

Annex H

Odour Patrol Results



ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
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Kwai Chung, N.T., Hong Kong
T +852 2610 1044 E +852 2610 2021

CERTIFICATE OF ANALYSIS

CLIENT:	Oscar Bioenergy Joint Venture	WORK ORDER:	HK2107360
CONTACT:	Mr Terence Chan	LABORATORY:	Hong Kong
ADDRESS:	No. 5, Sham Fung Road, Siu Ho Wan, Lantau Island, NT, Hong Kong	SUB-BATCH:	0
		DATE RECEIVED:	8 th February, 2021
		DATE OF ISSUE:	24 th February, 2021
PROJECT:	Stack Gas Sampling - CHP2	SAMPLE TYPE:	Air
SITE:	O-Park1, Siu Ho Wan, Lantau Island	NO. OF SAMPLES:	1
PO:	---		

COMMENTS

One (1) stack gas sample for CHP-2 was collected by ALS Technichem (HK) staff on 8th February, 2021 at the O-Park1 (Organic Resources Recovery Centre) in Lantau Island.

Sampling information (Project name, Sample ID) is provided by client.

The sample(s) was analysed and reported on 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
Managing Director - Hong Kong

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1. Summary of Work

This document is the final report for the stack gas sampling and testing event for Oscar Bioenergy Joint Venture in Siu Ho Wan, North Lantau Island.

Sampling Date: 8th February 2021
Location of Stack: ORRC1, Siu Ho Wan
No. of Stack: 1
Name of Stack: CHP-2

Methods for Stack Sampling and Analysis:

Parameter	Method Reference	Sampling Time (minutes)
Volatile Organic Compounds (VOCs) ^[1]	US EPA Method 18	60
Non-Methane Volatile Organic Compounds (NMCOCs) ^[1]	US EPA Method 18	60

Note:

[1]: Results expressed as carbon

2. Sampling Summary

Volatile Organic Compounds (VOCs)

Sample gas was collected by using a stainless steel sampling probe, from the centroid of the stack, into the Tedlar bag by passive sampling technique.

The measurement of total volatile organic compounds (VOCs) content in the sample was conducted in references to BS EN 12619. VOCs content was determined by measuring the methane and non-methane volatile organic compounds of the sample by Gas Chromatograph-Flame Ionisation Detector (GC-FID).

VOCs was reported as the sum of methane and non-methane organics content in the sample.

3. Sampling Period and Stack Parameter

Test Parameter	Sampling Period
Volatile Organic Compounds (VOCs)	8 February 2021 11:00 - 12:00

Stack Parameter	Unit	Concentration
Oxygen	%	11.2



4. Result

Parameter	Unit	Reporting Limit	Result ^[1] ^[2]
Gaseous & vaporous organic substances (VOCs)	mg/m ³	0.7	847
Methane (CH ₄)	mg/m ³	0.5	841
Non-Methane Organic Carbon (NMOC)	mg/m ³	0.2	6.0

Note:

[1] Results expressed as dry, at 0°C temperature, 101.325 kPa pressure and 6% O₂ content conditions.

[2] Results expressed as carbon.

Annex H1

Odour Patrol Result for July 2021



CERTIFICATE OF ANALYSIS

CLIENT:	OSCAR BIOENERGY JOINT VENTURE	WORK ORDER:	HK2127934
CONTACT:	MR TERENCE CHAN	LABORATORY:	HONG KONG
ADDRESS:	NO. 5, SHAM FUNG ROAD, SIU HO WAN, NORTH LANTAU ISLAND, NT, HONG KONG	SUB-BATCH:	0
		DATE OF PATROL:	9 th JULY, 2021
		DATE OF ISSUE:	16 th JULY, 2021
PROJECT:	ODOUR PATROL FOR THE ORGANIC RESOURCES RECOVERY CENTRE PHASE 1 IN SIU HO WAN	SAMPLE TYPE:	ODOUR PATROL
SITE:	ORGANIC RESOURCES RECOVERY CENTRE PHASE 1 (O-PARK 1)	NO. OF LOCATIONS:	8

COMMENTS


Odour Patrol was conducted by ALS Technichem (HK) Pty Ltd staff during 10:00 - 10:20 and 16:42 - 16:59.

Sampling information (Project name, Sample ID) is provided by client.

NOTES

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

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Managing Director - Hong Kong

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1. Summary of Work

The odour patrol was conducted during daytime and evening time.

2. Odour Patrol

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

The patrol work was conducted by two odour patrol team members from ALS Technichem (HK) Pty Ltd during each time session. All members are free from any respiratory diseases during patrol day. None of the members has been working or living in the area of the vicinity of the inspection zone.

