


ASB Biodiesel (Hong Kong) Limited

Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

Monthly EM&A Report

January 2018

(Version 2.0)

Certified By	 <hr/> <p>(Environmental Team Leader)</p>
--------------	--

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

CINOTECH CONSULTANTS LTD

Room 1710, Technology Park,

18 On Lai Street,

Shatin, NT, Hong Kong

Tel: (852) 2151 2083 Fax: (852) 3107 1388

Email: info@cinotech.com.hk



MANNINGS
(Asia) Consultants Limited

Address: 5/F, Winning Commercial Building, 46-48 Hollywood Road, Tsim Sha Tsui, Kowloon
Tel: 852 - 3168 2028 Fax: 852 - 3168 2022

<i>To:</i>	Cinotech	<i>Date:</i>	25 April 2018
<i>Attn:</i>	Mr. H. T. Lai	<i>Fax:</i>	3107 1388
<i>From:</i>	Mr. Mark Cheung	<i>Ref:</i>	D1067/P03540
<i>Job No.</i>	D1067	<i>Total Pages:</i>	1
Subject:	Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Draft monthly EM&A report (January 2018) v2.0		

Dear Sir,

We refer to your submission of the Draft monthly EM&A report (January 2018) v2.0 via email dated 23 April 2018.

We write to advise that we have no comment on the captioned report.

Please keep tracking on the conditions of the equipment and operation practice adopted in order to avoid the recurrence of exceedance event.

Regards,

Mark Cheung
Independent Environmental Checker

KTC/gk

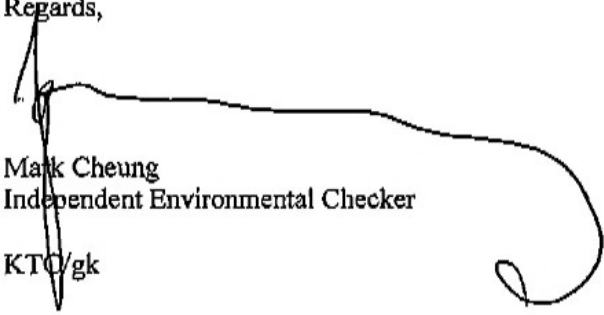


TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	1
Introduction.....	1
Environmental Licenses and Permits	1
Environmental Monitoring and Audit Works	1
Key Information in the Reporting Month	1
1 INTRODUCTION.....	3
Background.....	3
Project Organizations.....	3
Summary of EM&A Requirements.....	4
2 STATUS OF ENVIRONMENTAL LICENSING AND PERMITTING	5
3 ENVIRONMENTAL MONITORING REQUIREMENTS	6
Air Quality	6
Water Quality.....	9
Sulphur Content in Bio Heating Oil.....	10
4 MONITORING METHODOLOGY	12
Air Quality	12
Water Quality.....	13
Sulphur Content in Bio Heating Oil.....	14
5 MONITORING RESULTS	15
Air Quality	15
Water Quality.....	17
Sulphur Content in Bio Heating Oil.....	18
6 SUMMARY OF COMPLAINT AND PROSECUTION	19
7 CONCLUSIONS.....	20

LIST OF TABLES

Table I	Summary of Key Information in January 2018
Table 1-1	Key Project Contacts
Table 2-1	Summary of Environmental Licensing and Permit Status
Table 3-1	Monitoring Criteria for the Emission from Stacks of Boiler, Biogas Flare and Process Building
Table 3-2	Monitoring Criteria for the Odour Concentrations at the Final Air Scrubber and Odour Patrols along the Project Site Boundary
Table 3-3	Event and Action Plan for Air Quality Monitoring
Table 3-4	Monitoring Criteria for the Water Quality of Treated Effluent Discharged from Project Site and Stormwater Discharge
Table 3-5	Event and Action Plan for Water Quality Monitoring
Table 3-6	Monitoring Criteria for Sulphur Content in Bio Heating Oil
Table 4-1	Methodologies for Monitoring of Emission from Stacks of Boiler and Biogas Flare
Table 4-2	Methodology for Monitoring of Emission from Stack of Process Building
Table 4-3	Methodology for Monitoring of Odour Concentrations at the Final Air Scrubber
Table 4-4	Methodologies for Water Quality Monitoring of Treated Effluent Discharged from Project Site
Table 5-1	Monitoring Result of the Emission from the Stack of Boiler
Table 5-2	Monitoring Result of the Emission from the Stack of Biogas Flare
Table 5-3	Monitoring Result of the Emission from the Stack of Process Building
Table 5-4	Monitoring Result of the Odour Concentrations at the Final Air Scrubber
Table 5-5	Monitoring Result of Odour Patrols along Site Boundary
Table 5-6	Water Quality Monitoring Result of Treated Effluent Discharged from Project Site
Table 5-7	Monitoring Result of Sulphur Content in Bio Heating Oil
Table 6-1	Complaint Details

LIST OF FIGURES

Figure 1.1	Location Plan
------------	---------------

LIST OF APPENDICES

Appendix A	Air Quality Monitoring Report – Emission from Stack of Boiler
Appendix B	Air Quality Monitoring Report – Emission from Stack of Biogas Flare
Appendix C	Air Quality Monitoring Report – Emission from Stack of Process Building
Appendix D	Air Quality Monitoring Report – Odour Measurement at Final Air Scrubber
Appendix E	Air Quality Monitoring Report – Odour Patrol
Appendix F	Water Quality Monitoring Result – Effluent from Wastewater Treatment Plant
Appendix G	Not Used
Appendix H	Test Result – Sulphur Content in Bio Heating Oil
Appendix I	Complaint Log
Appendix J	Investigation Report of Environmental Quality Limit Exceedances (January 2018)
Appendix K	Water Pollution Control Ordinance Licence – WT00029932-2017

EXECUTIVE SUMMARY

Introduction

1. This is the 22nd monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate in operational phase. This report documents the findings of EM&A works carried out in January 2018.

Environmental Licenses and Permits

2. Licenses/Permits granted to the Project include the followings:
 - Environmental Permit, EP-319/2009/D, granted on 28 January 2014;
 - Specified Process Licence, L-25-019(1), granted on 10 October 2013 &
 - Water Pollution Control Ordinance Licence, WT00029932-2017, granted on 22 December 2017.

Environmental Monitoring and Audit Works

3. Environmental monitoring and audit works for the Project were carried out in accordance with the criteria and requirements listed in the EM&A Manual, Environmental Permit, Specified Process Licence and Water Pollution Control Ordinance (WPCO) Licence granted. Monitoring results were checked and reviewed.

Key Information in the Reporting Month

4. Summary of key information in this reporting month (January 2018) is listed in **Table I**.

Table I Summary of Key Information in January 2018

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Exceedance of Action & Limit Levels	3	<ol style="list-style-type: none"> 1. Complaint about unpleasant malodour 2. Nitrogen oxides (NOx) in emission from Stack of Boiler 3. Non-methanol organic compound (NMOC) in emission from Stack of Biogas Flare 	Events were investigated, and follow-up works have been carried out by the operator	On-going	---
Complaint received	1	Complaints about unpleasant malodour	Event was investigated, and follow-up works have been carried out by the operator	On-going	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	1	Monthly EM&A Report (Dec 2017) v1.0	Submitted to EPD on 26 January 2018	Verified by IEC	---
Notifications of any summons & prosecutions	2	<ol style="list-style-type: none"> 1. Summons to defendant regarding the contravention of licence granted under the WPCO; 2. Successful prosecution regarding the contravention of licence granted under the WPCO 	N/A	N/A	---

1 INTRODUCTION

Background

- 1.1 Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate (hereafter referred to as “the Project”) is to construct and operate a 100,000 tonnes per annum biodiesel plant at Tseung Kwan O Industrial Estate (see **Figure 1.1** for the location plan of Project Site). The plant will use a multi-feedstock which consists of used cooking oil (UCO), oil and grease recovered from grease trap waste (GTW), palm fatty acid distillate (PFAD) and animal fats. The proposed biodiesel plant offers a convenient recycling outlet for GTW and UCO, and converts oil and grease recovered from these wastes into useful products. The Project also offers a more environmental-friendly alternative to the diesel fuel market in Hong Kong.
- 1.2 This Project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499). An environmental impact assessment (EIA) was undertaken to identify and evaluate the impact on environment (e.g. air quality, noise, water quality and ecology), and propose possible measures to mitigate the impact. The EIA Report was approved by the Environmental Protection Department (EPD) on 26 February 2009.
- 1.3 Environmental Permit (EP) No. EP-319/2009 was issued on 11 March 2009 to ASB Biodiesel (Hong Kong) Limited as the Permit Holder. After several rounds of amendments, the latest version is EP No. EP-319/2009/D, which was issued on 28 January 2014.
- 1.4 Construction of the Biodiesel Plant has been completed since October 2013. After more than 2 years of commissioning trial, the Plant started to operate in April 2016. Cinotech Consultants Limited was commissioned by ASB Biodiesel (Hong Kong) Limited to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. This is the 22nd Monthly EM&A report summarizing the EM&A works in operational phase for the Project in January 2018.

Project Organizations

- 1.5 Different parties with different levels of involvement in the project organization include:
 - Project Proponent & Operator – ASB Biodiesel (Hong Kong) Limited
 - Independent Environmental Checker (IEC) – Mannings (Asia) Consultants Ltd.
 - Environmental Team (ET) – Cinotech Consultants Limited
- 1.6 The responsibilities of respective parties are detailed in Section 2 of the Final EM&A Manual of the Project.
- 1.7 The key contacts of the Project are shown in **Table 1-1**.

Table 1-1 Key Project Contacts

Party	Role	Name	Position	Phone No.
ASB	Permit Holder & Operator	Mr. Albert Kwan	Facilities and Operations Manager	3183 4209
		Mr. Nelson Tam	Engineer	3183 4315
Mannings	Independent Environmental Checker	Mr. Mark Cheung	Independent Environmental Checker	3168 2028
		Mr. Gavin Kwok	Assistant to Independent Environmental Checker	3970 8628
Cinotech	Environmental Team	Dr. HF Chan	ET Leader	2151 2088
		Mr. HT Lai	Project Coordinator	2151 2077

Summary of EM&A Requirements

1.8 EM&A requirements for the Project include:

- Monitoring requirements as listed in the Project EM&A Manual;
- Conditions listed in the Environmental Permit;
- Monitoring requirements as listed in the Specified Process (SP) Licence granted; &
- Monitoring requirements as listed in the Water Pollution Control Ordinance (WPCO) Licence granted

2 STATUS OF ENVIRONMENTAL LICENSING AND PERMITTING

2.1 All permits/licenses obtained for the Project are summarized in **Table 2-1**. The Water Pollution Control Ordinance (WPCO) Licence was renewed, and a copy of the Licence is attached in **Appendix K**.

Table 2-1 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Summary	Status
	From	To		
Environmental Permit (EP)				
EP-319/2009/D	28/01/2014	N/A	Operation of <ul style="list-style-type: none"> • a biochemical plant with a storage capacity of more than 500 tonnes and in which substances are processed and produced; • a storage, transfer and transshipment of oil facility with a storage capacity of not less than 1,000 tonnes; and • a dangerous goods godown with a storage capacity exceeding 500 tonnes 	Valid
Specified Process (SP) Licence				
L-25-019(1)	10/10/2013	10/10/2015	<ul style="list-style-type: none"> • Emission of non-fugitive fixed point emissions 	Under renewal
Water Pollution Control Ordinance (WPCO) Licence				
WT00029932-2017	22/12/2017	31/12/2019	Discharge of <ul style="list-style-type: none"> • effluent from wastewater treatment facilities to communal foul sewer; and • effluent from floor washing of operation areas to communal storm drain 	Valid
WT00022972-2015	16/12/2015	31/12/2017	Discharge of <ul style="list-style-type: none"> • effluent from wastewater treatment facilities to communal foul sewer; and • effluent from floor washing of operation areas to communal storm drain 	Expired on 31/12/2017

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Air Quality

- 3.1 According to Section 4.3 of the Final EM&A Manual of the Project, the emission from stacks of boiler, biogas flare and process building, and odour concentrations at the final air scrubber shall be monitored. Odour patrols along the Project Site boundary is also required.
- 3.2 Monitoring criteria (i.e. frequency, parameter, and action & limit levels) for the emission of the boiler stack, biogas flare and process building are listed in **Table 3-1**, while criteria for odour concentrations at the final air scrubber and odour patrols along the Project Site boundary are listed in **Table 3-2**.

