest version emergency procedures should be dispatched to Tung Chung Fire Station for reference once available. • The emergency procedures should specify means of providing a rapid and direct warning (e.g. Siren and Flashing Light) to construction workers in the event of chlorine gas release in the SHWWTW. • The Contractor should establish a communication channel with the SHWWTW operation personnel and FSD during construction stage. In case of any hazardous incidents in the treatment works, operation personnel of SHWWTW should advise the Contractor to inform construction workers to proceed with emergency procedure. The Contractor should appoint a Liaison Officer to communicate with FSD Incident Commander on site in case of emergency. • Introduction training should be provided to any staff before carryout construction works at the Project site. • Periodic drills should be coordinated and conducted to ensure all construction personnel are familiar with the emergency procedures. Upon completion of the drills, a review on every step taken should be conducted to identify area of improvement. Prior notice of periodic drills should be given to Station Commander of Tung Chung Fire Station. Joint operational exercise with FSD and SHWWTW is recommended.	Construction Period	
C. Water Quality				
5.44	4.5	<u>*Construction site run-off and general construction activities:*</u> The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	Construction Site / During Construction Period	<>
5.45	4.5	<u>*Excavation of Soil Materials*</u> The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimise dust emission. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed	Construction Site / During Construction Period	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from any stream courses so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work.		
5.46	4.5	*Accidental spillage of chemicals:* Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Construction Site / During Construction Period	√
5.47	4.5	Maintenance of vehicles and equipments involving activities with potential for leakage and spillage should only be undertaken within the areas which appropriately equipped to control these discharges.	Construction Site / During Construction Period	√
5.48	4.5	Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be sited on sealed areas in order to prevent spillage of fuels and solvents to the nearby watercourses. All waste oils and fuels should be collected in designated tanks prior to disposal.	Construction Site / During Construction Period	√
5.49	4.5	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labeled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	Construction Site / During Construction Period	√
5.50		Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid entering to the nearby watercourses. Stockpiles of cement and other construction materials should be kept covered when not being used. Rubbish and litter from construction sites should also be collected to prevent spreading of rubbish and litter from the site area. It is recommended to clean the construction sites on a regular basis.	Construction Site / During Construction Period	<>

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
5.51	4.5	*Sewage Effluent* The presence of construction workers generates sewage. It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more than 30m from any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.	Work site/During the construction period	√
5.52	4.5	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project. Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site.	Work Site / During Construction Period	√
5.53	4.5	*Nullah Decking* To minimize the potential water quality impacts from the nullah reconstruction works, the practices outlined below should be adopted where applicable: • The proposed works should be carried out within the dry season between October and March when the flow in the open nullah is low. • The use of less or smaller construction plants may be specified to reduce the disturbance to the nullah bed. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from the nullah and any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from the nullah any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nullah and nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the nullah, where practicable. • Construction effluent, site run-off and sewage should be properly collected and/or treated. • Any works site inside the nullah should be temporarily isolated, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props to prevent adverse impact on the water quality. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the nullah and nearby watercourse. • Supervisory staff should be assigned to station	Work Site / During Construction Period	N/A
D. Waste Management				

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
6.41	5.4	*Good Site Practices* Recommendations for good site practices during the construction phase would include: • Obtain relevant waste disposal permits from appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354) and subsidiary Regulations and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); • Provide staff training for proper waste management and chemical handling procedures; • Provide sufficient waste disposal points and regular waste collection; • Provide appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Carry out regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Separate chemical wastes for special handling and disposed of to licensed facility for treatment; and • Employ licensed waste collector to collect waste.	Work Site / During Construction Period	<>
6.42	5.5	*Waste Reduction Measures* Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: • Design foundation works that could minimise the amount of excavated material to be generated; • Provide training to workers on the importance of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling; • Sort out demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); • Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Encourage the collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; and • Plan and stock construction materials carefully to minimize the amount of waste to be generated and to avoid unnecessary generation of waste.	Work Site/During Design & Construction Period	√
6.44	5.7	*Excavated and C&D Materials* In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material arising from site formation and foundation works should be reused on-site as backfilling material and for landscaping works as far as practicable. Other mitigation requirements are listed below: • A WMP, which becomes part of the Environmental Management Plan (EMP), should be	Work Site/During Design & Construction Period	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		prepared in accordance with ETWB TCW No.19/2005; • A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites) should be adopted for easy tracking; and • In order to monitor the disposal of excavated and C&D material at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to ETWB TCW No. 31/2004).		
6.45 – 6.46	5.8 – 5.9	An EMP should be prepared and implemented in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities. The EMP should be submitted to the Supervising Officer (SO) and Supervising Officer's Representative (SOR) for approval. The EMP should be reviewed regularly and updated, preferably on a monthly basis. A system should be devised to work for on-site sorting of excavated and C&D materials and promptly removing all sorted and process materials arising from the construction activities to minimize temporary stockpiling on-site. The system should be included in the EMP identifying the source of generation, estimated quantity, arrangement for on-site sorting, collection, temporary storage areas and frequency of collection by recycling Contractors or frequency of removal off-site.	Work Site/During Design & Construction Period	√
6.47	5.10	*Chemical Waste* Should chemical wastes be produced at the construction site, the Contractor would be required to register with EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste (such as explosive, flammable, oxidizing, irritant, toxic, harmful, or corrosive). The Contractor should employ a licensed collector to transport and dispose of the chemical wastes, to either the CWTC in Tsing Yi, or any other licensed facilities, in accordance with the Waste Disposal (Chemical Waste) General) Regulation.	Work Site / During Construction Period	√
6.48	5.11	*General Refuse* General refuse should be stored in enclosed bins or compaction units separated from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	Work Site / During Construction Period	<>
E. Landscape and Visual				
7.99 & Table 7.7	Table 6.1	*Construction Phase*	Work site/During Design &	√

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location/ Timing	Status
		・Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical ・Compensatory tree planting should be provided to compensate for felled trees. - Compensation tree species shall be chosen from both indigenous and ornamental species - Compensatory tree planting quantities shall be as per DLO approved requirement. ・Control of night-time lighting ・Erection of decorative screen hoarding compatible with the surrounding setting	Construction Stages	
F. Noise				
8.25	7.3	Good Site Practice: ・Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; ・Mobile plant, if any, should be sited as far from noise sensitive receivers (NSRs) as possible; ・Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; ・Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and ・Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	Work site/During Design & Construction Stages	√

Remark:

√	Compliance of Mitigation Measures
<>	Compliance of Mitigation but need improvement
x	Non-compliance of Mitigation Measures
▲	Non-compliance of Mitigation Measures but rectified by OSCAR Bioenergy JV
Δ	Deficiency of Mitigation Measures but rectified by OSCAR Bioenergy JV
N/A	Not Applicable in Reporting Period

Annex F

Waste Flow Table

No. EP/SP/61/10 of Organic Resources Recovery Centre (Phase I)
Monthly Summary Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated				
	Total Quantity Generated	Reused in the Contract	Reused in other Projects	Hard Rocks & Large Broken Concrete	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	tonne	tonne	tonne	tonne	tonne	kilogram	kilogram	kilogram	Litre	tonne
May 2015	29.58	0.00	0.00	0.00	29.58	0.00	0.00	0.00	0.00	0.00
June 2015	2226.90	0.00	0.00	0.00	2226.90	0.00	0.00	0.00	0.00	9.66
July 2015	2832.27	0.00	0.00	0.00	2832.27	0.00	0.00	0.00	0.00	33.68
August 2015	6657.25	0.00	0.00	0.00	6657.25	0.00	20.00	0.00	0.00	55.06
September 2015	5467.05	0.00	0.00	0.00	5467.05	3480.00	0.00	0.00	0.00	83.81
October 2015	5419.04	0.00	0.00	0.00	5419.04	18710.00	0.00	0.00	0.00	20.45
November 2015	1375.26	0.00	0.00	0.00	1375.26	21610.00	0.00	0.00	0.00	17.38
December 2015	2199.56	75.28	0.00	0.00	2124.28	0.00	41.00	0.00	0.00	21.83
January 2016	4601.43	0.00	0.00	0.00	4601.43	18140.00	50.00	0.00	640.00	20.86
February 2016	4167.01	0.00	0.00	0.00	4167.01	510.00	79.00	0.00	0.00	16.57
March 2016	299.92	41.28	0.00	0.00	258.64	22320.00	75.00	0.00	0.00	22.69
April 2016	3186.37	98.37	0.00	0.00	3088.00	60690.00	77.00	0.00	255.00	37.63
May 2016	1612.33	63.41	0.00	0.00	1548.92	13490.00	35000.00	0.00	0.00	40.76
June 2016	1144.73	30.43	0.00	0.00	1114.30	14600.00	120.00	0.00	0.00	58.34
July 2016	662.76	0.00	0.00	0.00	662.76	13370.00	0.00	0.00	0.00	40.48
August 2016	391.88	0.00	0.00	0.00	391.88	18660.00	84.00	0.00	0.00	61.91
September 2016	324.35	0.00	0.00	0.00	324.35	56800.00	2780.00	0.00	0.00	138.25
October 2016	1561.82	39.00	0.00	0.00	1522.82	40000	9.30	0.00	700.00	114.47
November 2016	897.23	507.94	00.00	0.00	389.76	0.00	123.00	0.00	0.00	154.22
December 2016	2477.95	489.00	0.00	0.00	1988.95	2960.00	93.00	0.00	0.00	136.80

Month	Actual Quantities of Inert C&D Materials Generated					Actual Quantities of Non-inert C&D Materials (Construction Waste) Generated				
	Total Quantity Generated	Reused in the Contract	Reused in other Projects	Hard Rocks & Large Broken Concrete	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	tonne	tonne	tonne	tonne	tonne	kilogram	kilogram	kilogram	Litre	tonne
January 2017	2150.92	503.60	0.00	0.00	1647.32	31240.00	21051.00	3630.00	0.00	127.43
February 2017	553.80	440.00	0.00	0.00	113.80	14940.00	18820.00	2880.00	460.00	83.46
March 2017	665.93	460.00	0.00	0.00	205.93	11660.00	29370.00	4400.00	660.00	99.59
April 2017	553.41	220.00	0.00	0.00	333.41	8600.00	25610.00	520.00	700.00	81.83
May 2017	388.82	211.00	0.00	0.00	177.82	1090.00	64.00	0.00	0.00	109.10
June 2017	352.12	104.00	0.00	0.00	248.12	1800.00	16400.00	12030.00	700.00	70.58
July 2017	400.72	165.00	0.00	0.00	235.72	6500.00	12330.00	4690.00	0.00	52.20
August 2017	589.89	202.00	0.00	0.00	387.89	23330.00	27079.00	5220.00	700.00	69.52
September 2017	3347.18	1364.00	0.00	0.00	1983.18	33379.00	29426.00	3990.00	0.00	62.82
October 2017	2384.86	984.00	0.00	0.00	1400.86	11842.00	34071.00	5230.00	0.00	74.13
November 2017	797.42	384.18	0.00	0.00	413.24	20210.00	25225.00	4030.00	0.00	163.03
December 2017	106.32	51.00	0.00	0.00	55.32	17650.00	19520.00	3210.00	0.00	82.23
January 2018	283.65	125.83	0.00	0.00	157.82	12900.00	15600.00	12330.00	0.00	30.93
February 2018	122.31	55.70	0.00	0.00	66.61	10950.00	13260.00	6570.00	0.00	16.95
March 2018	217.06	99.80	0.00	0.00	117.26	12260.00	12120.00	5960.00	0.00	32.53
April 2018	1118.36	460.58	0.00	0.00	657.78	16320.00	12590.00	6280.00	0.00	33.90
May 2018	475.54	198.85	0.00	0.00	276.69	15230.00	11024.00	0.00	0.00	40.02
June 2018	684.10	256.50	0.00	0.00	427.60	14320.00	10260.00	2630.00	0.00	43.01
July 2018	93.99	42.00	0.00	0.00	51.99	11220.00	6200.00	0.00	0.00	59.77
August 2018	528.56	225.00	0.00	0.00	303.56	13620.00	33400.00	26760.00	0.00	44.50
September 2018	628.56 (See Note 4)	325.00	0.00	0.00	440.70	10600.00	4500.00	0.00	0.00	41.82
Total	64132.73	8222.28	0	0	55910.45	605001	416471.3	110360	4815	2504.2

Notes: (1) Metal and paper/cardboard packaging were collected by recycler for recycling.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material collected by recycler for recycling.
(3) General refuse was disposed of at NENT by subcontractors.
(4) In total, 628.56 tonnes of inert C&D material were generated from the Project, of which the 440.70 tonnes were disposed as public fill to Fill Bank at Tuen Mun Area 38 in reporting period and the 325.00 tonnes were reused in this contract.

Annex G

Environmental Complaint, Environmental Summons and Persecution Log

Annex G Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
May 2015	0	0
June 2015	0	0
July 2015	0	0
August 2015	0	0
September 2015	0	0
October 2015	0	0
November 2015	0	0
December 2015	0	0
January 2016	0	0
February 2016	0	0
March 2016	0	0
April 2016	0	0
May 2016	0	0
June 2016	0	0
July 2016	0	0
August 2016	0	0
September 2016	0	0
October 2016	0	0

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
November 2016	0	0
December 2016	0	0
January 2017	0	0
February 2017	0	0
March 2017	0	0
April 2017	0	0
May 2017	0	0
June 2017	0	0
July 2017	0	0
August 2017	0	0
September 2017	0	0
October 2017	0	0
November 2017	0	0
December 2017	0	0
January 2018	0	0
February 2018	0	0
March 2018	0	0
April 2018	0	0
May 2018	0	0
June 2018	0	0

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
July 2018	0	0
August 2018	0	0
September 2018	1	0
Overall Total	**1**	**0**

Annex H

Odour Monitoring Result

Annex H1

Odour Patrol Result

Patrol route and monitoring locations

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	3 / 9 / 2018
Start & End Time (24hr)	From 14:05 To 16:30
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	29.9°C
Relative Humidity (%)	82
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	
Centrifuge louver comes out some digestate smell.	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Choi	Patrick Yim		Sarah Ho
Signature			N/A	Sarah
Date	3/9/2018	3/9/18.		3/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	3 / 9 / 2018
Start & End Time (24hr)	From 14:05 To 14:30
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	29.9°C
Relative Humidity (%)	82
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Choi	Patrick Jm		Sarah Ho
Signature	[signature]	[signature]	N/A	Sarah
Date	3/8/2018	3/9/18.		3/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	5/9/2018
Start & End Time (24hr)	From 14:00 To 14:27
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up~~ / T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	32.1
Relative Humidity (%)	78
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	PSV of Biogas holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	~~[illegible]~~
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Dewater Digestate Smell / intermittend
Possible Source of Odour	Centrifuge Bld 2
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Dewater Digestate Smell
Possible Source of Odour	Centrifuge Bld 2
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	
Centrifuge louver comes out some digestate smell	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Yu		Gavin Lee
Signature	[signature]	[signature]	N/A	[signature]
Date	5/9/2018	5/9/18		5/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	5/9/2018
Start & End Time (24hr)	From 1400 To 1427
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up~~ / T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	32.1
Relative Humidity (%)	78
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Yim		Gavin Lee
Signature	[signature]	[signature]	N/A	[signature]
Date	5/9/2018	5/9/18		5/9/18

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	7/9/2018
Start & End Time (24hr)	From 15:05 To 15:30
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up /~~ T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	33°C
Relative Humidity (%)	76%
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Intermittent - Hot plastic Smell
Possible Source of Odour	PRV at Riogas Holder.
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Intermitend smell of digestate.
Possible Source of Odour	Door at Bld 2.
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	
Louver near centrign Bld 2, digestate smell.	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	[illegible]		Terence CHAN
Signature	[signature]	[signature]	N/A	[signature]
Date	7/9/2018	7/9/18		7/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	7/9/2018
Start & End Time (24hr)	From To 15:30
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	33°C
Relative Humidity (%)	76%
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Intermittent minor smell of ssow
Possible Source of Odour	Bld 1 Pretreament.
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Yim		Terence CHAN
Signature	[signature]	[signature]	N/A	[signature]
Date	7/9/2018	7/9/18		7/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	10/9/2018
Start & End Time (24hr)	From 16:15 To 16:36
Type of Patrol	Weekly / Monthly / (Ad hoc) / Follow-up /
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	28.7
Relative Humidity (%)	77.9
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Grassy
Possible Source of Odour	Grass & Tree
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4 P1 : 0
Characteristic of Odour	P2 = 1 Grassy
Possible Source of Odour	Grass & Tree
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Concrete & refuse
Possible Source of Odour	Waste container, construction waste
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Musty of construction material
Possible Source of Odour	Construction material
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	
Refer to the attachment for the monitoring point.	

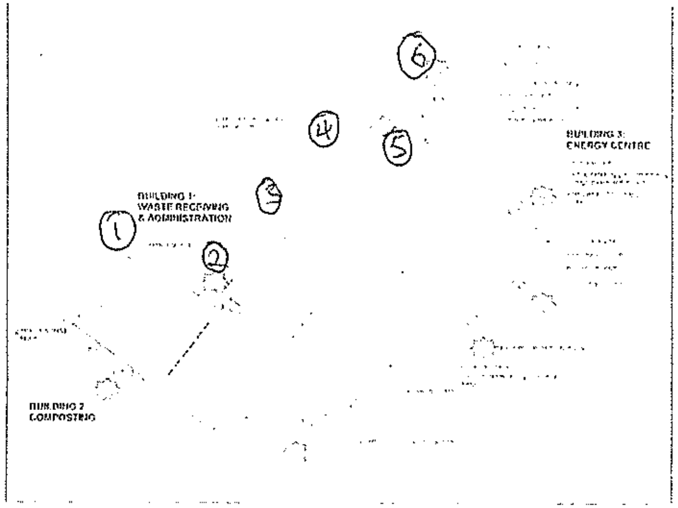
	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Choi	Patrick Yim	Pan Yuen / Allen Poon	Sarah HO
Signature				
Date	10/9/2018	10/9/18	10/9/2018	10/9/2018

Odour Patrol Survey

Date: 10-9-18 Weather: Sunny / Fine / (Cloudy) / Rainy ALS Work Order:

No.	Location ID	Time	Temp (°C)	RH (%)	Wind Speed (m/s)	Wind Direction	Odour Intensity	Odour Characteristics	Potential Odour Source	Duration	Direction from the Odour Source
-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1		16:15	28.7	77.9	0.8	309	P1: 0 / (1) / 2 / 3 / 4 P2: 0 / (1) / 2 / 3 / 4	Grassy	Grass & tree	(Intermittent) / Continuous	(Downwind) / Upwind / Sidewind
2		16:19	29.2	77.4	0.9	324	P1: (0) / 1 / 2 / 3 / 4 P2: (0) / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
3		1:22	28.9	77.4	0	NA	P1: (0) / 1 / 2 / 3 / 4 P2: 0 / (1) / 2 / 3 / 4	Grassy	Grass & other	(Intermittent) / Continuous	Downwind / Upwind / Sidewind
4		16:25	28.9	75.4	1.1	253	P1: 0 / (1) / 2 / 3 / 4 P2: 0 / (1) / 2 / 3 / 4	concrete & refuse	Waste Container, construction waste	(Intermittent) / Continuous	(Downwind) / Upwind / Sidewind
5		16:30	28.9	81.6	0	NA	P1: 0 / (1) / 2 / 3 / 4 P2: 0 / (1) / 2 / 3 / 4	Musty of Construction Material		(Intermittent) / Continuous	Downwind / Upwind / Sidewind
6		16:36	29.1	76.8	0	NA	P1: (0) / 1 / 2 / 3 / 4 P2: (0) / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
7							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
8							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind

Location Plan:



Proposed Patrol Route

Possible Odour Sources (No.) / Checkpoint

Assumed Odour Potential (normal operation)

Remark for Odour Intensity:

0 - Not detected	No odour perceived or an odour so weak that it cannot be readily characterized or described
1 - Slight	Identifiable odour, slight
2 - Moderate	Identifiable odour, moderate
3 - Strong	Identifiable odour, strong
4 - Extreme	Severe odour

Odour Patrol Team:

ALS Representative	[signature]	( )

P1. Allen Poon

P2. Pan Yuen

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	12 / 9 / 2018
Start & End Time (24hr)	From 14:05 To 14:37
Type of Patrol	~~Weekly / Monthly / Ad hoc / Follow up /~~ T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	28.9
Relative Humidity (%)	65
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	
In front of the lift lobby with smell of pre-treatment, hot plastic, [redacted] musty.	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick [illegible]		Sarah HO
Signature	FIONA	[signature]	N/A	Sarah.
Date	12/9/2018	12/9/18		12/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	12 / 9 / 2018
Start & End Time (24hr)	From 14:05 To 14:37
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / Cloudy (circled) / Windy / Humid / Foggy /
Temperature (℃)	28.9
Relative Humidity (%)	65
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 (circled) / 8
Intensity of Odour	0 (circled) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 (circled)
Intensity of Odour	0 (circled) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Dominic Yu		Sarah Ho
Signature	(signed)	(signed)	N/A	Sarah.
Date	12/9/2018	12/9/18		12/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	14 / 9 / 2018
Start & End Time (24hr)	From 15:00 To 15:18
Type of Patrol	~~Weekly / Monthly / Ad hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	29.7
Relative Humidity (%)	71
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Terence Ng	Patrick Yan		Sarah Ho
Signature			NA	Sarah.
Date	14/9/2018	14/9/18		14/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	14 / 9 / 2018
Start & End Time (24hr)	From 15:00 To 15:18
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	29.7
Relative Humidity (%)	71
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Teresa Ng	[signature]		Sarah Ho
Signature	[signature]	[signature]	NA	[signature]
Date	14 / 9 / 2018	14/9/18.		14/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	17 / 9 / 2018
Start & End Time (24hr)	From 15:00 To 15:22
Type of Patrol	~~Weekly / Monthly / Ad hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	27.1
Relative Humidity (%)	82
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Choi	Patrick Yim		Sarah Ho
Signature			NA	Sarah
Date	17/9/2018	17/9/18.		17/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	17 / 9 / 2018
Start & End Time (24hr)	From 15:00 To 15:22
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	27.1
Relative Humidity (%)	82
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	SSOW smell
Possible Source of Odour	Pre-treatment Skip area
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

Point 7: front roller shutter door is broken due to super typhoon "山竹".

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Chai	Patrick Yu		Sarah HO
Signature	[signature]	[signature]	NA	Sarah
Date	17/9/2018	17/9/18		17/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	19 / 9 / 2018
Start & End Time (24hr)	From 14:00 To 14:24
Type of Patrol	~~Weekly / Monthly / Ad hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	29.5
Relative Humidity (%)	73
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	H_2S
Possible Source of Odour	Near to the Biogas Holder
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Tess CHAN	Patrick Yum		Sarah Ho
Signature	Tess	X	NA	Sarah.
Date	19 Sept 2018	19/09/18.		19/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	19 / 9 / 2018
Start & End Time (24hr)	From 14:00 To 14:24
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	29.5
Relative Humidity (%)	73
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	SSOW smell
Possible Source of Odour	Pre-treatment skip area
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remark	
Lobby's SSOW smell is a bit strong.	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Tess CHAN	Patrick Yin		Sarah Ho
Signature	Tess	[signature]	NA	Sarah.
Date	19 Sept 2018	19/09/18.		19/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	21 / 9 / 2018
Start & End Time (24hr)	From 13:36 To 14:00
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up /~~ T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	30.8
Relative Humidity (%)	62
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	SSOW smell
Possible Source of Odour	Pre-treatment skip area (damaged door at Bay 1)
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Mixture smell
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	SSOW smell
Possible Source of Odour	Pre-treatment
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Chan	Patrick Jun		Sarah Ho
Signature			NA	Sarah
Date	21/9/2018	21/9/18		21/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	21 / 9 / 2018
Start & End Time (24hr)	From 13:36 To 14:00
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	30.8
Relative Humidity (%)	62
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	

~~Follow-up Actions~~ Remark

Lobby's has a bit SSOW smell.

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Choi	Patrick Yim		Sarah HO
Signature	[signature]	[signature]	NA	Sarah
Date	21/9/2018	21/9/18.		21/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	24 / 9 / 2018
Start & End Time (24hr)	From 14:30 To 14:57
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	28.3
Relative Humidity (%)	76
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic Smell
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patricia Yam		Sarah HO
Signature	Fiona		NA	Sarah
Date	24/9/2018	24/9/18.		24/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	**Observations**
Date	24/9/2018
Start & End Time (24hr)	From 14:30 To 14:57
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	28.3
Relative Humidity (%)	76
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	

~~Follow-up Actions~~ Remark

Lobby has a bit mixture smell (food waste, hot plastic).

	EPD Representative	**Employer Representative**	**Independent Odour Patrol Team**	**OSCAR Bioenergy JV**
Name	FIONA LAM	Patrick Yuy		Sarah HO
Signature	Fiona	(signature)	NA	Sarah
Date	24/9/2018	24/9/18		24/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	26 / 9 / 2018
Start & End Time (24hr)	From 14:00 To 14:38
Type of Patrol	~~Weekly / Monthly / Ad hoc / Follow-up /~~ T&C Period Patrol
Weather Condition	Sunny / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	30.7
Relative Humidity (%)	66
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic (Intermittent)
Possible Source of Odour	PSV of Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Hot Plastic
Possible Source of Odour	Near to Biogas Holder (Slight)
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	Sarah (0) / (1) / 2 / 3 / 4
Characteristic of Odour	Digestate
Possible Source of Odour	Centrifuge louver
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Jm		Sarah Ho
Signature	Fiol	R	NA	Sarah
Date	26/9/2018	26/9/18		26/9/2018

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Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	26 / 9 / 2018
Start & End Time (24hr)	From 14:00 To 14:38
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow-up /~~ T & C Period Patrol
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	30.7
Relative Humidity (%)	66
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Rubbish smell
Possible Source of Odour	Near to Pre-treatment area.
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Jim		Sarah Ho
Signature	[signature]	[signature]	NA	Sarah
Date	26/9/2018	26/9/18.		26/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	28 / 9 / 2018
Start & End Time (24hr)	From 10:02 To 10:18
Type of Patrol	Weekly / (Monthly) / Ac hoc / Follow-up /
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	29.6
Relative Humidity (%)	57
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (0) / 2 / 3 / 4
Characteristic of Odour	Plastic
Possible Source of Odour	Biogas Holder
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	0 / (0) / 2 / 3 / 4
Characteristic of Odour	Grass
Possible Source of Odour	Grass
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Teresa Ng	Patrick Yim	Edwin Wong Ho Tsz kin	Sarah Ho
Signature				Sarah
Date	28/9/2018	28/9/18.	28/9/18	28/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	28 / 9 / 2018
Start & End Time (24hr)	From 10:02 To 10:18
Type of Patrol	Weekly / Monthly / Ac hoc / Follow-up / [Monthly circled]
Weather Condition	Sunny / Cloudy / Windy / Humid / Foggy / [Sunny circled]
Temperature (℃)	29.6
Relative Humidity (%)	57
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 [7 circled]
Intensity of Odour	0 / 1 / 2 / 3 / 4 [1 circled]
Characteristic of Odour	Garbage
Possible Source of Odour	Rubbish Truck
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 [8 circled]
Intensity of Odour	0 / 1 / 2 / 3 / 4 [0 circled]
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remark	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Teresa Ng	Patrick Lam	Edwin Wong / HO Tsz Kin	Sarah HO
Signature	[signature]	[signature]	[signature]	Sarah
Date	28/9/2018	28/9/18	28/9/18	28/9/2018

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OSCAR Bioenergy Joint Venture

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	28 September 2018
Start & End Time (24hr)	From 17:57 To 18:11 Evening
Type of Patrol	Weekly / (Monthly) / Ac hoc / Follow-up /
Weather Condition	(Sunny) / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	~ 29°c
Relative Humidity (%)	~ 60%
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	~~0 / 1 / 2 / 3 / 4~~ 0 8 I
Characteristic of Odour	餿油
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Plastic
Possible Source of Odour	Biogas holder.
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Garbage
Possible Source of Odour	Rubbish storage area.
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	

~~**Follow-up Actions**~~ Remark

This is a copy record only and shall refer to ALS report.

