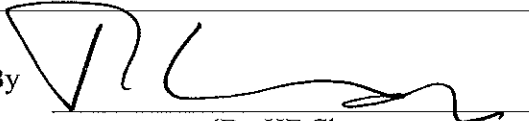


# ASB Biodiesel (Hong Kong) Limited

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

**Monthly Environmental Monitoring and  
Audit Report for  
January 2021**

**(version 1.0)**

Approved By   
(Dr. HF Chan,  
Environmental Team Leader)

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.

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17 February 2021

**By Fax (3107 1388)**

CINOTECH Consultants Limited  
Rm 1710, Technology Park,  
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Hong Kong

For the attention of Ms. Karina CHAN

Dear Madam,

**Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate - Operation Phase**

**IEC Certification on Draft Monthly EM&A Report (January 2021)**

We refer to your submission of the draft monthly EM&A report (January 2021 – v1.0) via email on 9 February 2021.

We write to advise that we have no adverse comment on the captioned report. We hereby remind you to keep tracking on the conditions of the equipment in order to avoid the recurrence of exceedance event. For any investigation regarding enquires or complaints, to be required in future, you are recommended to include such investigation details and results in the Monthly EM&A Report accordingly.

Yours faithfully

For and on behalf of Mannings (Asia) Consultants Ltd



Mark CHEUNG  
Independent Environmental Checker

KTC/SC/BLE/an

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## **EXECUTIVE SUMMARY**

### **Introduction**

1. This is the 58<sup>th</sup> 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 2021.

### **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(3), granted on 29 September 2020 &
  - Water Pollution Control Ordinance Licence, WT00035448-2019, granted on 25 February 2020

### **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.
4. As there was limited biogas production in January 2021, emission from stack of biogas flare cannot be sampled. Therefore, monitoring on emission from the stack was suspended in January 2021, and will be resumed in February 2021.

**Key Information in the Reporting Month**

5. Summary of key information in this reporting month (January 2021) is listed in **Table I**.

**Table I Summary of Key Information in January 2021**

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Exceedance of Action & Limit Levels	0	--	--	--	--
Complaint received	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	1	Monthly EM&A Reports: December 2020 v1.0	Submitted to EPD on 14 January 2021	Verified by IEC	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

## 1 INTRODUCTION

### Background

- 1.1 ASB Biodiesel Plant (hereafter referred to as “the Plant”) was established in 2013 for the production of biodiesel and crude glycerine using cooking oil (UCO) and grease trap waste (GTW). The plant is located at Tseung Kwan O Industrial Estate (see **Figure 1.1** for the location plan of Project Site) and are able to produce 100,000 tonnes of low-carbon fuel per year for selling to both local and overseas market. The plant uses multi-feedstock which consists of UCO, oil and grease recovered from GTW, palm fatty acid distillate (PFAD) and animal fats. The 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 Plant has been completed since November 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 55<sup>th</sup> Monthly EM&A report summarizing the EM&A works in operational phase for the Project in January 2021.

### 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**

<b>Party</b>	<b>Role</b>	<b>Name</b>	<b>Position</b>	<b>Phone No.</b>
ASB	Permit Holder & Operator	Mr. Martin Hui	Plant Manager	3183 4338
		Mr. Ryan Chan	Process Engineer	3183 4368
Mannings	Independent Environmental Checker	Mr. Mark Cheung	Independent Environmental Checker	3168 2028
		Mr. Bryan Leung	Assistant to Independent Environmental Checker	3970 8630
Cinotech	Environmental Team	Dr. HF Chan	ET Leader	2151 2088
		Ms. Karina Chan	Project Coordinator	2157 3880

**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**.

**Table 2-1 Summary of Environmental Licensing and Permit Status**

Permit / License No.	Valid Period		Summary	Status
	From	To		
<b>Environmental Permit (EP)</b>				
EP-319/2009/D	28/01/2014	N/A	Operation of <ul style="list-style-type: none"> <li>a biochemical plant with a storage capacity of more than 500 tonnes and in which substances are processed and produced;</li> <li>a storage, transfer and transshipment of oil facility with a storage capacity of not less than 1,000 tonnes; and</li> <li>a dangerous goods godown with a storage capacity exceeding 500 tonnes</li> </ul>	Valid
<b>Specified Process (SP) Licence</b>				
L-25-019(3)	29/09/2020	28/09/2022	<ul style="list-style-type: none"> <li>Emission of non-fugitive fixed point emissions</li> </ul>	Valid
L-25-019(2)	19/07/2018	18/07/2020	<ul style="list-style-type: none"> <li>Emission of non-fugitive fixed point emissions</li> </ul>	Expired on 18/07/2020
L-25-019(1)	10/10/2013	10/10/2015	<ul style="list-style-type: none"> <li>Emission of non-fugitive fixed point emissions</li> </ul>	Expired on 10/10/2015
<b>Water Pollution Control Ordinance (WPCO) Licence</b>				
WT00035448-2019	31/12/2019	28/02/2022	Discharge of <ul style="list-style-type: none"> <li>effluent from wastewater treatment facilities to communal foul sewer; and</li> <li>effluent from floor washing of operation areas to communal storm drain</li> </ul>	Valid
WT00029932-2017	22/12/2017	31/12/2019	Discharge of <ul style="list-style-type: none"> <li>effluent from wastewater treatment facilities to communal foul sewer; and</li> <li>effluent from floor washing of operation areas to communal storm drain</li> </ul>	Expired on 31/12/2019