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 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 odour patrol location was 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
8	1	Sunny	10:00	32.5	66.8	0.1	329	0	NA	NA	NA	NA
	0											
7	1	Sunny	10:02	33.8	62.0	0.0	--	1	Continuous	NA	Refuse smell	Pre-treatment Hall
	1											
2	1	Sunny	10:06	34.3	61.8	0.0	--	1	Continuous	NA	Biogas	Biogas Tank Valve Holder
	1											
3	1	Sunny	10:07	32.9	57.6	0.8	359	1	Continuous	Downwind	Biogas	Biogas Tank Valve Holder
	1											
5	1	Sunny	10:14	31.9	61.2	0.0	--	1	Intermittent	NA	Grassy smell	Nearby Vegetation
	1											



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	10:10	32.1	57.6	0.0	--	0	NA	NA	NA	NA
	2							0				
9	1	Sunny	10:17	30.9	61.2	1.2	344	0	NA	NA	NA	NA
	2							0				
10	1	Sunny	10:20	22.8	41.5	-	-	0	NA	NA	NA	NA
	2							1				

Remark:

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



3.2 Evening 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
8	1	Sunny	16:42	31.1	73.0	1.2	291	0	NA	NA	NA	NA
	2							0				
7	1	Sunny	16:44	31.4	66.9	1.1	334	1	Continuous	Upwind	Refuse smell	Pre-treatment Hall
	2							1				
2	1	Sunny	16:47	31.9	66.6	0.9	049	0	NA	NA	NA	NA
	2							0				
3	1	Sunny	16:48	32.3	64.8	0.0	--	0	NA	NA	NA	NA
	2							0				
5	1	Sunny	16:54	31.9	61.5	0.0	--	0	NA	NA	NA	NA
	2							1				



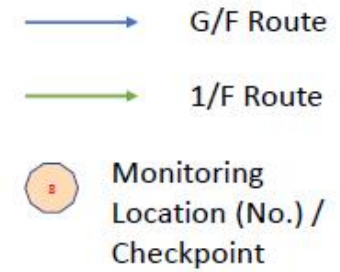
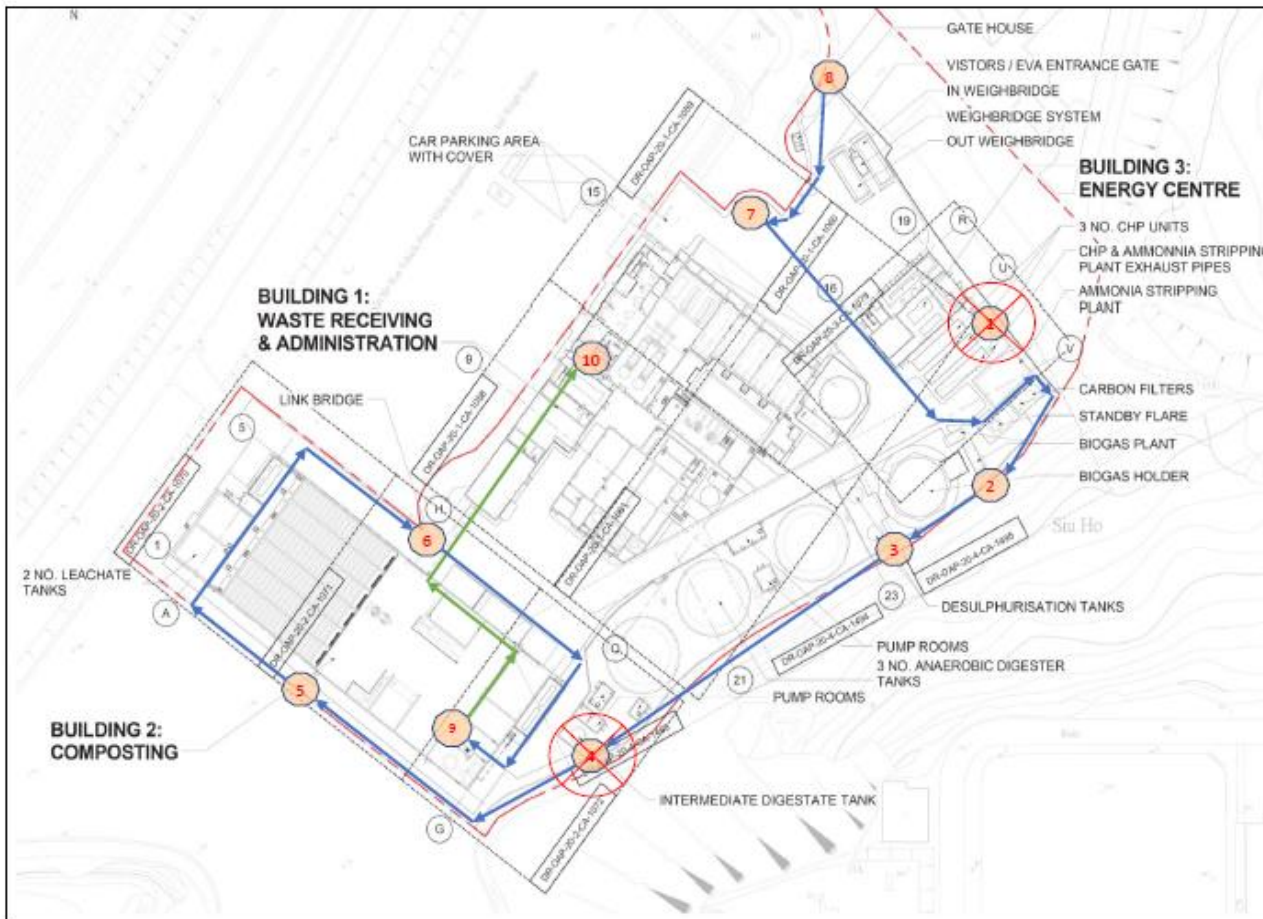
Location	Panellist	Weather	Time	T (°C)	RH (%)	WS (m/s)	WD (Degree)	Odour Intensity	Duration of Odour	Direction from Source	On-Site Observation	
											Odour Characteristics	Potential Odour Source
6	1	Sunny	16:50	32.3	64.8	1.0	115	1	Intermittent	Side wind	Refuse smell	Back of the Pre-treatment Hall
	2							0	NA	NA	NA	NA
9	1	Sunny	16:57	33.4	68.3	0.0	--	0	NA	NA	NA	NA
	2							0				
10	1	Sunny	16:59	25.2	45.6	-	-	0	NA	NA	NA	NA
	2							0				