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Yam	Edwin Wong / Ho Tsz Kin	Terence CHAN
Signature	[signature]	[signature]	[signature] [signature]	[signature]
Date	28/9/2018	28/9/18	28/9/18	28/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	28 September 2018
Start & End Time (24hr)	From 17:57 To 18:11 Evening
Type of Patrol	Weekly / Monthly / Ac hoc / Follow-up /
Weather Condition	Sunny / Cloudy / Windy / Humid / Foggy /
Temperature (℃)	~29°C
Relative Humidity (%)	~60%
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	~~0 / 1 / 2 / 3 / 4~~ 0 & 1
Characteristic of Odour	Garbage
Possible Source of Odour	Rubbish Tank
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	~~0 / 1 / 2 / 3 / 4~~ 0 & 1
Characteristic of Odour	Garbage
Possible Source of Odour	Rubbish Tank
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remark	

This is a copy record only and shall refer to ALS Report.

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Yim	Edwin Wong / Ho Tsz Lun	Terence CHAN
Signature	[signature]	[signature]	[signature] [signature]	[signature]
Date	28/9/2018	28/9/18	28/9/18	28/9/2018

ALS Technichem (HK) Pty Ltd
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CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1847225
CONTACT:	Edwin Wong		
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, North Lantau Island, NT, Hong Kong	LABORATORY:	Hong Kong
		SUB-BATCH:	0
		DATE OF PATROL:	31 August 2018
		DATE OF ISSUE:	18 September 2018
PROJECT:	Odour Patrol for the Organic Resources Recovery Centre Phase 1 in Siu Ho Wan		
SITE:	Organic Resources Recovery Centre Phase 1 (ORRC1)		

COMMENTS

Date of Odour Patrol: 31 August 2018.
Odour Patrols were conducted by ALS Technichem (HK) Pty Ltd staff during 10:22 - 10:41 and 18:01 - 18:19.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Richard Fung
General Manager - Hong Kong

1. Summary of Work

The odour patrol was conducted during daytime and evening / night time.

2. Odour Patrol

Odour patrolling is a process to make use of the calibrated olfactory senses (ie the nasal sense) of the patrol members to evaluate the odour and its intensity during a patrol exercise at the site.

Two odour patrol team members from ALS Technichem (HK) Pty Ltd were sent to conduct the patrol work during each session. All members are free from any respiratory diseases during patrol day. None of the members has been working or living in the area in the vicinity of the inspection area.

The odour patrol was conducted during daytime and evening / night time.

The patrol team was required to move slowly from one to the other monitoring locations and use their olfactory senses to detect odour at each location.
The location of odour sources and the areas to be affected by the odour nuisance were identified as much as possible.

During the patrolling, the meteorological and surrounding information are recorded:

- the prevailing weather condition;
- the wind direction;
- the wind speed;
- location where odour is spotted;
- possible source of odour;
- perceived intensity of the odour;
- duration of odour; and
- characteristics of the odour detected

The perceived intensity is to be divided into 5 levels which are ranked in an ascending order as follows:

0	Not detected	No odour perceives or an odour so weak that it cannot be easily characterised or described
1	Slight	Identifiable odour, slight
2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable odour, strong
4	Extreme	Severe odour

The odour patrol location is shown in Appendix 1.

3. Odour Patrol Result:

3.1. Daytime:

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
1	1	Cloudy	10:22	28.1	77.8	0.0	NA	0	NA	NA	NA	NA
	2							0				
2	1	Cloudy	10:26	28.4	84.4	0.0	NA	1	Intermittent	NA	Plastic	Biogas Holder Tank Relief Valve
	2							1	Intermittent	NA	Plastic	Biogas Holder Tank Relief Valve
3	1	Cloudy	10:28	28.4	89.7	1.2	000	0	NA	NA	NA	NA
	2							0				
4	1	Cloudy	10:31	29.0	85.1	0.1	297	0	NA	NA	NA	NA
	2							0				
5	1	Cloudy	10:33	28.7	86.0	0.0	NA	0	NA	NA	NA	NA
	2							0				

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
6	1	Cloudy	10:36	28.8	84.1	1.6	015	0	NA	NA	NA	NA
	2							0				
7	1	Cloudy	10:39	29.0	88.7	1.6	001	0	NA	NA	NA	NA
	2							0				
8	1	Cloudy	10:41	29.0	84.3	1.2	027	0	NA	NA	NA	NA
	2							0				

Remark:
T: Air Temperature;
RH: Relative Humidity;
WD: Wind Direction;
WS: Wind Speed.

3.2. Evening / Night time:

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
1	1	Cloudy	18:01	27.8	82.4	0.0	NA	0	NA	NA	NA	NA
	2							0				
2	1	Cloudy	18:04	27.7	90.9	0.0	NA	1	Intermittent	NA	Plastic	Biogas Holder Tank Relief Valve
	2							1	Intermittent	NA	Plastic	Biogas Holder Tank Relief Valve
3	1	Cloudy	18:06	27.5	94.0	0.0	NA	0	NA	NA	NA	NA
	2							0				
4	1	Cloudy	18:08	27.9	90.7	0.0	NA	0	NA	NA	NA	NA
	2							0				
5	1	Cloudy	18:10	28.0	91.9	0.0	NA	0	NA	NA	NA	NA
	2							1	Continuous	NA	Grassy	The vegetation along the boundary.

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
6	1	Cloudy	18:14	28.1	90.8	0.0	NA	0	NA	NA	NA	NA
	2							0				
7	1	Cloudy	18:17	28.4	90.0	0.0	NA	0	NA	NA	NA	NA
	2							0				
8	1	Cloudy	18:19	28.3	90.1	0.7	250	0	NA	NA	NA	NA
	2							0				

Remark:
T: Air Temperature;
RH: Relative Humidity;
WD: Wind Direction;
WS: Wind Speed.

APPENDIX 1
Odour Patrol Route

Proposed Patrol Route

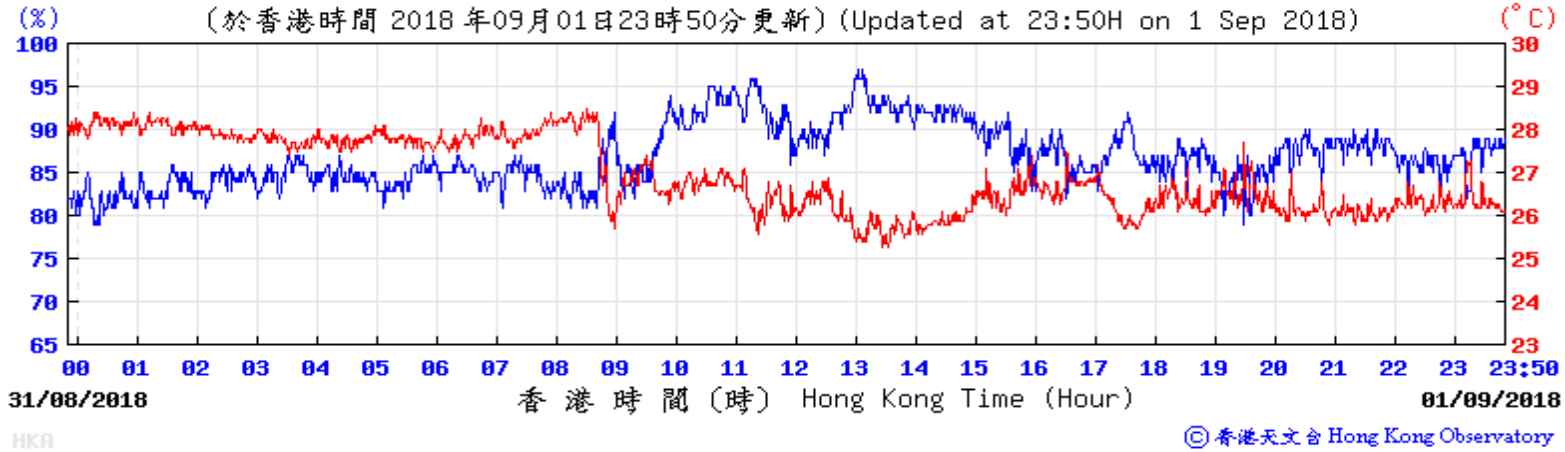
8 Possible Odour Sources (No.) / Checkpoint

1 Assumed Odour Potential (normal operation)
From 1 (min.) to 3 (max.)

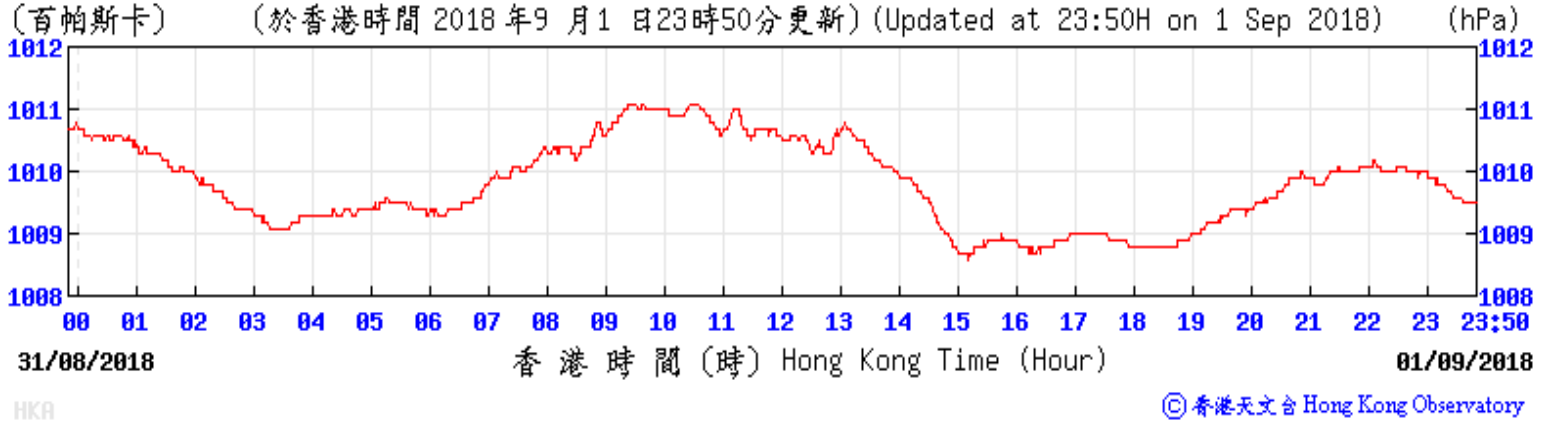
APPENDIX 2

Extract Of Meteorological Observations From Hong Kong Airport Observatory Station

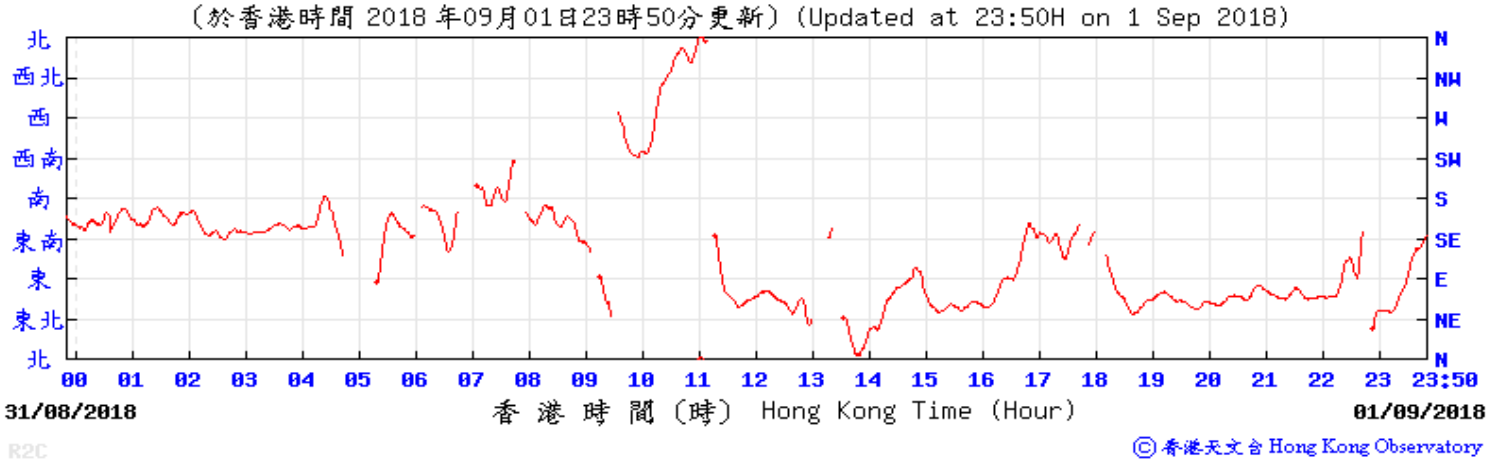
Tempearture/Humidity:



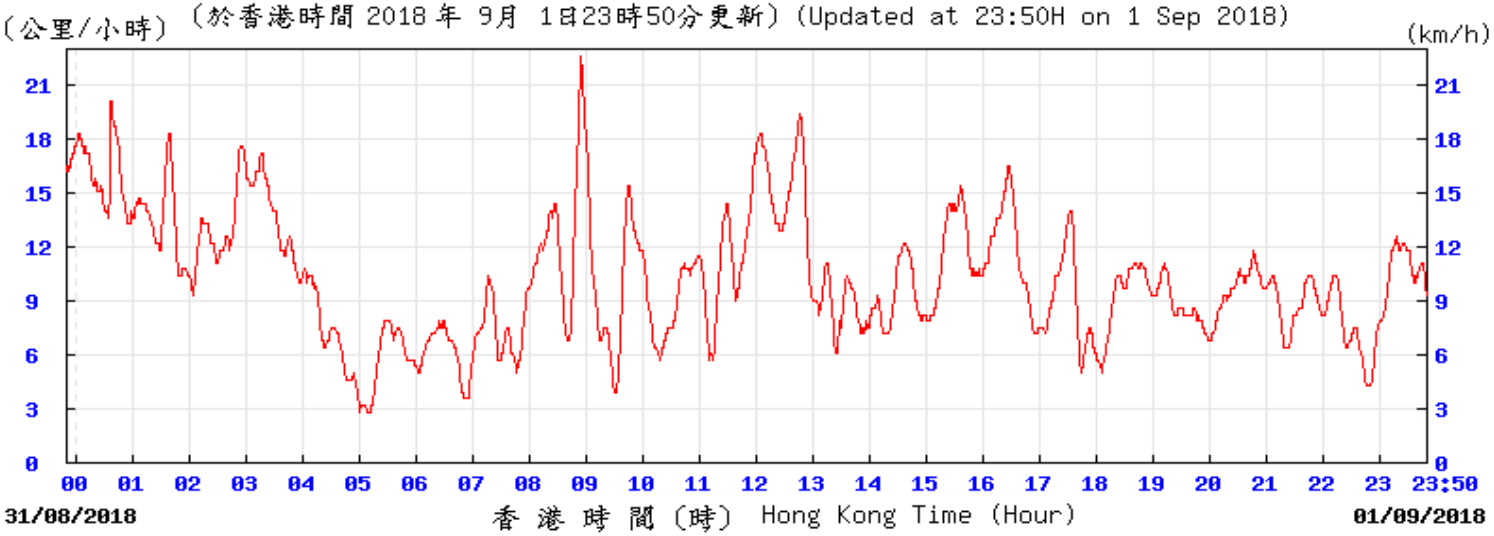
Pressure:



Wind Direction:



Wind Speed:



APPENDIX 3

A3.1. Odour Patrol at Different Locations – Daytime

Location: 1

Location: 2

Location: 3

Location: 4

Location: 5

Location: 6

Location: 7

Location: 8

A3.2. Odour Patrol at Different Locations – Evening / Night time

Location: 1

Location: 2

Location: 3

Location: 4

Location: 5

Location: 6

Location: 7

Location: 8

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T +852 2610 1044 F +852 2610 2021

CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1849200
CONTACT:	Edwin Wong		
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, North Lantau Island, NT, Hong Kong	LABORATORY:	Hong Kong
		SUB-BATCH:	0
		DATE OF PATROL:	10 September 2018
		DATE OF ISSUE:	18 September 2018
PROJECT:	Ad Hoc Odour Patrol for the Organic Resources Recovery Centre Phase 1 in Siu Ho Wan		
SITE:	Organic Resources Recovery Centre Phase 1 (ORRC1)		

COMMENTS

Ad hoc Odour Patrol was conducted by ALS Technichem (HK) Pty Ltd staff during 16:15 – 16:38 on 10th September 2018.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Richard Fung
General Manager - Hong Kong

1. Summary of Work

Ad hoc odour patrol service was conducted on 10th September 2018.

2. Odour Patrol

Odour patrolling is a process to make use of the calibrated olfactory senses (ie the nasal sense) of the patrol members to evaluate the odour and its intensity during a patrol exercise at the site.

Two odour patrol team members from ALS Technichem (HK) Pty Ltd were conducted the ad hoc patrol work and the patrol route was guided by the client. All members were free from any respiratory diseases during patrol day. None of the members has been working or living in the area in the vicinity of the inspection area.

The patrol team was required to move slowly from one to the other monitoring locations and used their olfactory senses to detect odour at each location.
The location of odour sources and the areas to be affected by the odour nuisance were identified as much as possible.

During the patrolling, the meteorological and surrounding information were recorded:

- the prevailing weather condition;
- the wind direction;
- the wind speed;
- location where odour is spotted;
- possible source of odour;
- perceived intensity of the odour;
- duration of odour; and
- characteristics of the odour detected

The perceived intensity is to be divided into 5 levels which are ranked in an ascending order as follows:

0	Not detected	No odour perceives or an odour so weak that it cannot be easily characterised or described
1	Slight	Identifiable odour, slight
2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable odour, strong
4	Extreme	Severe odour

The ad hoc odour patrol locations were shown in Appendix 1.

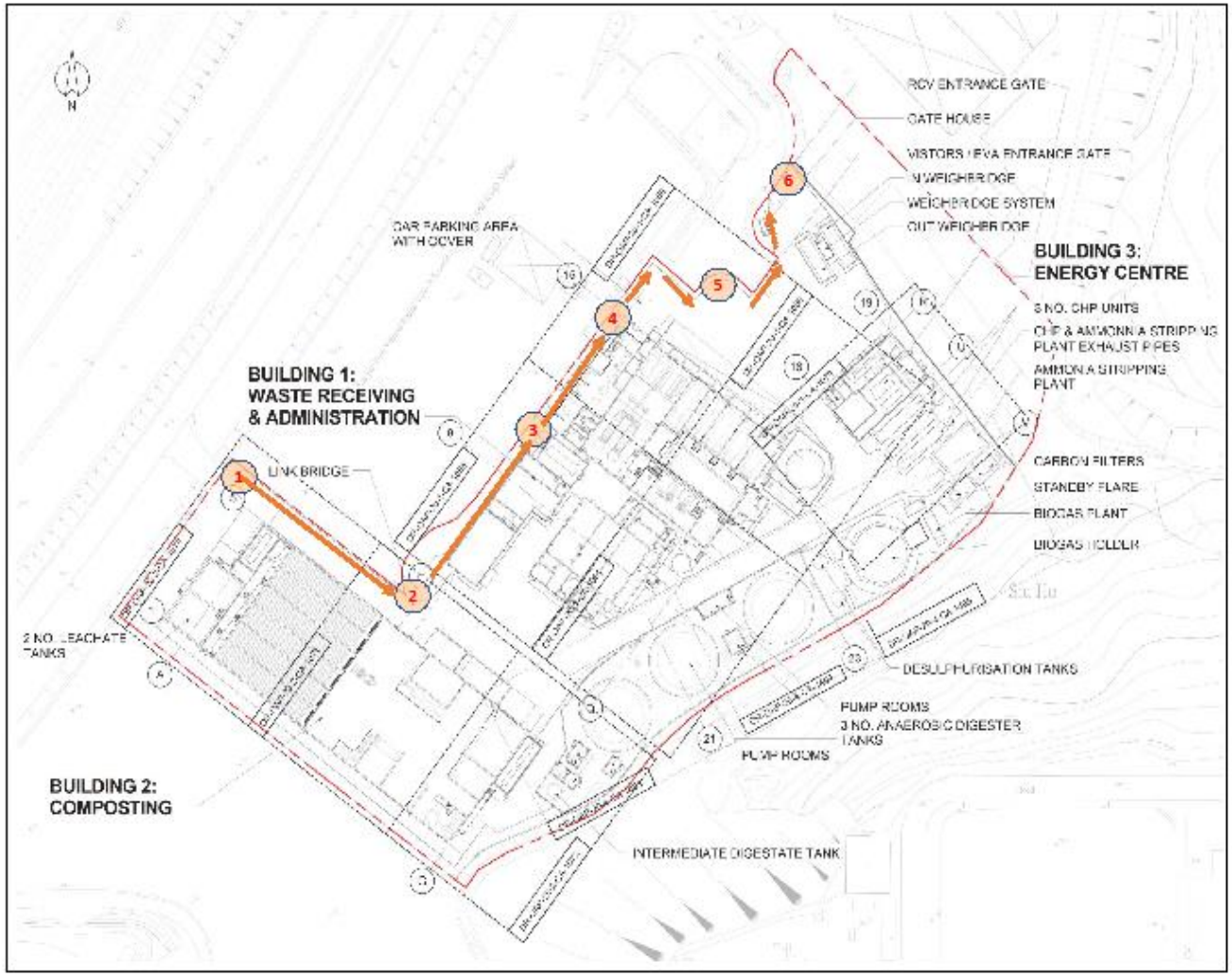
3. Result:

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Deg)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
1	1	Cloudy	16:15	28.7	77.9	0.8	309	1	Intermittent	Downwind	Grassy	Trees and grass
	2							1				
2	1	Cloudy	16:19	29.2	77.4	0.9	324	0	NA	NA	NA	NA
	2							0				
3	1	Cloudy	16:22	28.9	77.4	0.0	NA	0	NA	NA	Grassy	Trees and grass
	2							1	Intermittent			
4	1	Cloudy	16:25	28.9	75.4	1.1	253	1	Intermittent	Downwind	Smell of concrete and garbage	Construction waste container
	2							1				
5	1	Cloudy	16:30	28.9	81.6	0.0	NA	1	Intermittent	NA	Musty smell of construction material	Construction material storage zone
	2							1				
6	1	Cloudy	16:36	29.1	76.8	0.0	NA	0	NA	NA	NA	NA
	2							0				

Remark:
T: Air Temperature;
RH: Relative Humidity;
WD: Wind Direction;
WS: Wind Speed.

APPENDIX 1

Ad hoc Odour Patrol Route



Proposed Patrol Route

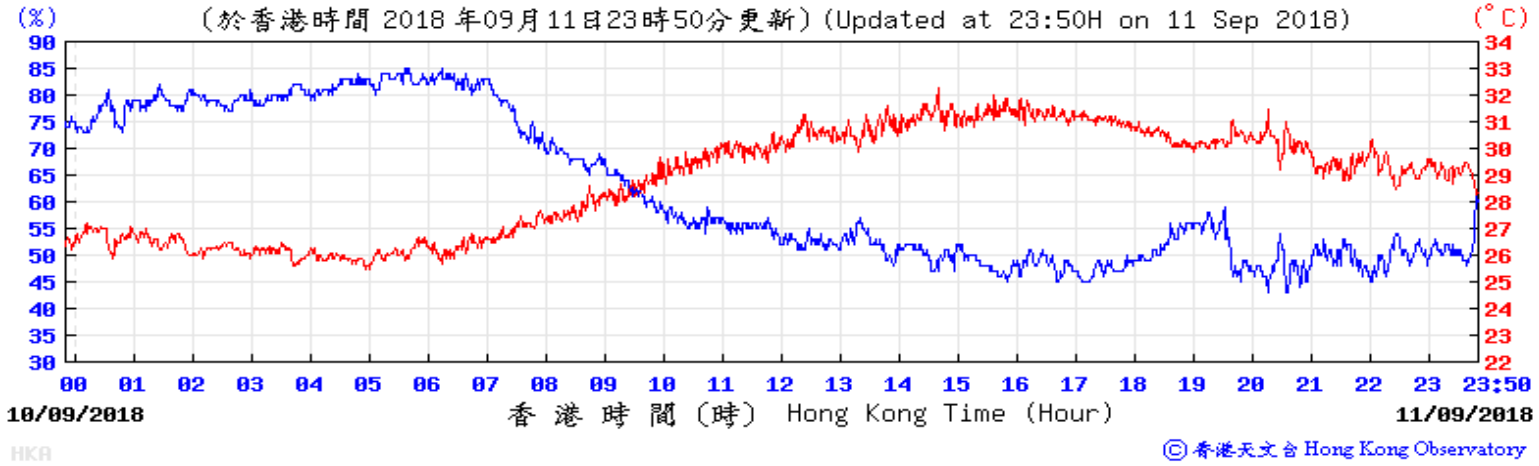
10 Possible Odour Sources (No.) / Checkpoint

1 Estimated Odour Intensity
From 1 (min.) to 3 (max.)

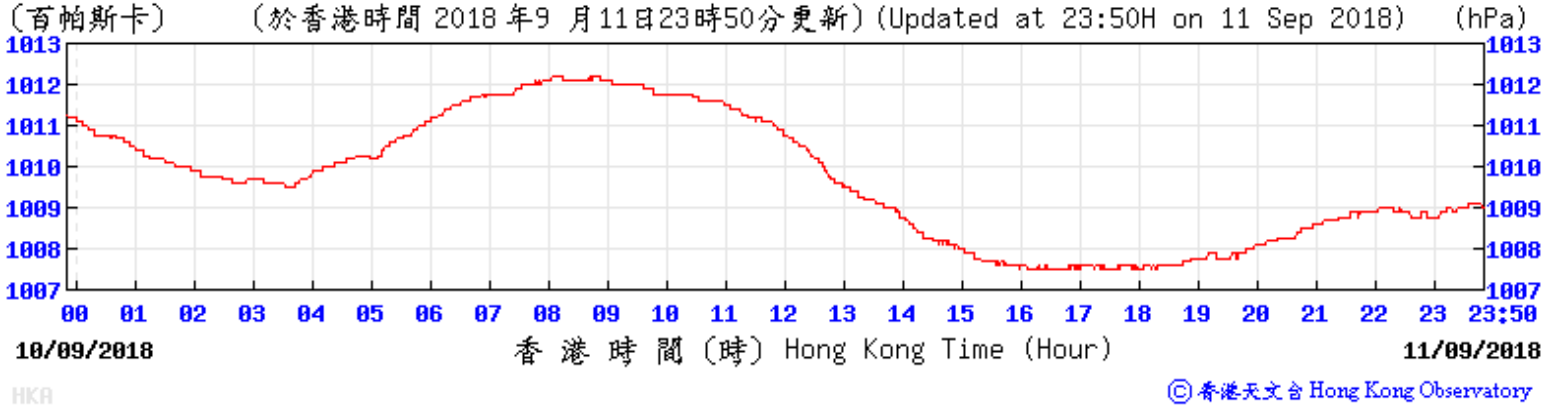
APPENDIX 2

Extract of Meteorological Observations from the Hong Kong Airport Observatory Station