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Permit / License No.	Valid Period		Summary	Status
	From	To		
WT00022972-2015	16/12/2015	31/12/2017	Discharge of <ul style="list-style-type: none"><li>• effluent from wastewater treatment facilities to communal foul sewer; and</li><li>• effluent from floor washing of operation areas to communal storm drain</li></ul>	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)	Once per quarter. (If the limit level(s) is exceeded, the frequency shall be increased to once per month until compliance for three consecutive months is obtained and the frequency will be resumed to once per quarter thereafter.)	Nitrogen oxides (NO <sub>x</sub> )	2.213 kg/h
		Carbon monoxide (CO)	0.553 kg/h
		Sulphur dioxide (SO <sub>2</sub> )	0.797 kg/h
		Non-methane Organic Compounds (NMOC)	0.041 kg/h
		Respirable suspended particulates	0.111 kg/h
		Odour	2,400 OU/s
		Exhaust gas velocity	10.00 m/s (minimum)
Biogas Flare (EP1)		NO <sub>x</sub>	0.053 kg/h
		CO	0.018 kg/h
		SO <sub>2</sub>	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)	
* The frequencies are updated according to the latest SP License and 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 SP 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)	Once per month.*	Odour	– **	28.6 OU/s
		Exhaust gas velocity		0.70 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"> <li>Once a month for the licence period; and</li> <li>If the action level is triggered, the frequency will be increased to twice a month until compliance with the action level for three consecutive months is obtained and the frequency will be resumed to once a month thereafter.</li> </ul>	Odour Intensity	<ul style="list-style-type: none"> <li>Odour intensity <math>\geq</math> Class 2 recorded; or</li> <li>One documented complaint received</li> </ul>	<ul style="list-style-type: none"> <li>Odour intensity <math>\geq</math> Class 3 recorded on 2 consecutive patrols</li> </ul>
* 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"> <li>Repeat measurement to confirm finding</li> <li>Identify source(s) and investigate the cause(s) of exceedance</li> <li>Inform Project Proponent whether the cause of exceedance is due to the Project</li> <li>Prepare the Notification of Exceedance within 24 hours</li> <li>Discuss remedial actions with the Project Proponent</li> <li>Assess the effectiveness of Project Proponent's remedial actions</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Verify the Notification of Exceedance submitted by the ET Leader</li> <li>Check with the Project Proponent on the operating activities and implementation of control measures</li> <li>Discuss with ET Leader and Project Proponent on the possible remedial actions</li> <li>Advise the Project Proponent on the effectiveness of the proposed remedial measures</li> <li>Supervise implementation of remedial measures</li> </ul>	<ul style="list-style-type: none"> <li>Rectify any unacceptable practice</li> <li>Amend working methods as required</li> <li>Implement amended working methods, if necessary</li> </ul>
Exceedance of Action Level for odour	<ul style="list-style-type: none"> <li>Identify source(s) / reason of exceedance or complain</li> <li>Prepare the odour complain form or the Notification of Exceedance within 24 hours</li> <li>Inform Project Proponent whether the cause of exceedance is due to the Project</li> <li>Discuss remedial actions with the Project Proponent</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Verify the Notification of Exceedance submitted by the ET Leader</li> </ul>	<ul style="list-style-type: none"> <li>Rectify any unacceptable practice</li> <li>Amend working methods as required</li> <li>Implement amended working methods, if necessary</li> </ul>

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

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

### 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"> <li>• 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.</li> <li>• 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.</li> </ul>	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 Stack of Boiler*

- 4.1 Emission from the stack of boiler was 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.

**Table 4-1 Methodologies for Monitoring of Emission from Stack of Boiler**

Parameter	Methodology
Nitrogen oxides (NO <sub>x</sub> )	USEPA Method 7C
Carbon monoxide (CO)	USEPA Method 10B
Sulphur dioxide (SO <sub>2</sub> )	USEPA Method 6
Non-methane organic compounds (NMOC)	USEPA Method TO-12
Respirable suspended particulates	USEPA Method 201A
Odour	European Standard Method (EN13725)

#### *Emission from Stack of Biogas Flare*

- 4.2 As there was limited biogas production in January 2021, emission from stack of biogas flare cannot be sampled. Therefore, monitoring on emission from the stack was suspended in January 2021, and will be resumed in February 2021.

#### *Emission from Stack of Process Building*

- 4.3 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.

**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*

- 4.4 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*

- 4.5 Odour patrols are carried out by a qualified odour panelist in both morning and afternoon. 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*

- 4.6 Treated effluent discharged from Project Site was sampled and analyzed. Methodologies for water quality monitoring 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*

- 4.7 Treated effluent discharged from Project Site was sampled and analyzed. Methodologies for water quality monitoring 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 4-5**. In addition to the parameters listed in **Table 4-5**, pH was measured.

**Table 4-5 Methodologies for Water Quality Monitoring of Stormwater Discharge**

<b>Parameter</b>	<b>Methodology</b>
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

**Sulphur Content in Bio Heating Oil**

- 4.8 One BHO in the tank are sampled to analyse its sulphur content in accordance with EN-ISO-20486:2011: Determination of sulphur content of automotive fuels – Ultraviolet fluorescence method.

## 5 MONITORING RESULTS

### Air Quality

#### *Emission from Stack of Boiler*

- 5.1 The monitoring result of the measurement, carried on 11<sup>th</sup> January 2021, of the emission from the stack of boiler is presented in **Table 5-1**. No exceedance of the limit level was recorded in January 2021.

**Table 5-1 Monitoring Results of the Emission from the Stack of Boiler**

Parameter	Limit Level	Monitoring Result*
Nitrogen oxides (NO <sub>x</sub> )	2.213 kg/h	0.82 kg/hr
Carbon monoxide (CO)	0.553 kg/h	0.363 kg/hr
Sulphur dioxide (SO <sub>2</sub> )	0.797 kg/h	<0.03 kg/hr
Non-methane Organic Compounds (NMOC)	0.041 kg/h	<0.0011 kg/hr
Respirable Suspended Particulates	0.111 kg/h	0.08 kg/hr
Exhaust gas velocity	10 m/s (minimum)	16 m/s
* Average result of all trials is presented		

- 5.2 Detail monitoring result of the emission from the stack of boiler is presented in **Appendix A**.
- 5.3 Odour measurement at the boiler stack (EP2) outlet was carried out on 11<sup>th</sup> January 2021 and no exceedance of the limit level was recorded. The monitoring results for the boiler stack are summarised in **Table 5-2** and detailed monitoring results report is presented in **Appendix A**.