Remark:

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



APPENDIX 1 Odour Patrol Route

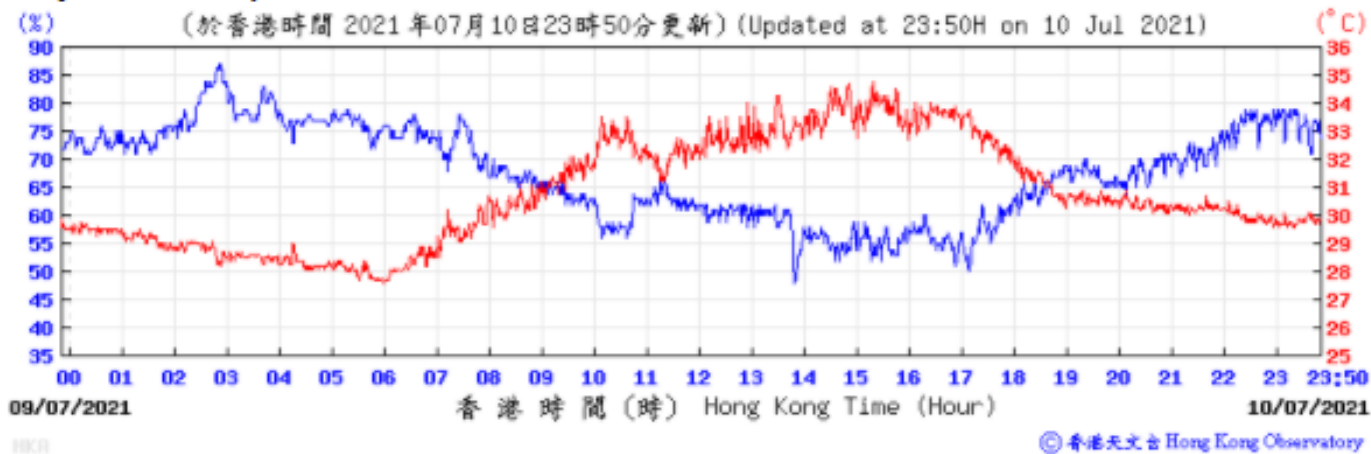




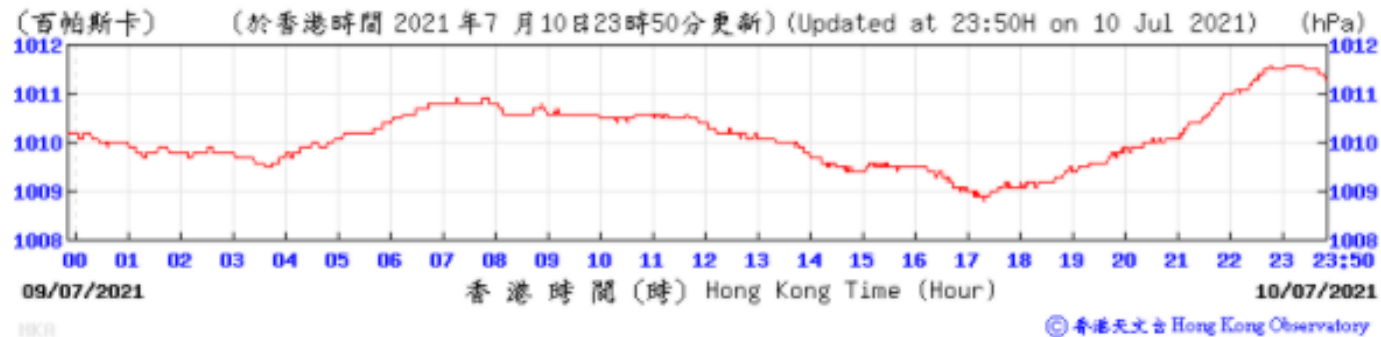
APPENDIX 2