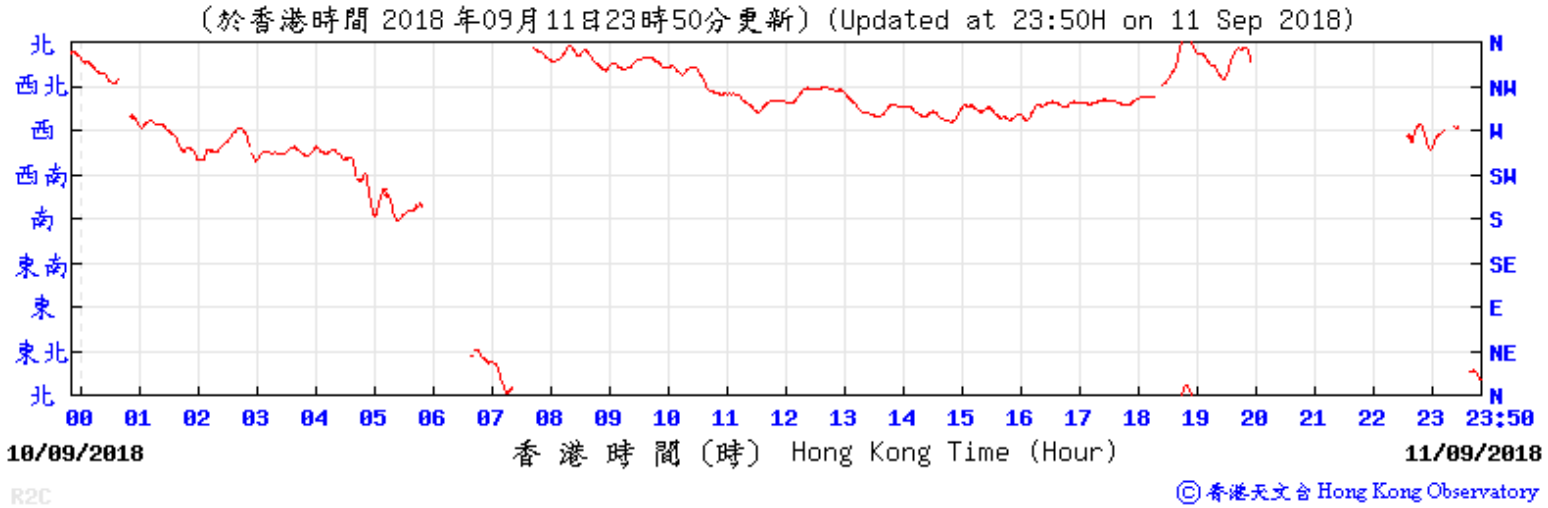
Tempearture/Humidity:



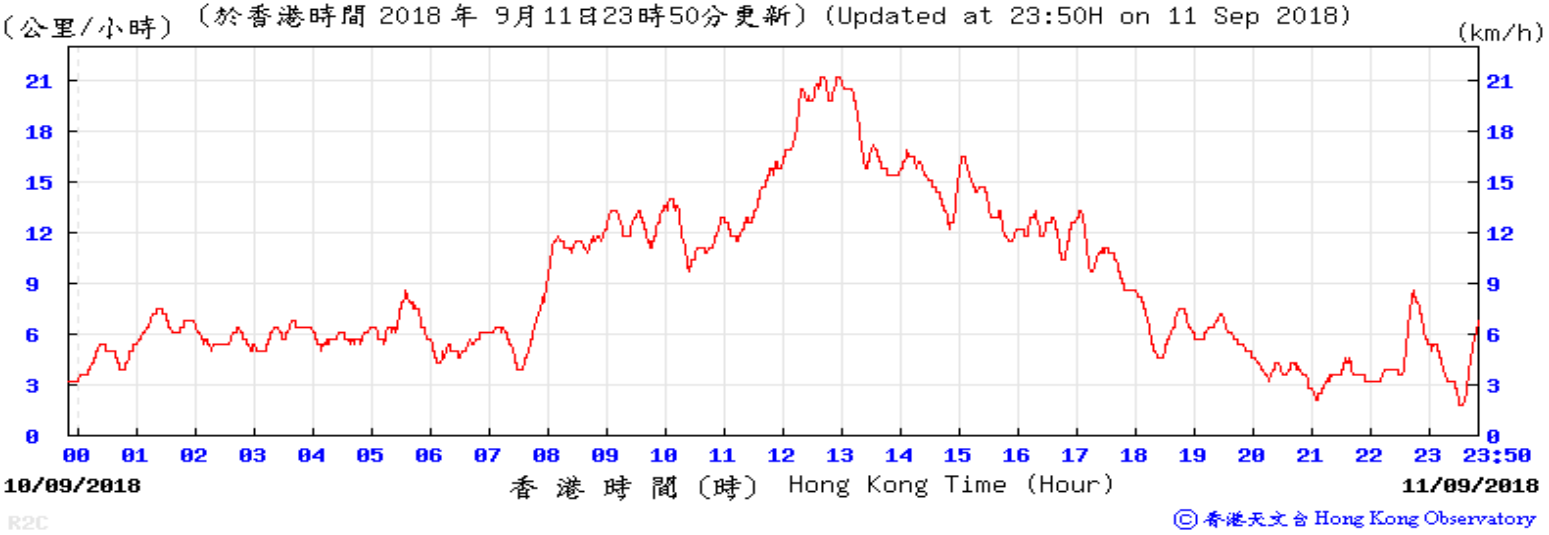
Pressure:



Wind Direction:



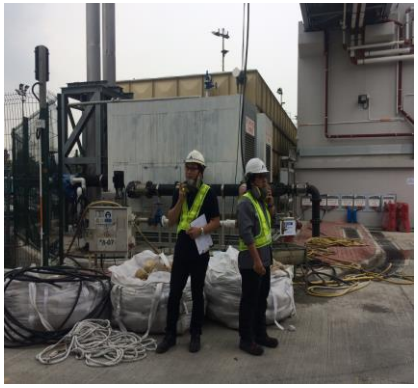
Wind Speed:



APPENDIX 3

Photos for the Odour Patrol Locations

Location: 1



Location: 2

Location: 3

Location: 4

Location: 5

Location: 6

CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1851885
CONTACT:	Edwin Wong		
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, North Lantau Island, NT, Hong Kong	LABORATORY:	Hong Kong
		SUB-BATCH:	0
		DATE OF PATROL:	28 September 2018
		DATE OF ISSUE:	12 October 2018
PROJECT:	Odour Patrol for the Organic Resources Recovery Centre Phase 1 in Siu Ho Wan		
SITE:	Organic Resources Recovery Centre Phase 1 (ORRC1)		

COMMENTS

Date of Odour Patrol: 28 September 2018.
Odour Patrols were conducted by ALS Technichem (HK) Pty Ltd staff during 10:02 – 10:20 and 17:57 – 18:13.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Richard Fung
General Manager - Hong Kong

1. Summary of Work

The odour patrol was conducted during daytime and evening / night time.

2. Odour Patrol

Odour patrolling is a process to make use of the calibrated olfactory senses (ie the nasal sense) of the patrol members to evaluate the odour and its intensity during a patrol exercise at the site.

Two odour patrol team members from ALS Technichem (HK) Pty Ltd were sent to conduct the patrol work during each session. All members are free from any respiratory diseases during patrol day. None of the members has been working or living in the area in the vicinity of the inspection area.

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- the wind speed;
- location where odour is spotted;
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- perceived intensity of the odour;
- duration of odour; and
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2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable odour, strong
4	Extreme	Severe odour

The odour patrol location is shown in Appendix 1.

3. Odour Patrol Result:

3.1. Daytime:

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
1	1	Sunny	10:02	29.6	57.0	2.4	319	0	NA	NA	NA	NA
	2							0				
2	1	Sunny	10:03	30.5	58.8	0.4	060	1	Intermittent	Downwind	Plastic	Biogas Holder Tank Relief Valve
	2							1	Intermittent	Downwind	Plastic	Biogas Holder Tank Relief Valve
3	1	Sunny	10:05	30.6	59.8	1.2	025	0	NA	NA	NA	NA
	2							0				
4	1	Sunny	10:07	29.8	61.3	0	NA	0	NA	NA	NA	NA
	2							0				
5	1	Sunny	10:10	30.4	66.7	0.4	105	1	Continuous	Side wind	Grassy	Vegetation
	2							1	Continuous	Side wind	Grassy	Vegetation

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
6	1	Sunny	10:13	29.2	59.9	1.3	303	0	NA	NA	NA	NA
	2							0				
7	1	Sunny	10:16	30.1	60.1	0.8	004	1	Intermittent	Upwind	Garbage	Nearby food waste truck
	2							1	Intermittent	Upwind	Garbage	Nearby food waste truck
8	1	Sunny	10:18	29.9	60.6	0.7	350	0	NA	NA	NA	NA
	2							0				

Remark:
T: Air Temperature;
RH: Relative Humidity;
WD: Wind Direction;
WS: Wind Speed.

3.2. Evening / Night time:

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
1	1	Sunny	17:57	29.2	59.8	0.8	320	1	Continuous	Side wind	Mosquito repellent	Outside the boundary of ORRC1
	2							0	NA	NA	NA	NA
2	1	Sunny	17:59	29.7	59.7	1.7	340	1	Continuous	Downwind	Plastic	Biogas Holder Tank Relief Valve
	2							1	Continuous	Downwind		
3	1	Sunny	18:00	29.5	60.7	1.3	016	1	Continuous	Downwind	Garbage	Garbage storage zone
	2							1	Continuous	Downwind		
4	1	Sunny	18:03	29.3	65.3	0	NA	0	NA	NA	NA	NA
	2							0				
5	1	Sunny	18:05	29.0	66.3	0	NA	0	NA	NA	NA	NA
	2							0				

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
6	1	Sunny	18:07	29.3	61.6	1.3	311	0	NA	NA	NA	NA
	2							0				
7	1	Sunny	18:10	29.2	61.8	0.8	323	0	NA	NA	NA	NA
	2							1	Intermittent	Side wind	Garbage	Nearby food waste truck
8	1	Sunny	18:11	29.5	61.6	0.7	319	1	Intermittent	Side wind	Garbage	Nearby food waste truck
	2							0	NA	NA	NA	NA

Remark:
T: Air Temperature;
RH: Relative Humidity;
WD: Wind Direction;
WS: Wind Speed.

APPENDIX 1
Odour Patrol Route

Proposed Patrol Route

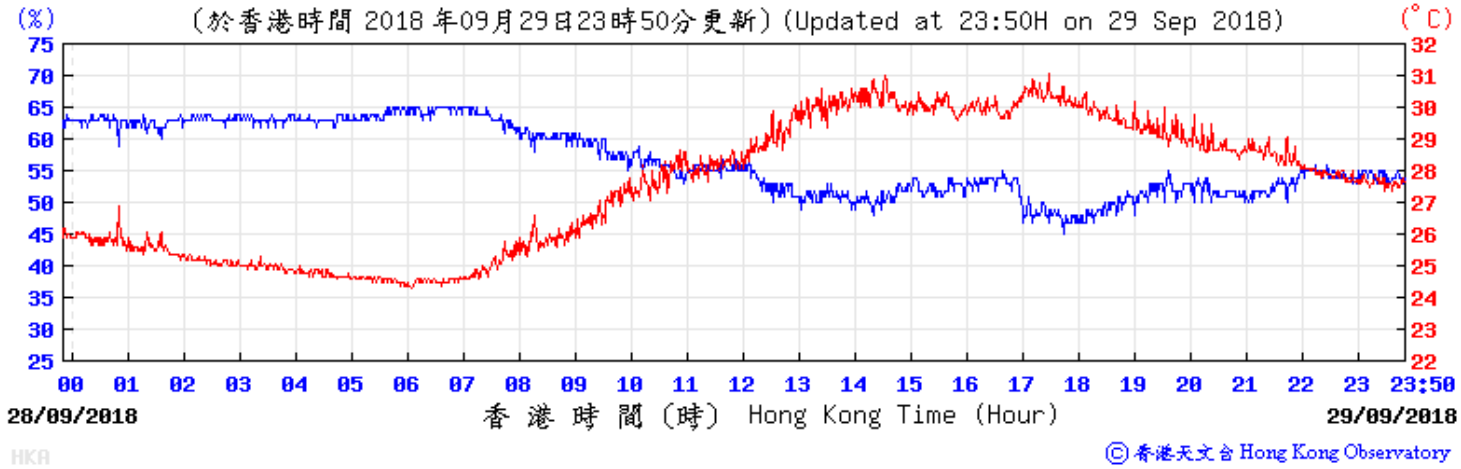
Possible Odour Sources (No.) / Checkpoint

Assumed Odour Potential (normal operation)
From 1 (min.) to 3 (max.)

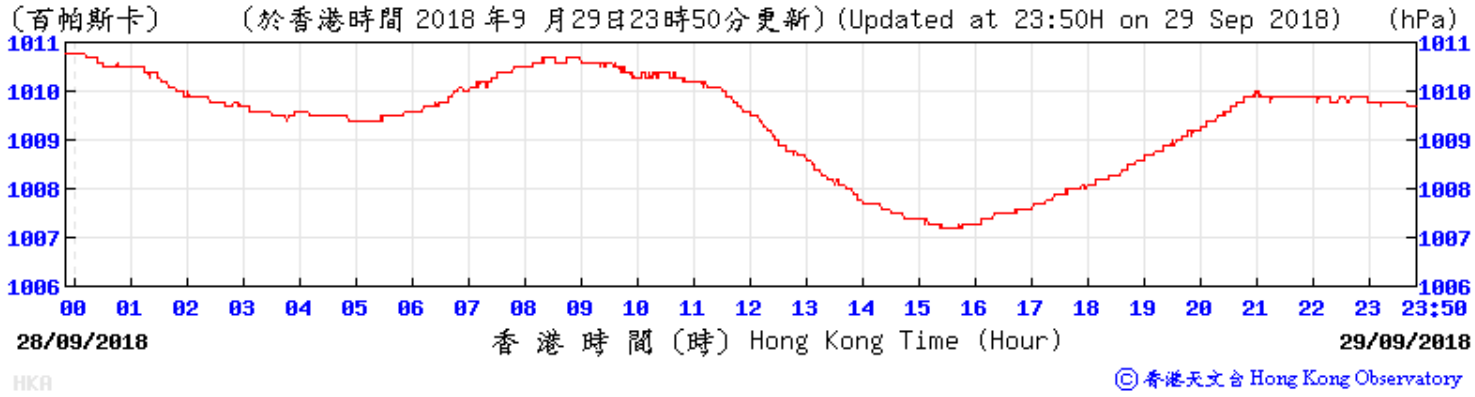
APPENDIX 2

Extract Of Meteorological Observations from the Hong Kong Airport Observatory Station

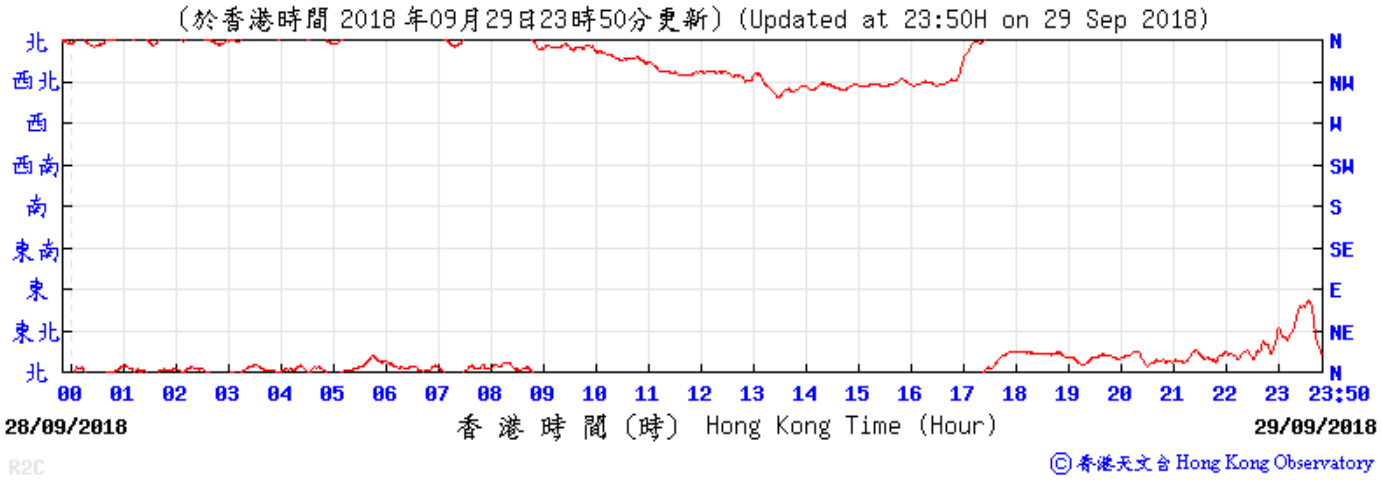
Tempearture/Humidity:



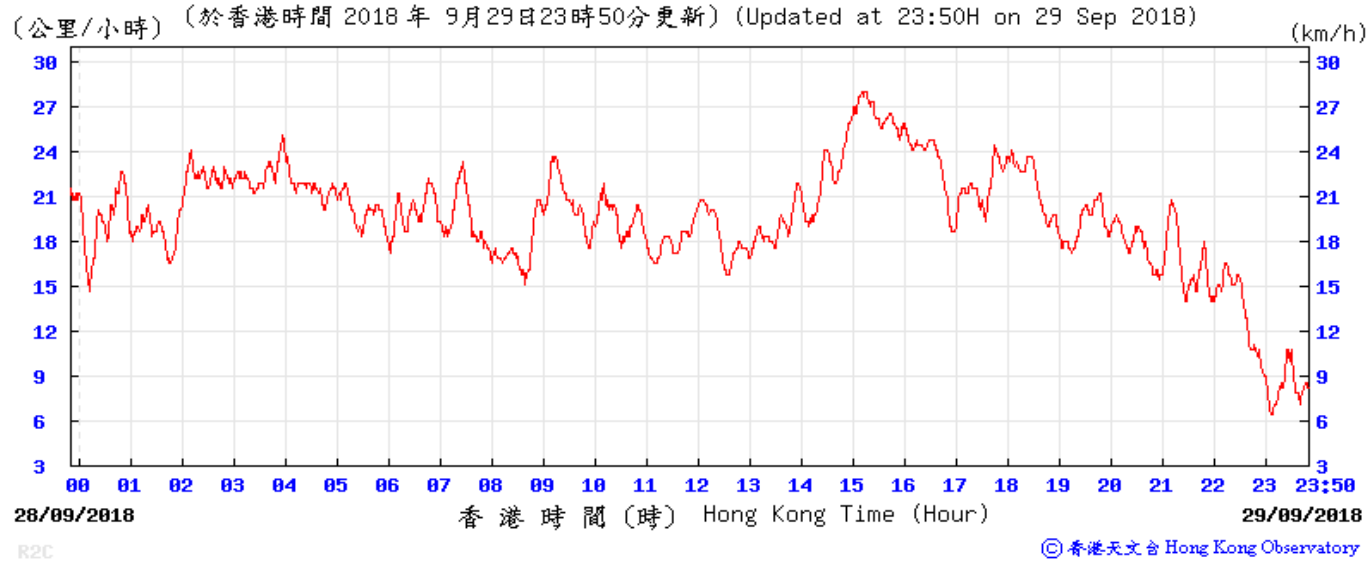
Pressure:



Wind Direction:



Wind Speed:

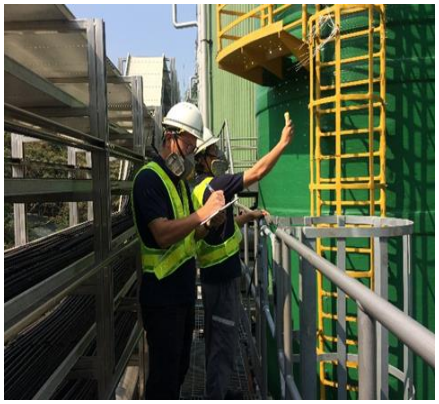


APPENDIX 3

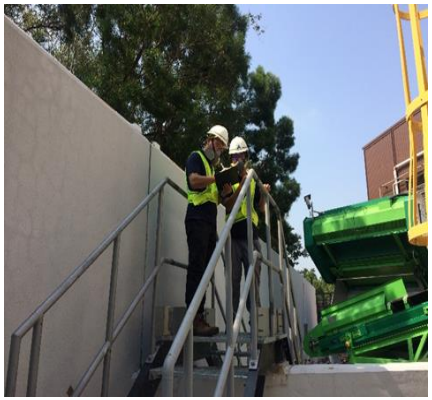
A3.1. Odour Patrol at Different Locations – Daytime