**Table 5-2 Monitoring Result of the Odour Concentrations at the Boiler Stack (EP2)**

Parameter	Limit Level	Monitoring Result*
Odour	2400 OU/s	75 OU/s
Exhaust gas velocity	10.0 m/s (minimum)	13.1 m/s
* Average result of all trials is presented		

#### *Emission from Stack of Biogas Flare*

- 5.4 Emission from stack of biogas flare was not monitored in January 2021 (see **Section 4.2** for details).

#### *Emission from Stack of Process Building*

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

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

Parameter	Limit Level	Monitoring Result*
Acetyldehyde	0.0975 kg/h	<0.00004 kg/hr
Methanol	0.0975 kg/h	<0.0006 kg/hr
Exhaust gas velocity	0.79 m/s (minimum)	0.8 m/s

\* Average result of all trials is presented

*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	28.6 OU/s	1.85 OU/s
Exhaust gas velocity	0.7 m/s (minimum)	0.7 m/s

\* Average result of all trials is presented

- 5.7 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**.

*Odour Patrols along Site Boundary*

- 5.8 According to **Table 3-2**, the monitoring was conducted once in January 2021. The monitoring result of the odour patrol, carried out on 11<sup>th</sup> Jan 2021, is presented in **Table 5-5**. No exceedance of the Limit Level was reported. Detailed monitoring result of odour patrols along site boundary is presented in **Appendix E**.

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

Patrol	Location	Action Level	Limit Level	Odour Intensity	Odour Nature
Morning	1	Odour intensity $\geq$ Class 2 recorded; or	Odour intensity $\geq$ Class 3 recorded on 2 consecutive patrols	0	N/A
	2			1	Oil and Grease
	3			1	Oil and Grease
	4			1	Oil and Grease
	5			0	N/A
Afternoon	1	One documented complaint received		0	N/A
	2			1	Oil and Grease
	3			1	Oil and Grease
	4			1	Food Smell
	5			0	N/A

## 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	7.3	N/A
Chemical Oxygen Demand (COD)	2000 mg/L	496	mg/L
Sulphate	1000 mg/L	50	mg/L
Total Nitrogen	200 mg/L	4	mg/L
Total Phosphorus	50 mg/L	30	mg/L
Suspended Solids	800 mg/L	160	mg/L
Oil & Grease	50 mg/L	15	mg/L
Biochemical Oxygen Demand (BOD) (5 days, 20 °C)	800 mg/L	350	mg/L

### *Water Quality of Stormwater Discharge*

- 5.10 The water quality of the stormwater discharge are monitored on a quarterly basis and was therefore not monitored in January 2021, the next monitoring shall be conducted in March 2021.

### *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
January 14, 2021	346 ppm	254 ppm

## **6 SUMMARY OF COMPLAINT AND PROSECUTION**

- 6.1 No environmental related complaints was received in the reporting month. There are no on-going investigations on previous complaints
- 6.2 In total, 26 environmental complaints, 6 notifications of summons, and 5 successful prosecutions were received since the operation of Project. The Complaint Log is attached in **Appendix I**.

## **7 CONCLUSIONS**

- 7.1 In January 2021, 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(3) and Water Pollution Control Ordinance Licence WT00035448-2019
- 7.2 Monitoring of air quality, water quality and sulphur content in Bio Heating Oil were carried out at designated locations. No exceedance of the Action and Limit Levels were recorded.
- 7.3 No environmental related complaints was received in the reporting month. In total, 26 environmental complaints, 6 notifications of summons, and 5 successful prosecutions were received since the operation of Project.



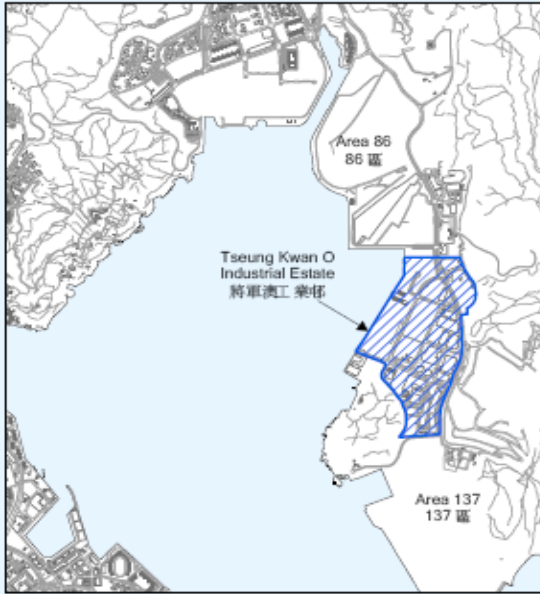
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## FIGURES