Table 3-1 Monitoring Criteria for the Emission from Stacks of Boiler, Biogas Flare and Process Building

Stack	Frequency *	Parameter	Limit Levels**
Boiler (EP2)	Monthly for the first 12 months of operation. If the monitoring results of the first year monitoring meet the limit level, the monitoring will be reduced to half-yearly intervals for the whole operational stage.	Nitrogen oxides (NO _x)	2.213 kg/h
		Carbon monoxide (CO)	0.553 kg/h
		Sulphur dioxide (SO ₂)	0.797 kg/h
		Non-methane Organic Compounds (NMOC)	0.041 kg/h
		Exhaust gas velocity	7 m/s (minimum)
Biogas Flare (EP1)		NO _x	0.053 kg/h
		CO	0.018 kg/h
		SO ₂	0.039 kg/h
		NMOC	0.0018 kg/h
		Exhaust gas velocity	0.54 m/s (minimum)
Process Building (EP3)		Acetyldehyde	0.0975 kg/h
		Methanol	0.0975 kg/h
		Exhaust gas velocity	0.79 m/s (minimum)

* Monitoring will not be carried out during raining days
** No action level is set in the Final EM&A Manual of the Project and in the Specified Process Licence

Table 3-2 Monitoring Criteria for the Odour Concentrations at the Final Air Scrubber and Odour Patrols along the Project Site Boundary

	Frequency	Parameter	Action Levels	Limit Levels
Odour Concentrations at the Final Air Scrubber (EP5)	Monthly for the first 2 years of operation *	Odour Exhaust gas velocity	– **	200.3 OU/s 0.7 m/s (minimum)
Odour Patrols along the Project Site Boundary	Two times a day, one in the morning and one in the afternoon <ul style="list-style-type: none"> Monthly for the first 12 months of operation. If the monitoring results of the first year monitoring meet the limit level, the monitoring frequency will be reduced to quarterly intervals in the second year; If the action level is triggered during the second year of operation, the frequency will be resumed to monthly intervals until compliance with the action level for three consecutive months is obtained; If the action level is not triggered for four consecutive quarterly monitoring, the monitoring can be terminated. 	Odour Intensity	<ul style="list-style-type: none"> Odour intensity \geq Class 2 recorded; or One documented complaint received 	<ul style="list-style-type: none"> Odour intensity \geq Class 3 recorded on 2 consecutive patrols
* Monitoring will not be carried out during raining days				
** No action level was set in the Final EM&A Manual of the Project and in the Specified Process Licence				

3.3 If action / limit levels are exceeded, the following actions should be taken by the ET:

- Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours;
- Repeat measurement to confirm findings; and
- Implement the event and action plan as shown in **Table 3-3**.

Table 3-3 Event and Action Plan for Air Quality Monitoring

Event	Actions		
	ET Leader	IEC	Project Proponent
Exceedance of Limit Level for stack emission from boiler, biogas flare, process building and final air scrubber	<ul style="list-style-type: none"> Repeat measurement to confirm finding Identify source(s) and investigate the cause(s) of exceedance Inform Project Proponent whether the cause of exceedance is due to the Project Prepare the Notification of Exceedance within 24 hours Discuss remedial actions with the Project Proponent Assess the effectiveness of Project Proponent's remedial actions For the monitoring of emissions from the stacks of the boiler, biogas flare and process building, increase the monitoring frequency from half-yearly (for the second year onward) to monthly intervals. If results of three consecutive monthly monitoring show no exceedance of the limit level, the monitoring frequency will be reverted back to half-yearly intervals. 	<ul style="list-style-type: none"> Verify the Notification of Exceedance submitted by the ET Leader Check with the Project Proponent on the operating activities and implementation of control measures Discuss with ET Leader and Project Proponent on the possible remedial actions Advise the Project Proponent on the effectiveness of the proposed remedial measures Supervise implementation of remedial measures 	<ul style="list-style-type: none"> Rectify any unacceptable practice Amend working methods as required Implement amended working methods, if necessary
Exceedance of Action Level for odour	<ul style="list-style-type: none"> Identify source(s) / reason of exceedance or complain Prepare the odour complain form or the Notification of Exceedance within 24 hours Inform Project Proponent whether the cause of exceedance is due to the Project Discuss remedial actions with the Project Proponent During the second year of operation, if the action level is triggered, the frequency will be resumed to monthly until compliance with the action level for three consecutive months is obtained and the frequency will be reduced to quarterly intervals thereafter. 	<ul style="list-style-type: none"> Verify the Notification of Exceedance submitted by the ET Leader 	<ul style="list-style-type: none"> Rectify any unacceptable practice Amend working methods as required Implement amended working methods, if necessary

Event	Actions		
	ET Leader	IEC	Project Proponent
Exceedance of Limit Level for odour	<ul style="list-style-type: none"> Identify source(s) / reason of exceedance or complain Prepare the odour complain form or the Notification of Exceedance within 24 hours Inform Project Proponent whether the cause of exceedance is due to the Project Assess the effectiveness of Project Proponent's remedial actions or amended design 	<ul style="list-style-type: none"> Verify the Notification of Exceedance submitted by the ET Leader Check with the Project Proponent on the operating activities and implementation of control measures Discuss with ET Leader and Project Proponent on the possible remedial actions Advise the Project Proponent on the effectiveness of the proposed remedial measures Supervise implementation of remedial measures 	<ul style="list-style-type: none"> Rectify any unacceptable practice Propose and implement remedial measures or amend design as required within 3 working days of notification Resubmit proposals if problem still not under control

Water Quality

3.4 According to Section 6.3 of the Final EM&A Manual of the Project, the water quality of treated effluent discharged from Project Site and stormwater discharge shall be monitored.

3.5 Monitoring criteria (i.e. frequency, parameter, and limit levels) for the water quality of treated effluent discharged from Project Site and stormwater discharge are listed in **Table 3-4**.

Table 3-4 Monitoring Criteria for the Water Quality of Treated Effluent Discharged from Project Site and Stormwater Discharge

Discharge	Frequency	Parameter	Limit Levels*
Treated Effluent Discharged from Project Site	Monthly	pH	Within the range of 6 - 10
		Suspended Solids	800 mg/L
		Biochemical Oxygen Demand (BOD) (5 days, 20 °C)	800 mg/L
		Chemical Oxygen Demand (COD)	2000 mg/L
		Oil & Grease	50 mg/L
		Sulphate	1000 mg/L
		Total Nitrogen	200 mg/L
		Total Phosphorus	50 mg/L
Stormwater Discharge	Quarterly	pH	Within the range of 6 – 9
		Suspended Solids	50 mg/L
		Biochemical Oxygen Demand (BOD) (5 days, 20 °C)	50 mg/L
		Chemical Oxygen Demand (COD)	100 mg/L
		Oil & Grease	30 mg/L

* No action level was set in the WPCO Licence

3.6 If limit levels are exceeded, the following actions should be taken by the ET:

- Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours;
- Repeat measurement to confirm findings; and
- Implement the event and action plan as shown in **Table 3-5**.

Table 3-5 Event and Action Plan for Water Quality Monitoring

Event	Actions		
	ET Leader	IEC	Project Proponent
Exceedance of Limit Level for Treated Effluent Discharged from Project Site	<ul style="list-style-type: none"> • Identify source(s) and investigate the cause(s) of exceedance • Repeat measurement to confirm finding • Prepare the Notification of Exceedance within 24 hours • Discuss remedial actions with the Project Proponent • Assess the effectiveness of Project Proponent's remedial actions 	<ul style="list-style-type: none"> • Verify the Notification of Exceedance submitted by the ET Leader • Check with Contractor on the operating activities and implementation of landfill gas control measures • Discuss with ET Leader and Contractor on the possible remedial actions • Advise the IC on the effectiveness of the proposed remedial measures • Supervise implementation of remedial measures 	<ul style="list-style-type: none"> • Check the performance of the on-site WWTP • Rectify any unacceptable performance • Carry out remedial measures or amend design as required • Implement amended design, if necessary
Exceedance of Limit Level for Stormwater Discharged from the Project Site	<ul style="list-style-type: none"> • Identify source(s) and investigate the cause(s) of exceedance • Repeat measurement to confirm finding • Prepare the Notification of Exceedance within 24 hours • Discuss remedial actions with the Project Proponent • Assess the effectiveness of Project Proponent's remedial actions 	<ul style="list-style-type: none"> • Verify the Notification of Exceedance submitted by the ET Leader • Check with Project Proponent on the operating activities • Discuss with ET Leader and Project Proponent on the possible remedial actions • Advise the Project Proponent on the effectiveness of the proposed remedial measures • Supervise implementation of remedial measures 	<ul style="list-style-type: none"> • Propose and implement remedial measures or amend design as required • Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary

Sulphur Content in Bio Heating Oil

3.7 According to Section 3.11 of the EP-319/2009/D, if Bio Heating Oil (BHO) is used on site, the sulphur content in BHO shall be monitored.

3.8 Monitoring criteria (i.e. frequency, parameter, and limit level) for the sulphur content in BHO are listed in **Table 3-6**.

Table 3-6 Monitoring Criteria for Sulphur Content in Bio Heating Oil

Frequency	Parameter	Limit Level*
Every tank load of the BHO for the BHO's sulphur content when the fuel tank(s) is being filled/refilled <ul style="list-style-type: none"> • This original frequency shall be adopted in the first three months of using BHO on site. After the first three months of the original monitoring regime, if all monitoring result in the first three months meet the limit level, the frequency may be reduced to one test for every two refills for the next three months; and after the first six months, the monitoring may be conducted once a month. • If exceedance occur, the monitoring shall be reverted to the original frequency of a test for every tank load of BHO, or at such a monitoring frequency to be advised and agreed by the EPD's Director. 	Sulphur Content	346 ppm
* No action level was set in the EP of the Project		

3.9 If limit level is exceeded, the following actions should be taken by the ET:

- Inform Project Proponent and IEC within 24 hours;
- Repeat measurement to confirm findings;
- Inform Project Proponent to increase the use of low sulphur diesel in the fuel tank(s) to achieve a fuel mixture with sulphur content of less than 346 ppm; and
- Revert the monitoring programme to the original frequency of a test for every tank load of BHO, or at such a monitoring frequency to be advised and agreed by the EPD's Director.

4 MONITORING METHODOLOGY

Air Quality

Emission from Stacks of Boiler, Biogas Flare

- 4.1 Emissions from the stack of boiler and from the stack of biogas flare were sampled and analyzed. Methods adopted for analysis are listed in **Table 4-1**. In addition to parameters listed in **Table 4-1**, exhaust gas velocity was measured. Detailed monitoring methodologies for emission from the stacks of boiler and biogas flare are presented in **Appendix A** and **Appendix B** respectively.

Table 4-1 Methodologies for Monitoring of Emission from Stacks of Boiler and Biogas Flare

Parameter	Methodology
Nitrogen oxides (NO _x)	USEPA Method 7C
Carbon monoxide (CO)	USEPA Method 10B
Sulphur dioxide (SO ₂)	USEPA Method 6
Non-methane organic compounds (NMOC)	USEPA Method TO-12

Emission from Stack of Process Building

- 4.2 Emission from the stack of process building was sampled and analyzed. Methods adopted for analysis are listed in **Table 4-2**. In addition to parameters listed in **Table 4-2**, exhaust gas velocity was measured. Detailed monitoring methodology for emission from the stack of process building is presented in **Appendix C**.

Table 4-2 Methodology for Monitoring of Emission from Stack of Process Building

Parameter	Methodology
Acetaldehyde	USEPA Method TO-11A
Methanol	USEPA Method TO-14A

Odour Concentrations at the Final Air Scrubber

- 4.3 Gas in the final air scrubber was sampled and analyzed. Method adopted for analysis is listed in **Table 4-3**. In addition to parameter listed in **Table 4-3**, exhaust gas velocity was measured. Detailed methodology for odour monitoring in the final air scrubber is presented in **Appendix D**.

Table 4-3 Methodology for Monitoring of Odour Concentrations at the Final Air Scrubber

Parameter	Methodology
Odour concentration	European Standard Method (EN13725)

Odour Patrols along Site Boundary

- 4.4 Odour patrols were carried out by a qualified odour panelist in both morning and afternoon on 15 January 2018. During odour patrol, the panelist identified the odour nature and determined the odour intensity, which is expressed using an odour intensity scale, at all 5 selected locations. Weather conditions including prevailing weather, wind direction and wind speed were also recorded. Detailed methodology for odour patrol is presented in **Appendix E**.

Water Quality*Water Quality of Treated Effluent Discharged from Project Site*

- 4.5 Treated effluent discharged from Project Site was sampled and analyzed. Methodologies for water quality monitoring were followed either American Public Health Association's (APHA's) "Standard Methods for the Examination of Water & Wastewater" or Hach Method, which are listed in **Table 4-4**. In addition to the parameters listed in **Table 4-4**, pH was measured.

Table 4-4 Methodologies for Water Quality Monitoring of Treated Effluent Discharged from Project Site

Parameter	Methodology
Suspended Solids (S.S.)	APHA 2540D
Biochemical Oxygen Demand (BOD) (5 days, 20 °C)	APHA 5210B
Chemical Oxygen Demand (COD)	Hach Method 8000
Oil & Grease	APHA 5520B
Sulphate	Hach Method 10248
Total Nitrogen	Hach Method 10071
Total Phosphorus	Hach Method 8190

Water Quality of Stormwater Discharge

- 4.6 As water quality of stormwater discharge is required to be monitored quarterly, next monitoring will be carried out in March 2018. No monitoring was carried out in January 2018.

Sulphur Content in Bio Heating Oil

- 4.7 In January 2018, BHO in the tank was sampled once. Its sulphur content was then analyzed in accordance with EN-ISO-20486:2011: Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method.

5 MONITORING RESULTS

Air Quality

Emission from Stack of Boiler

- 5.1 The monitoring results of the emission from the stack of boiler are presented in **Table 5-1**. Detailed monitoring result of the emission from the stack of boiler is presented in **Appendix A**.
- 5.2 One exceedance of Limit Level was reported. The exceedance is found due to inappropriate fuel/air ratio. Details of the investigation are presented in **Appendix J**.

Table 5-1 Monitoring Result of the Emission from the Stack of Boiler

Parameter	Limit Level	Monitoring Result*
Nitrogen oxides (NO _x)	2.213 kg/h	3.185 kg/h **
Carbon monoxide (CO)	0.553 kg/h	< 0.2 kg/h
Sulphur dioxide (SO ₂)	0.797 kg/h	< 0.04 kg/h
Non-methane Organic Compounds (NMOC)	0.041 kg/h	0.0175 kg/h
Exhaust gas velocity	7 m/s (minimum)	17.64 m/s
* Average result of all trials is presented		
** Exceedance of Limit Level		

Emission from Stack of Biogas Flare

- 5.3 The monitoring results of the emission from the stack of biogas flare are presented in **Table 5-2**. Detailed monitoring result of the emission from the stack of biogas flare is presented in **Appendix B**.
- 5.4 One exceedance of Limit Level was reported. The exceedance is found due to unstable biogas generation on the sampling day. Details of the investigation are presented in **Appendix J**.