Location: 1

Location: 2



Location: 3

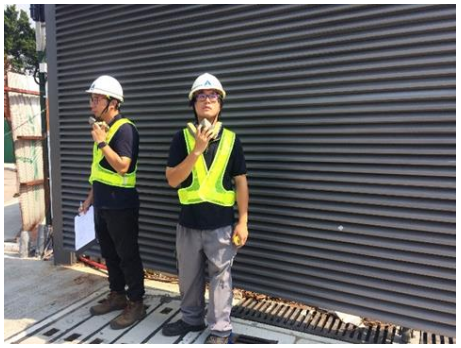


Location: 4

Location: 5

Location: 6

Location: 7



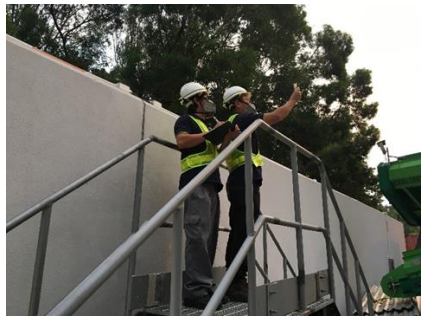
Location: 8

A3.2. Odour Patrol at Different Locations – Evening / Night time

Location: 1

Location: 2

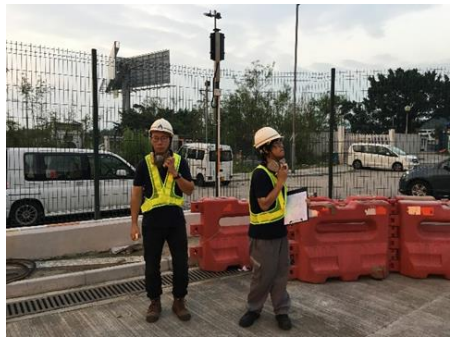
Location: 3



Location: 4

Location: 5

Location: 6



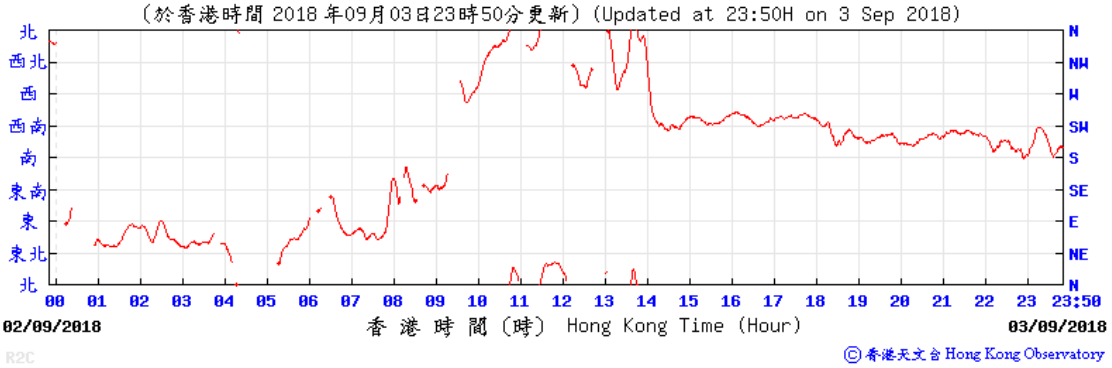
Location: 7

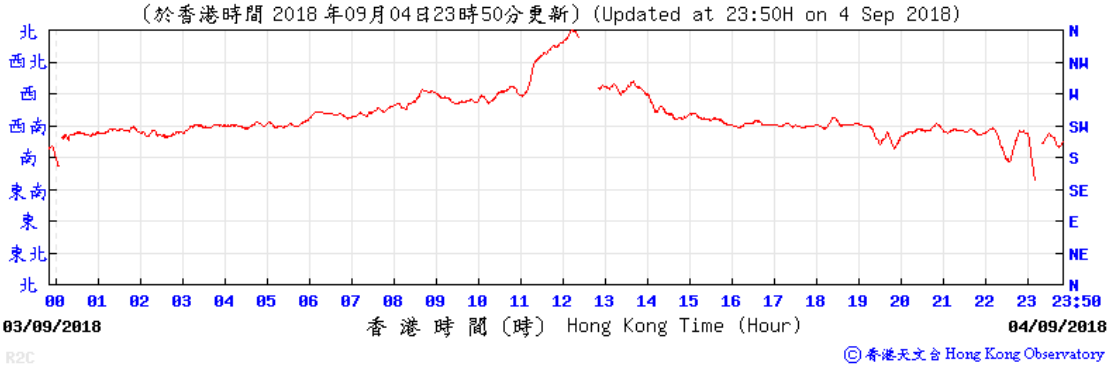
Location: 8

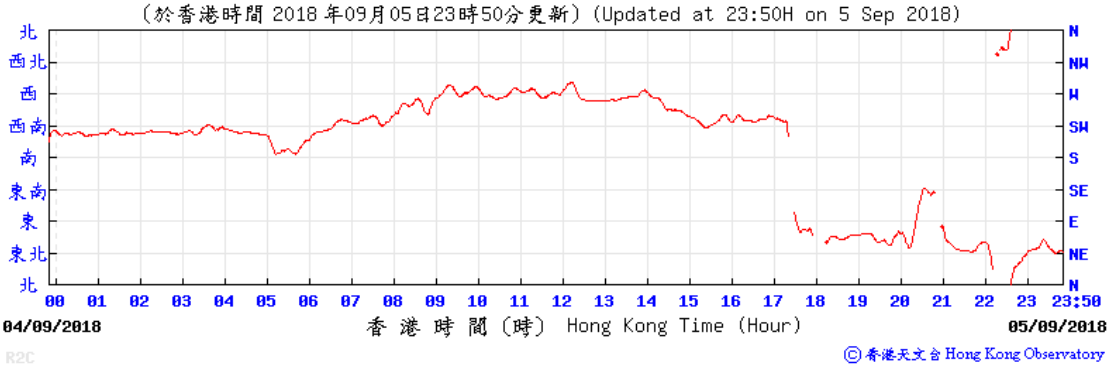
Annex H2

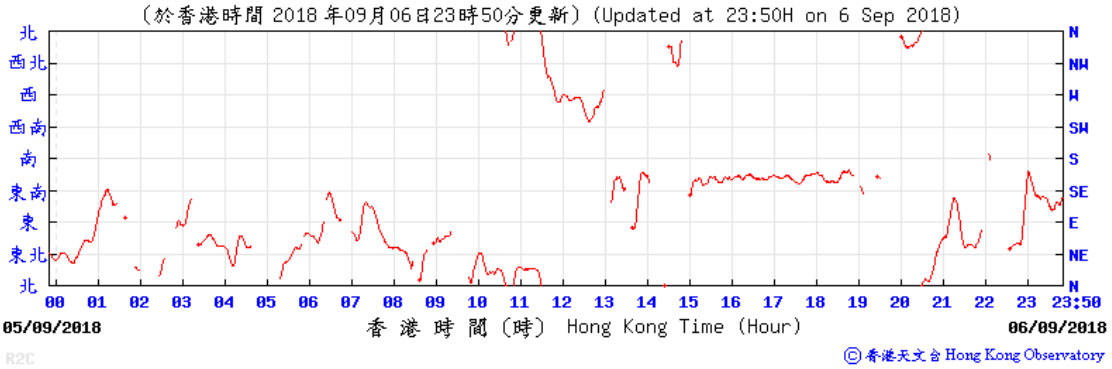
Local Wind Direction and Wind Speed

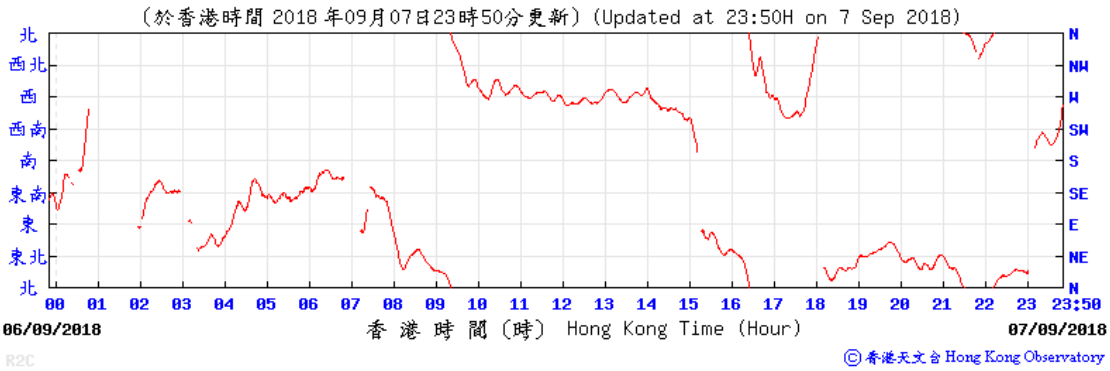
Wind Direction







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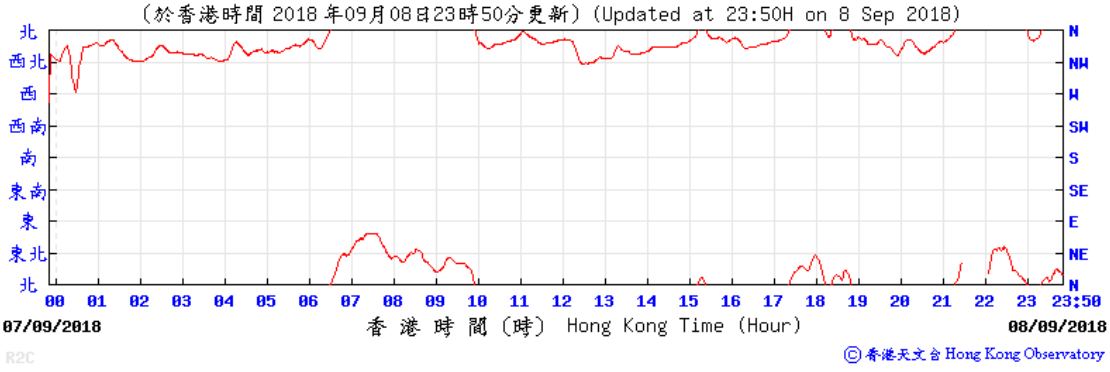
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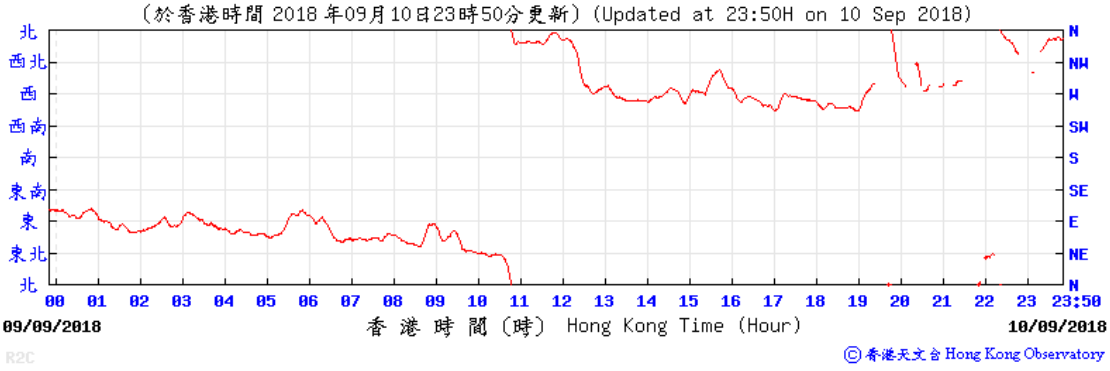
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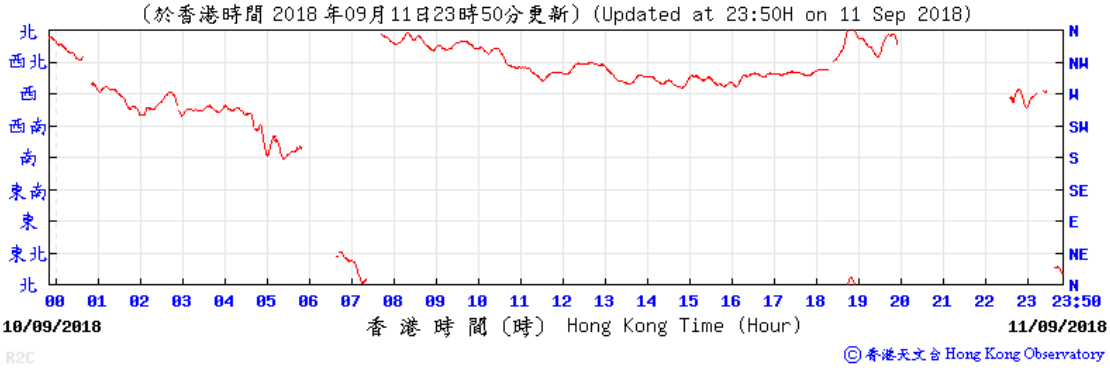
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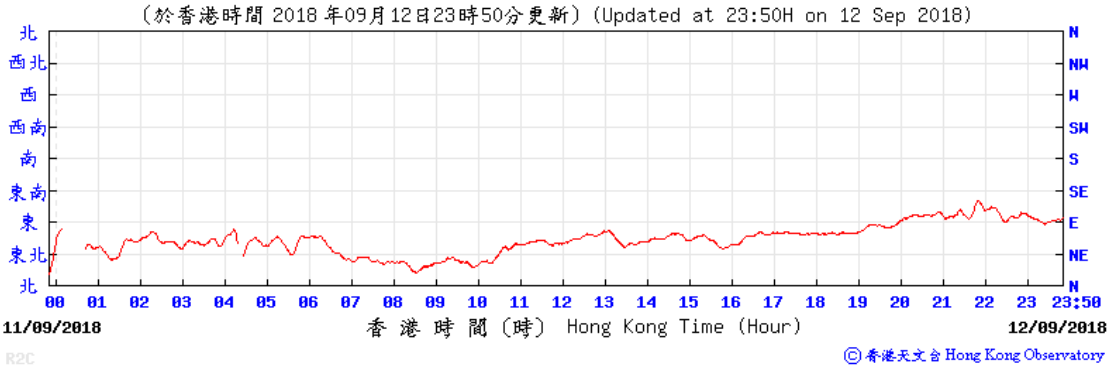
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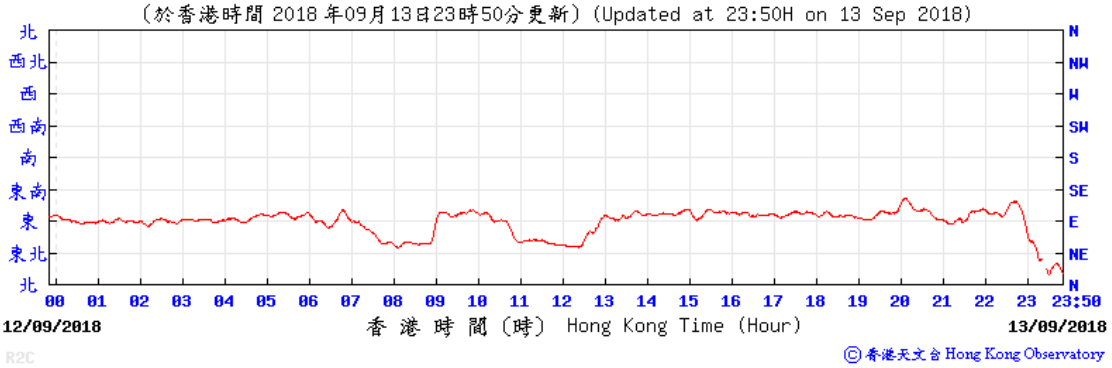
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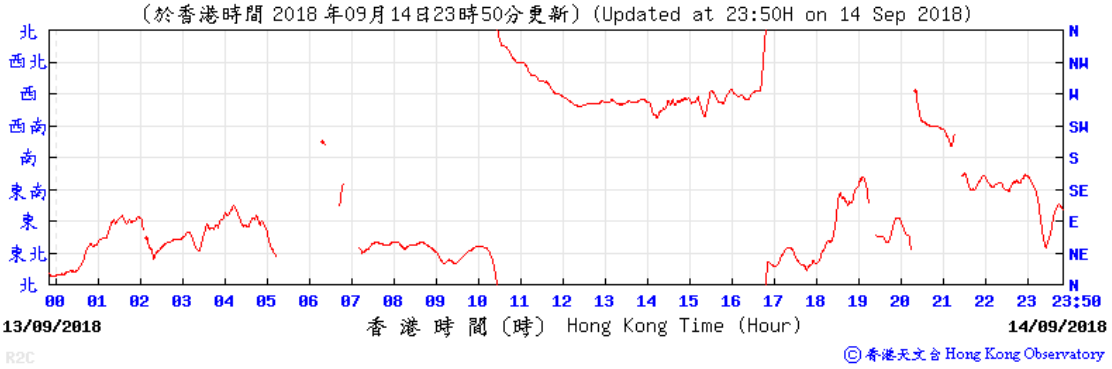
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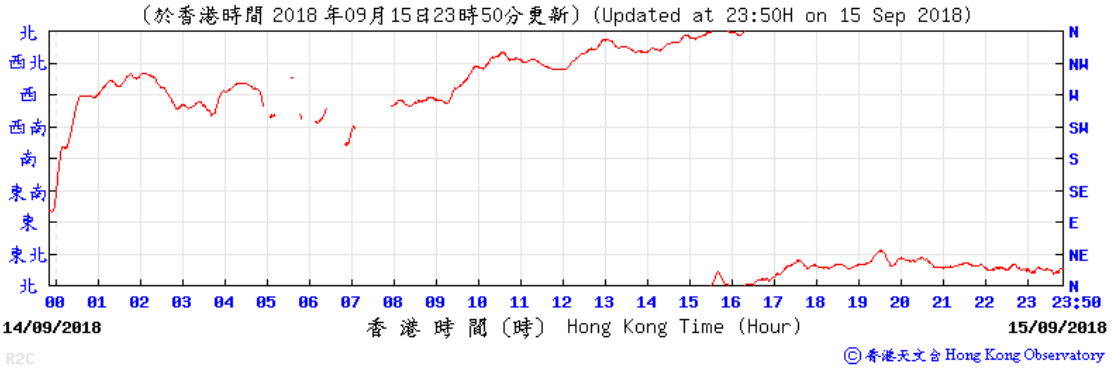
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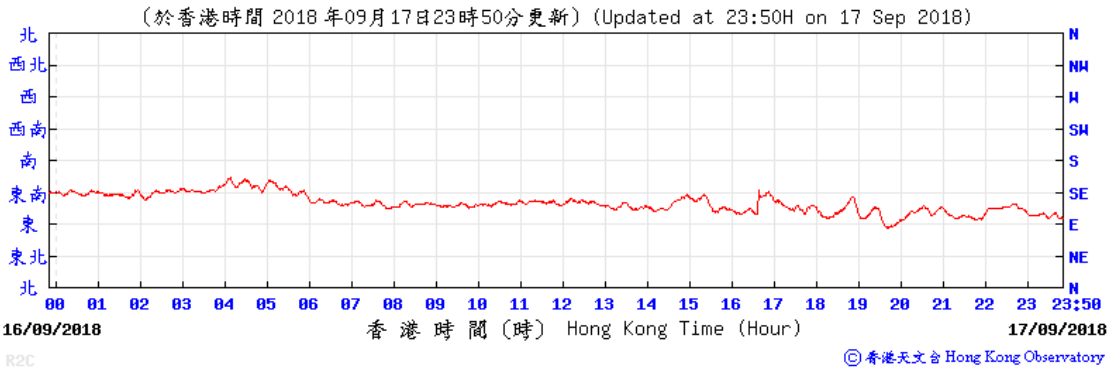
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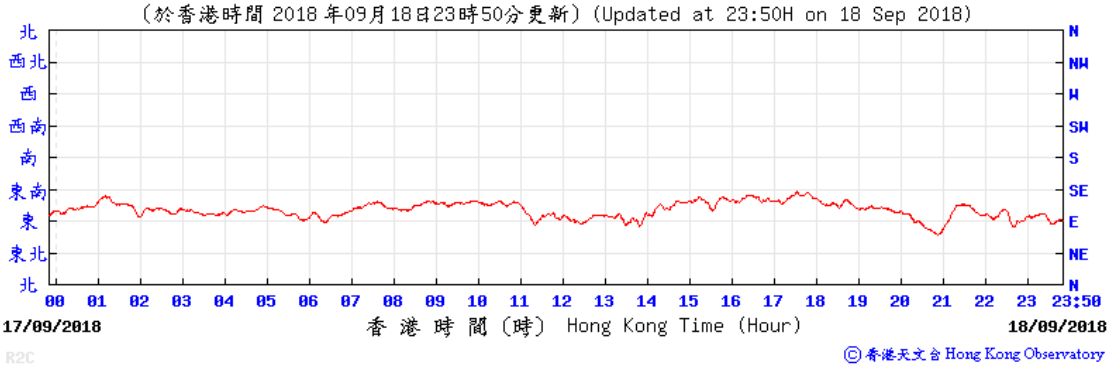
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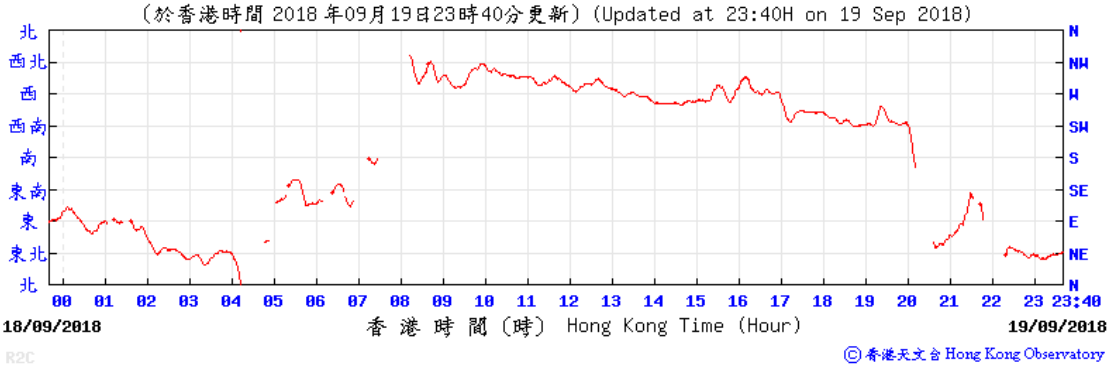
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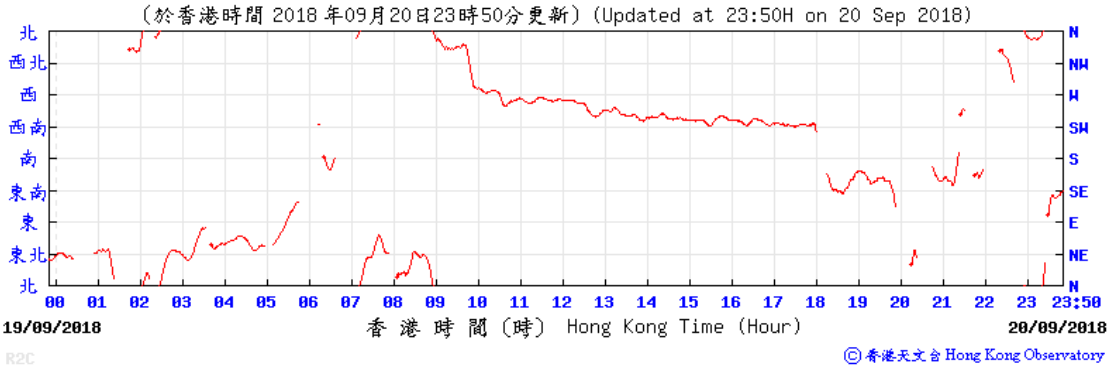
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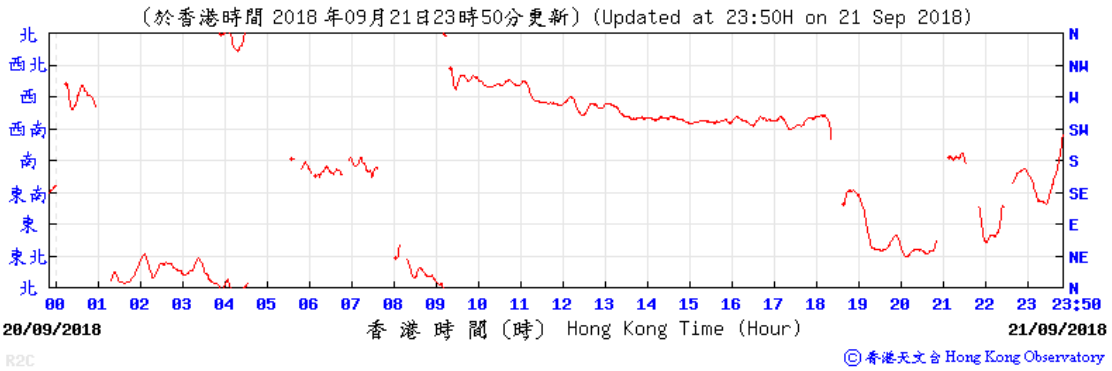
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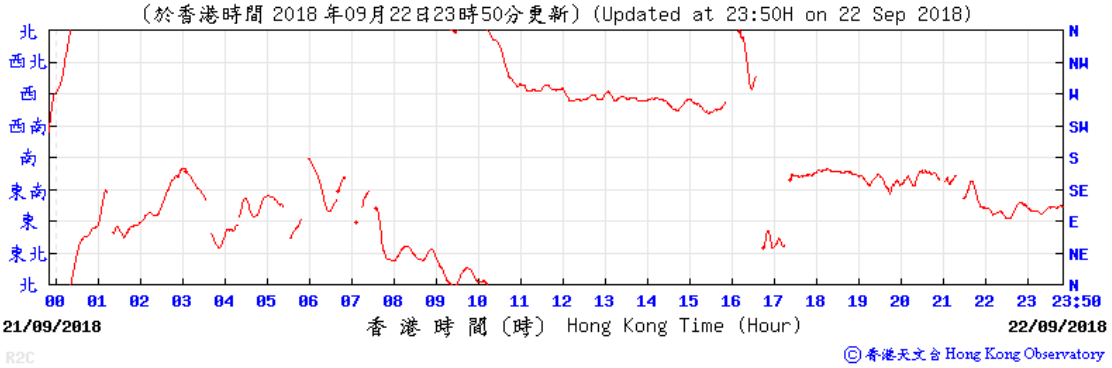
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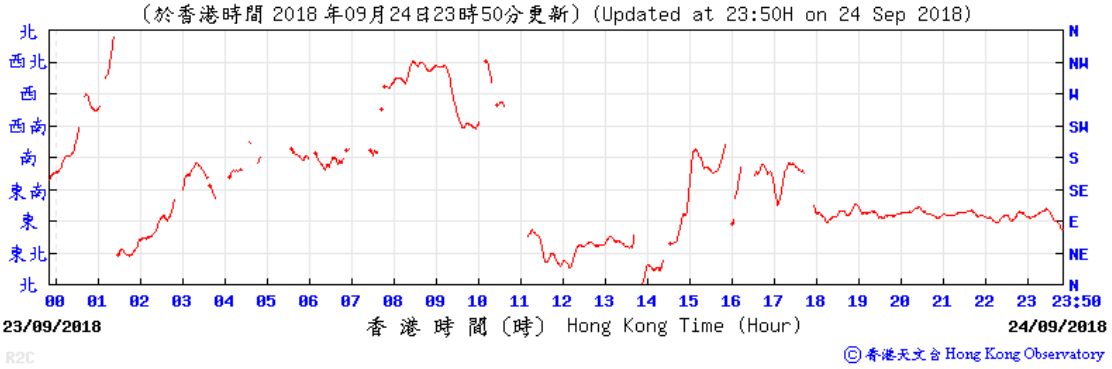
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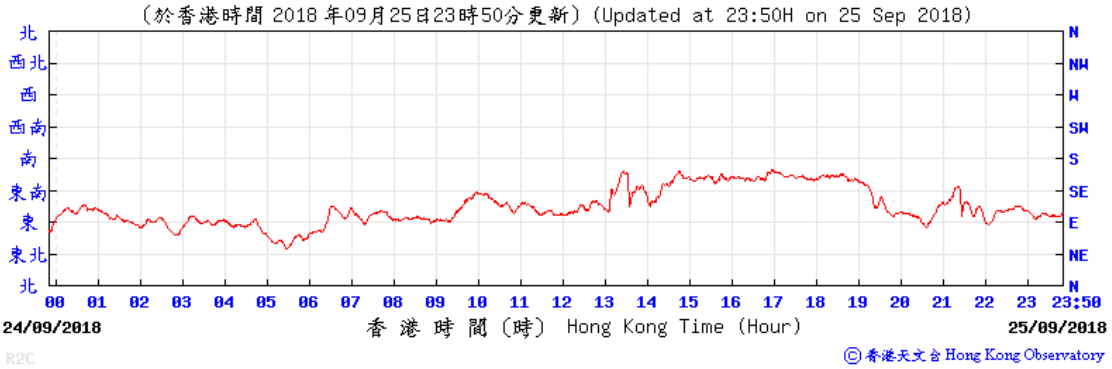
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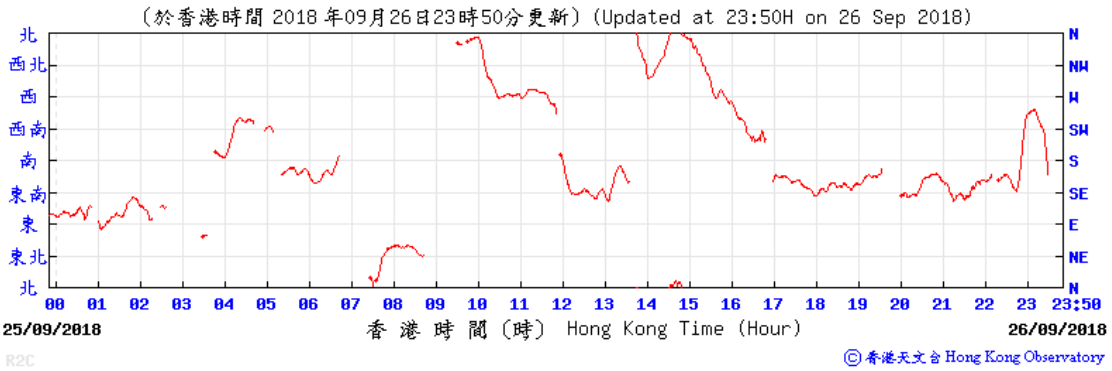
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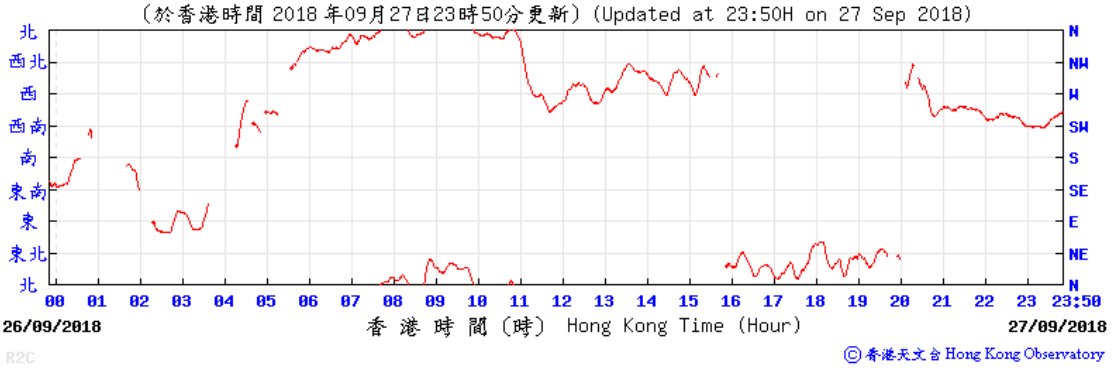
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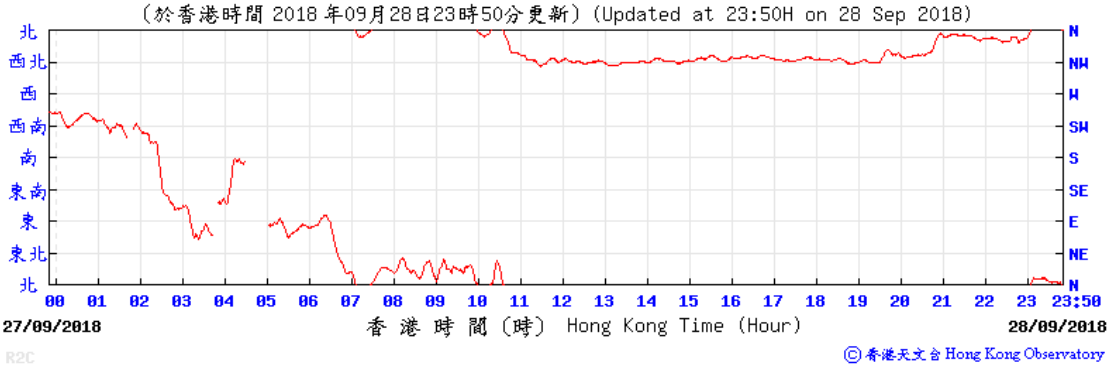
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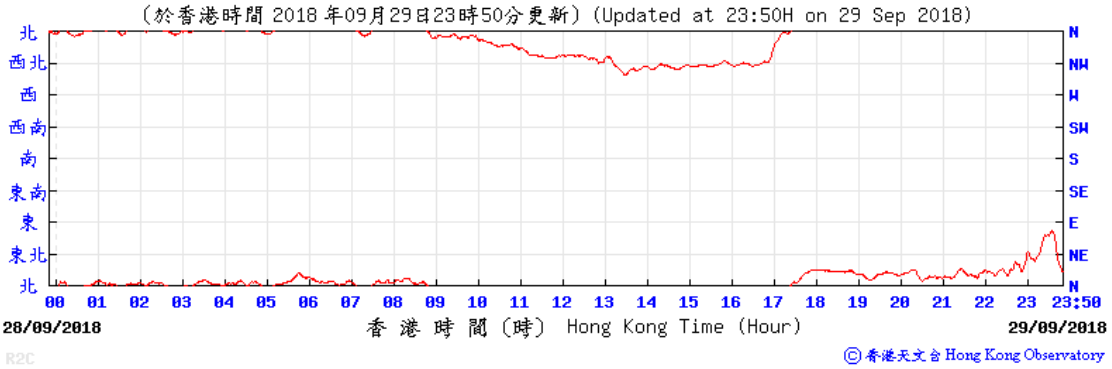
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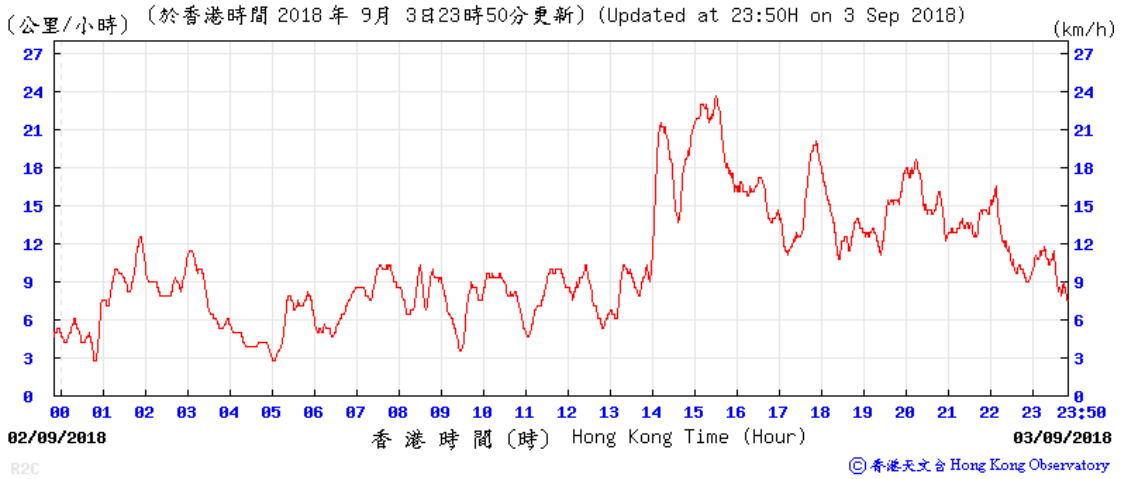