Extract of Meteorological Observations from Hong Kong Airport Observatory Station

Temperature/Humidity:

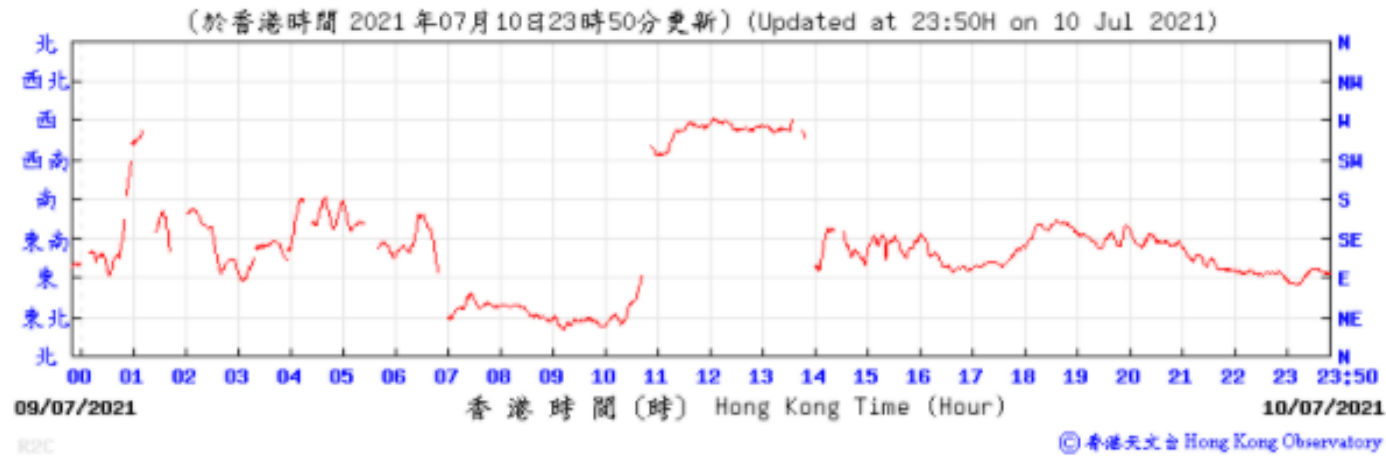


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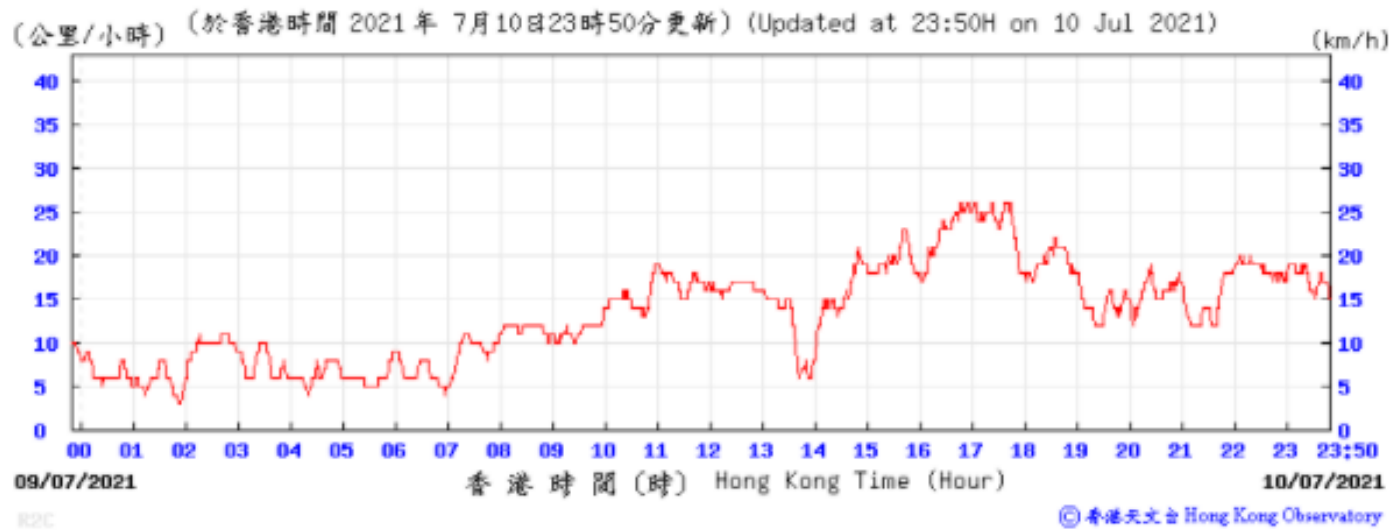