Table 5-2 Monitoring Result of the Emission from the Stack of Biogas Flare

Parameter	Limit Level	Monitoring Result*
Nitrogen oxides (NO _x)	0.053 kg/h	< 0.014 kg/h
Carbon monoxide (CO)	0.018 kg/h	< 0.021 kg/h **
Sulphur dioxide (SO ₂)	0.039 kg/h	< 0.006 kg/h
Non-methane Organic Compounds (NMOC)	0.0018 kg/h	0.06385 kg/h ***
Exhaust gas velocity	0.54 m/s (minimum)	1.15 m/s
* Average result of all trials is presented ** As the emission of carbon monoxide is below reporting level, it is not considered as an exceedance event. *** Exceedance of Limit Level		

Emission from Stack of Process Building

- 5.5 The monitoring results of the emission from the stack of process building are presented in **Table 5-3**. No exceedance of Limit Level was reported. Monitoring result of the emission from the stack of process building is presented in **Appendix C**.

Table 5-3 Monitoring Result of the Emission from the Stack of Process Building

Parameter	Limit Level	Monitoring Result*
Acetyldehyde	0.0975 kg/h	<0.001 kg/h
Methanol	0.0975 kg/h	0.02 kg/h
Exhaust gas velocity	0.79 m/s (minimum)	1.7 m/s
* Average result of all trials is presented ** Exceedance of Limit Level		

Odour Concentrations at the Final Air Scrubber

- 5.6 The monitoring result of the odour concentrations at the final air scrubber is presented in **Table 5-4**. No exceedance of Limit Level was reported. Detailed monitoring result of the odour concentrations at the final air scrubber is presented in **Appendix D**.

Table 5-4 Monitoring Result of the Odour Concentrations at the Final Air Scrubber

Parameter	Limit Level	Monitoring Result*
Odour	200.3 OU/s	11.6 OU/s
Exhaust gas velocity	0.7 m/s (minimum)	0.95 m/s
* Average result of all trials is presented		

Odour Patrols along Site Boundary

- 5.7 The monitoring result of the odour patrol is presented in **Table 5-5**. Detailed monitoring result of odour patrols along site boundary is presented in **Appendix E**.
- 5.8 1 exceedance of Action Level was reported as 1 complaint regarding odour was received. Details are presented in **Section 6** and **Appendix I**.

Table 5-5 Monitoring Result of Odour Patrols along Site Boundary

Patrol Time	Location	Odour Intensity		
		Action Level	Limit Level	Measured Level (Odour Nature)
Morning	1	Odour intensity \geq Class 2 recorded; or	Odour intensity \geq Class 3 recorded on 2 consecutive patrols	1 (Oil and grease)
	2			1~2 (Oil and grease)
	3			0~1 (Oil and grease)
	4			0~1 (Oil and grease)
	5			0
Afternoon	1	One documented complaint received		1 (Oil and grease)
	2			1~2 (Oil and grease)
	3			0
	4			0~1 (Oil and grease)
	5			0

Water Quality*Water Quality of Treated Effluent Discharged from Project Site*

- 5.9 The water quality monitoring result of treated effluent discharged from Project Site is presented in **Table 5-6**. No exceedance of Limit Level was reported. Detailed water quality monitoring result of treated effluent discharged from Project Site is presented in **Appendix F**.

Table 5-6 Water Quality Monitoring Result of Treated Effluent Discharged from Project Site

Parameter	Limit Level	Monitoring Result
pH	Within the range of 6 - 10	7.05
Suspended Solids	800 mg/L	320 mg/L
Biochemical Oxygen Demand (BOD) (5 days, 20 °C)	800 mg/L	520 mg/L
Chemical Oxygen Demand (COD)	2000 mg/L	661 mg/L
Oil & Grease	50 mg/L	40 mg/L
Sulphate	1000 mg/L	90 mg/L
Total Nitrogen	200 mg/L	60.4 mg/L
Total Phosphorus	50 mg/L	6.0 mg/L

Water Quality of Stormwater Discharge

- 5.10 Water quality of stormwater discharge was not monitored in January 2018 (see **Section 4.6** for details).

Sulphur Content in Bio Heating Oil

- 5.11 The monitoring result of sulphur content in Bio Heating Oil (BHO) is presented in **Table 5-7**. No exceedance of Limit Level was reported. Detailed monitoring result of sulphur content in Bio Heating Oil is presented in **Appendix H**.

Table 5-7 Monitoring Result of Sulphur Content in Bio Heating Oil

Sampling Date	Limit Level	Monitoring Result
31 January 2018	346 ppm	313 ppm

6 SUMMARY OF COMPLAINT AND PROSECUTION

6.1 1 environmental related complaint was received in January 2018. Details are tabulated in **Table 6-1**.

Table 6-1 Complaint Details

Complaint No.	Date	Complaint Details
COM-2018-01-015	29/1/2018	<p>EPD referred that a complainant complained ASB biodiesel plant emitting malodour across Chun Wang Street.</p> <p>Investigation found that the tricanter in the wastewater treatment plant was blocked on 29th January 2018. During maintenance on the same day, some odourous material (e.g. sludge) spilled out. The operator has cleaned up the spilled material.</p> <p>Joint site visit on 5th February 2018 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.</p>

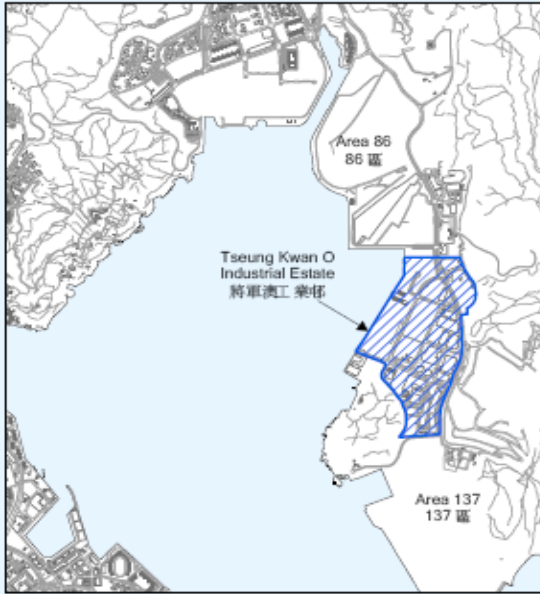
6.2 1 successful prosecution and 1 notification of summon regarding the contravention of the WPCO licence (WT00022972-2015) were received in the reporting month.

6.3 15 environmental complaints, 4 notification of summons, and 3 successful prosecutions were received since the operation of Project. The Complaint Log is attached in **Appendix I**.


7 CONCLUSIONS

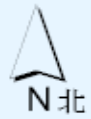
- 7.1 In January 2018, environmental monitoring and audit works were carried out in accordance with criteria and requirements listed in the Project EM&A Manual, Environmental Permit EP-319/2009D, Specified Process Licence L-25-019(1) and Water Pollution Control Ordinance Licence WT00029932-2017.
- 7.2 Monitoring of air quality, water quality and sulphur content in Bio Heating Oil were carried out at designated locations. 1 Limit Level exceedance was recorded at the stack of boiler, and 1 Limit Level exceedance was recorded at the stack of biogas flare. 1 Action Level exceedance due to the complaint about unpleasant malodour received on 29th January 2018 was recorded. Investigation for the event has been carried out, and measures were recommended to counter the exceedance event.
- 7.3 In total, 1 complaint, 1 notification of summons and 1 successful prosecution regarding the contravention of the WPCO licence (WT00022972-2015) were received in the reporting month.

FIGURES



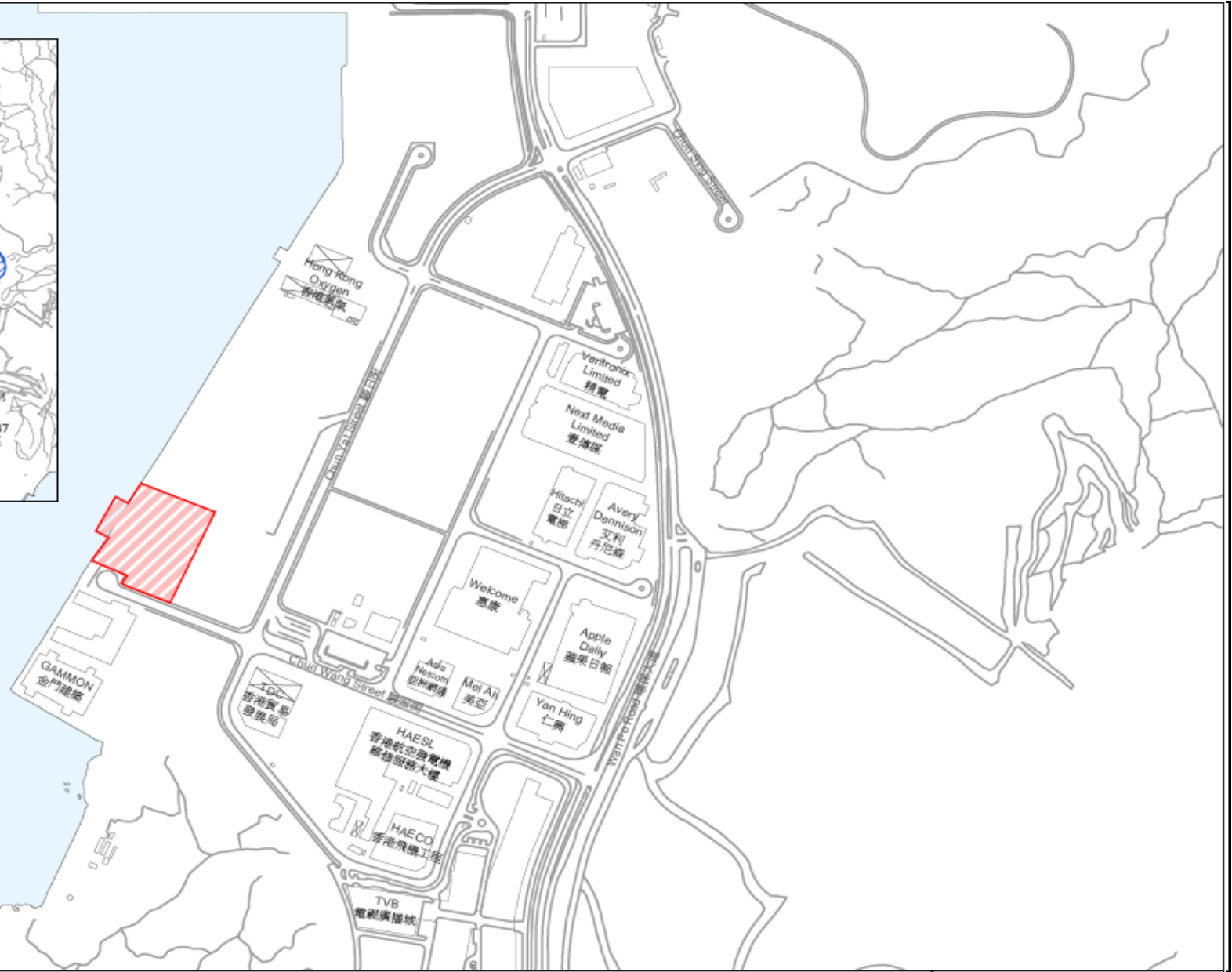
Key 圖例

 Proposed Site



Meters 米

0 100 200 400



Title Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

Location Plan

Scale

N.T.S

Project

No. MA15052

Date

MAY 2016

Figure

1.1



APPENDIX A
Air Quality Monitoring Report – Emission
from Stack Of Boiler



STACK GAS SAMPLING AND LABORATORY TESTING REPORT

Location: ASB Biodiesel (Hong Kong) Ltd

Sampling Period: 30th January, 2018

ALS Work Order No: HK1815057

Report Issue Date: 5th March, 2018

CLIENT:
ASB Biodiesel (Hong Kong) Ltd

No. 22, Chun Wang Street,
Tseung Kwan O Industrial Estates, N.T.,
Hong Kong
Tel: 852-3741-1640
Fax: 852-3183-4200

PREPARED BY:



Mr Fung Lim Chee, Richard
General Manager - Hong Kong

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.

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.



1 Summary of Work

The document is the final report for the stack gas sampling and testing events in ASB Biodiesel (Hong Kong) Ltd.

Sampling Period: 30th January, 2018
Location of Stack: Tseung Kwan O Industrial Estate
No. of Stack: 1
Name of Stack: Boiler (EP2)

1.1 Method for Stack Sampling and Analysis

Parameter	USEPA Method Reference
Velocity / Volumetric Flow Rate	Method 2
Nitrogen / Oxygen / Carbon Dioxide	Method 3
Moisture Content	Method 4
Sulphur Dioxide (SO ₂)	Method 6
Nitrogen Oxides (NO _x)	Method 7C
Carbon Monoxide (CO)	Method 10B
Non-Methane Organic Compounds (NMOC)	Method TO-12
Respirable Suspended Particulates (PM ₁₀)	Method 201A

1.2 Sampling Time

Each gas sample, except carbon monoxide and non-methane organic compounds, was covered for at least 1 hour.