Wind Speed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香 港 時 間 (時) Hong Kong Time (Hour)
03/09/2018
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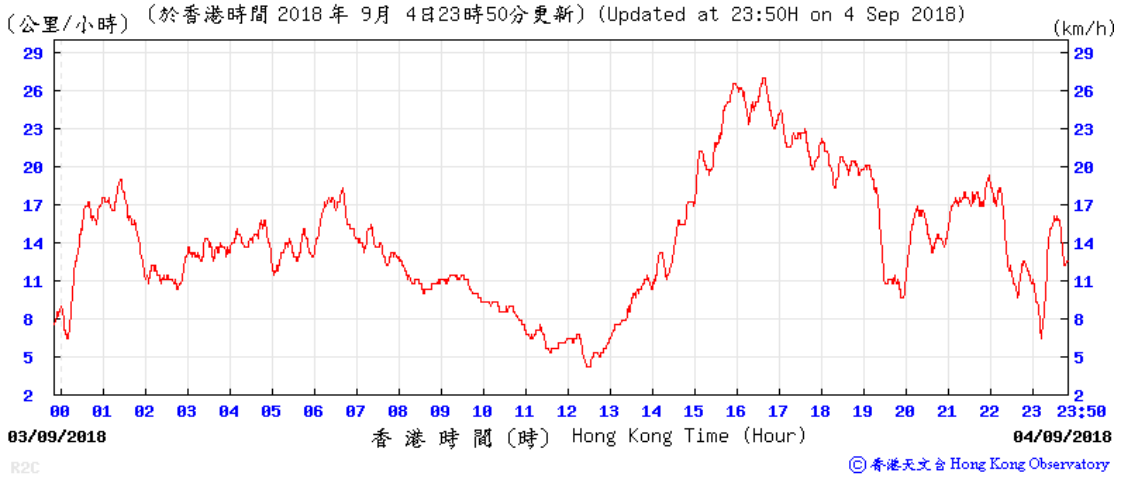
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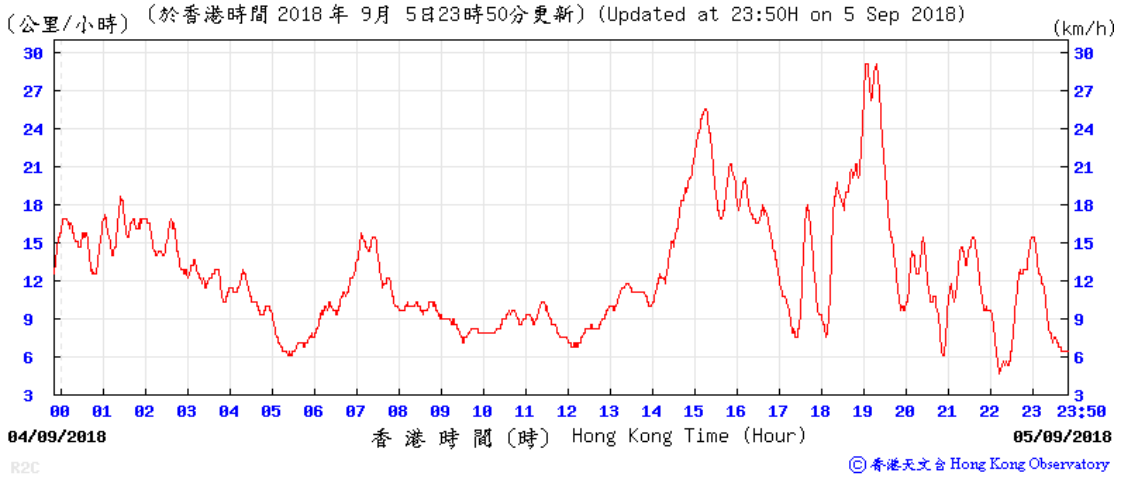
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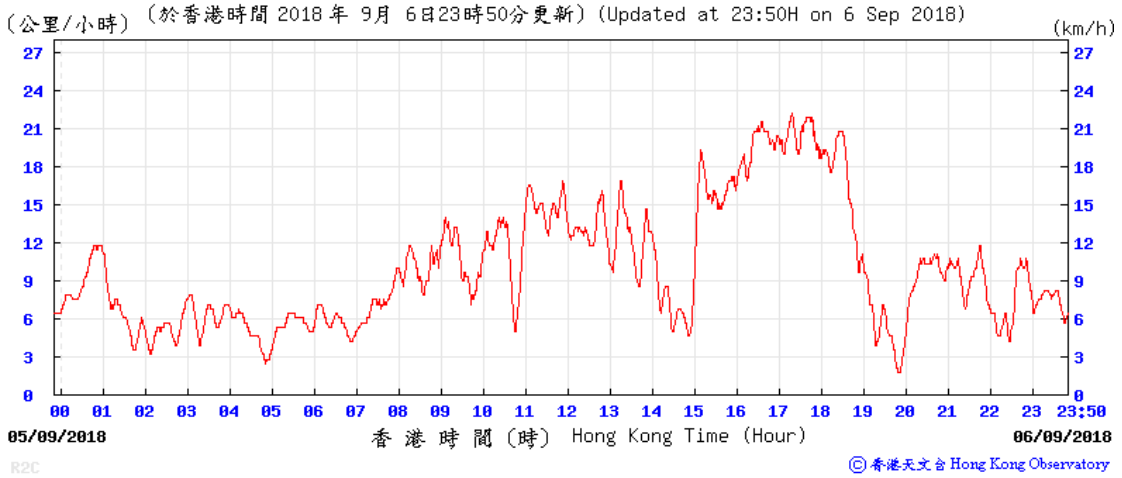
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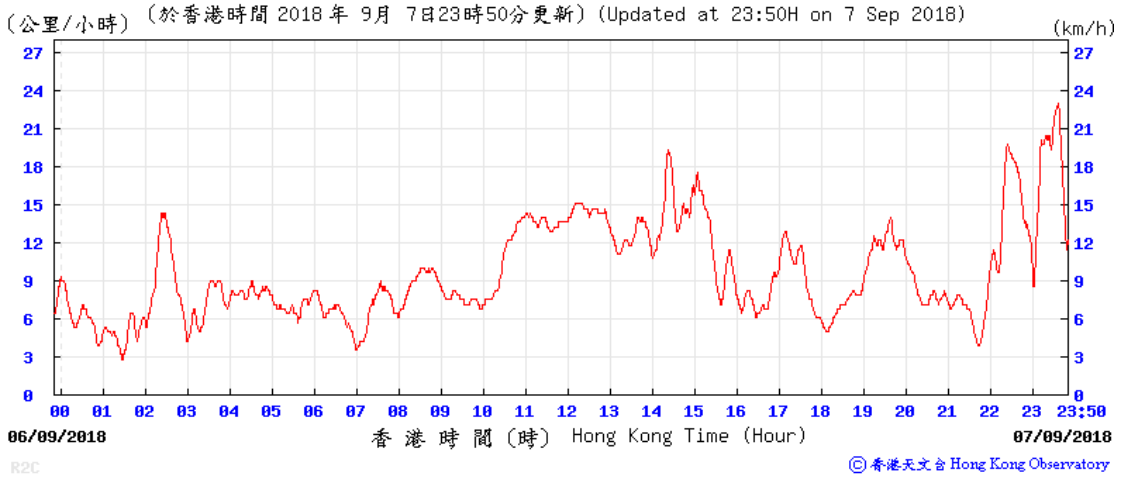
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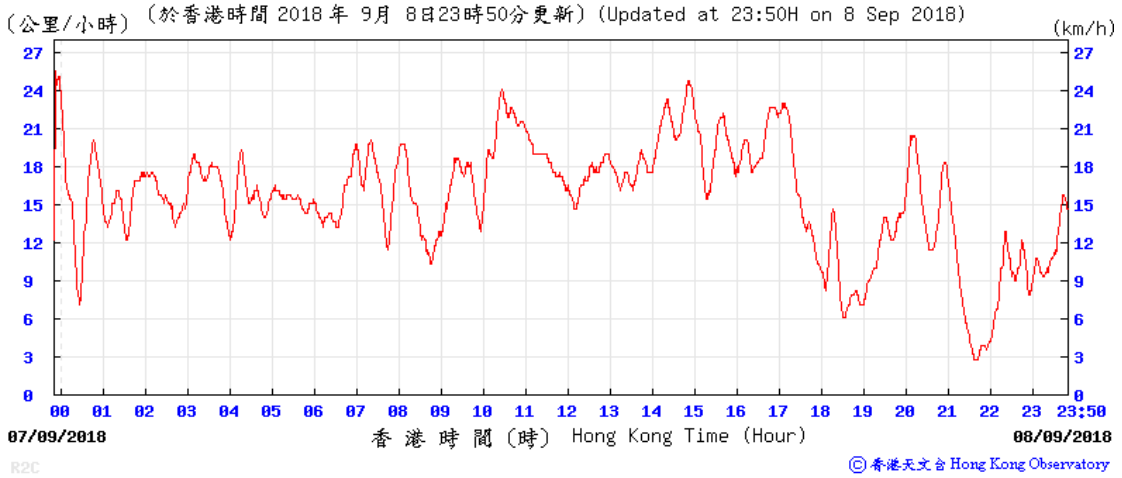
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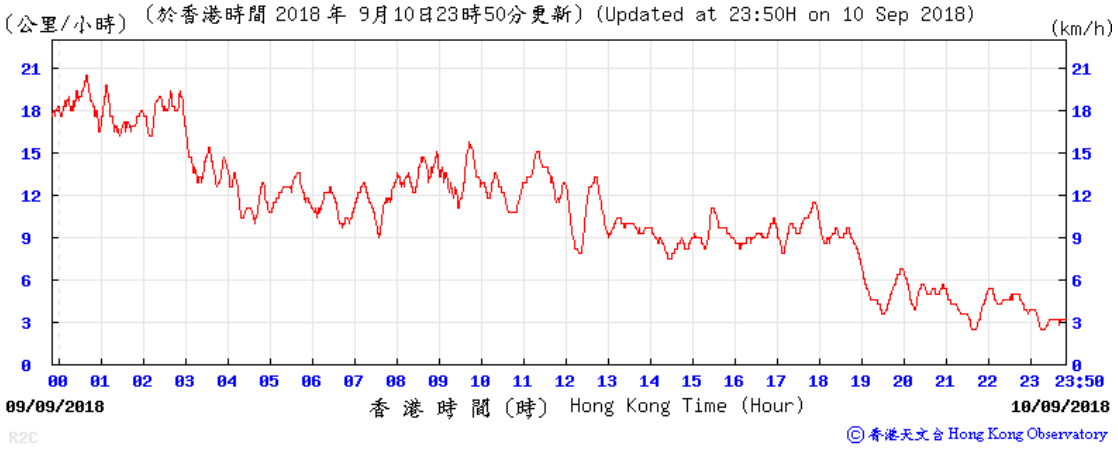
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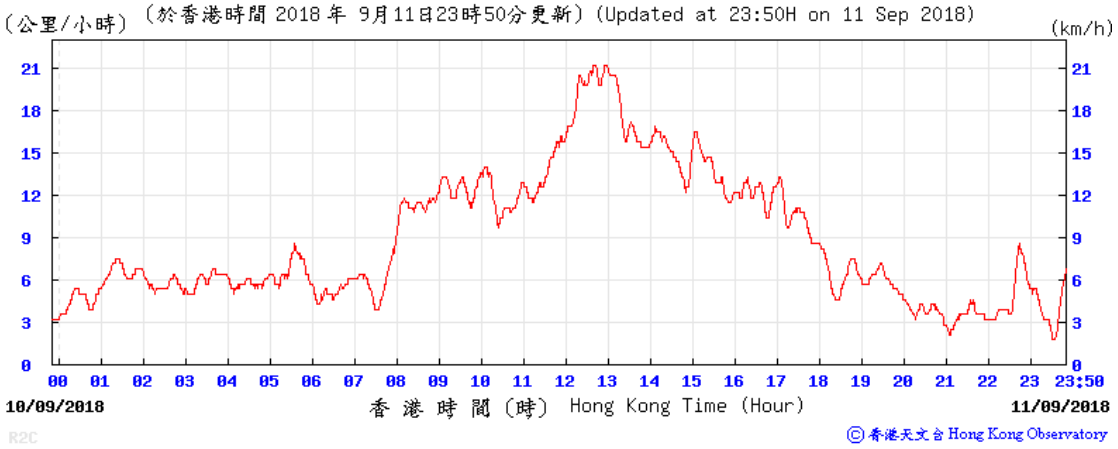
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香 港 時 間 (時) Hong Kong Time (Hour)
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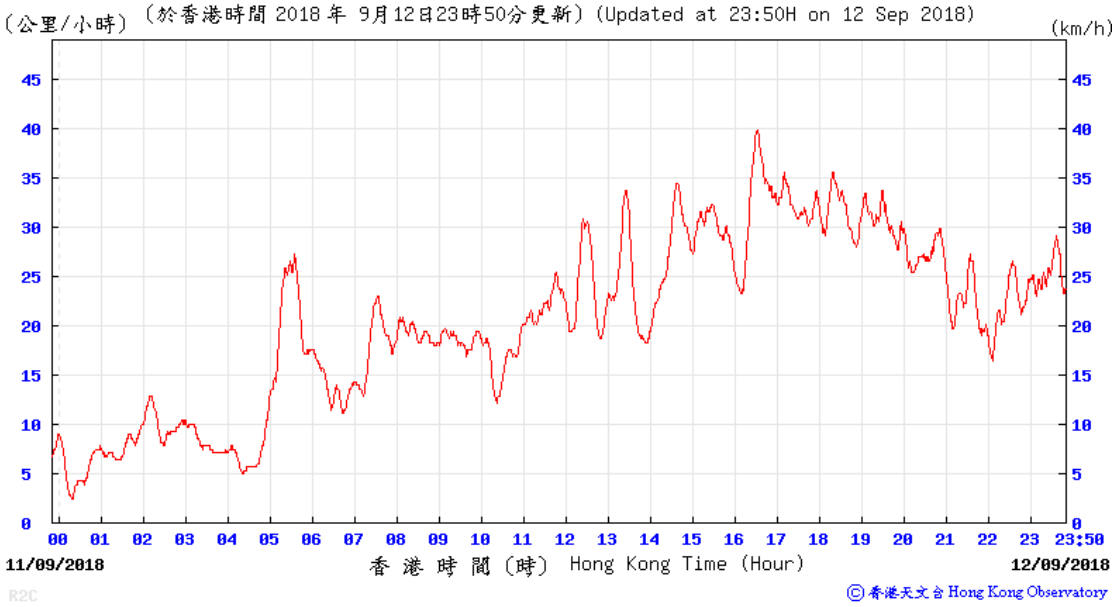
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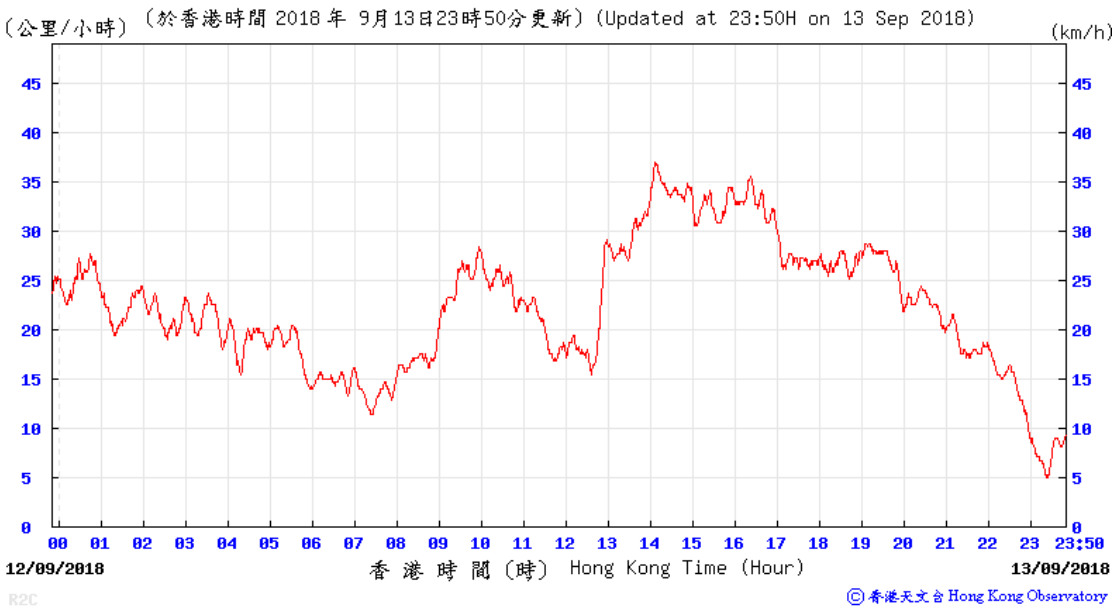
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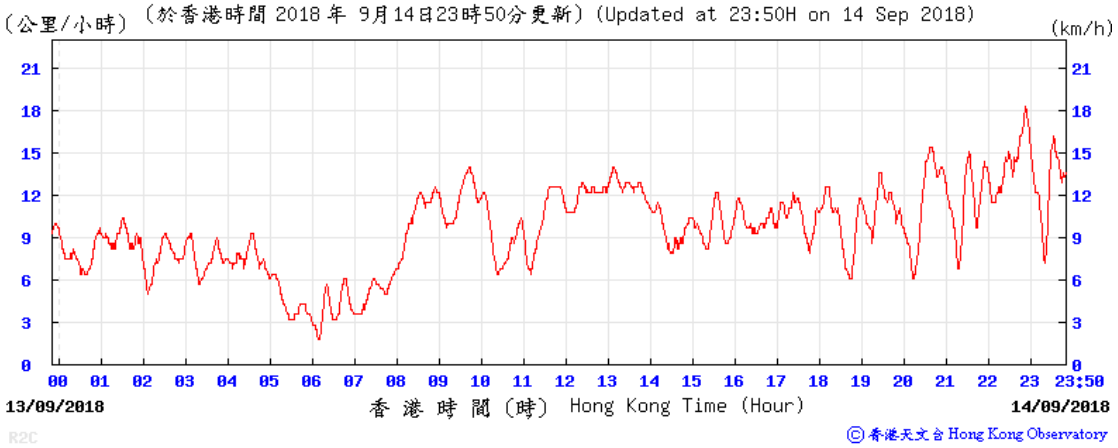
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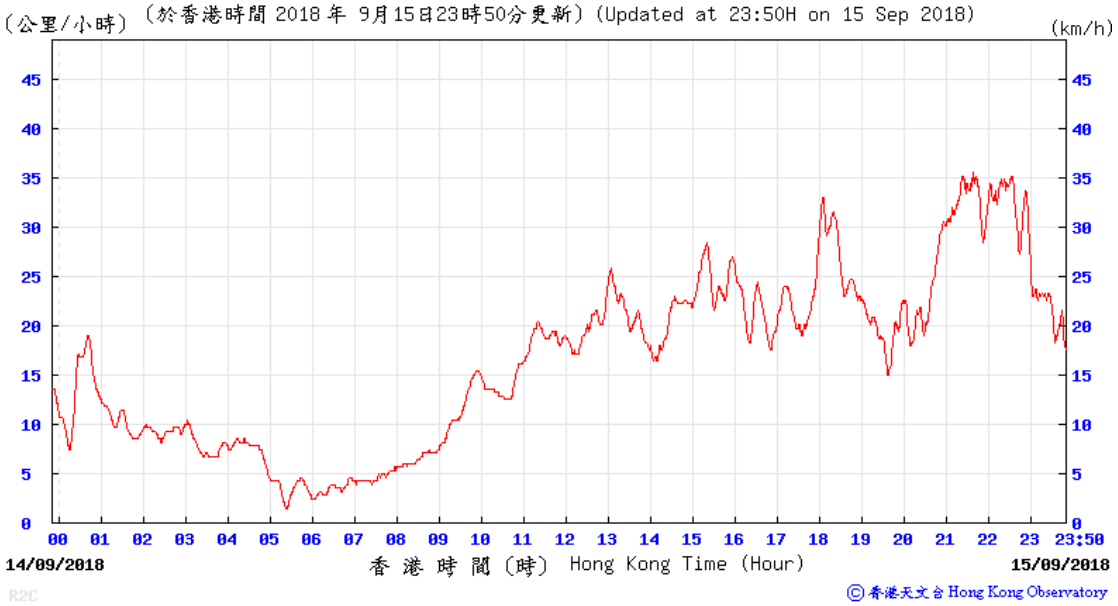
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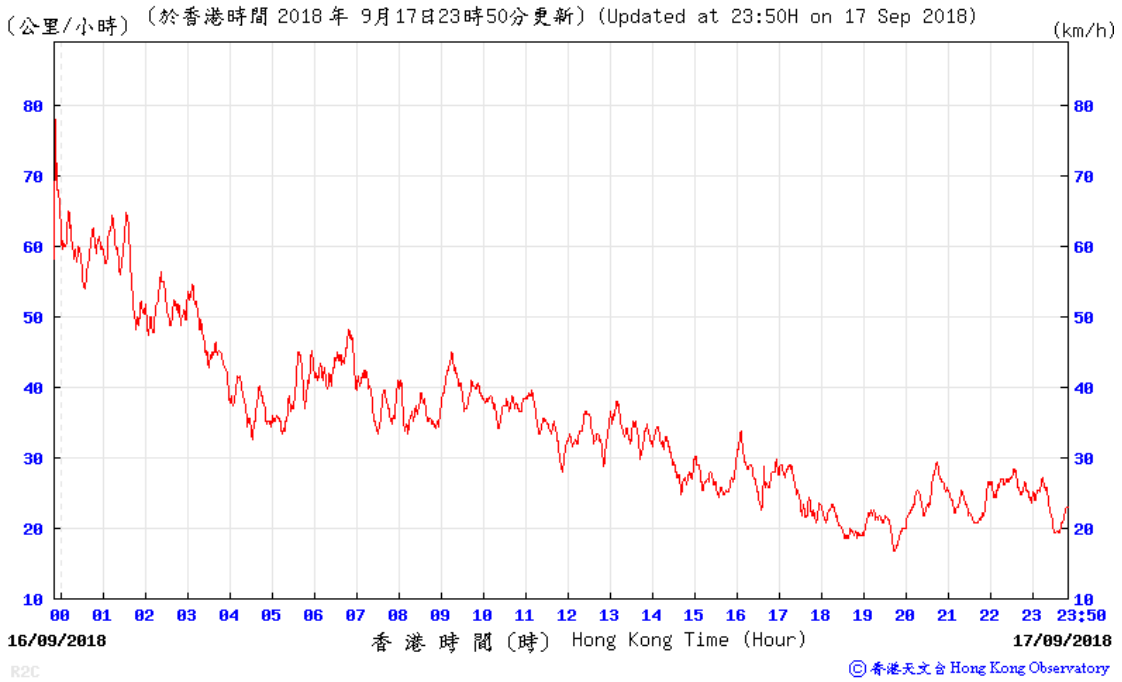
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R2C
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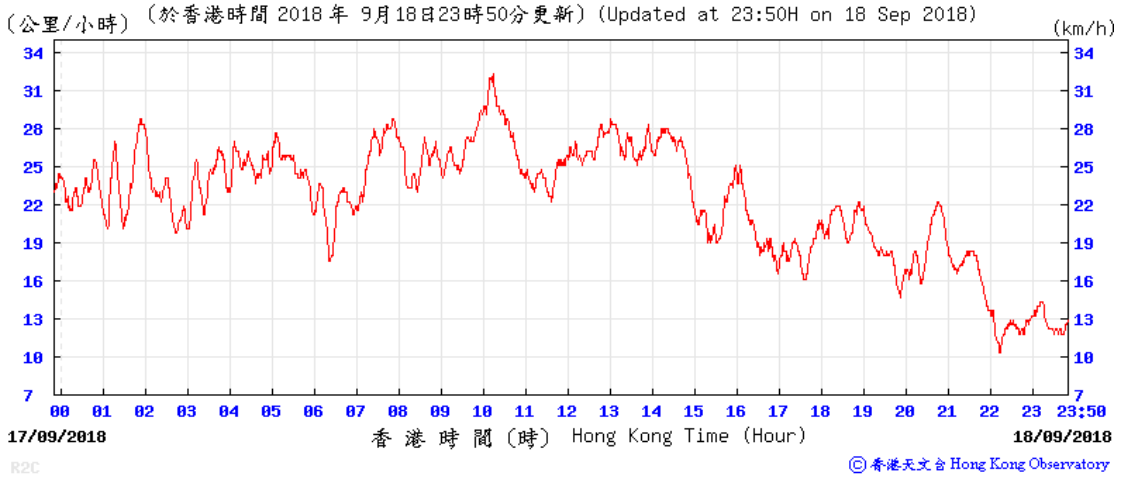
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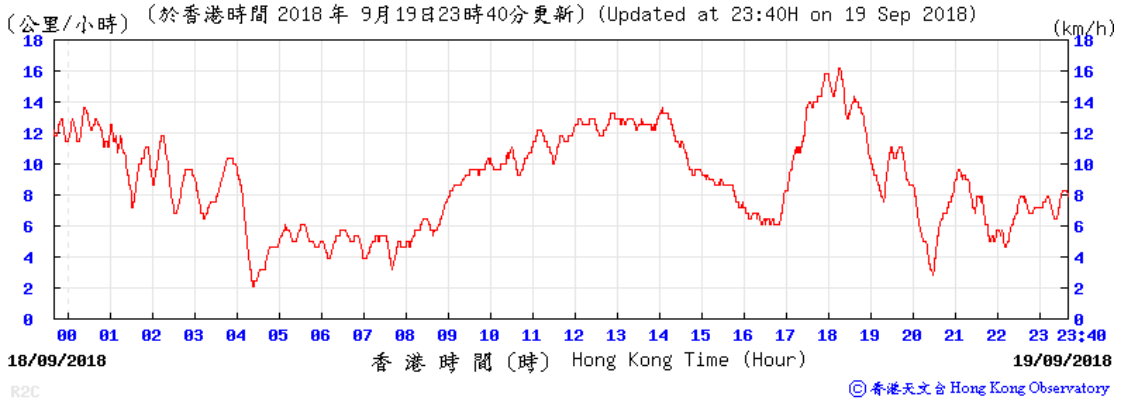
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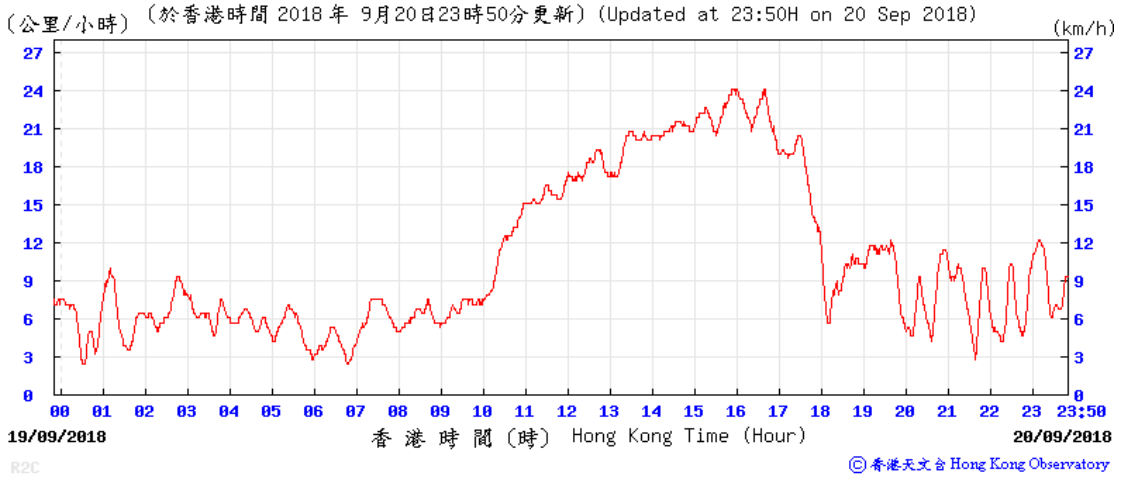
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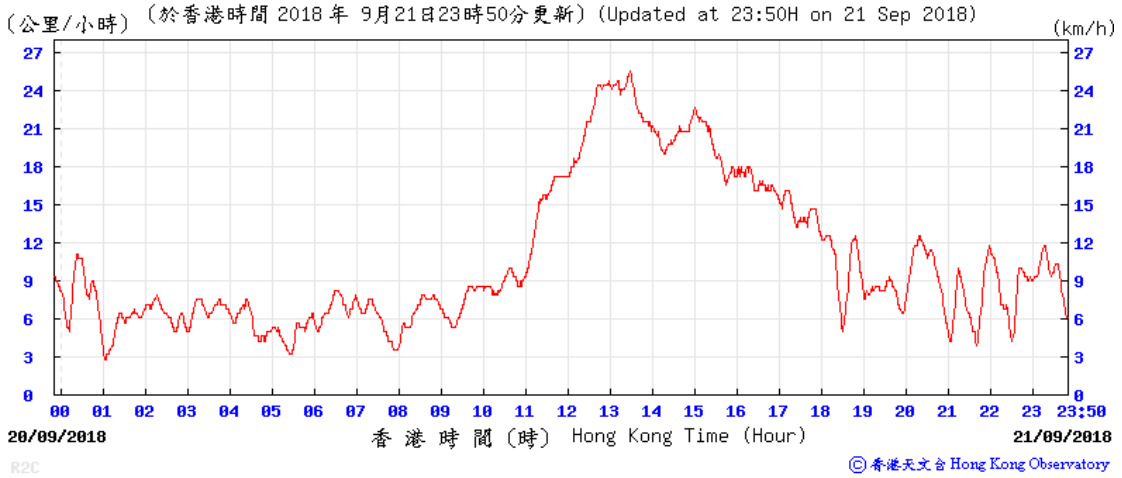
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21/09/2018
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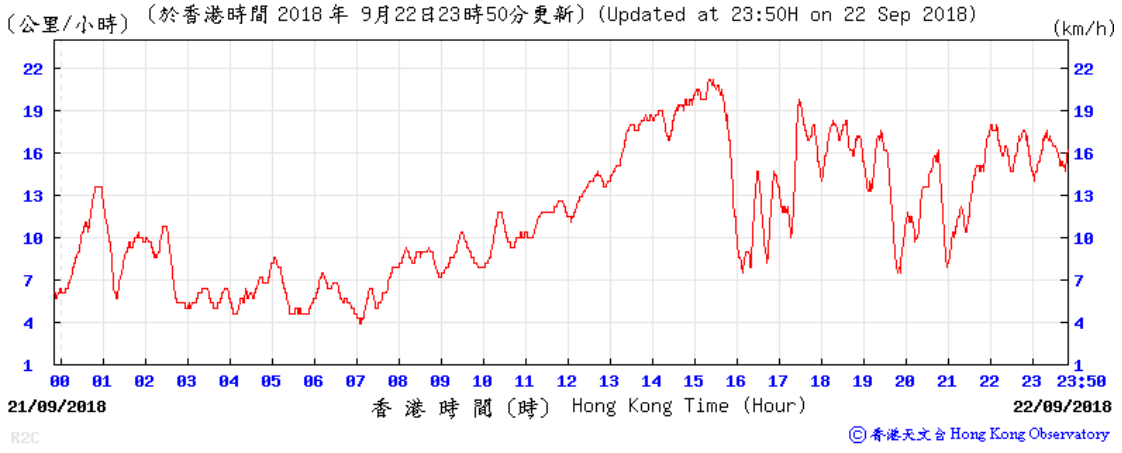
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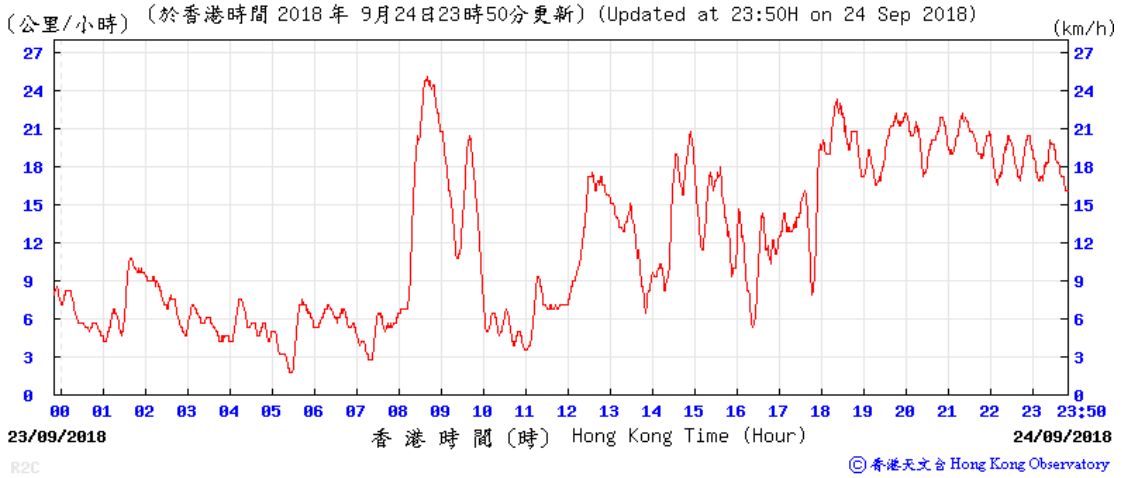
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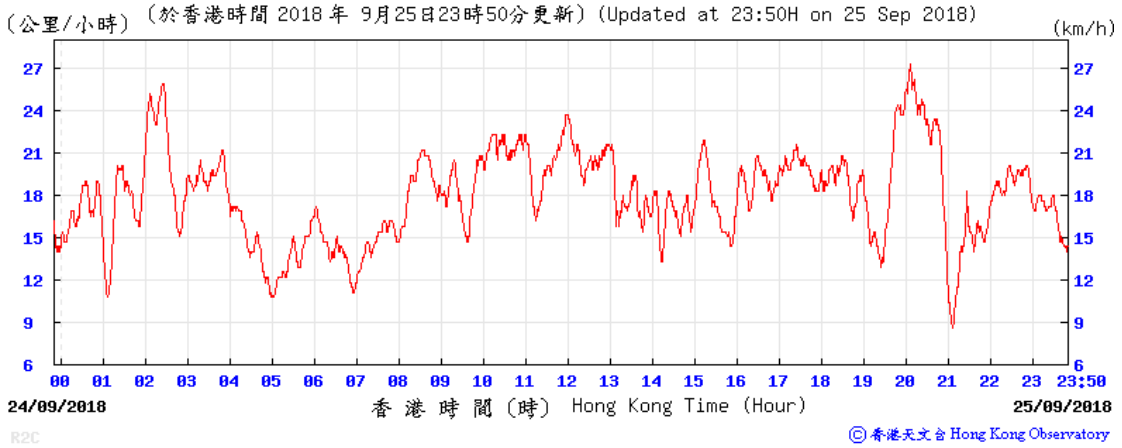
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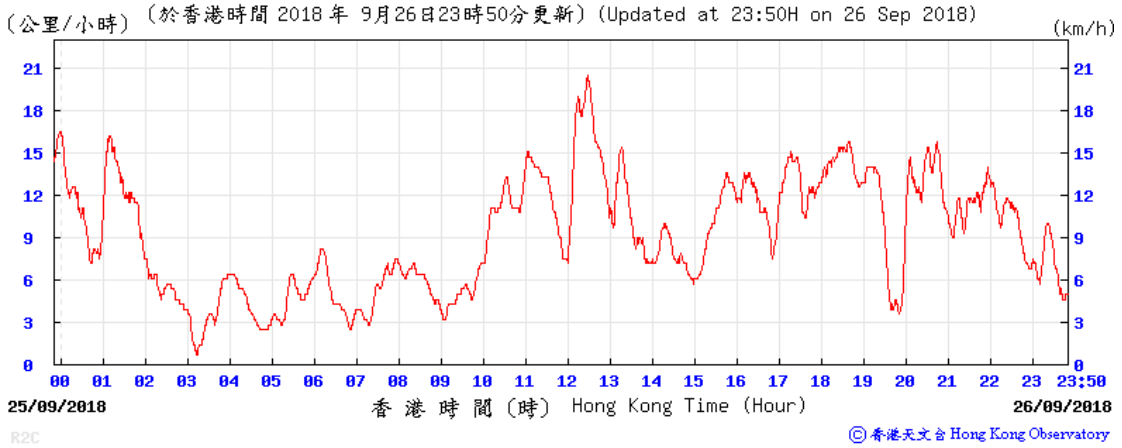
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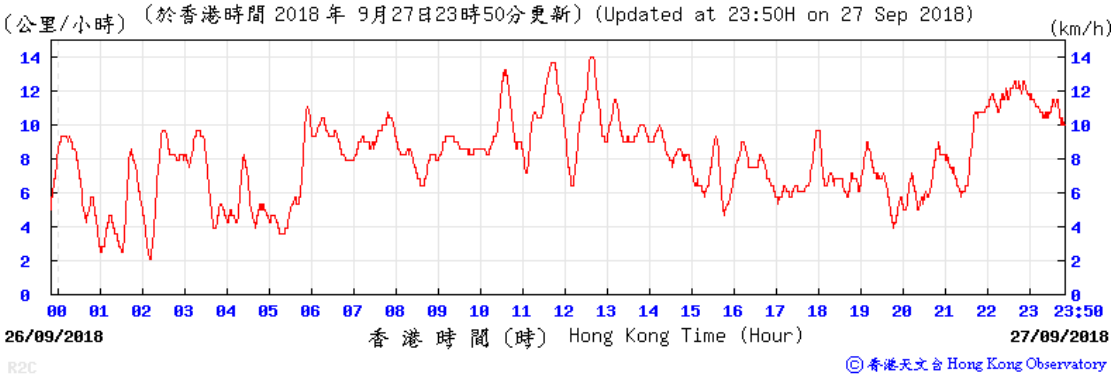
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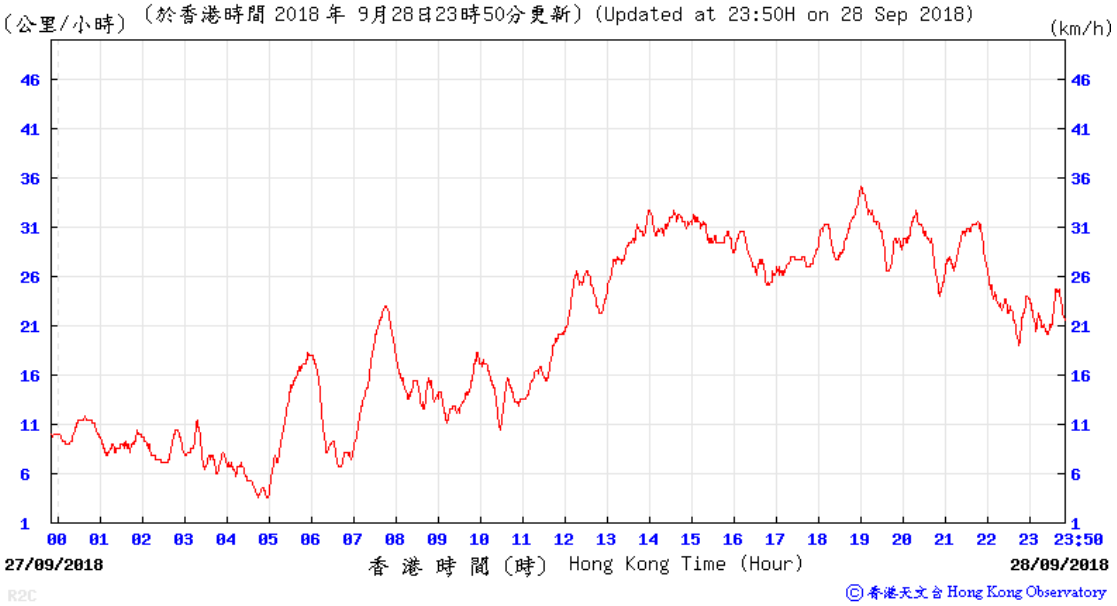
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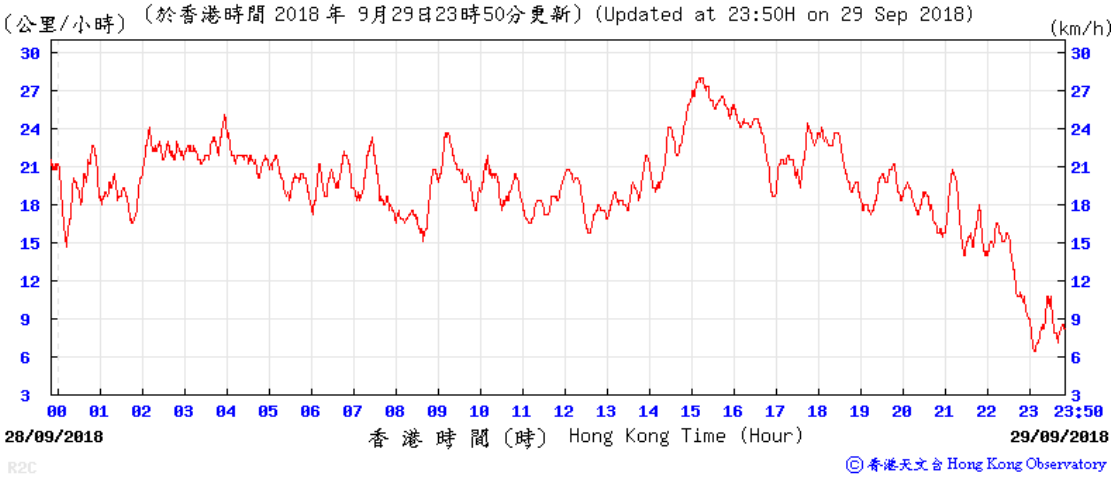
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29/09/2018
R2C
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Annex H3