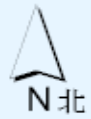
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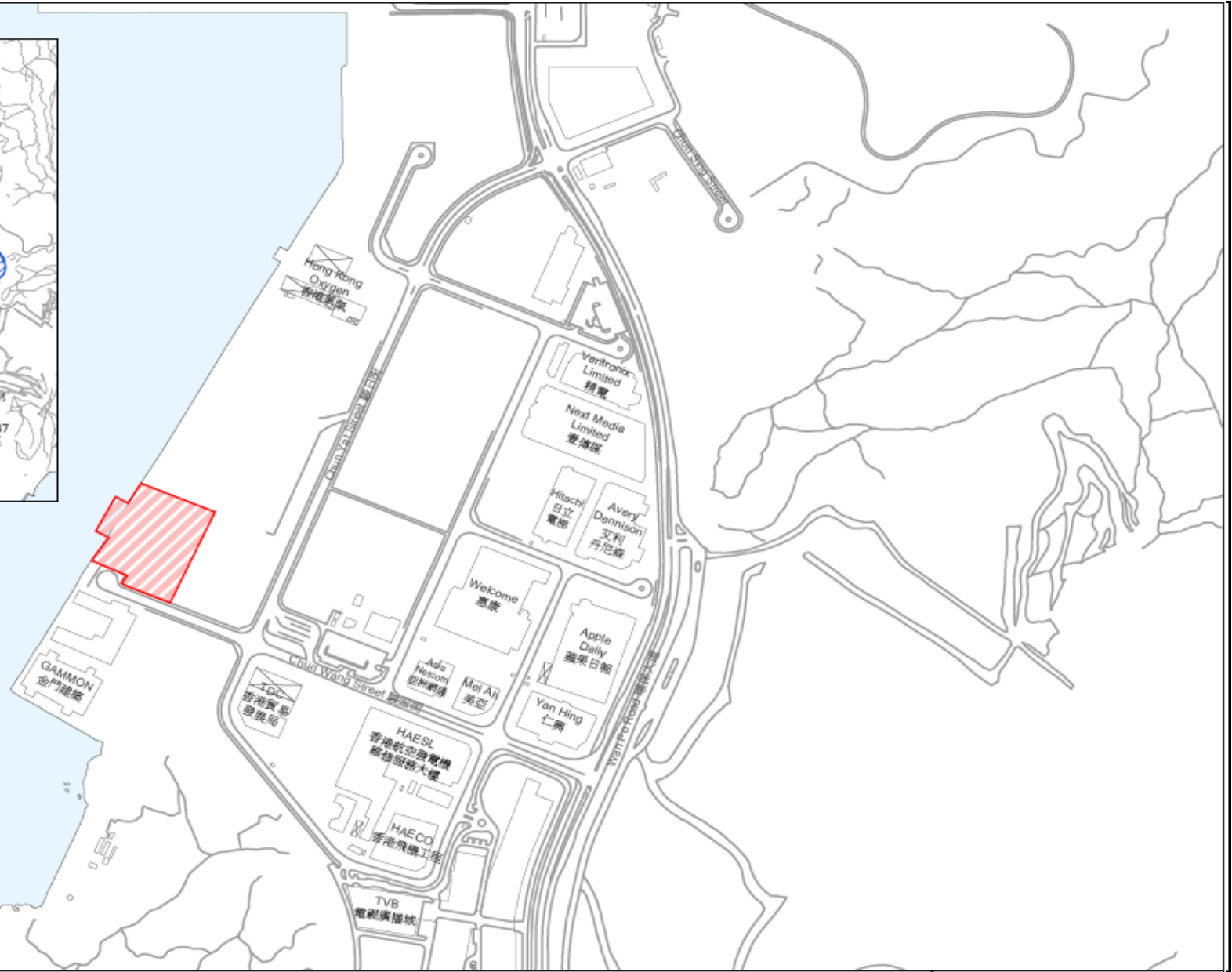
**Key 圖例**

 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**

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## TEST REPORT

Report No. : AA0005737(0) Date : 25 Jan 2021

Application No. : LA001660(2)

Applicant : ASB BIODIESEL (HONG KONG) LTD.  
22 CHUN WANG STREET,  
TSEUNG KWAN O INDUSTRIAL ESTATE  
NEW TERRITORIES, HONG KONG

Project Name : Stack gas measurement on Tseung Kwan O Biodiesel Plant for  
ASB Biodiesel (Hong Kong) Ltd.

Sampling Point : Boiler – EP2.

Sampling Date : 11 Jan 2021.

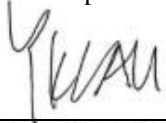
Test Requested : 1. Velocity / Volumetric Flow Rate;  
1. Respirable Suspended Particulates (RSP);  
2. Sulphur Dioxide (SO<sub>2</sub>) ;  
3. Carbon monoxide (CO);  
4. Nitrogen oxides (NO<sub>x</sub>);  
5. Non-Methane Organic Compounds (NMOC).

Methodology : Refer to page 2.

Test Result : Refer to pages 3 to 4.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

  
Lau Yan Kin  
Senior Manager

Page 1 of 4



## TEST REPORT

Report No. : AA0005737(0)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Methodology** :

Respirable Suspended Particulates – USEPA Method 201A

The stack emission test for measuring RSP emission was carried out by using an Isokinetic Stack Sampling System in accordance with the Reference Method 201A of the United States Environmental Protection Agency [“USEPA”]. Extract a sample of gas at a predetermined constant flow rate through an in-stack sizing device. The particle-sizing device separates particles of RSP. After a sample is obtained, remove uncombined water from the particulate, and then use gravimetric analysis to determine the particulate mass for each size fraction.

Sulphur Dioxide – USEPA Method 6

The stack emission test for measuring SO<sub>2</sub> concentration was carried out by using an Isokinetic Stack Sampling System in accordance with the Reference Method 6 of USEPA. Stack flue gas was extracted into the sampling system and SO<sub>2</sub> in the flue gas was absorbed in 3% hydrogen peroxide solution and then measured by barium-thorin titration method. Concentration of SO<sub>2</sub> in flue gas was then determined from the mass of SO<sub>2</sub> obtained and gas volume extracted similarly to that for PM.

Carbon Monoxide – USEPA Method 10B

CO level was determined using USEPA Reference Method 10B. Stack gas sample was extracted into a Tedlar Bag and analysed by gas chromatography flame ionization detector (GC/FID).

Nitrogen Oxides – USEPA Method 7C

NO<sub>x</sub> concentration was determined using USEPA Reference Method 7C. Stack flue gas sample was extracted and then collected in alkaline-potassium permanganate solution. The NO<sub>x</sub> in the gas sample would then be oxidized to nitrate and nitrite. The nitrate would in turn be reduced to nitrite with cadmium and the total nitrite was then analyzed colorimetrically, giving the mass of NO<sub>x</sub> obtained. The NO<sub>x</sub> concentration was then determined from the mass of NO<sub>2</sub>.

Non-Methane Organic Compounds – USEPA Method TO12

This was made by sampling the stack flue gas with Tedlar Bag and then analyzed by Gas Chromatography. The amount of organic substance was expressed as carbon.