Wind Direction:



Wind Speed:

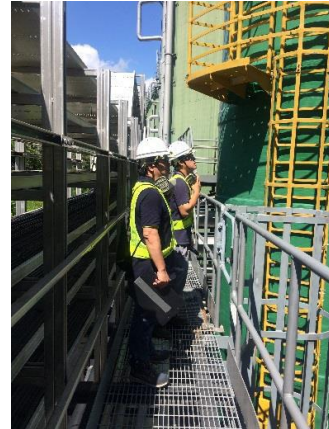


APPENDIX 3

A3.1 Odour Patrol at Different Locations – Daytime



Location: 2



Location: 3



Location: 5



Location: 6



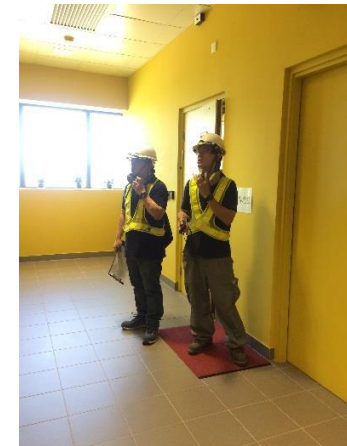
Location: 7



Location: 8



Location: 9



Location: 10



A3.2 Odour Patrol at Different Locations - Evening time



Location: 2



Location: 3



Location: 5



Location: 6



Location: 7



Location: 8



Location: 9



Location: 10

Annex H2

Odour Patrol Result for August 2021



CERTIFICATE OF ANALYSIS

CLIENT:	OSCAR BIOENERGY JOINT VENTURE	WORK ORDER:	HK2132340
CONTACT:	MR TERENCE CHAN	LABORATORY:	HONG KONG
ADDRESS:	NO. 5, SHAM FUNG ROAD, SIU HO WAN, NORTH LANTAU ISLAND, NT, HONG KONG	SUB-BATCH:	0
		DATE OF PATROL:	9 th AUGUST, 2021
		DATE OF ISSUE:	19 th AUGUST, 2021
PROJECT:	ODOUR PATROL FOR THE ORGANIC RESOURCES RECOVERY CENTRE PHASE 1 IN SIU HO WAN	SAMPLE TYPE:	ODOUR PATROL
SITE:	ORGANIC RESOURCES RECOVERY CENTRE PHASE 1 (O-PARK 1)	NO. OF LOCATIONS:	8

COMMENTS

Odour Patrol was conducted by ALS Technichem (HK) Pty Ltd staff during 09:49 - 10:05 and 15:35 - 15:51.

Sampling information (Project name, Sample ID) is provided by client.

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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:

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1	Slight	Identifiable odour, slight
2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable odour, strong
4	Extreme	Severe odour

The odour patrol location was 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
8	1	Cloudy	09:49	29.7	80.5	0.8	285	1	Continuous	Side wind	Refuse smell	Loading Bay /Pre-treatment Hall
	2							1				
7	1	Cloudy	09:51	31.0	80.7	0.4	133	1	Continuous	Side wind	Refuse smell	Pre-treatment Hall
	2							1				
2	1	Cloudy	09:54	30.7	85.7	1.9	114	1	Continuous	Upwind	Biogas	Biogas Tank Valve Holder
	2							1				
3	1	Cloudy	09:56	30.3	86.6	0.4	132	0	NA	NA	NA	NA
	2							0				
5	1	Cloudy	09:58	30.6	86.6	0.0	--	1	Continuous	NA	Grassy smell	Nearby Vegetation
	2							1				