Odour Sampling Result

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T +852 2610 1044 F +852 2610 2021

lfactometry analysis – sampled on 25 June 2018

CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1847224
CONTACT:	Edwin Wong		
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, North Lantau Island, NT, Hong Kong	LABORATORY:	Hong Kong
		SUB-BATCH:	0
		DATE RECEIVED:	31 August 2018
		DATE OF ISSUE:	18 September 2018
PROJECT:	Odour Monitoring for the Organic Resources Recovery Centre Phase 1 in Siu Ho Wan	SAMPLE TYPE:	Air
SITE:	Organic Resources Recovery Centre Phase 1 (ORRC1)	NO OF SAMPLES:	3
PO:	---		

COMMENTS

Air sample(s) were collected by ALS Technichem (HK) staff on 31st August, 2018 at the Organic Resources Recovery Centre Phase 1 (ORRC1) in Siu Ho Wan for Odour Monitoring.

The sample(s) were analysed and reported on an as received basis.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Richard Fung
General Manager - Hong Kong

METHOD STATEMENT

A. Odour Concentration

1. Odour Sampling

Odour gas sample was collected by passive sampling technique. A Nalophan™ sampling bag was placed inside an air-tight sampler and then drawn to vacuum. Approximately 60 litre of gas sample was collected into the sampling bag for testing.

The odour sample was collected at the Organic Recovery Resources Centre Phase 1 (ORRC1) and sampling locations were shown in Appendix A1.

2. Olfactometry Testing

Odour concentration was determined by a Forced-choice Dynamic Olfactometer in accordance with the European Standard Method (EN13725).

This European Standard specifies a method for the objective determination of the odour concentration of a gaseous sample using dynamic olfactometry with human assessors and the emission rate of odours emanating from point sources, area sources with outward flow and area sources without outward flow.

This European Standard is applicable to the measurement of odour concentration of pure substances, defined mixtures and undefined mixtures of gaseous odorants in air or nitrogen, using dynamic olfactometry with a panel of human assessors being the sensor.

The unit of measurement is the odour unit per cubic metre: OU_E/m^3. The odour concentration is measured by determining the dilution factor required to reach the detection threshold. The odour concentration at the detection threshold is by definition 1 OU_E/m^3. The odour concentration is then expressed in terms of multiples of the detection threshold. The range of measurement including pre-dilution prior to the olfactometry analysis is typically from 10^1 OU_E/m^3 to 10^7 OU_E/m^3.

Olfactometry Testing was performed by using the Scentroid™ SS600 Olfactometer. The testing was performed by at least five qualified panellists who have been selected through an n-butanol screening test.

All testing finished within 24 hours after sample receipt.

RESULT

1. Odour Concentration

Sample ID	Location	Sampling Date	Sampling Time	LOR (OU_E/Nm^3)	Odour Concentration (OU_E/Nm^3)	Characteristics of the odour detected of the gas sample	Volumetric Flow Rate (Nm^3/min)	Emission rate (OU_E/hr)
HK1847224-001	CAPC Unit	31-Aug-18	11:04 – 11:07	11	444	Smell of Garbage	1261.1	33,600,000
HK1847224-002	CAPC Unit	31-Aug-18	11:08 – 11:11	11	476	Smell of Garbage	1261.1	36,020,000
HK1847224-003	Field Blank	31-Aug-18	--	11	<11	--	--	--

Remark:
1. LOR denotes limit of reporting.
2. The collected sample volume of the gas bag is sufficient for olfactometry analysis.
3. Field Blank containing pure nitrogen gas was collected and filled by ALS staff on site.
4. The volumetric flow rate used for calculation of the emission rate was provided by the client.

APPENDIX 1

A1. SITE CONDITIONS AND OBSERVATION

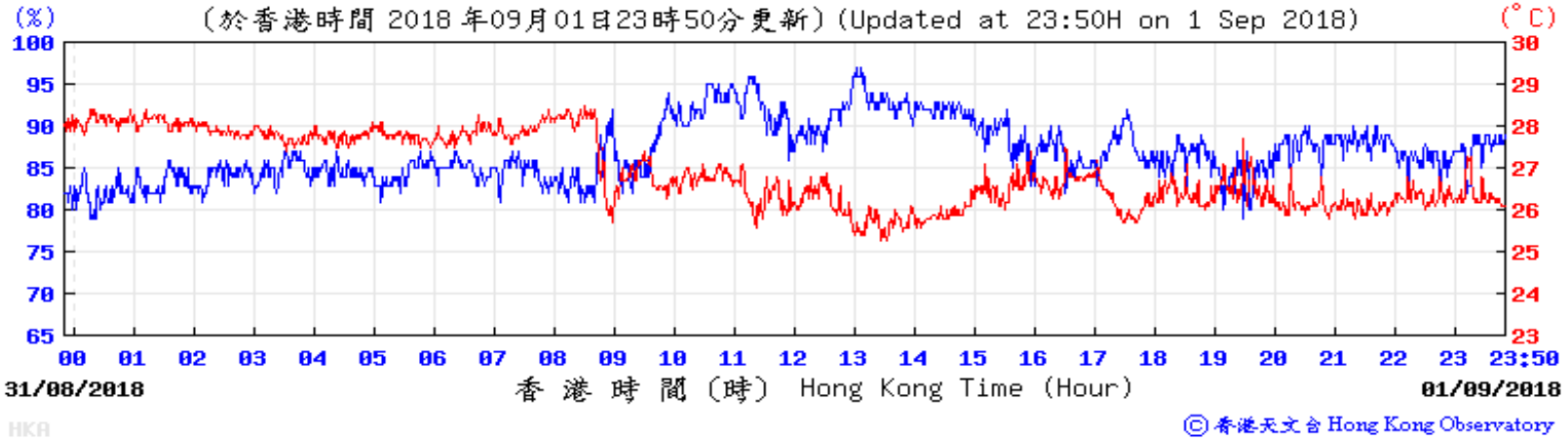
Location	Date	Time	Ambient Temperature (°C)	Relative Humidity (%)	Ambient Pressure (hPa)	Wind Speed (m/s)	Wind Direction (Degree)	Direction from Source[1]	Duration of Odour	On-Site Observation		Weather Condition
										Odour Nature	Possible Source	
CAPC Unit	31-08-18	11:04 -11:11	29.0	81.0	1008.0	1.6	309	NA	NA	No odour was smelled.	NA	Cloudy

Note:
1. It was assumed that the exhaust of the CAPC Unit was from the odour source.

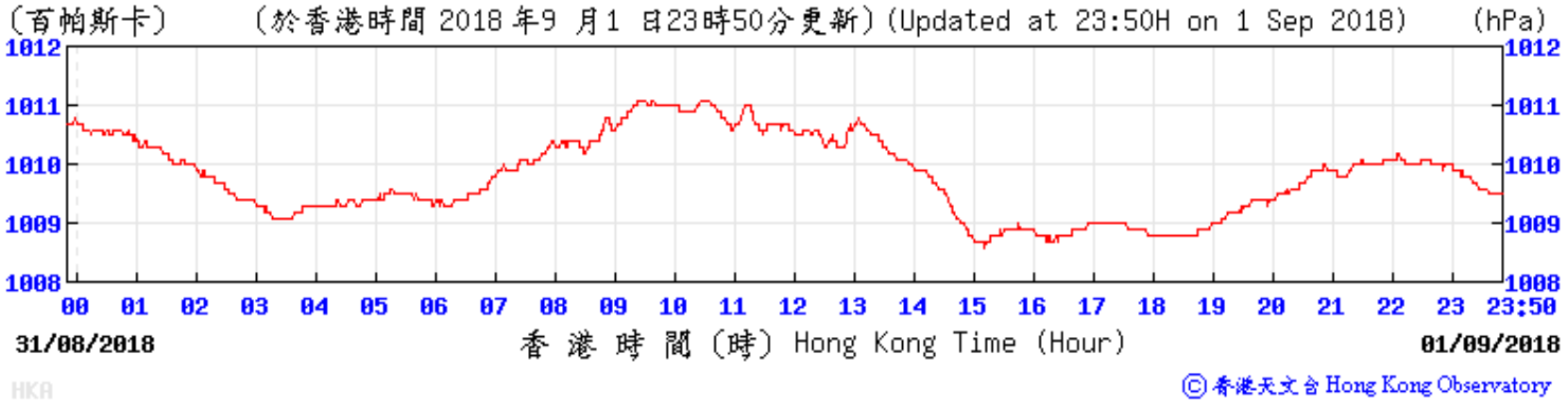
APPENDIX 2

A2. EXTRACT OF METEOROLOGICAL OBSERVATIONS FROM HONG KONG AIRPORT OBSERVATORY STATION

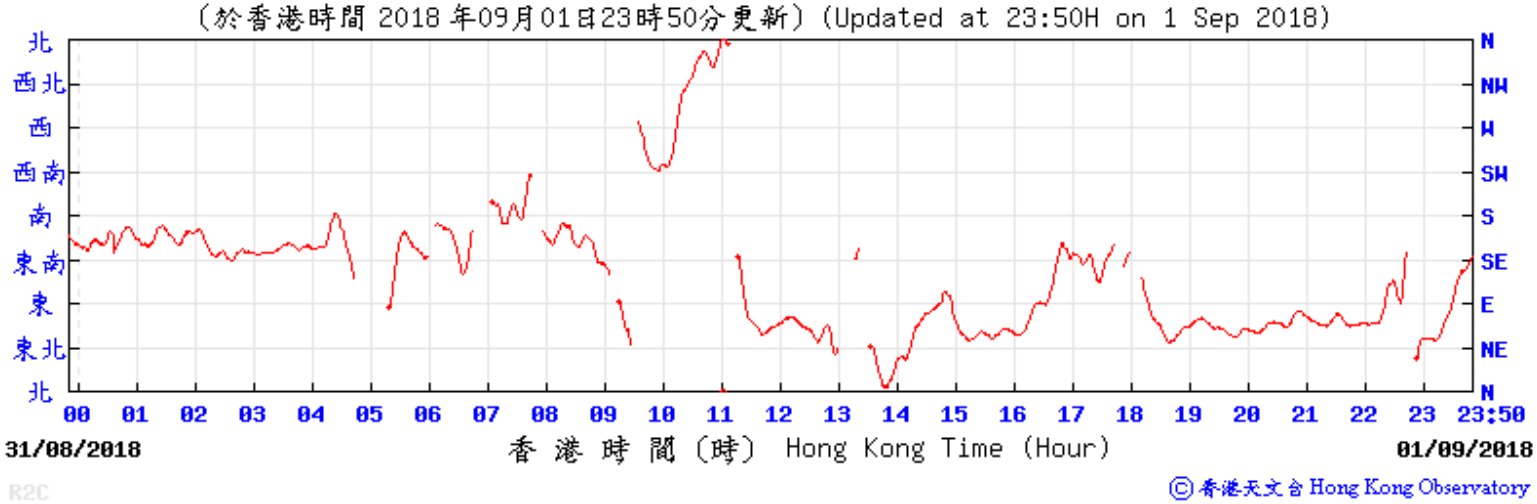
Tempearture/Humidity:



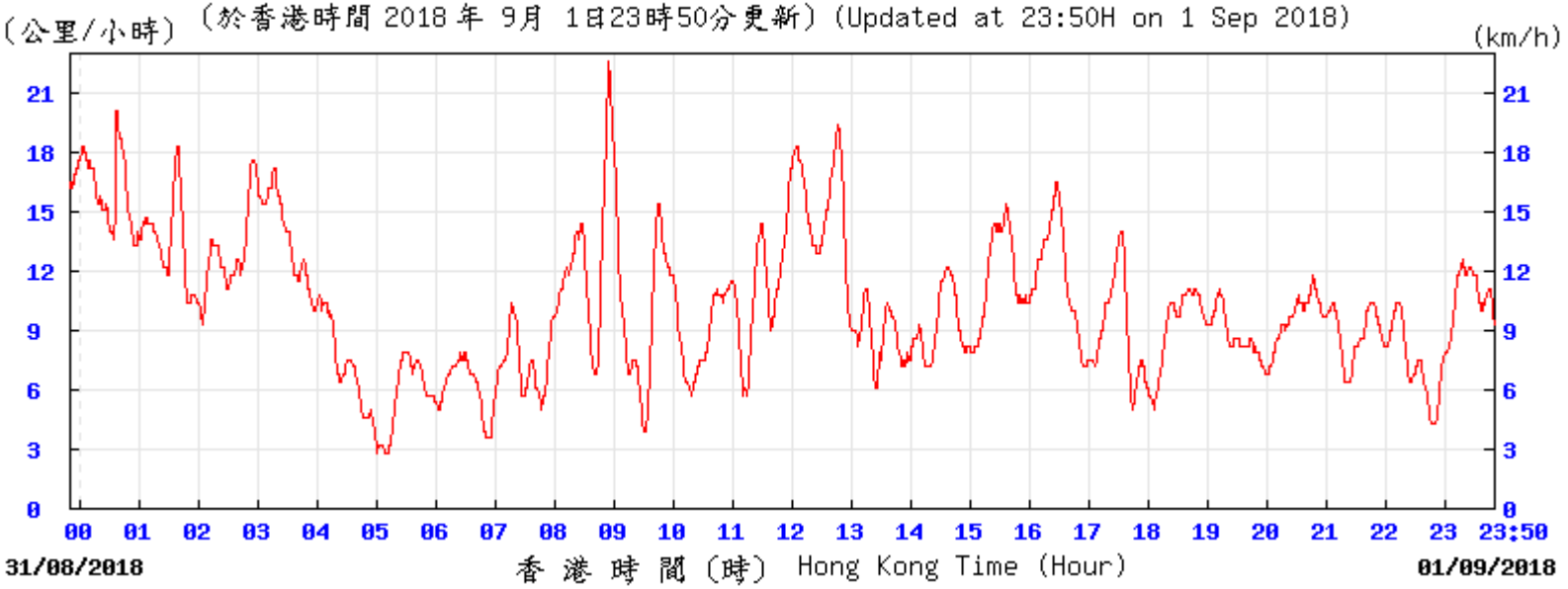
Pressure:



Wind Direction:



Wind Speed:



APPENDIX 3

A3. PHOTO OF THE SAMPLING LOCATION

Annex H4

Action and Limit Levels for Odour Nuisance

Odour Intensity Level

Level	Odour Intensity
0	Not detected. No odour perceived or an odour so weak that it cannot be easily
1	Slight identifiable odour, and slight chance to have odour
2	Moderate identifiable odour, and moderate chance to have odour
3	Strong identifiable, likely to have odour nuisance
4	Extreme severe odour, and unacceptable odour level

Action and Limit Levels for Odour Nuisance

Parameter	Action Level	Limit Level
Odour Nuisance (from odour patrol)	When one documented compliant is received(1), or Odour Intensity of 2 is measured from odour patrol.	Two or more documented complaints are received(1) within a week; or Odour intensity of 3 or above is measured from odour patrol.