## TEST REPORT

Report No. : AA0005737(0)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Sampling Schedule** :

Parameter	Trial	
	1	2
RSP	11 Jan 2021, 09:49 – 10:49	11 Jan 2021, 11:15 – 12:15
SO <sub>2</sub>	11 Jan 2021, 12:42 – 13:42	11 Jan 2021, 14:03 – 15:03
CO	11 Jan 2021, 09:49 – 10:49	11 Jan 2021, 11:15 – 12:15
NO <sub>x</sub>	11 Jan 2021, 09:55 – 10:55	11 Jan 2021, 11:10 – 12:10
NMOC	11 Jan 2021, 09:55 – 10:55	11 Jan 2021, 11:10 – 12:10

## TEST REPORT

Report No. : AA0005737(0)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Results :**

Parameter	Unit	Trial	
		1	2
Average Stack Gas Velocity (RSP)	m/s	13.1	14.8
Average Stack Gas Velocity (SO <sub>2</sub> )		18.4	18.4
Average Stack Gas Temperature (RSP)	°C	203	202
Average Stack Gas Temperature (SO <sub>2</sub> )		206	204
RSP	mg/dscm	5.1	<5
	kg/hr	0.06	<0.05
SO <sub>2</sub>	mg/dscm	<2	<2
	kg/hr	<0.03	<0.03
CO	ppmv	21	17
	kg/hr	0.408	0.318
NO <sub>x</sub> as NO <sub>2</sub>	mg/dscm	69.5	80.4
	kg/hr	0.78	0.86
NMOC as Carbon	mg/dscm	<0.1	<0.1
	kg/hr	<0.0011	<0.0011

Note: 1. dscm means dry standard cubic meter, which is corrected to temperature of 273 K and a pressure of 101.3 kilopascals (1atm).

2. "<" denotes less than.

\*\*\*\*\* End of Report \*\*\*\*\*

## TEST REPORT

Report No. : AA0005739(2) Date : 25 Jan 2021

Application No. : LA001660(2)

Applicant : ASB BIODIESEL (HONG KONG) LTD.  
22 CHUN WANG STREET,  
TSEUNG KWAN O INDUSTRIAL ESTATE  
NEW TERRITORIES, HONG KONG

Project Name : Odour Measurement on Tseung Kwan O Biodiesel Plant for  
ASB Biodiesel (Hong Kong) Ltd.

Sampling Point : Boiler – EP2.

Sampling Date : 11 Jan 2021.

Test Requested : Odour Measurement in accordance with the European Standard Method  
(EN13725), including

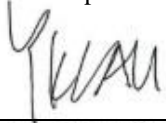
- Collect two odour samples at the final air scrubber and deliver the collected samples to laboratory for olfactometry analysis;
- Conduct laboratory olfactometry analysis to determine the odour concentration of the collected odour samples;
- Calculate the odour emission rate.

Methodology : Refer to pages 2 to 3.

Test Result : Refer to page 4.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

  
Lau Yan Kin  
Senior Manager

Page 1 of 9



## TEST REPORT

Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Methodology** :

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

## TEST REPORT

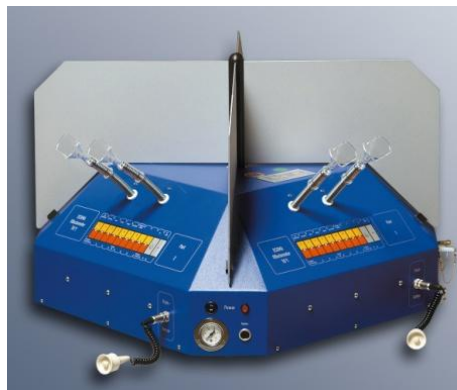
Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(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:  $\text{OU}_E/\text{m}^3$ . 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

### Determination of Odour Emission Rate

The odour emission rate (OER) can be calculated by the following equation:

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



## TEST REPORT

Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Results :**

Trail	Date	Time	Type	a (m <sup>2</sup> )	V (m/s)	OC (OU <sub>E</sub> /m <sup>3</sup> )	OER (ou/s)
1	11 Jan 2021	09:50	A	0.44	13.1	10	58
2	11 Jan 2021	09:55	A	0.44	13.1	16	92

Note : A: Ambient.  
a: Cross section area.  
V: Gas flow velocity.  
OC: Odour concentration.  
OER: Odour emission rate.

\*\*\*\*\* End of Report \*\*\*\*\*

**TEST REPORT**

Report No. : AA0005739(2)  
Application No. : LA001660(2)

Date : 25 Jan 2021

**Appendix**

Photo of Location (EP2):



## TEST REPORT

Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(2)

### Certificates for the qualified odour panel members



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### **Certificate for a Qualified Odour Panel Member**

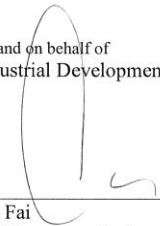
**Serial No.** : P-001  
**Odour Panel Member** : Andrew Yuen  
**Date of Screening Test** : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020  
**Valid Until** : 12 Jan 2021

This is to certify that Mr. Andrew Yuen participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020

## TEST REPORT

Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(2)



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### Certificate for a Qualified Odour Panel Member


Serial No. : P-002  
Odour Panel Member : To Lau  
Date of Screening Test : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020  
Valid Until : 12 Jan 2021

This is to certify that Mr. To Lau participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited

  
Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020

## TEST REPORT

Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(2)



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### **Certificate for a Qualified Odour Panel Member**

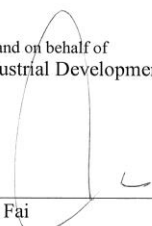
**Serial No.** : P-003  
**Odour Panel Member** : Billy Lam  
**Date of Screening Test** : 19 Jun 2020  
08 Jul 2020  
15 Jul 2020  
**Valid Until** : 14 Jan 2021

This is to certify that Mr. Billy Lam participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 15 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 15 Jul 2020

## TEST REPORT

Report No. : AA0005739(2)

Date : 25 Jan 2021

Application No. : LA001660(2)



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### Certificate for a Qualified Odour Panel Member

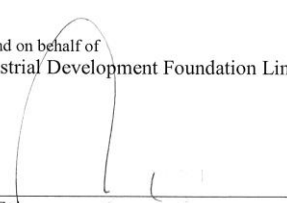
**Serial No.** : P-012  
**Odour Panel Member** : Jenny Chan  
**Date of Screening Test** : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020  
**Valid Until** : 12 Jan 2021

This is to certify that Miss Jenny Chan participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020



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

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## TEST REPORT

Report No. : AA0005738(1) Date : 25 Jan 2021

Application No. : LA001660(2)

Applicant : ASB BIODIESEL (HONG KONG) LTD.  
22 CHUN WANG STREET,  
TSEUNG KWAN O INDUSTRIAL ESTATE  
NEW TERRITORIES, HONG KONG

Project Name : Stack gas measurement on Tseung Kwan O Biodiesel Plant for  
ASB Biodiesel (Hong Kong) Ltd.