For the measurement of carbon monoxide and non-methane organic compounds, the sampling was last for at least 30 minutes.



2 Sampling Summary

2.1 Nitrogen Oxides (NO_x)

USEPA Method 7C will be used for sampling and testing of nitrogen oxides (NO_x) sample. Stack gas with nitrogen oxides (NO_x) analyte will be collected from the centroid of the stack into impinger contains absorption solution (alkaline potassium permanganate solution) via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed colorimetrically.

2.2 Sulphur Dioxide (SO₂)

USEPA Method 6 will be used for sampling and testing of sulphur dioxide (SO₂) sample. Stack gas with sulphur dioxide (SO₂) analyte will be collected from the centroid of the stack into impinger contains absorption solution (3 percent H₂O₂ solution) via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the ion chromatography method.

2.3 Carbon Monoxide (CO)

USEPA Method 10B will be used for sampling and testing of carbon monoxide (CO) sample. Stack gas with carbon monoxide (CO) analyte will be collected from the centroid of the stack into a Tedlar Bag via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the gas chromatography flame ionization detection (GC/FID).

2.4 Non-Methane Organic Compounds (NMOC)

USEPA Method TO-12 will be used for sampling and testing of Non-Methane Organic Compounds (NMOC) sample. Stack gas with Non-Methane Organic Compounds (NMOC) analyte will be collected from the centroid of the stack into a 6L Canister via regulated gas sampler.

The sampling period will last for around 30 mins to collect sufficient sample for laboratory analysis. The duration depends on the stack condition such as pressure, temperature. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the gas chromatography flame ionization detection (GC/FID), the result of NMOC will be reported as "propane".

2.5 Respirable Suspended Particulates (PM₁₀)

USEPA Method 201A will be used for sampling and testing of Respirable Suspended Particulates (PM₁₀) sample. The Respirable Suspended Particulates sample shall be collected at a predetermined constant flow rate through an in-stack sizing device with filter paper, a glass-made probe, and a series of impingers containing distilled water absorbing solution at different traverse points along the two sampling port axis as required in the USEPA Method 1 & 2. The particulate content shall be determined gravimetrically in laboratory.



3 Sampling Period and Stack Parameter
3.1 Sampling Period

Sampling Date: 30th January, 2018

Test Parameter	Trial 1	Trial 2
	Sampling Time	
Sulphur Dioxide (SO ₂)	12:23 - 13:23	16:37 - 17:37
Nitrogen Oxides (NO _x)	13:27 - 14:27	15:36 - 16:36
Respirable Suspended Particulates (PM ₁₀) and Total Particulates (PM _{total})	08:53 - 10:23	10:41 - 12:14
Carbon Monoxide (CO) & Non-Methane Organic Compounds (NMOC)	14:32 - 15:02	15:03 - 15:33

3.2 Stack Parameter

Test Parameter	Trial	Sampling Volume (m ³) ^[1]	Stack Gas Temperature (°C)	Stack Gas Velocity (m/s)	Minimum Flow Rate (m ³ /hr) ^[1]	Moisture Content (%)
SO ₂	1	0.056	196	15.5	13205	9.4
	2	0.057	204	20.2	18179	8.2
NO _x	1	0.024	193	18.0	15856	9.4
	2	0.025	202	19.5	16687	8.2
PM ₁₀ & PM _{total}	1	0.876	196	17.3	15236	9.4
	2	0.913	195	17.7	15523	8.2
CO	1	0.0084	190	15.8	15004	9.4
	2	0.0086	192	17.1	15408	8.2
NMOC	1	0.006	190	15.8	15004	9.4
	2	0.006	192	17.1	15408	8.2

Note:

[1]: Results expressed as at 0 degree Celsius temperature, 101.325 kilopascals pressure, without correction for water vapour or oxygen content.



4 Result
4.1 Boiler (EP2)

Test Parameter	Unit	LOR	Result ^[1]	
			Trial 1	Trial 2
Nitrogen Oxides (NO _x) Incl. Nitrogen Dioxide & Nitrogen Oxide ^[2]	ppmv	2	87	104
	mg/m ³	5	178	213
	kg/hr ^{[4] [5]}	0.08	2.82	3.55
Carbon Monoxide (CO)	ppmv	10	<10	<10
	mg/m ³	13	<13	<13
	kg/hr ^{[4] [5]}	0.2	<0.2	<0.2
Sulphur Dioxide (SO ₂)	ppmv	1.0	<1.0	<1.0
	mg/m ³	3.0	<3.0	<3.0
	kg/hr ^{[4] [5]}	0.040	<0.040	<0.040
Non-Methane Organic Carbon (NMOC) ^[3]	ppmv	0.2	3.4	1.0
	mg/m ³	0.1	1.8	0.5
	kg/hr ^{[4] [5]}	0.001	0.027	0.008
Respirable Suspended Particulates (PM ₁₀)	mg/m ³	5.0	<5.0	<5.0
	kg/hr ^{[4] [5]}	0.08	<0.08	<0.08
Total Particulates (PM _{total})	mg/m ³	5.0	<5.0	<5.0
	kg/hr ^{[4] [5]}	0.08	<0.08	<0.08

Note:

[1]: Results expressed as at 0 degree Celsius temperature, 101.325 kilopascals pressure, without correction for water vapour or oxygen content. The introduction of dilution air to achieve the limit is not allowed.

[2]: Results expressed as nitrogen dioxide.

[3]: Results expressed as carbon.

[4]: The LOR of the emission rate (kg/hr) is calculated based on the minimum flow rate among the 2 sampling trials.

[5]: The emission rate (kg/hr) is calculated based on the minimum flow rate during sampling.

LOR: Laboratory Reporting Limit.

APPENDIX B
Air Quality Monitoring Report – Emission
from Stack of Biogas Flare



STACK GAS SAMPLING AND LABORATORY TESTING REPORT

Location: ASB Biodiesel (Hong Kong) Ltd

Sampling Period: 17th January, 2018

ALS Work Order No: HK1771863

Report Issue Date: 27th February, 2018

CLIENT:

ASB Biodiesel (Hong Kong) Ltd

No. 22, Chun Wang Street,
Tseung Kwan O Industrial Estates, N.T.,
Hong Kong

Tel: 852-3741-1640

Fax: 852-3183-4200

PREPARED BY:

Mr Fung Lim Chee, Richard
General Manager - Hong Kong

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.

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.



1 Summary of Work

The document is the final report for the stack gas sampling and testing events in ASB Biodiesel (Hong Kong) Ltd.

Sampling Period: 17th January, 2018
Location of Stack: Tseung Kwan O Industrial Estate
No. of Stack: 1
Name of Stack: Biogas Flare (EP1)

1.1 Method for Stack Sampling and Analysis

Parameter	USEPA Method Reference
Velocity / Volumetric Flow Rate	Method 2
Sulphur Dioxide (SO ₂)	Method 6
Nitrogen Oxides (NO _x) Incl. Nitrogen Dioxide & Nitrogen Oxide	Method 7C
Carbon Monoxide (CO)	Method 10B
Non-Methane Organic Compounds (NMOC)	Method TO-12

1.2 Sampling Time

Each gas sample, except carbon monoxide and non-methane organic compounds, was covered for at least 1 hour.

For the measurement of carbon monoxide and non-methane organic compounds, the sampling was last for at least 30 minutes.



2 Sampling Summary

2.1 Sulphur Dioxide (SO₂)

USEPA Method 6 will be used for sampling and testing of sulphur dioxide (SO₂) sample. Stack gas with sulphur dioxide (SO₂) analyte will be collected from the centroid of the stack into impinger contains absorption solution (3 percent H₂O₂ solution) via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the ion chromatography method.

2.2 Nitrogen Oxides (NO_x)

USEPA Method 7C will be used for sampling and testing of nitrogen oxides (NO_x) sample. Stack gas with nitrogen oxides (NO_x) analyte will be collected from the centroid of the stack into impinger contains absorption solution (alkaline potassium permanganate solution) via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed colorimetrically.

2.3 Carbon Monoxide (CO)

USEPA Method 10B will be used for sampling and testing of carbon monoxide (CO) sample. Stack gas with carbon monoxide (CO) analyte will be collected from the centroid of the stack into a Tedlar Bag via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the gas chromatography flame ionization detection (GC/FID).

2.4 Non-Methane Organic Compounds (NMOC)

USEPA Method TO-12 will be used for sampling and testing of Non-Methane Organic Compounds (NMOC) sample. Stack gas with Non-Methane Organic Compounds (NMOC) analyte will be collected from the centroid of the stack into a 6L Canister via regulated gas sampler.

The sampling period will last for around 30 mins to collect sufficient sample for laboratory analysis. The duration depends on the stack condition such as pressure, temperature. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the gas chromatography flame ionization detection (GC/FID), the result of NMOC will be reported as "propane".



3 Sampling Period and Stack Parameter

3.1 Sampling Period

Sampling Date: 17th January, 2018

Test Parameter	Trial 1	Trial 2
Sulphur Dioxide (SO ₂)	10:10 - 11:10	16:05 - 17:05
Nitrogen Oxides (NO _x)	11:17 - 12:17	15:00 - 16:00
Carbon Monoxide (CO)	12:22 - 12:52	14:10 - 14:40
Non-Methane Organic Compounds (NMOC)	12:22 - 12:52	14:10 - 14:40

3.2 Stack Parameter

Test Parameter	Trial	Sampling Volume (m ³) ^[1]	Average Stack Gas Temperature (°C)	Average Stack Gas Velocity (m/s)	Average Stack Gas Volume Flow Rate (m ³ /hr) ^[1]
Sulphur Dioxide (SO ₂)	1	0.0554	102	0.8	1382
	2	0.0554	110	1.4	2510
Nitrogen Oxides (NO _x)	1	0.0246	131	0.8	1328
	2	0.0244	124	1.6	2870
Carbon Monoxide (CO)	1	0.0082	192	1.2	1835
	2	0.0082	191	1.1	1624
Non-Methane Organic Compounds (NMOC)	1	0.006	192	1.2	1835
	2	0.006	191	1.1	1624

Note:

[1]: Expressed as 0 deg. C, 101.325 kilopascal pressure.



4 Result

4.1 Biogas Flare (EP1)

Test Parameter	Unit	LOR	Result ^[1]	
			Trial 1	Trial 2
Sulphur Dioxide (SO ₂)	ppmv	1	<1	<1
	mg/m ³	3	<3	<3
	kg/hr	0.006	<0.006	<0.006
Nitrogen Oxides (NO _x) ^[2]	ppmv	3	3	<3
	mg/m ³	5	7	<5
	kg/hr	0.014	<0.014	<0.014
Carbon Monoxide (CO)	ppmv	10	<10	<10
	mg/m ³	13	<13	<13
	kg/hr	0.021	<0.021	<0.021
Non-Methane Organic Compounds (NMOC) ^[3]	ppmv	0.2	75.7	61.1
	mg/m ³	0.1	40.6	32.7
	kg/hr	0.0002	0.0745	0.0532

Note:

[1]: Results expressed as at 0 degree Celsius temperature, 101.325 kilopascals pressure, without correction for water vapour or oxygen content. The introduction of dilution air to achieve the limit is not allowed.

[2]: Results expressed as nitrogen dioxide.

[3]: Results expressed as carbon.

[4]: The LOR of the emission rate (kg/hr) is calculated based on the minimum flow rate among the 2 sampling trials.

LOR: Laboratory Reporting Limit.

APPENDIX C
Air Quality Monitoring Report – Emission
from Stack of Process Building



STACK GAS SAMPLING AND LABORATORY TESTING REPORT

Location: ASB Biodiesel (Hong Kong) Ltd

Sampling Period: 16th January, 2018

ALS Work Order No: HK1781988

Report Issue Date: 21st February, 2018

CLIENT:

ASB Biodiesel (Hong Kong) Ltd

No. 22, Chun Wang Street,
Tseung Kwan O Industrial Estates, N.T.,
Hong Kong
Tel: 852-3741-1640
Fax: 852-3183-4200

PREPARED BY:

Mr Fung Lim Chee, Richard
General Manager - Hong Kong

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.

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.



1 Summary of Work

The document is the final report for the stack gas sampling and testing events in ASB Biodiesel (Hong Kong) Ltd.

Sampling Period: 16th January, 2018
Location of Stack: Tseung Kwan O Industrial Estate
No. of Stack: 1
Name of Stack: Process Building Outlet (EP3)

1.1 Method for Stack Sampling and Analysis

Parameter	USEPA Method Reference
Velocity / Volumetric Flow Rate	Method 2
Acetaldehyde	Method TO-11A
Methanol	Method TO-14A

1.2 Sampling Time

The sampling time of each gas sample was covered for at least 1 hour.

2 Sampling Summary

2.1 Acetaldehyde

USEPA Method TO-11A will be used for sampling and testing of Acetaldehyde sample. Stack gas with Acetaldehyde analyte will be collected from the centroid of the stack into DNPH-coated silica gel cartridges via regulated gas sampler. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the liquid chromatography with ultraviolet (UV) detection.

2.2 Methanol

USEPA Method TO-14A will be used for sampling and testing of Methanol sample. Stack gas with Methanol analyte will be collected from the centroid of the stack into a 6L Canister via regulated gas sampler.

The sampling period will last for around 60 mins to collect sufficient sample for laboratory analysis. The duration depends on the stack condition such as pressure, temperature. Sample will be delivered to ALS Hong Kong Laboratory and analysed by the gas chromatography flame ionization detection (GC/FID).