Note:

(1) Once the compliant is received by the Project Proponent (EPD), the Project Proponent would investigate and verify the complaint whether it is related to the potential odour emission from the OWTF and its on-site wastewater treatment unit.

Event and Action Plan for Odour Monitoring

EVENT	ACTION	
	Person-in-charge of Odour	**Project Proponent**[1]
ACTION LEVEL		
Exceedance of action level (Odour Patrol)	1. Identify source/reason of exceedance; 2. Repeat odour patrol to confirm finding.	1. Carry out investigation to identify the source/reason of exceedance. Investigation should be completed within 2 weeks; 2. Rectify any unacceptable practice; 3. Implement more mitigation measures if necessary; 4. Inform DSD or the operator of the Siu Ho Wan Sewage Treatment Works (SHWSTW) if exceedance is considered to be caused by the operation of the SHWSTW. 5. Inform North Lantau Refuse Transfer Station (NLTS) operator if exceedance is considered to be caused by the operation of NLTS.

EVENT	ACTION	
	Person-in-charge of Odour	**Project Proponent**[(1)]
Exceedance of action level (Odour Complaints)	1. Identify source/reason of exceedance; 2. Carry out odour patrol to determinate odour intensity.	1. Carry out investigation and verify the complaint whether it is related to potential odour emission from the nearby SHWSTW; 2. Carry out investigation to identify the source/reason of exceedance. Investigation should be completed within 2 weeks; 3. Rectify any unacceptable practice; 4. Implement more mitigation measures if necessary; 5. Inform DSD or the operator of the SHWSTW if exceedance is considered to be caused by the operation of the SHWSTW.

EVENT	ACTION	
	Person-in-charge of Odour	**Project Proponent**(1)
LIMIT LEVEL		
Exceedance of Limit level	1. Identify source/reason of exceedance; 2. Inform EPD; 3. Repeat odour patrol to confirm findings; 4. Increase odour patrol frequency to bi-weekly; 5. Assess effectiveness of remedial action and keep EPD informed of the results; 6. If exceedance stops, cease additional odour patrol.	1. Carry out investigation to identify the source/reason of exceedance. Investigation should be completed within 2 week; 2. Rectify any unacceptable practice; 3. Formulate remedial actions; 4. Ensure remedial actions properly implemented; 5. If exceedance continues, consider what more/enhanced mitigation measures should be implemented;

Note: (1) Project Proponent shall identify an implementation agent

Annex I

Investigation Report for Environmental Complaint

Investigation Report of Environmental Complaint

Ref. No.: ORRC-EC-001-20180907

Project	ORRC1
Date	7 September 2018
Time	3:30 p.m.
EPD Reference No	N/A
Description of the Complaint	During the odour patrol conducted by the Employer (EPD Project Team, ER (AECOM) and OSCAR at about 3 pm on 7 September 2018 (Friday), the patrol team received a verbal compliant from a police officer (Mr Cho who works at the Hong Kong Police Siu Ho Wan Vehicle Examination Centre and Weigh Station next to ORRC1, hereafter referred to as the Compound) regarding odour nuisance, flies and mosquitos at the Compound. It is understood that the complainant has also notified the FEHD. ER notified the ET in the in the morning of 8 September 2018 (Saturday).
Site Activity Summary	Based on the site information on 7 September 2018, finishing work, BS installation, electrical installation (cable trays, Local Control panels/switch installation, general cabling works, instrumentation and control installation, lighting , ELV and SCADA installation) and process commissioning (waste reception, pre-treatment, CAPCS extraction, the digesters, the centrifuge, the composting tunnels, the desulphurisation, the emergency flare, the CHPs, the ASP and the biological waste water treatment plant) were conducted at the area next to the Compound.
Actions taken/ to be taken	The following actions have been taken/will be taken: 1. Further to the scheduled joint odour patrol conducted by OSCAR, ER(AECOM) and Employer (EPD Project Team Team) on 7 September 2018, an extra joint odour patrol was conducted by OSCAR, ER (AECOM), ET (ERM), Employer (EPD Project Team Team) and the Independent Odour Patrol Team (ALS) on 10 September 2018. The odour patrol results and photographic records are shown in **Appendix A**. 2. The construction waste skip (which was identified as the

	potential source of the odour nuisance and flies) was moved away from the site boundary next to the Compound on 11 September 2018, and the storage area next to the original location of the construction waste skip had been properly cleaned. The photographic records are shown in **Appendix B**. 3. An investigation of the potential mosquito generation locations was conducted on 11 September 2018 by OSCAR, ER (AECOM) and ET (ERM). The photographs of the surveyed potential mosquito generation locations are shown in **Appendix C**. 4. The frequency pest control at the Facility will be increased from twice a week to three times a week.
Remarks	-

Prepared by: Leah Pak, ET Représentative

Date 5-October-2018

Appendix A

Odour Patrol

Appendix A1

Odour Patrol Result

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	7/9/2018
Start & End Time (24hr)	From 15:05 To 15:30
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up /~~ T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	33°C
Relative Humidity (%)	76%
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Intermittent - Hot plastic Smell
Possible Source of Odour	PRV at Riogas Holder.
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Intermitend smell of digestate.
Possible Source of Odour	Door at Bld 2.
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	
Louver near centrign Bld 2, digestate smell.	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	[illegible]		Terence CHAN
Signature	[signature]	[signature]	N/A	[signature]
Date	7/9/2018	7/9/18		7/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	7/9/2018
Start & End Time (24hr)	From To 15:30
Type of Patrol	~~Weekly / Monthly / Ac hoc / Follow up~~ / T&C Period Patrol
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	33°C
Relative Humidity (%)	76%
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / (7) / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Intermittent minor smell of ssow
Possible Source of Odour	Bld 1 Pretrement.
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / (8)
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~Follow-up Actions~~ Remarks	

	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	FIONA LAM	Patrick Yim		Terence CHAN
Signature	[signature]	[signature]	N/A	[signature]
Date	7/9/2018	7/9/18		7/9/2018

6. Appendix

Organic Resources Recovery Centre (Phase 1)

Odour Patrol Record Log Sheet

Parameter	Observations
Date	10 / 9 / 2018
Start & End Time (24hr)	From 16:15 To 16:36
Type of Patrol	Weekly / Monthly / (Ad hoc) / Follow-up /
Weather Condition	Sunny / (Cloudy) / Windy / Humid / Foggy /
Temperature (℃)	28.7
Relative Humidity (%)	77.9
Monitoring Point	(1) / 2 / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Grassy
Possible Source of Odour	Grass & Tree
Monitoring Point	1 / (2) / 3 / 4 / 5 / 6 / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
Monitoring Point	1 / 2 / (3) / 4 / 5 / 6 / 7 / 8
Intensity of Odour	0 / 1 / 2 / 3 / 4 P1 : 0
Characteristic of Odour	P2 = 1 Grassy
Possible Source of Odour	Grass & Tree
Monitoring Point	1 / 2 / 3 / (4) / 5 / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Concrete & refuse
Possible Source of Odour	Waste container, construction waste
Monitoring Point	1 / 2 / 3 / 4 / (5) / 6 / 7 / 8
Intensity of Odour	0 / (1) / 2 / 3 / 4
Characteristic of Odour	Musty of construction material
Possible Source of Odour	Construction material
Monitoring Point	1 / 2 / 3 / 4 / 5 / (6) / 7 / 8
Intensity of Odour	(0) / 1 / 2 / 3 / 4
Characteristic of Odour	
Possible Source of Odour	
~~**Follow-up Actions**~~ Remark	
Refer to the attachment for the monitoring point.	

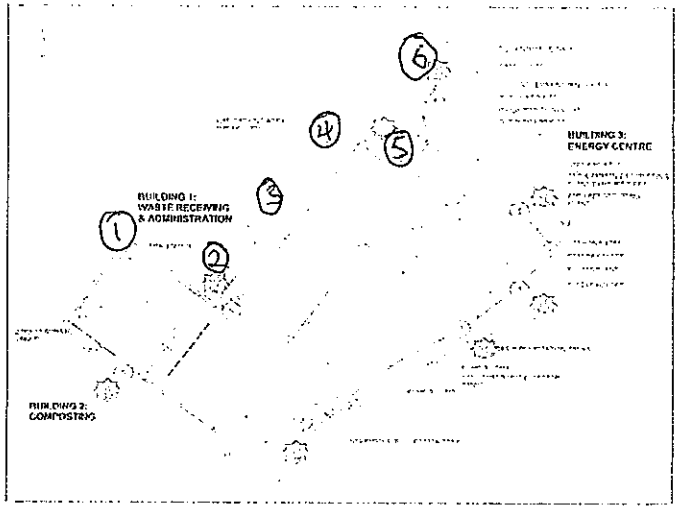
	EPD Representative	Employer Representative	Independent Odour Patrol Team	OSCAR Bioenergy JV
Name	Daniel Choi	Patrick Yim	Pan Yuen / Allen Poon	Sarah HO
Signature				
Date	10/9/2018	10/9/18	10/9/2018	10/9/2018

Odour Patrol Survey

Date: 10-9-18 Weather: Sunny / Fine / Cloudy / Rainy ALS Work Order:

No.	Location ID	Time	Temp (°C)	RH (%)	Wind Speed (m/s)	Wind Direction	Odour Intensity	Odour Characteristics	Potential Odour Source	Duration	Direction from the Odour Source
-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	N	0 / 1 / 2 / 3 / 4	sewage/ rotten egg smell/ decayed vegetables/ ammonical/ dischargeable odour/ putrefaction/ sharp/ pungent/ fish/ irritating/ fruit/ vinegar	Sediment/ Water sewage/ floating debris/ material/ others	Intermittent / Continuous	Downwind / Upwind / Sidewind
1		16:15	28.7	72.9	0.8	309	P1: 0 (1) 2 / 3 / 4 P2: 0 (1) 2 / 3 / 4	Grassy	Grass & tree	(Intermittent) / Continuous	(Downwind) / Upwind / Sidewind
2		16:19	29.2	72.4	0.9	324	P1 (0) / 1 / 2 / 3 / 4 P2: (0) / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
3		16:22	28.9	72.4	0	NA	P1 (0) / 1 / 2 / 3 / 4 P2: 0 (1) 2 / 3 / 4	Grassy	Grass & tree	(Intermittent) / Continuous	Downwind / Upwind / Sidewind
4		16:25	28.9	75.4	1.1	253	P1: 0 (1) 2 / 3 / 4 P2: 0 (1) 2 / 3 / 4	concrete & refuse	waste & Containing construction waste	Intermittent / Continuous	(Downwind) / Upwind / Sidewind
5		16:30	28.9	81.6	0	NA	P1: 0 (1) 2 / 3 / 4 P2: 0 (1) 2 / 3 / 4	Mostly of Construction Material		Intermittent / (Continuous)	Downwind / Upwind / Sidewind
6		16:36	29.1	76.8	0	NA	P1 (0) / 1 / 2 / 3 / 4 P2: (0) / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
7							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
8							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind
							P1: 0 / 1 / 2 / 3 / 4 P2: 0 / 1 / 2 / 3 / 4			Intermittent / Continuous	Downwind / Upwind / Sidewind

Location Plan:



Proposed Patrol Route

Possible Odour Sources (No.) / Checkpoint

Assumed Odour Potential (normal operation)

Remark for Odour Intensity:

0 - Not detected
1 - Slight
2 - Moderate
3 - Strong
4 - Extreme

No odour perceived or an odour so weak that it cannot be readily characterized or described
Identifiable odour, slight
Identifiable odour, moderate
Identifiable odour, strong
Severe odour

Odour Patrol Team:

ALS Representative	[signature]	( )

P1. Allen Poon

P2. Pan Yuen

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T +852 2610 1044 F +852 2610 2021

CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1849200
CONTACT:	Edwin Wong		
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, North Lantau Island, NT, Hong Kong	LABORATORY:	Hong Kong
		SUB-BATCH:	0
		DATE OF PATROL:	10 September 2018
		DATE OF ISSUE:	18 September 2018
PROJECT:	Ad Hoc Odour Patrol for the Organic Resources Recovery Centre Phase 1 in Siu Ho Wan		
SITE:	Organic Resources Recovery Centre Phase 1 (ORRC1)		

COMMENTS

Ad hoc Odour Patrol was conducted by ALS Technichem (HK) Pty Ltd staff during 16:15 – 16:38 on 10th September 2018.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Richard Fung
General Manager - Hong Kong

1. Summary of Work

Ad hoc odour patrol service was conducted on 10th September 2018.

2. Odour Patrol

Odour patrolling is a process to make use of the calibrated olfactory senses (ie the nasal sense) of the patrol members to evaluate the odour and its intensity during a patrol exercise at the site.

Two odour patrol team members from ALS Technichem (HK) Pty Ltd were conducted the ad hoc patrol work and the patrol route was guided by the client. All members were free from any respiratory diseases during patrol day. None of the members has been working or living in the area in the vicinity of the inspection area.

The patrol team was required to move slowly from one to the other monitoring locations and used their olfactory senses to detect odour at each location.
The location of odour sources and the areas to be affected by the odour nuisance were identified as much as possible.

During the patrolling, the meteorological and surrounding information were recorded:

- the prevailing weather condition;
- the wind direction;
- the wind speed;
- location where odour is spotted;
- possible source of odour;
- perceived intensity of the odour;
- duration of odour; and
- characteristics of the odour detected

The perceived intensity is to be divided into 5 levels which are ranked in an ascending order as follows:

0	Not detected	No odour perceives or an odour so weak that it cannot be easily characterised or described
1	Slight	Identifiable odour, slight
2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable odour, strong
4	Extreme	Severe odour

The ad hoc odour patrol locations were shown in Appendix 1.

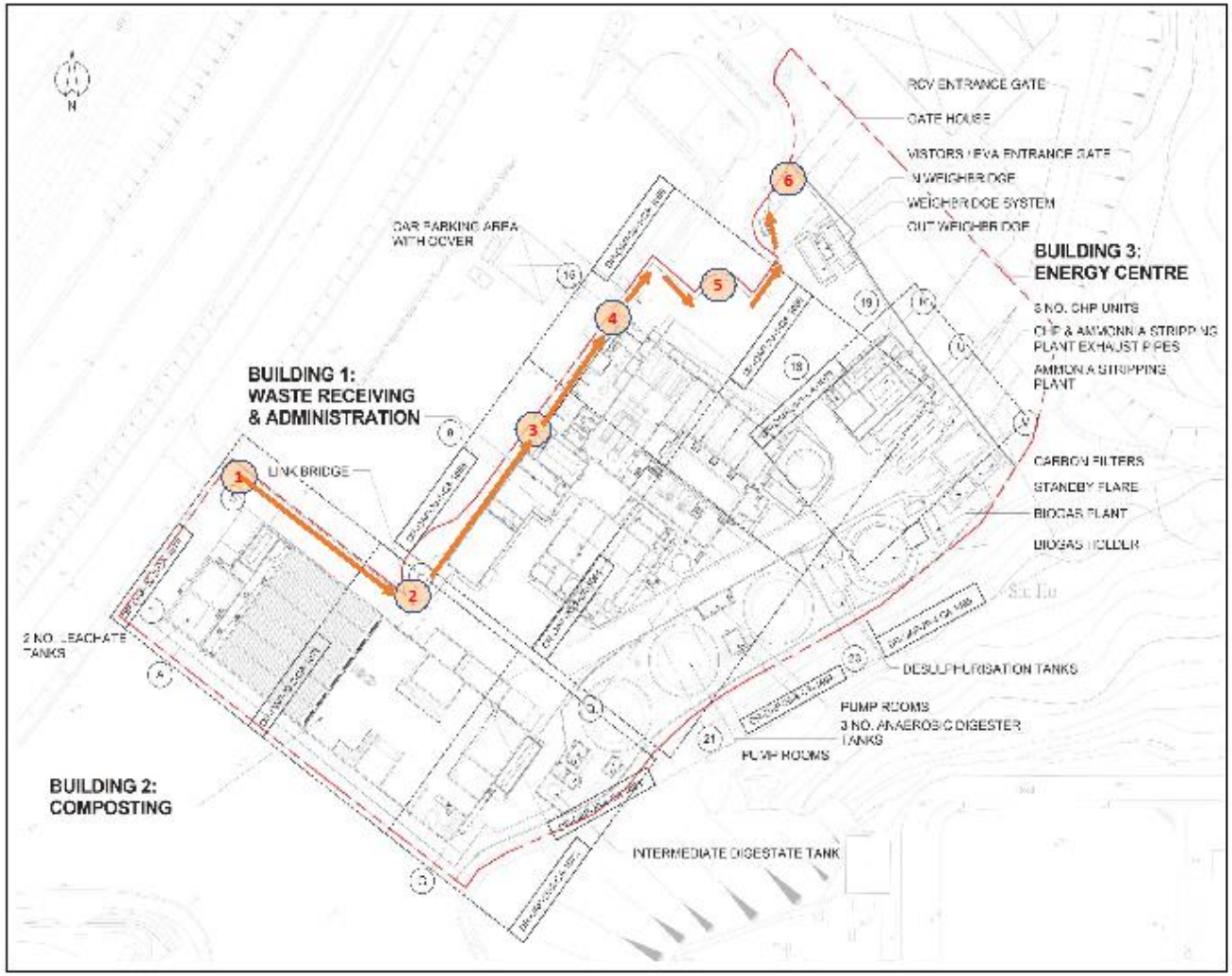
3. Result:

Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Deg)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
1	1	Cloudy	16:15	28.7	77.9	0.8	309	1	Intermittent	Downwind	Grassy	Trees and grass
	2							1				
2	1	Cloudy	16:19	29.2	77.4	0.9	324	0	NA	NA	NA	NA
	2							0				
3	1	Cloudy	16:22	28.9	77.4	0.0	NA	0	NA	NA	Grassy	Trees and grass
	2							1	Intermittent			
4	1	Cloudy	16:25	28.9	75.4	1.1	253	1	Intermittent	Downwind	Smell of concrete and garbage	Construction waste container
	2							1				
5	1	Cloudy	16:30	28.9	81.6	0.0	NA	1	Intermittent	NA	Musty smell of construction material	Construction material storage zone
	2							1				
6	1	Cloudy	16:36	29.1	76.8	0.0	NA	0	NA	NA	NA	NA
	2							0				

Remark:
T: Air Temperature;
RH: Relative Humidity;
WD: Wind Direction;
WS: Wind Speed.

APPENDIX 1

Ad hoc Odour Patrol Route



Proposed Patrol Route

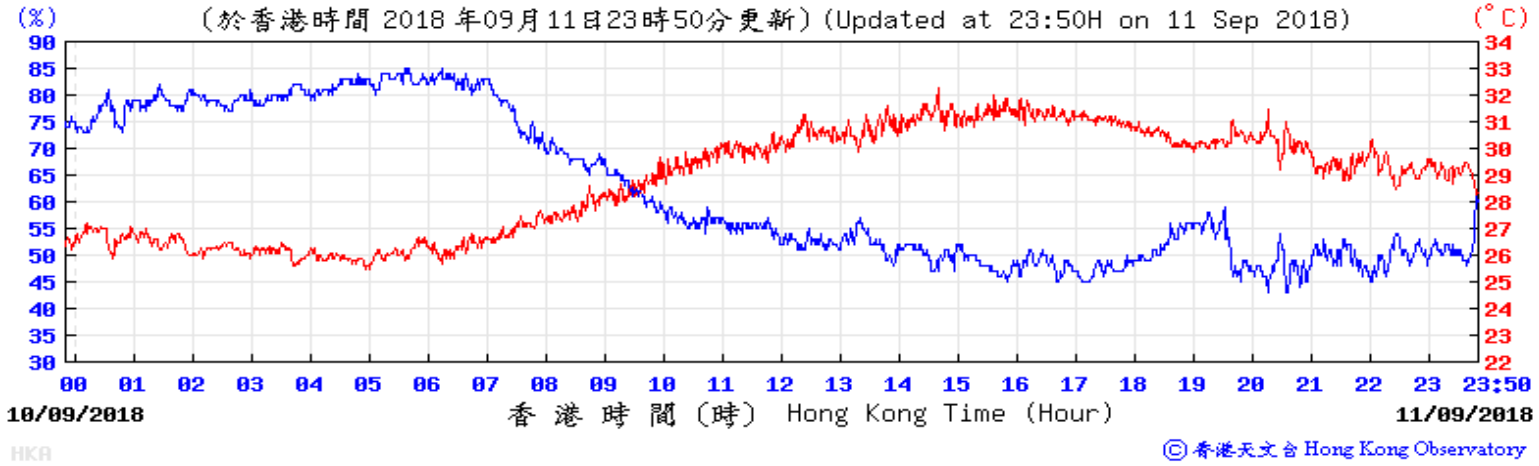
10 Possible Odour Sources (No.) / Checkpoint

1 Estimated Odour Intensity
From 1 (min.) to 3 (max.)

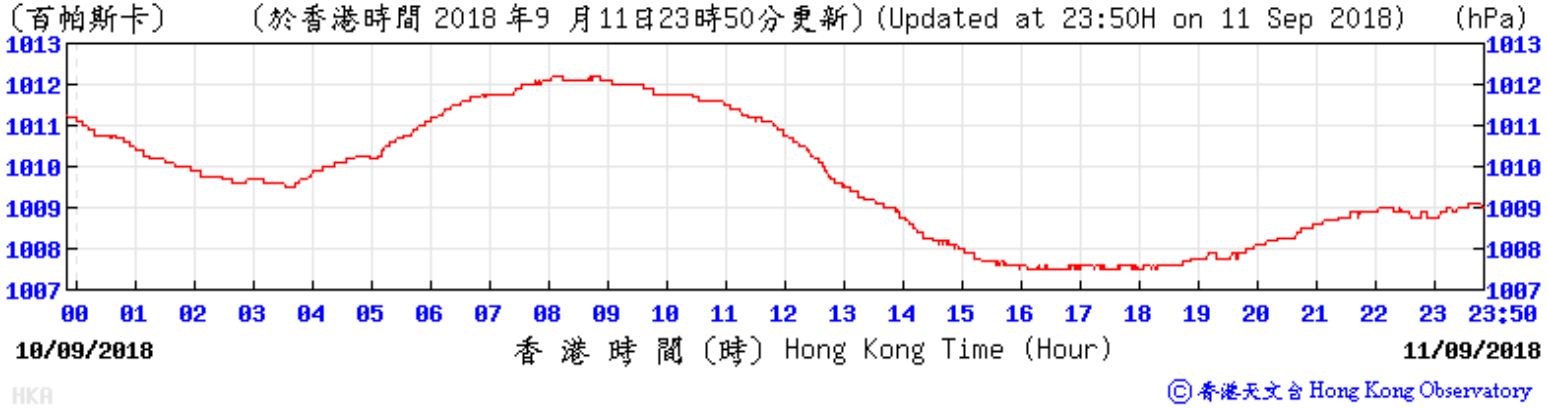
APPENDIX 2

Extract of Meteorological Observations from the Hong Kong Airport Observatory Station

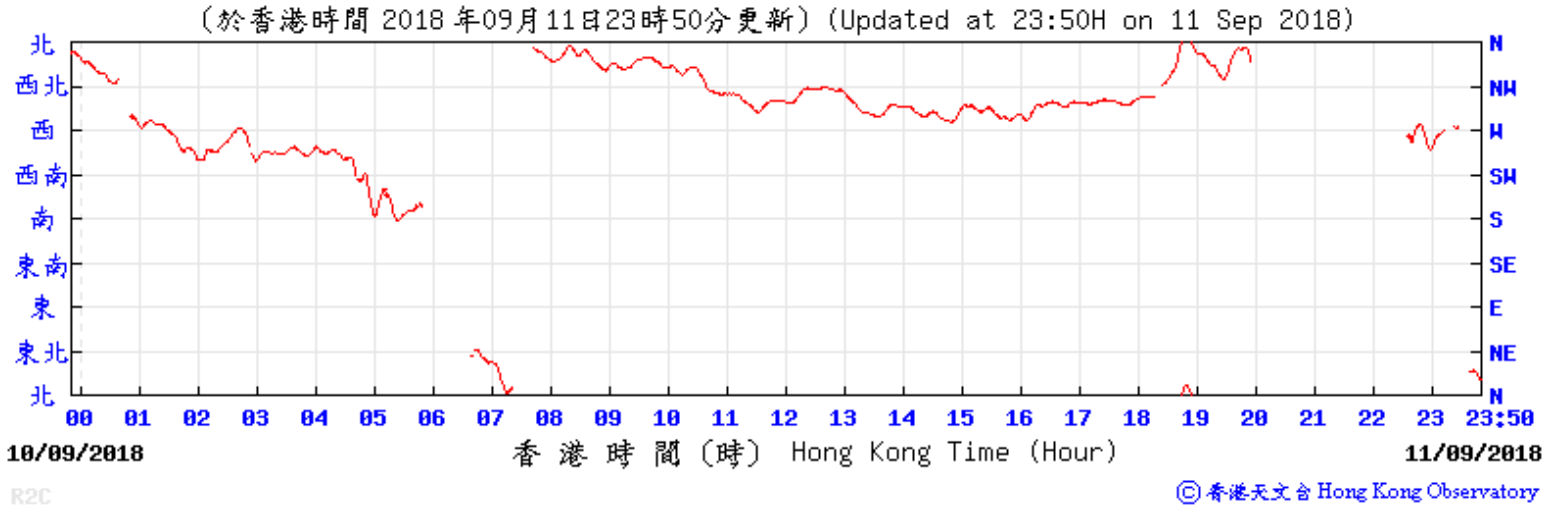
Tempearture/Humidity:



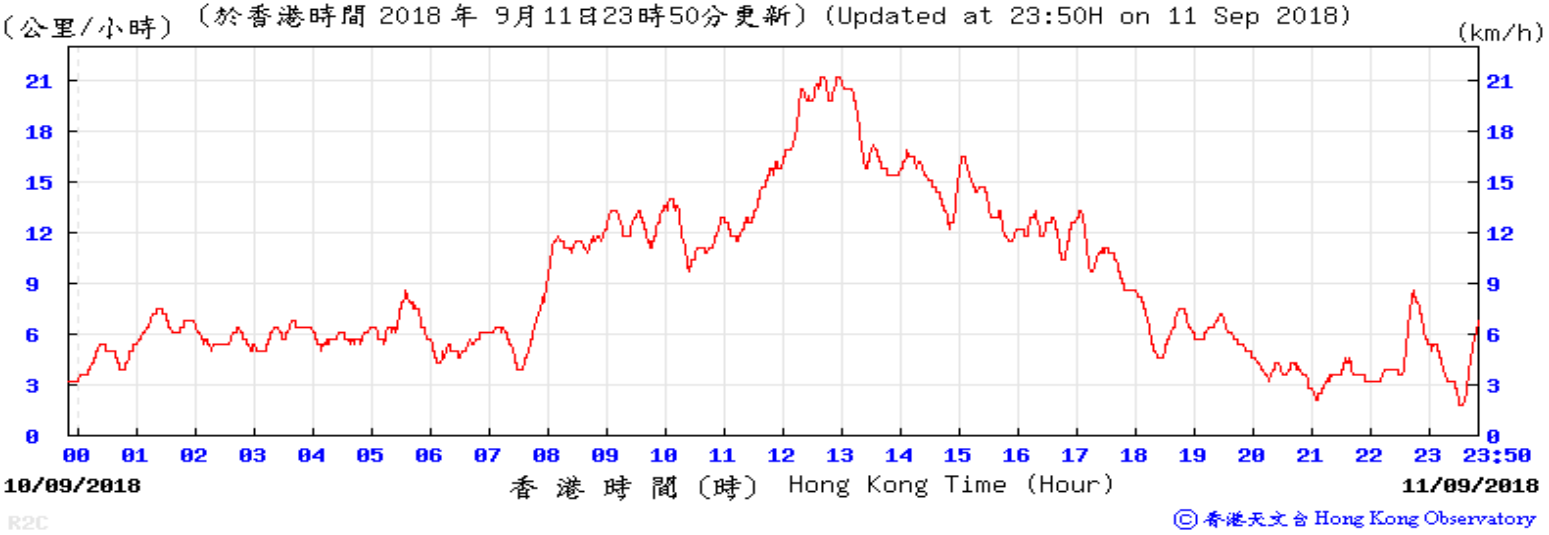
Pressure:



Wind Direction:



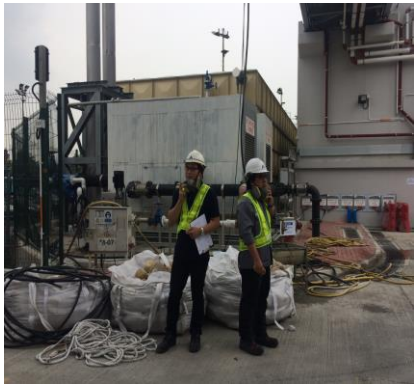
Wind Speed:



APPENDIX 3

Photos for the Odour Patrol Locations

Location: 1



Location: 2

Location: 3

Location: 4

Location: 5

Location: 6

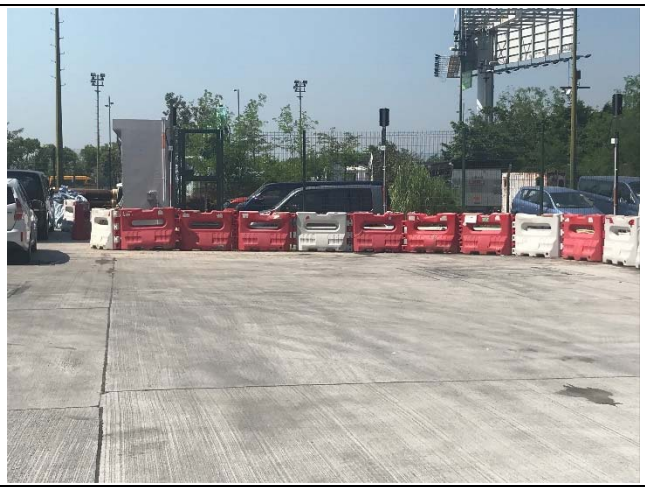
Appendix A2

Odour Patrol Photo Record


小心車輛
Please mind the Vehicle

Appendix B

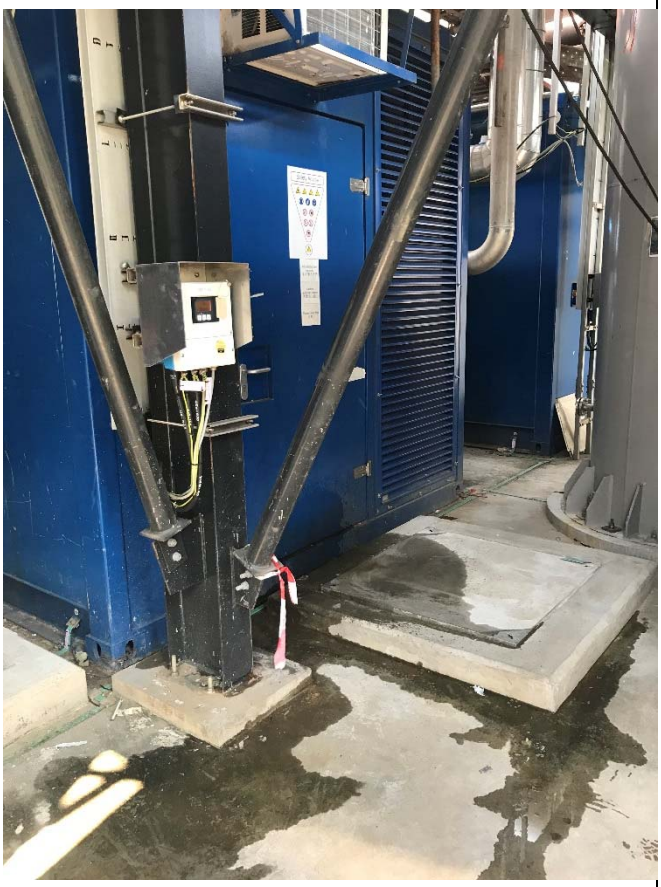
Photo Record

Before	After
	
Construction waste skip was relocated.	
	