Sampling Point : Process Building – EP3.

Sampling Date : 11 Jan 2021.

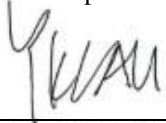
Test Requested : 1. Velocity / Volumetric Flow Rate;  
2. Acetaldehyde;  
3. Methanol.

Methodology : Refer to page 2.

Test Result : Refer to pages 3 to 4.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

  
Lau Yan Kin  
Senior Manager

Page 1 of 4



## TEST REPORT

Report No. : AA0005738(1)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Methodology** :

Acetaldehyde – USEPA Method TO-11A

The emission test was carried out in accordance with the reference TO-11A of the United States Environmental Protection Agency [“USEPA”]. Flue gas was extracted into the sampling system and analyte in the flue gas was absorbed DNPH-coated silica gel absorption tube. Concentration in flue gas was then delivered to laboratory and analysed by liquid chromatography with ultraviolet detector (HPLC-UV).

Methanol – USEPA Method TO-14

The emission test was carried out in accordance with the reference TO-14 of the United States Environmental Protection Agency [“USEPA”]. This was made by sampling the stack flue gas with Tedlar Bag and then analyzed by gas chromatography flame ionization detector (GC/FID).



## **TEST REPORT**

Report No. : AA0005738(1)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Sampling Schedule** :

<b>Parameter</b>	<b>Trial</b>	
	<b>1</b>	<b>2</b>
Acetaldehyde and Methanol	11 Jan 2021, 13:20 – 14:20	11 Jan 2021, 14:25 – 15:25



## TEST REPORT

Report No. : AA0005738(1)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Results :**

Parameter	Unit	Trial	
		1	2
Average Stack Gas Velocity	m/s	0.8	0.8
Average Stack Gas Temperature	°C	34.0	35.0
Acetaldehyde	mg/m <sup>3</sup>	<0.6	<0.6
	kg/hr	<0.00004	<0.00004
Methanol	mg/m <sup>3</sup>	<10	<10
	kg/hr	<0.0006	<0.0006

Note: 1. mg/m<sup>3</sup> means milligram per cubic meter, which is corrected to temperature of 273 K and a pressure of 101.3 kilopascals (1atm).  
2. "<" denotes less than.

\*\*\*\*\* End of Report \*\*\*\*\*

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

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## TEST REPORT

Report No. : AA0005740(5) Date : 25 Jan 2021

Application No. : LA001660(2)

Applicant : ASB BIODIESEL (HONG KONG) LTD.  
22 CHUN WANG STREET,  
TSEUNG KWAN O INDUSTRIAL ESTATE  
NEW TERRITORIES, HONG KONG

Project Name : Odour Measurement on Tseung Kwan O Biodiesel Plant for  
ASB Biodiesel (Hong Kong) Ltd.

Sampling Point : The final air scrubber – EP5.

Sampling Date : 11 Jan 2021.

Test Requested : Odour Measurement in accordance with the European Standard Method  
(EN13725), including

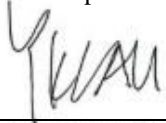
- Collect two odour samples at the final air scrubber and deliver the collected samples to laboratory for olfactometry analysis;
- Conduct laboratory olfactometry analysis to determine the odour concentration of the collected odour samples;
- Calculate the odour emission rate.

Methodology : Refer to pages 2 to 3.

Test Result : Refer to page 4.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

  
Lau Yan Kin  
Senior Manager

Page 1 of 9

## TEST REPORT

Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Methodology** :

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



## TEST REPORT

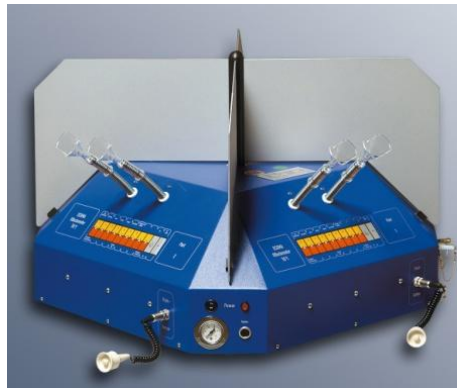
Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(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:  $\text{OU}_E/\text{m}^3$ . 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

### Determination of Odour Emission Rate

The odour emission rate (OER) can be calculated by the following equation:

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



## TEST REPORT

Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Results :**

Trial	Date	Time	Type	a (m <sup>2</sup> )	V (m/s)	OC (OU <sub>E</sub> /m <sup>3</sup> )	OER (ou/s)
1	11 Jan 2021	10:10	A	0.0962	0.70	12	0.8
2	11 Jan 2021	11:15	A	0.0962	0.70	43	2.9

Note : A: Ambient.  
a: Cross section area.  
V: Gas flow velocity.  
OC: Odour concentration.  
OER: Odour emission rate.