3 Sampling Period and Stack Parameter

3.1 Sampling Period

Sampling Date: 16th January, 2018

Test Parameter	Trial 1	Trial 2
Acetaldehyde	13:59 - 14:59	15:01 - 16:01
Methanol	13:59 - 14:59	15:01 - 16:01

3.2 Stack Parameter

Test Parameter	Trial	Sampling Volume (m ³) ^[1]	Stack Gas Temperature (°C)	Stack Gas Velocity (m/s)	Stack Gas Volume Flow Rate (m ³ /hr) ^[1]
Acetaldehyde	1	0.0539	37.0	1.8	102
	2	0.0545	39.6	1.6	87
Methanol	1	0.006	37.0	1.8	102
	2	0.006	39.6	1.6	87

Note:

[1]: Expressed as 0 deg. C, 101.325 kilopascal pressure.

**4 Result****Process Building Outlet (EP3)**

Test Parameter	Unit	LOR	Result ^[1]	
			Trial 1	Trial 2
Acetaldehyde	ppmv	2.5	<2.5	<2.5
	mg/m ³	5	<5	<5
	kg/hr	1×10 ⁻³	<1×10 ⁻³	<1×10 ⁻³
Methanol	ppmv	50	110	176
	mg/m ³	70	157	252
	kg/hr	0.01	0.02	0.02

Note:

[1]: Results expressed as at 0 degree Celsius temperature, 101.325 kilopascals pressure, without correction for water vapour or oxygen content. The introduction of dilution air to achieve the limit is not allowed.

LOR: Laboratory Reporting Limit

APPENDIX D
Air Quality Monitoring Report – Odour
Measurement at Final Air Scrubber

Technological and Higher Education Institute of Hong Kong 香港高等科技教育學院

THEi Building, 20A Tsing Yi Road, Tsing Yi Island, New Territories, Hong Kong

香港新界青衣島青衣路20A號 香港高等科技教育學院大樓

www.thei.edu.hk

Telephone No 電話

Facsimile No 傳真

Our Reference 本院檔號

Your Reference 來函檔號

The logo for Thei, consisting of the word "Thei" in a bold, black, sans-serif font. The letter "i" is red and has a red dot above it.

Member of VTC Group
VTC 機構成員

For ASB Biodiesel (Hong Kong) Limited

Odour Measurement at ASB Biodiesel Plant

23 January 2018

By Odour Research Centre

Faculty of Science and Technology
Technological and Higher Education Institute of Hong Kong

(Member of VTC Group)

1. Background

An odour assessment service was required by ASB Biodiesel (Hong Kong) Limited to collect odour samples at the final air scrubber and to conduct laboratory olfactometry analysis with the European Standard Method (EN13725).

2. Scope of the Work

The scope of the work is:

One sampling location was previously identified by the client. A total of two odour samples need to be collected at final air scrubber per month for a period of one year and the monthly report need to be submitted to the client.

- . to collect two odour samples at the final air scrubber and deliver the collected samples to laboratory for olfactometry analysis on 23 January 2018.
- . to conduct laboratory olfactometry analysis to determine the odour concentration of the collected odour samples;
- . to calculate the odour emission rate at the final air scrubber;
- . to prepare an analytical report.

3. Methodology

3.1 Odour Sampling

Odour gas sample is collected by a Sampling Device Standard consists of a vacuum container, which is evacuated by a vacuum pump. The sampling point and the standard sampler are connected by a probe. Due to the evacuation in the sampling device, the sample bag, inside the device, sucks in sample air via the probe. During this process, none of its components come into contact with the sample air due to the construction of the sampling device.



Odour Sampling System

3.2 Odour Measurement by Olfactometry

Odour concentration is determined by a Dynamic Olfactometer (TO9) 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 defined as $1 \text{ OU}_E/\text{m}^3$. The odour concentration is then expressed in terms of multiples of the detection threshold. The range of measurement is typically from $2^2 \text{ OU}_E/\text{m}^3$ to $2^{17} \text{ OU}_E/\text{m}^3$ (excluding pre-dilution).



Olfactometer

3.3 Determination of Odour Emission Rate

The odour emission rate (OER) at the final air scrubber can be calculated by the following equation:

$$\text{OER (ou/s)} = \text{Odour concentration (ou/m}^3\text{)} \times \text{Cross section area of outlet (m}^2\text{)} \times \text{Outlet gas flow velocity (m/s)}.$$

4. Odour Sampling and Olfactometry Measurement

4.1 Sampling Activities

The odour sampling works was conducted on 23 January 2018 at the final air scrubber. A total of two odour samples were collected on the site and delivered to the Odour Research Centre of THEi

immediately.

During the odour sampling, the wind speed was measured on the outlet of final air scrubber. The location description and sampling condition are summarized in Table 1.

Table 1: Summary of sampling condition and results for olfactometry measurement

Location ID	Location description	Date	Time	Type	a (m ²)	V (m/s)	OC (OU _E /m ³)	OER (ou/s)
1	Final air scrubber	23 January 2018	15:20	A	0.0962	0.95	131	12.0
2	Final air scrubber	23 January 2018	15:25	A	0.0962	0.95	123	11.2

Remark: A: Ambient sampling; a: Cross section area of final air scrubber; V: Gas flow velocity from final air scrubber; OC: Odour concentration; OER: Odour emission rate from final air scrubber.

4.2 Olfactometry Measurement and Analytical Results

A total of two odour samples were transported to the Odour Research Centre of THEi. The olfactometry analysis was conducted within 24 hours after the sampling work using a dynamic olfactometer in accordance with the European Standard Method (EN13725). Four qualified panellists participated in the odour testing session, who were previously selected through a set of screening tests using a certified n-butanol gas (60 ppm/v) as a standard reference.

According to the odour concentration determined for each sample, the odour emission rates at the final air scrubber were calculated as follows:

$OER \text{ (ou/s)} = \text{Odour concentration (ou/m}^3\text{)} \times \text{Cross section area of outlet (m}^2\text{)} \times \text{Outlet gas flow velocity (m/s)}$.

The analytical results of odour concentrations and odour emission rate are summarized in Table 1.

The photos about the on-site sampling activity at the final air scrubber are presented below,



Final air scrubber



Final air scrubber

Prepared by:

KH NG

Signed:



Odour Research Centre at THEi



APPENDIX E
Air Quality Monitoring Report – Odour
Patrol

Technological and Higher Education Institute of Hong Kong 香港高等科技教育學院

THEi Building, 20A Tsing Yi Road, Tsing Yi Island, New Territories, Hong Kong
香港新界青衣島青衣路20A號 香港高等科技教育學院大樓
www.thei.edu.hk

Telephone No 電話

Facsimile No 傳真

Our Reference 本院檔號

Your Reference 來函檔號

The logo for Thei, consisting of the word "Thei" in a bold, black, sans-serif font. The letter "i" is red and has a red dot above it.

Member of VTC Group
VTC 機構成員

For ASB Biodiesel (Hong Kong) Limited

Odour Patrol at ASB Biodiesel Plant

15 January 2018

By Odour Research Centre

**Faculty of Science and Technology
Technological and Higher Education Institute of Hong Kong
(Member of VTC Group)**

1. Background

An odour patrol survey was required by ASB Biodiesel (Hong Kong) Limited to determine the odour intensity of ambient air at the boundary of ASB Biodiesel Plant during its operation period of the morning and the afternoon on 15 January 2018.

2. Scope of the Work

The scope of the work is:

This field odour survey includes the daily monitoring by a qualified odour panelist from THEi to record the instant weather conditions, to determine odour intensity and also to identify odour natures at each of five locations along with the boundary of the ASB Biodiesel Plant. The odour patrol exercise should be conducted two times per month for a period of one year and the monthly report need to be submitted to the client.

3. Methodology

- 3.1 The odour patrol means a simple judgment by observers patrolling and sniffing at the boundary of the ASB Biodiesel Plant to detect any odour at different time within operating hours.
- 3.2 One qualified odour panelist with his individual thresholds (n-butanol) complied with the requirement of the European Standard Method (EN13725) in the range of 20 to 80 ppb/v and a standard deviation of $R < 2.3$ should be selected to conduct the odour patrol work.
- 3.3 The panelist should be free from any respiratory diseases and normally do not work at or live in the area in the vicinity of the ASB Biodiesel Plant.
- 3.4 During each visit, the instant weather conditions should be measured using a portable environment anemometer (Lutron LM-8000) and recorded for references.
- 3.5 During odour patrol, the panelist should indentify the odour nature and determine the odour intensity at each location. The odour intensity can be expressed using an odour intensity scale, which is a verbal description of an odour sensation to which a numerical value is assigned at five different levels according to the following criteria:

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

4. Odour Patrol Survey

- 4.1 Prior to the on-site odour survey, a site visit was conducted by an odour technician from the Odour Research Centre of THEi together with the staff from ASB Biodiesel (Hong Kong) Limited. During the site visit, five locations at the boundary of ASB Biodiesel Plant were identified for the odour patrol survey and are clearly marked in Figure 1.
- 4.2 One qualified odour panelist from THEi was selected as an observer to conduct the odour patrol, who participated in a set of screening tests using a certified n-butanol gas with their individual thresholds (n-butanol) complied with the requirement of the European Standard Method (EN13725) in the range of 20 to 80 ppb/v and a standard deviation of $R < 2.3$.
- 4.3 The odour patrol survey was conducted in the morning and the afternoon on 15 January 2018.
- 4.4 During each survey, the odour panelist recorded the weather conditions including prevailing weather, wind direction and wind speed, determined the odour intensity and also identified the odour nature at each location.
- 4.5 The illustrations about odour patrol activities at different locations are presented below:



1



2



3



4



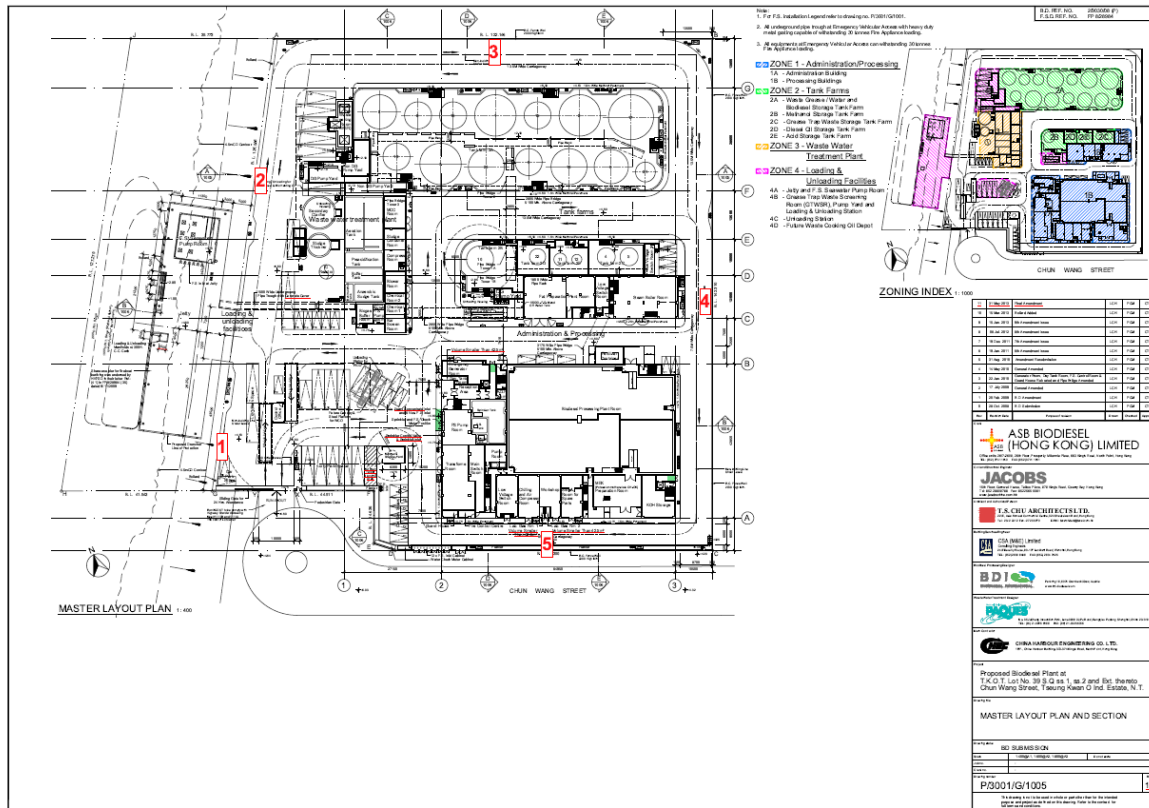
5

4.6 All odour patrol data and findings in two trips on 15 January 2018 are summarized in Table 1 as shown below:

Table 1: Summary of odour patrol survey data and findings

Date	Location	Time	Weather	Wind		Odour Intensity	Observations
				Speed (m/s)	Direction		Odour Nature
15 January 2018	1	10:20	Fine	0.8	NE	1	Oil and Grease
	2	10:24		4.4	NE	1~2	Oil and Grease
	3	10:29		1.5	NE	0~1	Oil and Grease
	4	10:33		0.9	NE	0~1	Oil and Grease
	5	10:36		0.5	NE	0	
	1	12:12	Fine	1.3	NE	1	Oil and Grease
	2	12:16		3.7	NE	1~2	Oil and Grease
	3	12:21		2.4	NE	0	
	4	12:25		1.4	NE	0~1	Oil and Grease
	5	12:29		0.3	NE	0	