Storage area was properly cleaned up.	

Appendix C

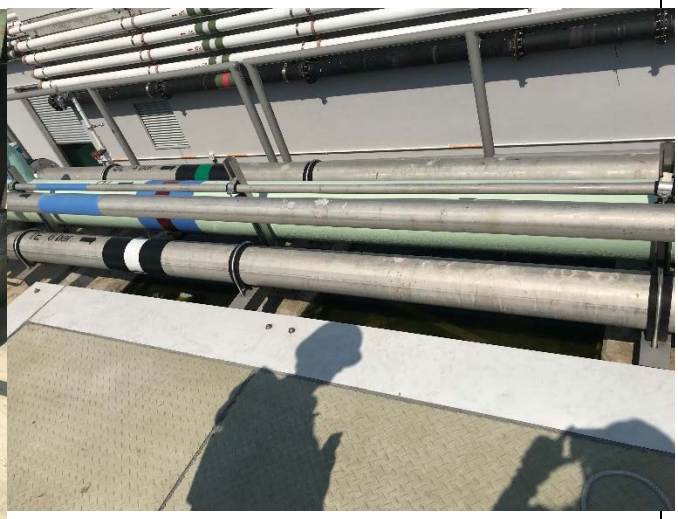
Mosquito Control Points

Near Building 1



Near CHP

Link Bridge



Building 1 Roof

All surface channel

Annex J

Investigation Report

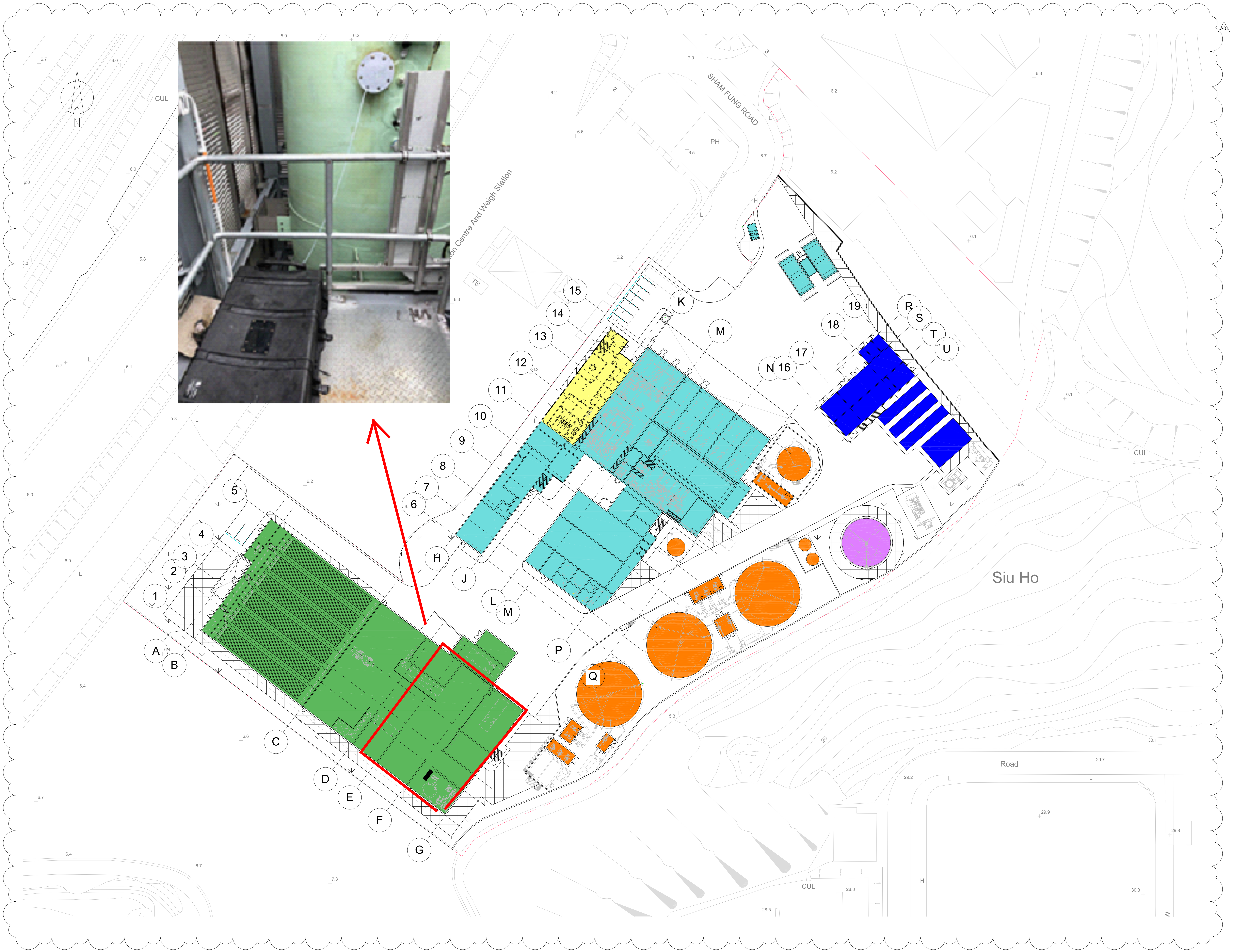
Investigation Report of Odour Sampling Exceedance

Date	31 August 2018
Time	11:04-11:07 am
Monitoring Location	Centralized Air Pollution Control (CAPC) Unit ((Detailed location and photos shown on the marked drawing DR-OAP-20-0-CA-1001 attached as **Appendix A**)
Weather	Fine
Parameter	Odour
Exceedance Description	1. On 31 August 2018, air samples were collected from the outlet of the Centralised Air Pollution Control (CAPC) unit by ALS for measurement of the Odour Intensity by olfactometry analysis at the laboratory. According to the EM&A Manual and EP requirements, it is considered an exceedance if the odour level is more than 220 OU/Nm3. the odour level of the odour samples collected from the CAPC unit have exceeded the odour limits stated in Table 2.2 of the EM&A Manual. (The detail sampling results are shown in **Appendix B**.) 2. Odour emitting activities, including wastewater treatment plant and ammonia stripping plant (ASP) were operating on 31 August 2018. 3. No organic waste were being processed the time the odour samples were being collected, due to pre-treatment line was stopped and only operated at mid night. 4. The CAPC system was operating during the odour sampling. 5. The contractor reported that the active carbon (AC) filter and the venturi scrubber in Building 2 were operating. The wet & chemical scrubbers were not operating at the time of the sampling as it is still under testing and commissioning. 6. The exceedance could be due to saturation of the AC filter as an increase of VOCs concentration was observed.
Action Taken / Action to be Taken	The contractor has replaced all AC filter media in the last week of September 2018. (Photograph record attached as **Appendix C**.)
Remedial Works and Follow-up Actions	To avoid saturation of the filter media, it is recommended that the contractor should test the medium regularly or indicator medium should be used to provide an indication of the condition of the media.

Prepared by: Leah Pak, ET Représentatives
Date 22-November-2018

Appendix A

Monitoring Location



REV	DATE	BY	APP	DESCRIPTION
A01	05/03/15	CW	MB	IMTECH BACKGROUNDS UPDATED
A00	18/02/15	CW	MB	DRAFT ISSUE

CLIENT
ENVIRONMENTAL PROTECTION DEPARTMENT
GOVERNMENT OF THE HKSAR

CLIENT'S CONSULTANT
AECOM
AECOM ASIA CO. LTD.

CONTRACTOR
SITA ATAL RosRoca
OSCAR BIOENERGY JV

LEAD DESIGNER
ARUP
Ove Arup & Partners Hong Kong Limited

ENVIRONMENTAL TEAM
ERM
ERM HONG KONG LIMITED

INDEPENDENT CONSULTANTS
MEINHARDT
Meinhardt Infrastructure and Environment Limited
邁進基建環保工程顧問有限公司

PROJECT
ORGANIC WASTE TREATMENT FACILITIES
PHASE 1
EP/SP/61/10

STATUS
DRAFT ISSUE

DRAWING TITLE
SITE LAYOUT

DRAWN	CHECKED	APPROVED
CW	RS	DP

SCALE	DATE
1:500@A1 / 1:1000@A3	12/02/15

JOB NO.	DRAWING NO.	REV.
239956	DR-OAP-20-0-CA-1001	A01

Plot Time: 05/03/15 21:20:07
Plot Location: C:\Users\matthew.brown\Documents\OWTF_Architectural Working Model (Combined) CEN_matthew.brown.rvt

Appendix B

Odour Sampling Report

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T +852 2610 1044 F +852 2610 2021

CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK1847224
CONTACT:	Edwin Wong		
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, North Lantau Island, NT, Hong Kong	LABORATORY:	Hong Kong
		SUB-BATCH:	0
		DATE RECEIVED:	31 August 2018
		DATE OF ISSUE:	18 September 2018
PROJECT:	Odour Monitoring for the Organic Resources Recovery Centre Phase 1 in Siu Ho Wan	SAMPLE TYPE:	Air
SITE:	Organic Resources Recovery Centre Phase 1 (ORRC1)	NO OF SAMPLES:	3
PO:	---		

COMMENTS

Air sample(s) were collected by ALS Technichem (HK) staff on 31st August, 2018 at the Organic Resources Recovery Centre Phase 1 (ORRC1) in Siu Ho Wan for Odour Monitoring.

The sample(s) were analysed and reported on an as received basis.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Richard Fung
General Manager - Hong Kong

METHOD STATEMENT

A. Odour Concentration

1. Odour Sampling

Odour gas sample was collected by passive sampling technique. A Nalophan™ sampling bag was placed inside an air-tight sampler and then drawn to vacuum. Approximately 60 litre of gas sample was collected into the sampling bag for testing.

The odour sample was collected at the Organic Recovery Resources Centre Phase 1 (ORRC1) and sampling locations were shown in Appendix A1.

2. Olfactometry Testing

Odour concentration was determined by a Forced-choice Dynamic Olfactometer in accordance with the European Standard Method (EN13725).

This European Standard specifies a method for the objective determination of the odour concentration of a gaseous sample using dynamic olfactometry with human assessors and the emission rate of odours emanating from point sources, area sources with outward flow and area sources without outward flow.

This European Standard is applicable to the measurement of odour concentration of pure substances, defined mixtures and undefined mixtures of gaseous odorants in air or nitrogen, using dynamic olfactometry with a panel of human assessors being the sensor.

The unit of measurement is the odour unit per cubic metre: OU_E/m^3. The odour concentration is measured by determining the dilution factor required to reach the detection threshold. The odour concentration at the detection threshold is by definition 1 OU_E/m^3. The odour concentration is then expressed in terms of multiples of the detection threshold. The range of measurement including pre-dilution prior to the olfactometry analysis is typically from 10^1 OU_E/m^3 to 10^7 OU_E/m^3.

Olfactometry Testing was performed by using the Scentroid™ SS600 Olfactometer. The testing was performed by at least five qualified panellists who have been selected through an n-butanol screening test.

All testing finished within 24 hours after sample receipt.

RESULT

1. Odour Concentration

Sample ID	Location	Sampling Date	Sampling Time	LOR (OU_E/Nm^3)	Odour Concentration (OU_E/Nm^3)	Characteristics of the odour detected of the gas sample	Volumetric Flow Rate (Nm^3/min)	Emission rate (OU_E/hr)
HK1847224-001	CAPC Unit	31-Aug-18	11:04 – 11:07	11	444	Smell of Garbage	1261.1	33,600,000
HK1847224-002	CAPC Unit	31-Aug-18	11:08 – 11:11	11	476	Smell of Garbage	1261.1	36,020,000
HK1847224-003	Field Blank	31-Aug-18	--	11	<11	--	--	--

Remark:
1. LOR denotes limit of reporting.
2. The collected sample volume of the gas bag is sufficient for olfactometry analysis.
3. Field Blank containing pure nitrogen gas was collected and filled by ALS staff on site.
4. The volumetric flow rate used for calculation of the emission rate was provided by the client.

APPENDIX 1

A1. SITE CONDITIONS AND OBSERVATION

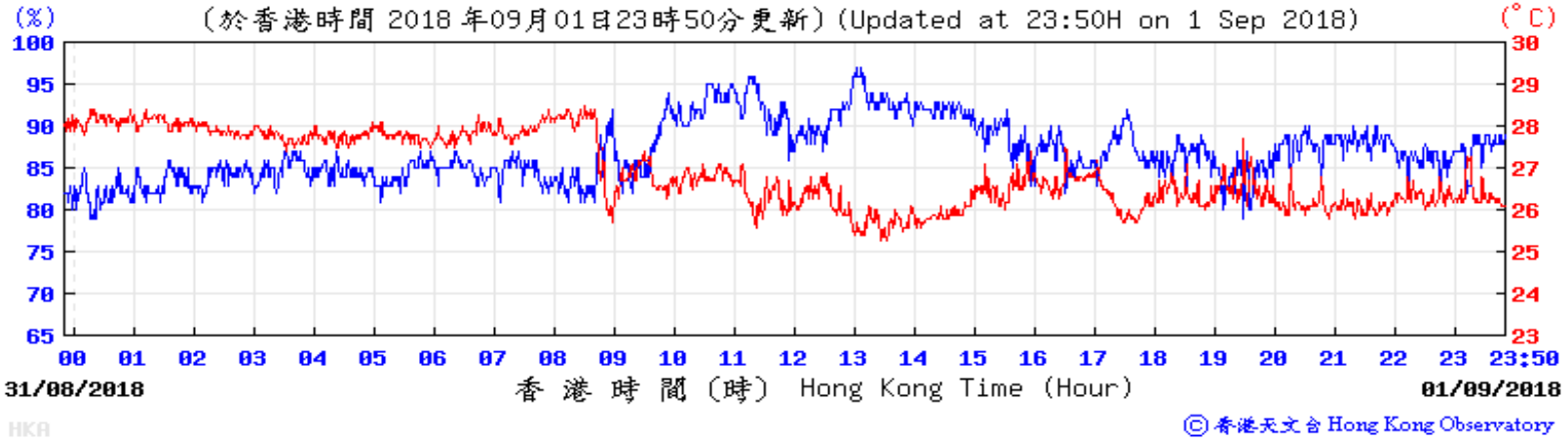
Location	Date	Time	Ambient Temperature (°C)	Relative Humidity (%)	Ambient Pressure (hPa)	Wind Speed (m/s)	Wind Direction (Degree)	Direction from Source[1]	Duration of Odour	On-Site Observation		Weather Condition
										Odour Nature	Possible Source	
CAPC Unit	31-08-18	11:04 -11:11	29.0	81.0	1008.0	1.6	309	NA	NA	No odour was smelled.	NA	Cloudy

Note:
1. It was assumed that the exhaust of the CAPC Unit was from the odour source.

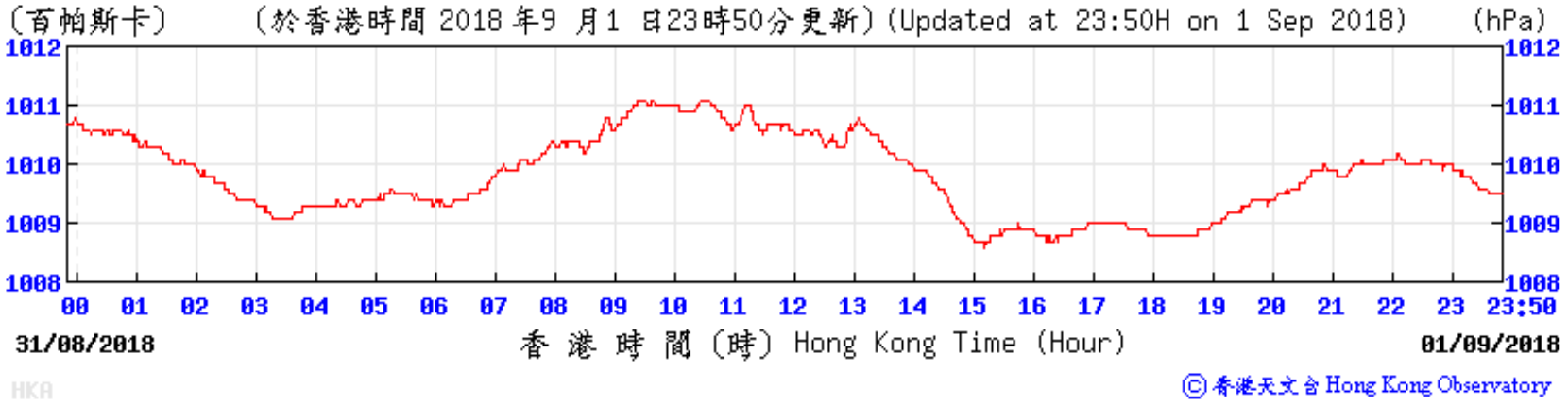
APPENDIX 2

A2. EXTRACT OF METEOROLOGICAL OBSERVATIONS FROM HONG KONG AIRPORT OBSERVATORY STATION

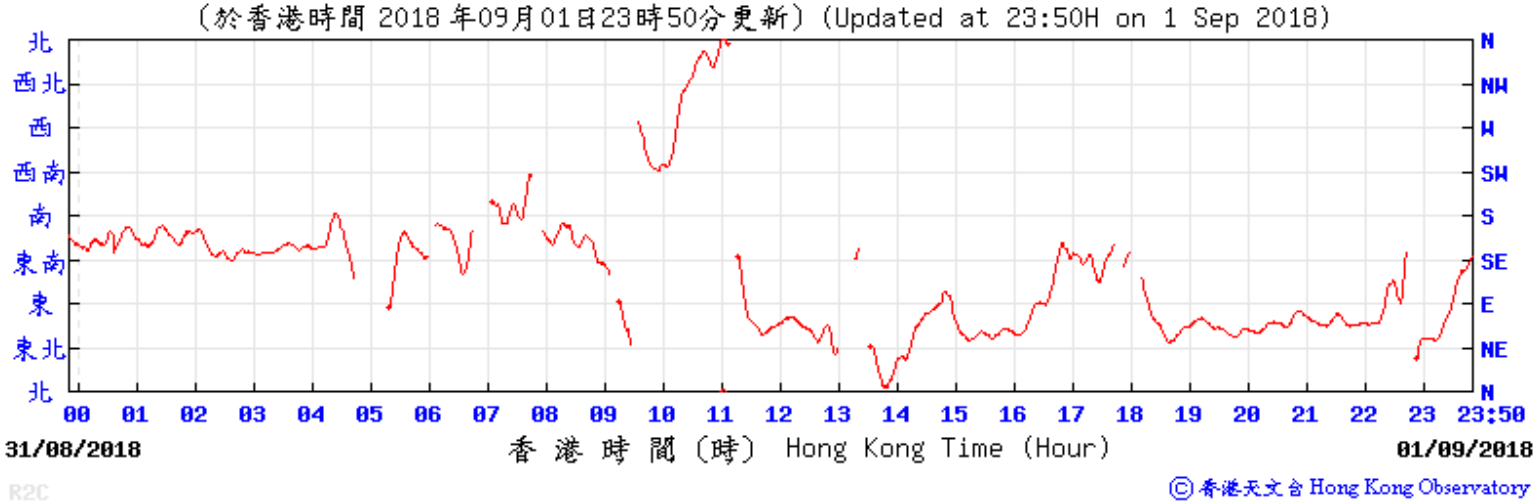
Tempearture/Humidity:



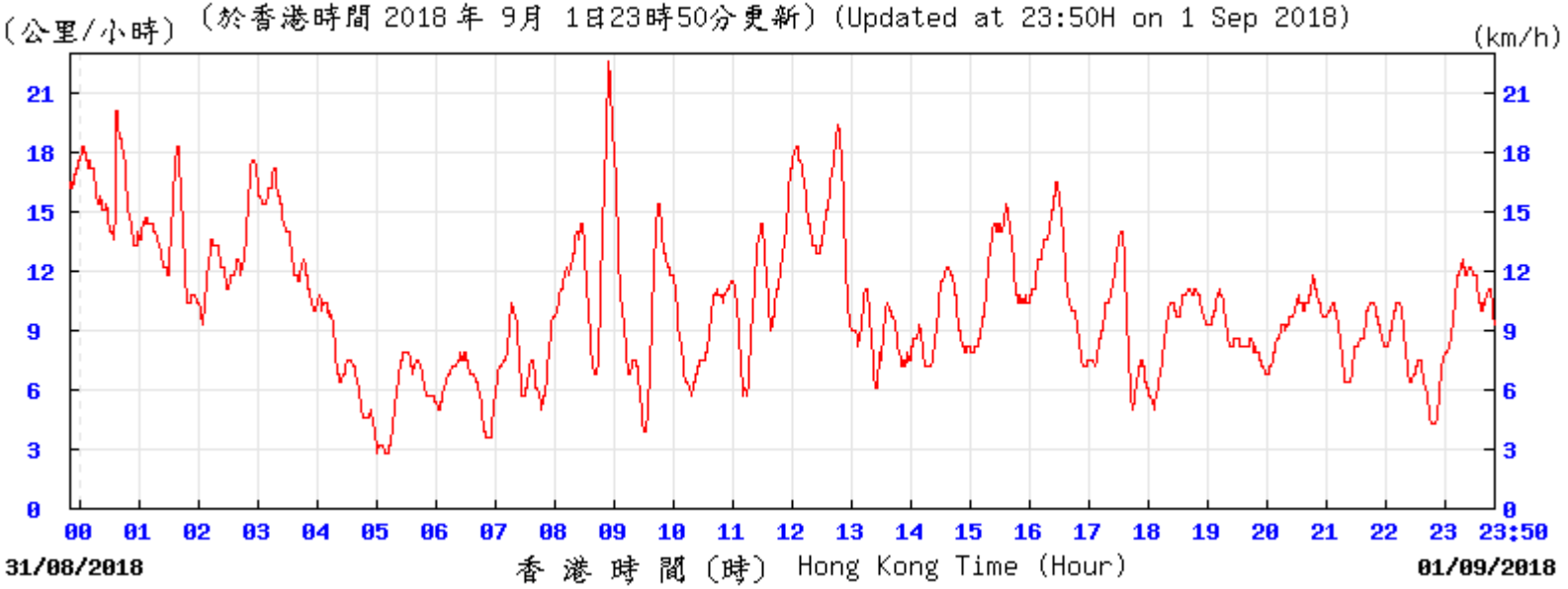
Pressure:



Wind Direction:



Wind Speed:



APPENDIX 3

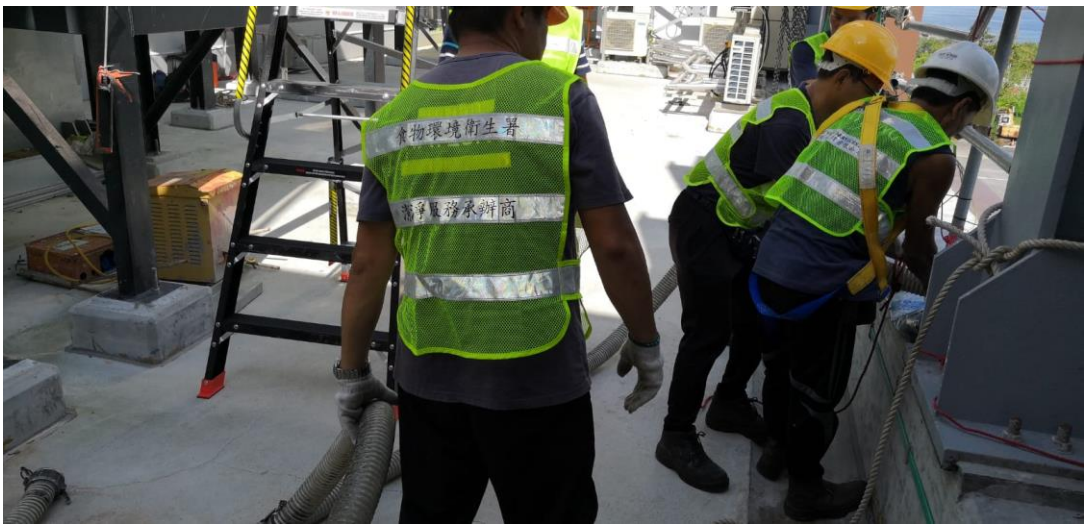
A3. PHOTO OF THE SAMPLING LOCATION

Annex C

Photograph Records


WAYLUNG

The Activate Carbon (ACs) were standby for replacement on site in mid-September 2018.



The ACs were being replaced by on site workers.