\*\*\*\*\* End of Report \*\*\*\*\*

**TEST REPORT**

Report No. : AA0005740(5)  
Application No. : LA001660(2)

Date : 25 Jan 2021

**Appendix**

**Photo of Location (EP5):**



## TEST REPORT

Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(2)

Certificates for the qualified odour panel members



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### **Certificate for a Qualified Odour Panel Member**

**Serial No.** : P-001

**Odour Panel Member** : Andrew Yuen

**Date of Screening Test** : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020

**Valid Until** : 12 Jan 2021

This is to certify that Mr. Andrew Yuen participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited

  
Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020

## TEST REPORT

Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(2)



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### Certificate for a Qualified Odour Panel Member

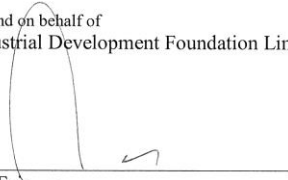
**Serial No.** : P-002  
**Odour Panel Member** : To Lau  
**Date of Screening Test** : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020  
**Valid Until** : 12 Jan 2021

This is to certify that Mr. To Lau participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020

## TEST REPORT

Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(2)



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### Certificate for a Qualified Odour Panel Member

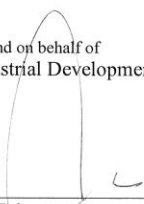
**Serial No.** : P-003  
**Odour Panel Member** : Billy Lam  
**Date of Screening Test** : 19 Jun 2020  
08 Jul 2020  
15 Jul 2020  
**Valid Until** : 14 Jan 2021

This is to certify that Mr. Billy Lam participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 15 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 15 Jul 2020

## TEST REPORT

Report No. : AA0005740(5)

Date : 25 Jan 2021

Application No. : LA001660(2)



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### Certificate for a Qualified Odour Panel Member

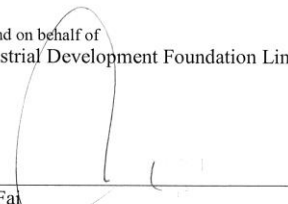
**Serial No.** : P-012  
**Odour Panel Member** : Jenny Chan  
**Date of Screening Test** : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020  
**Valid Until** : 12 Jan 2021

This is to certify that Miss Jenny Chan participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020

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**APPENDIX E**  
**Air Quality Monitoring Report – Odour**  
**Patrol**

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## TEST REPORT

Report No. : AA0005741(6)

Date : 25 Jan 2021

Application No. : LA001660(2)

Applicant : ASB BIODIESEL (HONG KONG) LTD.  
22 CHUN WANG STREET,  
TSEUNG KWAN O INDUSTRIAL ESTATE  
NEW TERRITORIES, HONG KONG

Project Name : Odour Patrol on Tseung Kwan O Biodiesel Plant for  
ASB Biodiesel (Hong Kong) Ltd.

Sampling Date : 11 Jan 2021.

Test Requested : Determine odour intensity and identify odour natures at each of five locations.

Methodology : Refer to page 2.

Test Result : Refer to page 3.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

Lau Yan Kin  
Senior Manager

Page 1 of 6



## TEST REPORT

Report No. : AA0005741(6)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Methodology :**

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.

One qualified odour panelist with his individual thresholds (n-butanol) complied with the requirement of the European Standard Method (EN 13725) 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.

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.

During each visit, the instant weather conditions should be measured using a portable environment anemometer (Lutron LM-8000) and recorded for references.

During odour patrol, the panelist should identify 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 cannot be easily characterised or described
1	Slight	Identifiable odour, slight
2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable, strong
4	Extreme	Severe odour



## TEST REPORT

Report No. : AA0005741(6)

Date : 25 Jan 2021

Application No. : LA001660(2)

**Results :**

Date	Location	Time	Weather	Wind		Odour Intensity	Observations
				Speed (m/s)	Direction		Odour Nature
11 Jan 2021	1	10:20	Cloudy	1.3	N	0	
	2	10:24		1.6	N	1	Oil and Grease
	3	10:28		1.5	N	1	Oil and Grease
	4	10:31		1.0	N	1	Oil and Grease
	5	10:35		0.8	N	0	
	1	13:18	Cloudy	1.1	NE	0	
	2	13:22		1.5	NE	1	Oil and Grease
	3	13:26		1.7	NE	1	Oil and Grease
	4	13:30		1.3	NE	1	Food Smell
	5	13:33		0.8	NE	0	

\*\*\*\*\* End of Report \*\*\*\*\*

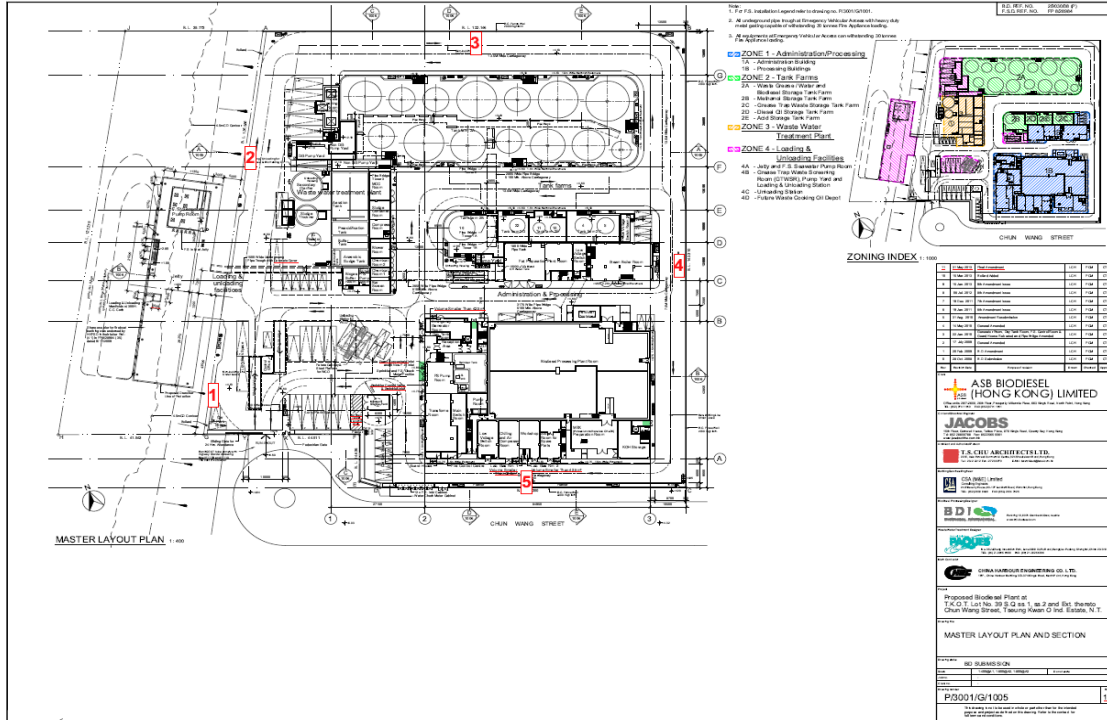
# TEST REPORT

Report No. : AA0005741(6)  
 Application No. : LA001660(2)