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	10:01	29.9	88.0	1.3	122	0	NA	NA	NA	NA
	2							0				
9	1	Cloudy	10:03	29.8	89.7	1.8	243	0	NA	NA	NA	NA
	2							0				
10	1	Cloudy	10:05	23.8	77.0	-	-	0	NA	NA	NA	NA
	2							0				

Remark:

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



3.2 Evening 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
8	1	Cloudy	15:35	30.1	81.0	0.5	312	1	Intermittent	Side wind	Refuse smell	Pre-treatment Hall
	2							1				
7	1	Cloudy	15:37	31.2	80.5	1.0	101	1	Continuous	Side wind	Refuse smell	Pre-treatment Hall
	2							1				
2	1	Cloudy	15:40	31.4	82.2	0.5	112	1	Continuous	Upwind	Biogas	Biogas Tank Valve Holder
	2							1				
3	1	Cloudy	15:42	31.2	82.5	0.4	121	0	NA	NA	NA	NA
	2							0				
5	1	Cloudy	15:45	30.6	85.0	0.0	--	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	15:47	30.9	81.0	1.1	130	0	NA	NA	NA	NA
	2							0				
9	1	Cloudy	15:49	30.5	85.6	0.5	237	0	NA	NA	NA	NA
	2							0				
10	1	Cloudy	15:51	24.9	69.9	-	-	0	NA	NA	NA	NA
	2							0				

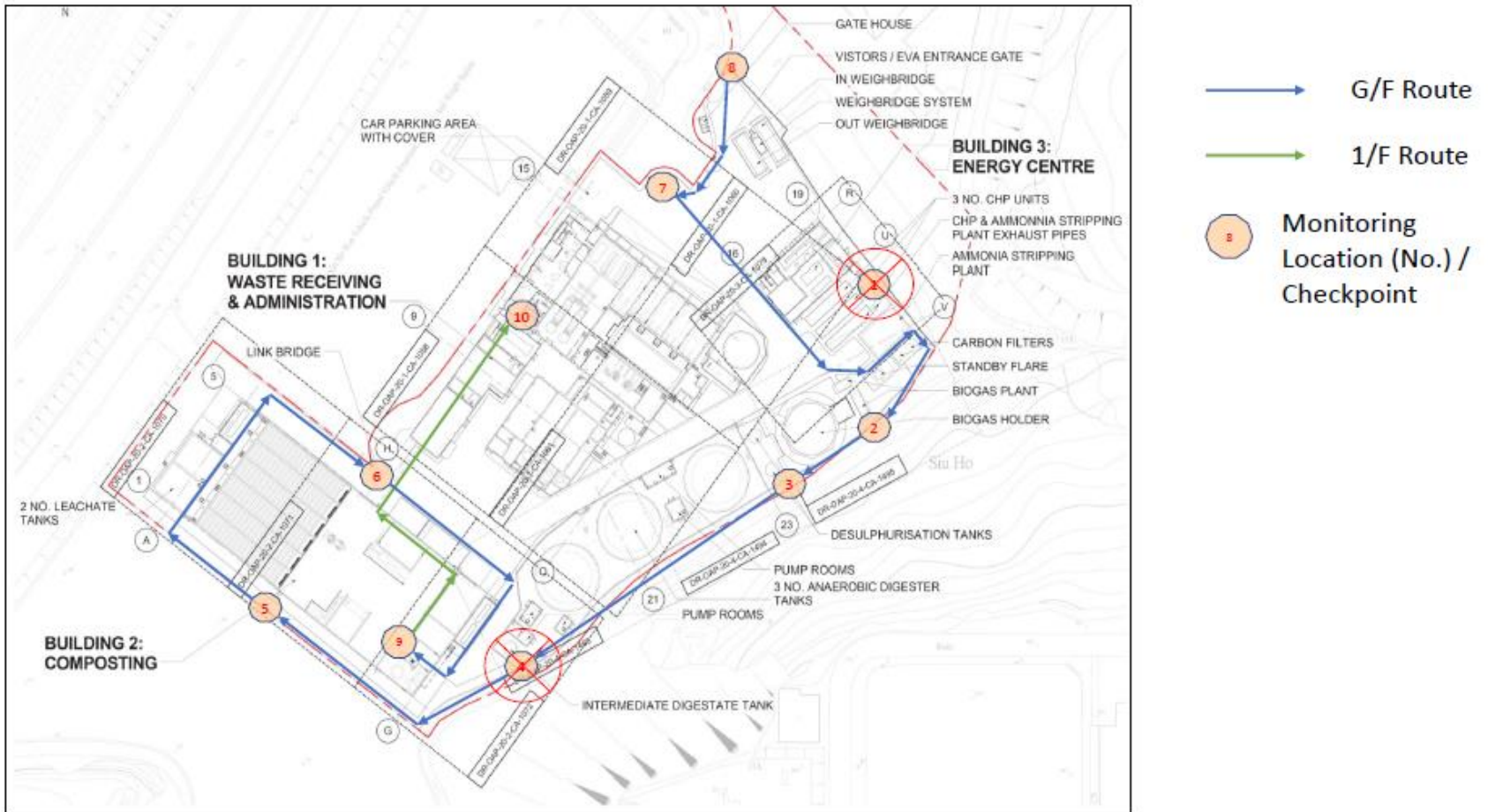
Remark:

T: Air Temperature;
 RH: Relative Humidity;
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APPENDIX 1

Odour Patrol Route

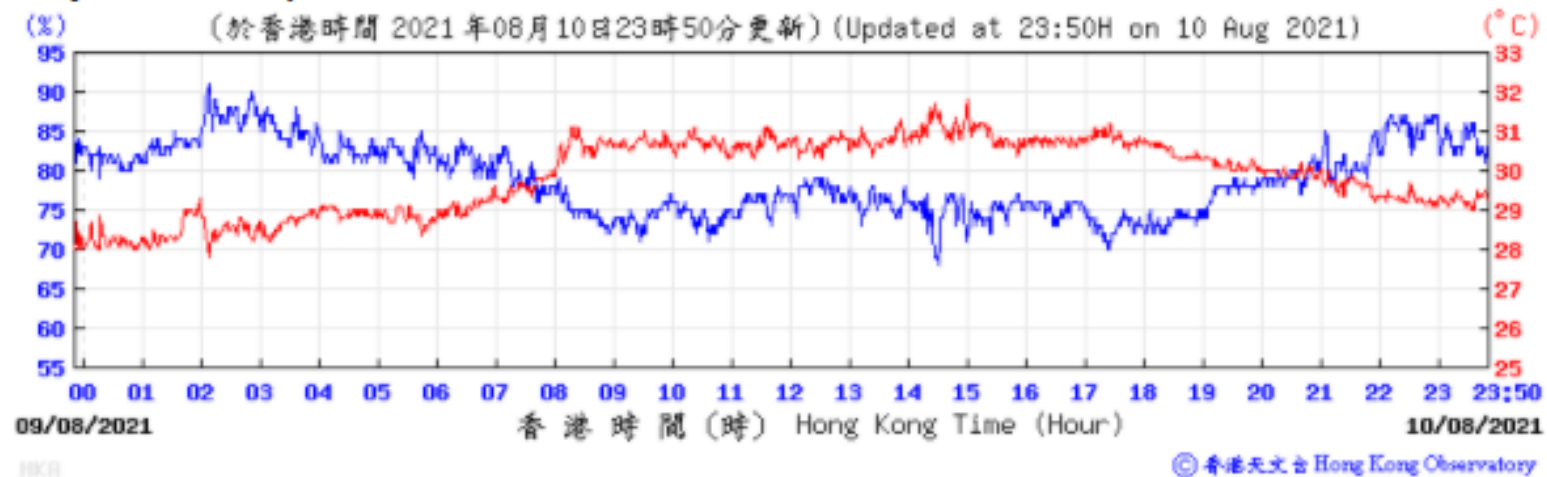




APPENDIX 2

Extract of Meteorological Observations from Hong Kong Airport Observatory Station

Temperature/Humidity:

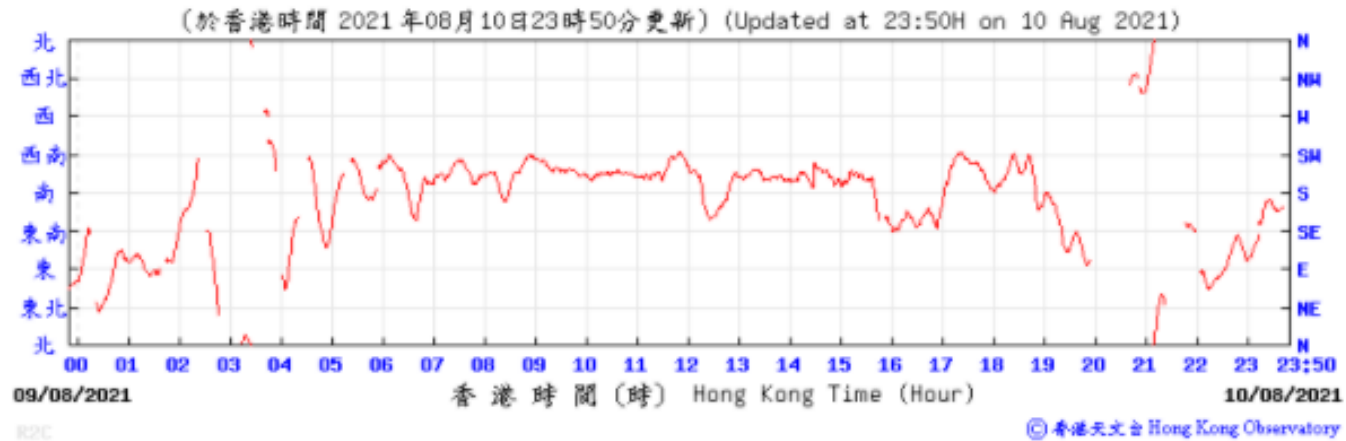


Pressure:

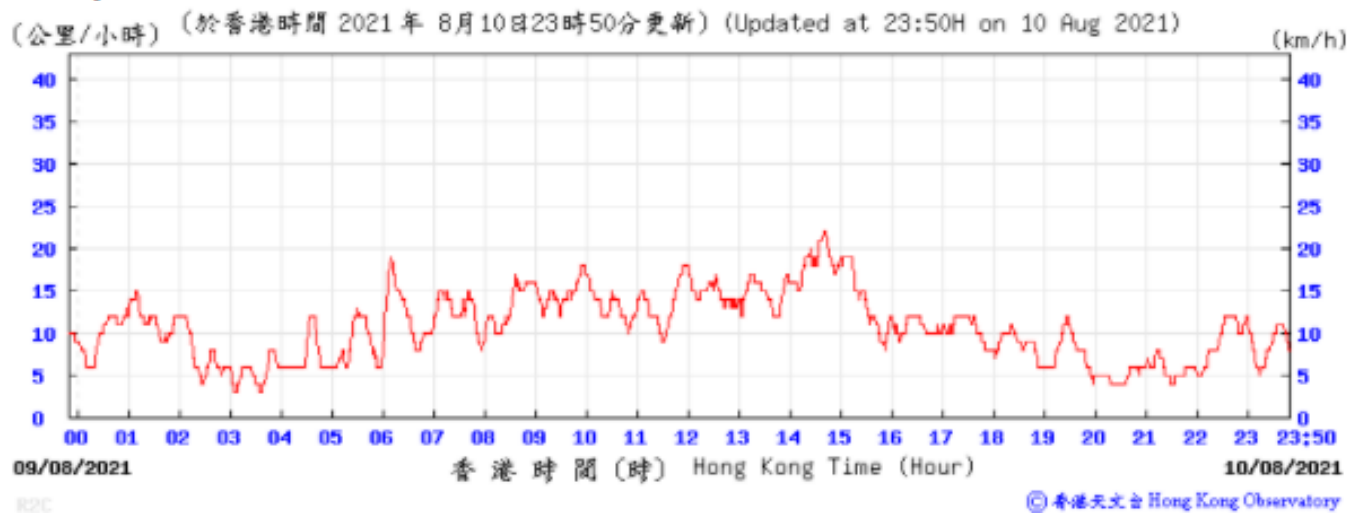




Wind Direction:



Wind Speed:



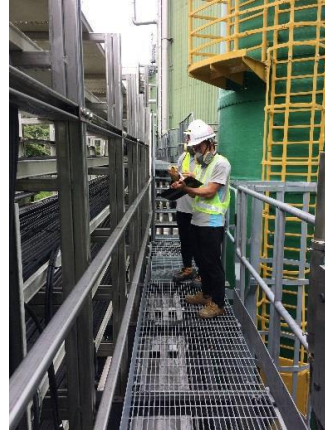


APPENDIX 3

A3.1 Odour Patrol at Different Locations - Daytime



Location: 2



Location: 3



Location: 5



Location: 6



Location: 7



Location: 8



Location: 9



Location: 10



A3.2 Odour Patrol at Different Locations – Evening time



Location: 2



Location: 3



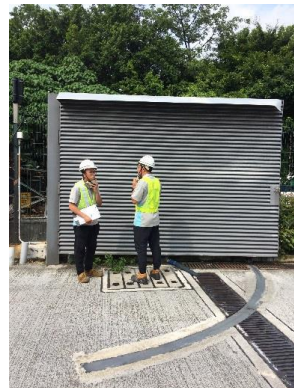
Location: 5



Location: 6



Location: 7



Location: 8



Location: 9



Location: 10