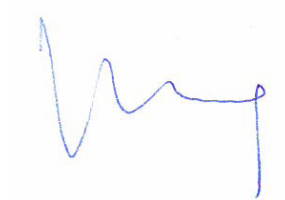
Figure 1: Five locations of odour patrol survey at the boundary of ASB Biodiesel Plant



Prepared by:

KH NG

Signed:



Odour Research Centre at THEi



APPENDIX F
Water Quality Monitoring Result – Effluent
from Wastewater Treatment Plant

TEST REPORT

SAMPLE DESCRIPTION : Stream 1, Water Pollution Control Ordinance (CAP. 358)
 Licence No.: WT00029932-2017

SAMPLE RECEIVED DATE : 25 January, 2018

TESTING DATE : 25-29 January, 2018

TEST RESULT :

TEST	METHOD	UNIT	LIMIT	RESULT
pH	/	/	6-10	7.05
TCOD	HACH Method 8000	mg/L	2000	661
Sulfate	HACH Method 10248	mg/L	1000	90
Total Nitrogen (as N)	HACH Method 10071	mg/L	200	60.4
Total Phosphorous (as P)	HACH Method 8190	mg/L	50	6.0
Total Suspended Solid	APHA 2540 D	mg/L	800	320
Oil & Grease	APHA 5520 B	mg/L	50	40
BOD ₅	APHA 5210 B	mg/L	800	520

For and on behalf of
 ASB BIODIESEL (HONG KONG) LTD

Authorized Signature




APPENDIX H
Test Result – Sulphur Content in Bio
Heating Oil



TEST REPORT

SAMPLE DESCRIPTION : Bio Heating Oil, Tank 21
SAMPLE RECEIVED DATE : 31 January, 2018
TESTING DATE : 31 January, 2018
TEST RESULT :

TEST	METHOD	UNIT	RESULT
Sulphur	EN ISO 20846: 2011	mg/kg	313

For and on behalf of
ASB BIODIESEL (HONG KONG) LTD



Authorized Signature

APPENDIX I
Complaint Log

APPENDIX I – COMPLAINT LOG**Reporting Month:** January 2018

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2016-09-001	Not Specified	24 th September, 2016	2 Gammon engineers complained about strong odour and oily discharge at 9:15 am	<p>The incident was due to the pump P101A was tripped and led to an overflow of wastewater at Influent Pit T101.</p> <p>According to the project proponent, at 8:45 am, high level alarm at Level Indicator of T101 was triggered and the water level in Influent Pit T101 was over 100%. Investigation found out that wastewater was flooding from Bar Screen Room to road because the pump P101A was not operating in the field (although the pump was indicated operating in Process Control System).</p> <p>Operator then immediately stopped the wastewater feeding to Influent Pit T101, and put sand bags around the stormwater grating outside the pedestrian walkway of Bar Screen Room to block wastewater leaking into storm water drainage. Afterwards, operator cleaned up the area. The problem was resolved at 10:30 am at the same day, and no irritation smell was sensed outside the project site.</p> <p>To prevent recurrence, the following measures are recommended:</p> <ul style="list-style-type: none"> - Cover the storm water grating outside the bar screen room pedestrian walkway by steel plate; - Modify the pump P101A temporary control circuit to feedback overload trip signal back to Process Control System. Maintenance will set up periodic inspection programme to monitor pump performance; and - Review the emergency handling procedures. 	Closed
COM-2016-10-002	Not Specified	5 th October, 2016	EPD referred that a councilor complained about constant smell released from the Project	<p>Investigation found out that housekeeping of the plant was unsatisfactory and improvements are required.</p> <p>Operator has improved housekeeping, including:</p> <ul style="list-style-type: none"> - Always keep the gate of the grease trap waste screening room closed; - Always keep sludge containers closed; - Frequent cleaning of drainage system; and - Always keep the work site clean and tidy 	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2016-10-003	Not Specified	18 th October, 2016	EPD referred that a complaint on malodour from the Project was received on 11 th October 2016	Investigation found no process upset during that week. Operator has put the best effort housekeeping (e.g. keeping sludge containers and rooms closed and frequent cleaning of drainage system), and staff have been trained on housekeeping.	Closed
COM-2017-02-004	Not Specified	6 th February, 2017	EPD referred complaints from Drainage Service Department (DSD) and neighboring sites regarding the blockage of public sewerage system along Chun Wang Street. DSD reported to EPD that some oily substances and debris had blocked the sewerage system.	Investigation found similar substances (i.e. oily substances and debris) at the foul manhole within the Plant. Investigation also found that untreated effluent was discharged to a foul manhole within the Plant. Follow-up action (i.e. cleaning of internal sewerage system, from FMH01 to TFMH01) was carried out in early February. In addition, operator has put the best effort (e.g. carry out staff training) to ensure that all effluent are treated properly by wastewater treatment facilities before discharge.	Closed
COM-2017-07-005	Not Specified	4 th July, 2017	EPD referred that resident of LOHAS Park complained operation of ASB plant caused noise nuisance (low frequency machinery noise continuously round the clock) and emitted unpleasant malodour on 19 June, 2017.	<u>Noise Nuisance</u> Since there are other noise sources which operate continuously round the clock (e.g. cooling tower from other buildings) between the Project Site and LOHAS Park, the noise nuisance could be due to other noise sources. In addition, investigation found no process upset on that day. Considering the long distance (at least 900m) between the Project Site and LOHAS Park, the noise nuisance may not be caused by the operator. <u>Unpleasant Malodour</u> Investigation found no process upset during the week. Since the regular odour monitoring (i.e. odour measurement at the Final Air Scrubber and odour patrol along Site boundary) did not report any exceedance event (except this complaint) in June and July 2017, the unpleasant malodour may not be caused by the Project considering the long distance (at least 900m) between the Project Site and LOHAS Park. Operator has, and will, put the best effort housekeeping (e.g. keeping sludge containers and rooms closed and frequent cleaning of drainage system) to minimize odour nuisance.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2017-07-006	Stack of Boiler	4 th July, 2017	EPD referred that a complaint on continuous dark smoke emission from Stack of Boiler on 30 June, 2017 at about 6 pm.	Investigation found that a Pressure Control Valve had malfunctioned, causing unsteady oil flow into burner. This led to a low air to fuel ratio which ultimately led to dark smoke emission. The Valve was repaired on 1 st July 2017 morning, and no dark smoke was emitted.	Closed
COM-2017-10-007	Not Specified	6 th October 2017	EPD referred that employee of nearby plant (Chun Wang Street, Tseung Kwan O Industrial Estate) complained ASB biodiesel plant emitting malodour continuously.	Investigation found no process upset during the week. Regular odour monitoring (i.e. odour measurement at the Final Air Scrubber and odour patrol along Site boundary) did not report any exceedance event (except complaint) in this reporting month. Nevertheless, as joint site visit on 1 st November 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.	Ongoing
COM-2017-10-008	Not Specified	17 th October 2017	EPD referred that employee of nearby plant (Chun Wang Street, Tseung Kwan O Industrial Estate) complained ASB biodiesel plant emitting malodour from 7:15am to afternoon on 12 Oct 2017 and from 7:50am to afternoon on 13 Oct 2017.	Investigation found no process upset during the week. Regular odour monitoring (i.e. odour measurement at the Final Air Scrubber and odour patrol along Site boundary) did not report any exceedance event (except complaint) in this reporting month. Nevertheless, as joint site visit on 1 st November 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.	Ongoing
COM-2017-11-009	Stack of Boiler	17 th November 2017	EPD referred that a complaint was received regarding continuous dark smoke emission from Stack of Boiler on 14 Nov 2017 at 12:50pm.	Investigation found that the steam boiler was tripped, which might cause dark smoke emission. The operator had stopped the production immediately, and carried out maintenance work to rectify the problem.	Ongoing

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2017-11-010	Stack of Boiler	20 th November 2017	EPD referred that a complaint was received regarding continuous dark smoke emission from Stack of Boiler on 18 Nov 2017 from 11:00am to noon (12:00).	Investigation found that the steam boiler was tripped, which might cause dark smoke emission. The operator had stopped the production immediately, and carried out maintenance work to rectify the problem.	Ongoing
COM-2017-11-011	Not Specified	21 st November 2017	EPD referred that employee of nearby plant complained ASB biodiesel plant emitting malodour continuously.	Although investigation found no process upset during the week, the roller door of the sludge container room was impaired, which would emit malodour. The operator will fix the roller door. Nevertheless, regular odour monitoring (i.e. odour measurement at the Final Air Scrubber and odour patrol along Site boundary) did not report any exceedance event (except complaint) in this reporting month. Besides, joint site visit on 11 th December 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.	Ongoing
COM-2017-11-012	Not Specified	23 th November 2017	EPD referred that a complainant complained ASB biodiesel plant emitting malodour across Chun Wang Street.	Investigation found no process upset during the week. The impaired roller door of the sludge container room (COM-2017-11-011) hadn't been fixed. The operator will fix the roller door. Nevertheless, regular odour monitoring (i.e. odour measurement at the Final Air Scrubber and odour patrol along Site boundary) did not report any exceedance event (except complaint) in this reporting month. Besides, joint site visit on 11 th December 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.	Ongoing
COM-2017-11-013	Not Specified	29 th November 2017	EPD referred that a complainant at Tseung Kwan O Industrial Estate complained ASB biodiesel plant emitting malodour continuously, from Monday to Saturday, from 8:00am to 7:00pm. The complainant	Regular odour monitoring (i.e. odour measurement at the Final Air Scrubber and odour patrol along Site boundary) did not report any exceedance event (except complaint) since the commencement of the Project's operational phase. Nevertheless, during the year, site visits carried out by EPD and site audits carried out jointly by the operator, ET and IEC identified environmental deficiencies which would pose malodour problem. The recent joint site audit carried out by the operator, ET and IEC on 11 th Decmber 2017 identified several environmental deficiencies.	Ongoing

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			<p>suspected that the odourous gas is toxic and causes air pollution. The complainant also pointed out that complaint on malodour was raised one year ago. Although the malodour was mitigated after EPD's follow-up action, the problem resumed after 2 weeks.</p>	<p>Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.</p> <p>Regarding the complainant suspected that the odourous gas is toxic, the investigation is still in progress.</p>	
COM-2017-11-014	Not Specified	29 th November 2017	<p>EPD referred that a complaint complained oily substances being discharged from an outfall near the roundabout at the western end of Chun Wang Street. The oily substances was suspected to be discharged from the ASB biodiesel plant.</p>	<p>Investigation work has been carried out. A joint site visit on 11th December 2017 carried out by ET & IEC found oily substance being left near drainage channel, the operator is advised to 1.) clean up the oily substance; 2.) check and clean the oil interceptor; and 3.) clean the drainage system.</p>	Ongoing
COM-2018-01-015	Not Specified	29 th January 2018	<p>EPD referred that a complainant complained ASB biodiesel plant emitting malodour across Chun Wang Street.</p>	<p>Investigation found that the tricanter in the wastewater treatment plant was blocked on 29th January 2018. During maintenance on the same day, some odourous material (e.g. sludge) spilled out. The operator has cleaned up the spilled material.</p> <p>Joint site visit on 5th February 2018 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the operator, and the operator has been rectifying the deficiencies.</p>	Ongoing

APPENDIX J
Investigation Report of Environmental
Quality Limit Exceedances (January 2018)



MANNINGS
(Asia) Consultants Limited

Address: 5/F, Winning Commercial Building, 46-48 Hillwood Road, Tsim Sha Tsui, Kowloon
Tel: 852 - 3168 2028 Fax: 852 - 3168 2022

<i>To:</i>	Cinotech	<i>Date:</i>	16 April 2018
<i>Attn:</i>	Mr. H. T. Lai	<i>Fax:</i>	3107 1388
<i>From:</i>	Mr. Mark Cheung	<i>Ref:</i>	D1067/P02926
<i>Job No.</i>	D1067	<i>Total Pages:</i>	1
Subject:	Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Investigation Report for the exceedance event in January 2018		

Dear Sir,

We refer to your submission of the Investigation Report for the exceedance event in January 2018 via email dated 13 April 2018.

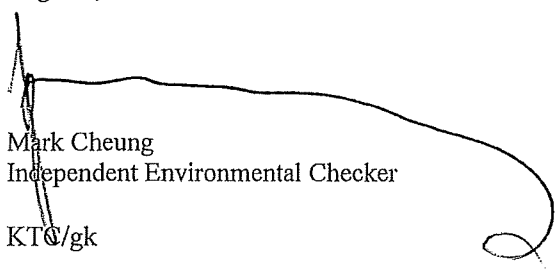
We write to advise that we have no comment on the captioned report.

Please keep tracking on the conditions of the equipment and operation practice adopted in order to avoid the recurrence of exceedance event.

Regards,

Mark Cheung
Independent Environmental Checker

KTC/gk



Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

- Investigation Report of Environmental Quality Limit Exceedances

Monitoring Month: January 2018

Part A – Exceedance Summary Table

	Station	Parameter	Action Level	Limit Level	Monitoring Result **
i	Stack of Boiler (EP2)	Nitrogen oxides (NO _x)	N.A. *	2.213 kg/hr	<u>3.185 kg/hr</u>
ii	Stack of Biogas Flare (EP1)	Non-methane Organic Compounds (NMOC)	N.A. *	0.0018 kg/hr	<u>0.064 kg/hr</u>

* No Action Level was set in the Final EM&A Manual of the Project

** ***Bold Italic*** means Action Level exceedance; ***Bold Italic with underline*** means Limit Level exceedance

Part B – Investigation:

- i) The exceedance of NO_x in emission from Stack of Boiler was due to excessive air for combustion. Investigation pointed out that the air ratio was increased to guarantee complete combustion of fuel. Nevertheless, this resulted in excessive air, and led to the exceedance of NO_x.
- ii) The exceedance of NMOC in emission from Stack of Biogas Flare was due to the unstable biogas generation on the sampling day. The biogas generated was not sufficient for the biogas flare to operate in desirable condition throughout the sampling period (which will not happened in normal operation). Nevertheless, in order to obtain sufficient gas for sampling, the biogas flare was operated throughout the sampling period. This led to unstable fuel/air ratio during sampling, and resulted in the exceedance event. Since the biogas flare was operated in undesirable condition which will not be happened in normal operation, the sample is not representative.

Part C – Recommendation and Follow-up Action:

- i) It is recommended that the operator should review and revise the air/fuel ratio to an optimum ratio. The operator has reviewed and revised the air/fuel ratio so that the ratio allows complete combustion of fuel without excessive air. In order to prevent similar event in future, the operator will put in more human resources to get a better control of fuel combustion.
- ii) As the biogas flare requires sufficient and stable biogas production for operating in normal condition, it is recommended to suspend the sampling if there has limited/not stable biogas production on the sampling day. This can prevent obtaining non-representative sample for the monitoring.

APPENDIX K
Water Pollution Control Ordinance
Licence – WT00029932-2017



Licence No.:

牌照編號: WT00029932-2017

This Licence is Valid to: 31 December 2019

本牌照有效期至: 二〇一九年十二月三十一日

ENVIRONMENTAL PROTECTION DEPARTMENT

環境保護署

WATER POLLUTION CONTROL ORDINANCE (CAP. 358)

水污染管制條例(第358章)

LICENCE PURSUANT TO SECTION 15/ 20 / 23A*

按第15/ 20 / 23A*條簽發的牌照

The Director of Environmental Protection ("the Authority") grants this licence under the Water Pollution Control Ordinance ("the Ordinance") on the terms and conditions stated below.

環境保護署署長(「監督」)按下列的條款及條件,根據水污染管制條例(「本條例」)批給此牌照。

22 December 2017

Date

日期

(CHAN Kin Ki)

For the Authority

監督 (陳健基 代行)

PART A 甲部 : GENERAL TERMS 一般條款

Name of Licensee ("the Licensee") 持牌人名稱(「持牌人」)	ASB Biodiesel (Hong Kong) Limited	
Discharge Premises ("the premises") 排放處所(「處所」)	ASB Biodiesel (Hong Kong) Limited of 22 Chun Wang Street, Tseung Kwan O Industrial Estate, Tseung Kwan O, N.T. 新界將軍澳將軍澳工業邨駿宏街22號之 ASB Biodiesel (Hong Kong) Limited	
Water Control Zone 水質管制區	Junk Bay 將軍澳	
Discharge Category 排放種類	Discharge of Industrial/Commercial/Institutional* Trade Effluent 工業/商業/機構* 污水排放	
Nature of Discharge and Wastewater Treatment Facilities 排放性質及廢水處理設施	Stream 1 水流 1 Effluent from Wastewater Treatment Facilities 源自上址的污水處理設施 Screen, Oil/Water Separation, pH Control, Biological Treatment and Sludge Treatment 隔濾、油水分隔、控制酸鹼值、生物處理及污泥處理	Stream 2 水流 2 Effluent from floor washing of operation areas 源自上址的操作區的清地水 Oil Interceptor 截油器
Discharge Point(s) 排放點	Stream 1 水流 1 Discharge into communal foul sewer 排放入公用污水渠	Stream 2 水流 2 Discharge into communal storm water drain 排放入公用雨水渠
Sampling Point(s) 取樣點	Stream 1 水流 1 See Point(s) marked S.P.1 on Annex attached 參見附件中標指 S.P.1 的取樣點	Stream 2 水流 2 See Point(s) marked S.P.2 on Annex attached 參見附件中標指 S.P.2 的取樣點

*Delete as appropriate
將不適用者刪去

PART B 乙部 : SPECIFIC CONDITIONS 特別條件

B1. Limitations on Discharge 排放限制

The quantity and composition of any discharge from the premises shall not exceed the limits stated in the table below^(Note a). All figures are upper limits unless otherwise indicated. All units are expressed as concentration in milligramme per litre unless otherwise stated.

任何源自處所之排放的量和成份不得超過下表所列的限度^(附註 a)。除另予表明外，所有數字均為上限。除另予說明外，所有單位均以毫克/升的濃度表示。

For Stream 1 水流 1:

Determinand 測量物	Limit 限度	Determinand 測量物	Limit 限度
Flow Rate (m3/day) 流量 (立方米 / 日)	515	Copper 銅	1.5
pH (pH unit) 酸鹼值 (pH 單位)	6-10#	Nickel 鎳	1.5
Temperature (oC) 溫度 (攝氏)	43	Chromium 鉻	1
Suspended Solids 懸浮固體	800	Zinc 鋅	1.5
Settleable Solids 可沈降的固體	100	Silver 銀	1.5
Biochemical Oxygen Demand (5 days, 20°C) 生化需氧量 (5 天, 20°C)	800	Other toxic metals individually 其他個別的有毒金屬	1
Chemical Oxygen Demand 化學需氧量	2000	Total toxic metals 總有毒金屬	3
Oil & Grease 油脂	50	Cyanide 氰化物	0.7
Iron 鐵	15	Phenols 酚	0.7
Boron 硼	4	Sulphide 硫化物	5
Barium 鋇	4	Sulphate 硫酸鹽	1000
Mercury 汞	0.001	Total Nitrogen 總氮	200
Cadmium 鎘	0.001	Total Phosphorus 總磷	50
		Surfactants (total) 表面活性劑 (總量)	30

#Range 上下限

For Stream 2 水流 2:

Determinand 測量物	Limit 限度	Determinand 測量物	Limit 限度
Flow Rate (m3/day) 流量 (立方米 / 日)	1	Cadmium 鎘	0.1
pH (pH unit) 酸鹼值 (pH 單位)	6-9#	Other toxic metals individually 其他個別的有毒金屬	1
Temperature (oC) 溫度 (攝氏)	40	Total toxic metals 總有毒金屬	2
Colour(lovibond units) (25mm cell length) 色度(羅維保德色調計) (25 毫米光度管)	1	Cyanide 氰化物	0.2
Suspended Solids 懸浮固體	50	Phenols 酚	0.5
Biochemical Oxygen Demand (5 days, 20°C) 生化需氧量 (5 天, 20°C)	50	Sulphide 硫化物	5
Chemical Oxygen Demand 化學需氧量	100	Total residual chlorine 總殘餘氯	1
Oil & Grease 油脂	30	Total Nitrogen 總氮	100
Iron 鐵	15	Total Phosphorus 總磷	10
Boron 硼	5	Surfactants (total) 表面活性劑 (總量)	20
Barium 鋇	5	E. coli (count/100 ml) 大腸桿菌 (個/100 毫升)	1000
Mercury 汞	0.1		

#Range 上下限

B2. Self-monitoring and Reporting 自行監測及報告

The Licensee shall perform self-monitoring as and when required by the Authority.

持牌人須在監督要求時進行自行監測。

The Licensee shall sample the discharge at the Sampling Point(s) and, at his own expense, carry out analyses in accordance with the sample type and measurement frequency specified for each determinand named below:-

持牌人須在取樣點為排放抽取樣本，並依照下列指定的測量物、取樣形式及頻率，自資予以分析。

For Stream 1 水流 1:

<i>Determinand 測量物</i>	<i>Unit 單位</i>	<i>Sample Type 取樣形式</i>	<i>Frequency 頻率</i>
pH 酸鹼值	(pH unit) (pH 單位)	Grab 隨意取集	Monthly 每一個月
Suspended Solids 懸浮固體	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月
Biochemical Oxygen Demand (5 days, 20°C) 生化需氧量 (5 天, 20°C)	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月
Chemical Oxygen Demand 化學需氧量	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月
Oil & Grease 油脂	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月
Sulphate 硫酸鹽	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月
Total Nitrogen 總氮	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月
Total Phosphorus 總磷	mg/L 毫克/升	Grab 隨意取集	Monthly 每一個月

Results of these monitoring shall be summarized in a report on a ~~monthly~~/~~bi-monthly~~/~~quarterly~~* basis and shall be submitted to the Authority.

所有監測結果須以摘要形式，每一個月/~~兩個月~~/~~三個月~~*作出紀錄，並須呈交監督審閱。

For Stream 2 水流 2:

<i>Determinand 測量物</i>	<i>Unit 單位</i>	<i>Sample Type 取樣形式</i>	<i>Frequency 頻率</i>
pH 酸鹼值	(pH unit) (pH 單位)	Grab 隨意取集	Quarterly 每三個月
Suspended Solids 懸浮固體	mg/L 毫克/升	Grab 隨意取集	Quarterly 每三個月
Biochemical Oxygen Demand (5 days, 20°C) 生化需氧量 (5 天, 20°C)	mg/L 毫克/升	Grab 隨意取集	Quarterly 每三個月
Chemical Oxygen Demand 化學需氧量	mg/L 毫克/升	Grab 隨意取集	Quarterly 每三個月
Oil & Grease 油脂	mg/L 毫克/升	Grab 隨意取集	Quarterly 每三個月

Results of these monitoring shall be summarized in a report on a ~~monthly~~/~~bi-monthly~~/~~quarterly~~* basis and shall be submitted to the Authority.

所有監測結果須以摘要形式，每一個月/~~兩個月~~/~~三個月~~*作出報告，並須呈交監督審閱。

*Delete as appropriate
將不適用者刪去

PART C 丙部 : STANDARD CONDITIONS 標準條件

C1. The Discharge 排放

C1.1 The discharge shall not contain polychlorinated biphenyls (PCB), polyaromatic hydrocarbon (PAH), fumigant, pesticide or toxicant, chlorinated hydrocarbons, flammable or toxic solvents, calcium carbide; any substance likely to damage the sewer or to interfere with any of the treatment processes, or to be harmful to the health and safety of any personnel engaged in the operation or maintenance of a sewerage system; waste liable to form scum or deposits in any part of the drainage or sewerage system, or the waters of Hong Kong; waste liable to form discolouration in any parts of the waters of Hong Kong; sludge, floatable substances or solids larger than 10 mm; and sludge or solid refuse of any kind.

排放不得含有多氯聯苯、聚芳烴、薰蒸劑、殺蟲劑或毒劑、氯化烴、可燃的或有毒的溶劑、碳化鈣；會損毀污水渠結構或干擾任何處理程序的物質，或有損操作及維修排污系統人員健康及安全的任何物質；足以及在排水或排污系統，或香港水域任何範圍內形成浮渣或沉積物的廢物；足以在香港水域任何範圍內形成變色的廢物；污泥、漂浮物質或體積超越 10 毫米的固體；及任何種類的污泥或固體垃圾。

C1.2 No discharge shall bypass the wastewater treatment facilities, the Sampling Point(s) or the Discharge Point(s) unless it is unavoidable to prevent loss of life, personal injury or severe property damage or no feasible alternative exists.

除非避免人命傷亡或嚴重財物損失或無其他可行代替辦法，排放不得繞流不經其廢水處理設施，取樣點或排放點。

C1.3 Dilution of the discharge to achieve compliance with the limits contained in this licence is prohibited.

不得將排放稀釋，以求達到本牌照內所訂的限度。

C2. Flow Measurement 量度流量

The Licensee shall determine the flow rate of the discharge by installing, operating and maintaining a continuous flow measuring device with an accuracy certified by its manufacturer to be within plus or minus 3 percent of the actual flow, and calibrating the flow measuring device regularly according to manufacturer's recommendations. If no such device is installed, the Licensee shall determine the flow rate through using calculation methods agreed by the Authority, by making reference to the amount of water used in the premises being served by mains supply and other sources, less process consumption and any other losses.

持牌人必須設置、操作及保養一個連續性流量計作為測定排放的流量率之方法，其準確程度須經製造商證實為不超逾或低於真正流量的 3%，並應根據製造商建議的方法，定期校準流量計。如沒有設置該設備，持牌人須依照監督同意的計算方法，根據處所由自來水及其他水源供應的總用水量減去工序耗水量及其他耗水量來測定流量率。

C3. Treatment 處理

C3.1 The Licensee shall provide necessary wastewater treatment facilities, and shall engage personnel with adequate qualification and experience to properly operate and maintain all wastewater treatment facilities at all times. Standby equipment shall be provided to guard against failure of major treatment equipment.

持牌人須提供必需的廢水處理設施，並須僱用有足夠資格及經驗的人士，時常妥善操作及保養所有廢水處理設施。主要處理設施須配有後備裝置，以應付故障發生。

C3.2 In the event of loss of efficiency of operation, or failure of all or part of the wastewater treatment facility, the Licensee shall take all reasonable steps to the extent necessary to maintain compliance with this licence. Such steps shall remain until operation of the wastewater treatment facility is restored or an alternative method of treatment is provided.

倘若部份或整個廢水處理設施操作失靈或發生故障，持牌人須採取所有必要的合理措施，以求達到符合本牌照的規定。此等措施須維持至廢水處理設施恢復如常操作或有其他代替的處理方法可供採用為止。

C3.3 If the wastewater treatment facilities are not properly operated and maintained to the satisfaction of the Authority, the Licensee shall take immediate and effective remedial actions as required by the Authority.

倘若廢水處理設施的操作及保養未能令監督滿意，持牌人須按監督之規定，採取即時及有效的補救行動。

C4. Disposal 棄置

Sludges, screenings, solids, oil and grease, filter backwash, or other pollutants removed in the course of treatment shall be disposed of in a proper manner^(Note b & c).

處理過程中所產生的污泥、隔濾物、固體、油脂、過濾回洗或其他污染物，必須妥善地棄置^(附註 b 及 c)。

C5. Monitoring 監測

C5.1 The Licensee shall provide and maintain suitable facility such as an inspection chamber, manhole or sampling valve at each Sampling Point to enable duly authorized officer(s) of the Authority to take samples of the discharge at any time from the premises.

持牌人須在每一個取樣點提供及保養適當的設施，例如檢查槽，沙井或取樣閥，以確保獲監督授權的人員隨時可在處所內抽取排放樣本。

C5.2 For self-monitoring, "grab samples" shall be taken during the period when the determinand to be analyzed for is likely to be present in its maximum concentration. "Composite samples" shall include samples taken over daily duration of the discharge.

在自行監測中，「隨意取集樣本」須在測量物的濃度很可能是最高的那段時間內抽取。「綜合樣本」須包含在每日排放期間不同時候所抽取的樣本。

C5.3 For self-monitoring, all samples shall be analyzed in accordance with the most updated analytical methods used by the Government Chemist ^(Note d).

在自行監測中，所有樣本均須按照政府化驗師所採用的最新分析方法予以分析^(附註d)。

C6. Records and Reporting 紀錄及報告

C6.1 The Licensee shall keep the following records in the premises for inspection by duly authorized officer(s) of the Authority:

持牌人須在處所內保存下列紀錄，以備獲監督授權的人員隨時查閱：

(i) records of flow rate, nature and composition of the discharge;

排放流量率、性質及成份的紀錄；

(ii) updated records of all monitoring information, including all laboratory analytical results relating to samples taken, all original chart recordings for continuous flow and pH monitoring; and

所有最新監測資料的紀錄，包括所有關於已取樣本的檢驗分析結果、所有連續性流量及酸鹼值監測記錄圖表的正本；及

(iii) records of all desludging and degreasing operation, and records of corresponding disposal operation.

所有清除污泥和清理隔油池廢物工序的紀錄，及其棄置工序的紀錄。

Copies of all such records shall be submitted to the Authority upon request.

在監督要求時，須向監督呈交所有該等紀錄的副本。

C6.2 The Licensee shall notify and explain to the Authority within 24 hours upon the occurrence of an accidental discharge or any emergency bypass or an overflow of untreated effluent or an operation upset which places the discharge in a temporary state of non-compliance with this licence. The Licensee shall within 7 days following the incident, submit to the Authority a detailed report in writing on the cause and duration of the non-compliance and steps taken or to be taken to reduce, eliminate, or prevent recurrence of such non-compliance. Reporting in accordance with this Condition does not relieve the Licensee of any obligations imposed by this licence.

倘若有未經處理的污水意外排放、緊急繞流或溢滿的事件或操作失靈，引至排放出現短暫不符合牌照規定的情況，持牌人須在事發後 24 小時內通知監督並予以解釋。持牌人須在事故發生後 7 天內，以書面報告，詳述事件的起因、違反牌照條件的時間及為減少、消除或防止類似事件再次發生所採取或將會採取的措施，送交監督審閱。然而，按照本條件的規定提交報告並不表示持牌人可獲免除承擔本牌照內所載的任何責任。

C7. Operation Manual 操作手冊

The Licensee shall prepare an operation manual which shall include, as a minimum, operating procedures, inspection programme and repair and maintenance programme for the wastewater treatment facilities. The operation manual shall be kept at the aforesaid wastewater treatment facilities and a copy of the manual shall be submitted to the Authority upon request.

持牌人須擬備廢水處理設施的操作手冊。手冊內容須最低限度包括操作程序、檢查、維修及保養工作計劃表。該手冊須保存在上述廢水處理設施內。持牌人須在監督要求時，呈交手冊副本乙份。

C8. Notification of Change 更改通知

The Licensee shall notify the Authority in writing within 14 days of any changes or proposed changes in the processes of manufacture or the nature of the raw materials used or of any other circumstances which may alter the nature and composition of the discharge or may result in the permanent cessation of the discharge.

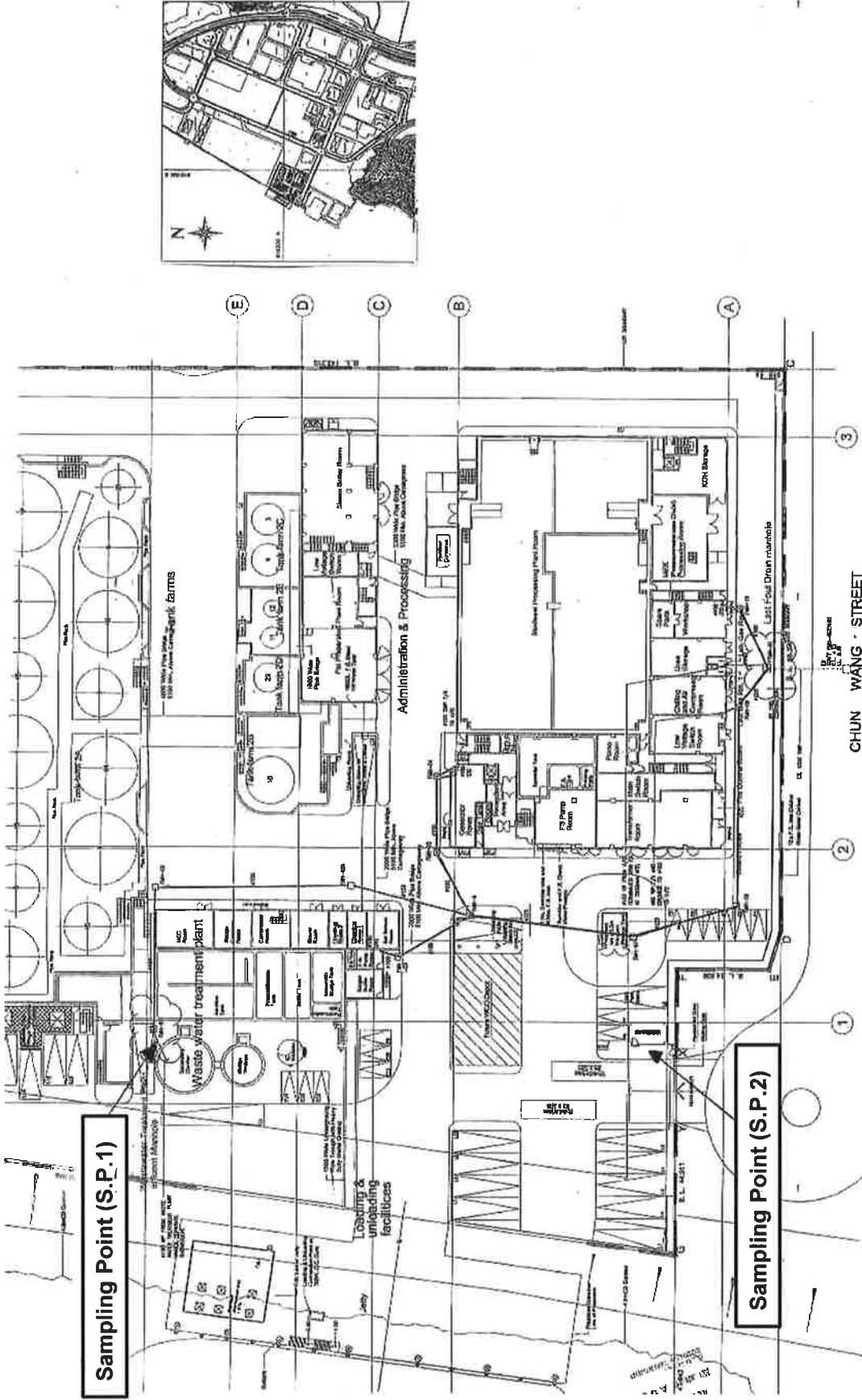
倘若持牌人更改或擬更改其生產程序、或所用原料的性質、或有其他足以改變其排放的性質及成份或可導致永久性終止排放的事情，必須在 14 日內以書面通知監督。

Notes 附註

- (a) For the purposes of determining compliance with the limits stated in Specific Condition B1, samples shall be taken by the duly authorized officer(s) of the Authority at the Sampling Point(s) or any other points from which the samples so taken are regarded by the duly authorized officer(s) as being representative of the quality of the discharge. When any single sample analyzed for a determinand is proved not complying with corresponding limit set out in the table, the discharge is deemed to have failed to comply with Specific Condition B1.
為確定排放是否符合特別條件第 B1 項內所列的限度，獲監督授權的人員須在取樣點或在認為可以抽取到具代表性的樣本的任何其他位置抽取樣本。只要在任何一個經分析的樣本中，證實任何一個測量物不符合表中所列的相應限度時，排放即被視為不符合特別條件第 B1 項。
- (b) An example of proper disposal method for sludge is sending dewatered sludge to landfill for disposal.
妥善棄置污泥方法中的一個例子是將脫水後的污泥運往堆填區棄置。
- ~~(c) Proper disposal of grease trap waste includes but is not limited to employing any reputable firm or collector who will use the right equipment and dispose of the collected grease trap waste at West Kowloon Transfer Station. The updated list of grease trap waste collectors who are using the disposal service at West Kowloon Transfer Station is maintained in the EPD website and Green Restaurant website.~~
~~妥善的隔油池廢物棄置方法包括卻不限於聘用任何信譽良好的公司／收集商使用適當的設備在西九龍廢物轉運站棄置所收集的隔油池廢物。環保署網站及環保食肆網均載有目前使用西九龍廢物轉運站棄置隔油池廢物的收集商最新名單。~~
- (d) The Licensee may make reference to Annex 1 of the <Technical Memorandum on Effluent Standards> for analytical methods used by the Government Chemist.
持牌人可參照「流出物標準技術備忘錄」附件 1 有關政府化驗師所採用的分析方法。
- (e) The Licensee shall keep this licence in the premises and make it available at all times for inspection by duly authorized officer(s) of the Authority.
持牌人須在處所內保存此牌照，以備獲監督授權的人員隨時查閱。
- (f) (i) The Licensee shall allow duly authorized officer(s) of the Authority to enter the premises for the purposes of inspection, sampling, records examination or any other duties authorized by Section 37 and Section 38 of the Ordinance.
持牌人須准許獲監督授權的人員進入處所內進行檢查、抽取樣本、審查紀錄或執行其他根據本條例第 37 及第 38 條所授權的職務。
(ii) Where the premises has security measures in force which would require proper identification and clearance before entry, the Licensee shall make necessary arrangements such that upon presentation of evidence of identity and of authorization, duly authorized officer(s) will be permitted to enter, without delay, for the purposes of performing duties.
倘若由於處所的保安理由而需先行鑑定來人的身份，持牌人必須作出必要的安排，以便獲授權人員在出示身份證明及授權文件後，即可內進執行其職務而不致受延誤。
- (g) (i) For a licence granted under Section 15 of the Ordinance, the Licensee may, not less than 2 months before expiry of the licence, apply under Section 19 of the Ordinance for a new licence. The Authority may grant the licence or otherwise.
持有根據本條例第 15 條所批給牌照的人士，可於牌照屆滿前不少於 2 個月內，根據本條例第 19 條的規定，申請一面新牌照。監督可批給或拒絕批給牌照。
(ii) For a licence granted under Section 20 or 23A of the Ordinance, the Licensee may, not more than 4 months and not less than 2 months before expiry of the licence, apply under Section 23 or 23A respectively of the Ordinance for renewal of licence. The Authority may renew the licence or otherwise.
持有根據本條例第 20 條或第 23 A 條所批給牌照的人士，可於牌照屆滿前不多於 4 個月及不少於 2 個月內，根據本條例的第 23 或 23 A 條的規定，申請牌照續期。監督可將牌照續期或拒絕將牌照續期。
- (h) Under Section 24 of the Ordinance, the Authority may by notice in writing, impose new or amended terms and conditions on this licence or cancel this licence. Under Section 25, 26 and 27 of the Ordinance, a Licensee whose licence has been so varied or cancelled may be entitled to compensation.
根據本條例第 24 條的規定，監督可以書面通知，向本牌照施加新訂或經修訂的條款及條件，或取消本牌照。根據本條例第 25、26 及 27 條的規定，被更改或取消牌照的持牌人可能會獲得補償。
- (i) Under Section 28 of the Ordinance, the Licensee may apply to the Authority for a variation of this licence.
根據本條例第 28 條的規定，持牌人可向監督申請更改本牌照。
- (j) Under Section 49 of the Ordinance, this licence shall not be construed as a dispensation from the requirements of any other Ordinance except where that other Ordinance so provides.
根據本條例第 49 條的規定，本牌照並不得解釋為豁免符合任何其他條例的規定，除非該其他條例如此訂定。

Annex

附件



Annex to licence No.: WT00029932-2017

牌照編號 WT00029932-2017 的附件

Date: December 2017

日期: December 2017

Scale: NTS

比例: 不按比例

Prepared by: Amanda Chan

製作: Amanda Chan

ENVIRONMENTAL PROTECTION DEPARTMENT,
HONG KONG

REGIONAL OFFICE (EAST)

香港環境保護署
區域辦事處(東)



Title: Sampling Points (S.P.1 & S.P.2)

標題: 取樣點 (S.P.1 & S.P.2)

ASB Biodiesel (Hong Kong) Limited of 22 Chun Wang Street,
Tseung Kwan O Industrial Estate, Tseung Kwan O, N.T.
新界將軍澳將軍澳工業邨駿宏街22號之ASB Biodiesel (Hong
Kong) Limited