Date : 25 Jan 2021

## Appendix

### Photo of Locations:



1



2

**TEST REPORT**

Report No. : AA0005741(6)

Date : 25 Jan 2021

Application No. : LA001660(2)



3



4



5

## TEST REPORT

Report No. : AA0005741(6)

Date : 25 Jan 2021

Application No. : LA001660(2)

Certificate for the qualified odour panel member



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

### **Certificate for a Qualified Odour Panel Member**

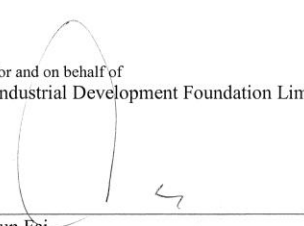
**Serial No.** : P-009  
**Odour Panel Member** : Terry Wong  
**Date of Screening Test** : 19 Jun 2020  
06 Jul 2020  
13 Jul 2020  
**Valid Until** : 12 Jan 2021

This is to certify that Mr. Terry Wong participated in a set of n-butanol screening tests in our laboratory between 19 Jun 2020 and 13 Jul 2020.

The odour threshold test results of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v and a standard deviation of  $R < 2.3$ , which comply with the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN 13725).

The participant is Approved and Authorized as Qualified Odour Panel Member for odour patrol and olfactometry analysis.

Signed for and on behalf of  
CMA Industrial Development Foundation Limited



Wu Chun Fai  
Assistant Manager – Environmental Division

Date: 13 Jul 2020

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

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**TEST REPORT**

**SAMPLE DESCRIPTION** : Stream 1, Water Pollution Control Ordinance (CAP. 358)  
Licence No.: WT00035448-2019

**SAMPLE RECEIVED DATE** : 18 January, 2020

**TESTING DATE** : 18 - 22 January, 2020

**TEST RESULT** :

TEST	METHOD	UNIT	LIMIT	RESULT
pH	/	/	6-10	7.30
TCOD	HACH Method 8000	mg/L	2000	496
Sulfate	HACH Method 10248	mg/L	1000	50
Total Nitrogen (as N)	HACH Method 10071	mg/L	200	4
Total Phosphorous (as P)	HACH Method 8190	mg/L	50	30
Total Suspended Solid	APHA 2540 D	mg/L	800	160
Oil & Grease	APHA 5520 B	mg/L	50	15
BOD <sub>5</sub>	APHA 5210 B	mg/L	800	350

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



TSE MAN LOK  
LABORATORY MANAGER



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**APPENDIX H**  
**Test Result – Sulphur Content in Bio**  
**Heating Oil**

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TEST REPORT

SAMPLE DESCRIPTION : Bio Heating Oil  
SAMPLE RECEIVED DATE : 14 January, 2021  
TESTING DATE : 14 January, 2021  
TEST RESULT :

TEST	METHOD	UNIT	RESULT
Sulphur	EN ISO 20846: 2011	mg/kg	254

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


TSE MAN LOK  
LABORATORY MANAGER

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**APPENDIX I**  
**Complaint Log**

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**APPENDIX I – COMPLAINT LOG****Reporting Month:** January 2021

<b>Log Ref.</b>	<b>Location</b>	<b>Received Date</b>	<b>Details of Complaint</b>	<b>Investigation/Mitigation Action</b>	<b>Status</b>
COM-2016-09-001	Not Specified	24 <sup>th</sup> 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, the 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"> <li>- Cover the storm water grating outside the bar screen room pedestrian walkway by steel plate;</li> <li>- 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</li> <li>- Review the emergency handling procedures.</li> </ul>	Closed
COM-2016-10-002	Not Specified	5 <sup>th</sup> 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"> <li>- Always keep the gate of the grease trap waste screening room closed;</li> <li>- Always keep sludge containers closed;</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				- Frequent cleaning of drainage system; and - Always keep the work site clean and tidy	
COM-2016-10-003	Not Specified	18 <sup>th</sup> October, 2016	EPD referred that a complaint on malodour from the Project was received on 11 <sup>th</sup> 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 <sup>th</sup> 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, the 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 <sup>th</sup> 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	<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>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			unpleasant malodour on 19 June, 2017.	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.	
COM-2017-07-006	Stack of Boiler	4 <sup>th</sup> 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 <sup>st</sup> July 2017 morning, and no dark smoke was emitted.	Closed
COM-2017-10-007	Not Specified	6 <sup>th</sup> 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 <sup>st</sup> November 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the Operator, and the Operator rectified the deficiencies.	Closed
COM-2017-10-008	Not Specified	17 <sup>th</sup> 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	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 <sup>st</sup> November 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the Operator, and the Operator rectified the deficiencies.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			to afternoon on 13 Oct 2017.		
COM-2017-11-009	Stack of Boiler	17 <sup>th</sup> 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 (the P11 filter was blocked) and caused dark smoke emission. The Operator had stopped the production immediately, and carried out maintenance work (filter cleaning and purging) to rectify the problem. The Operator will carry out regular maintenance more frequently to minimize the chance of tripping. The Operator also carried out an incident sharing on 18 Dec 2018 to prevent recurrence of similar event.	Closed
COM-2017-11-010	Stack of Boiler	20 <sup>th</sup> 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 (the P11 filter was blocked) and caused dark smoke emission. The Operator had stopped the production immediately, and carried out maintenance work to rectify the problem. As the same filter was cleaned on 14 Nov 2017 (COM-2017-11-009) and was blocked again within a few days, the Operator replaced the filter. The Operator will carry out regular maintenance more frequently to minimize the chance of tripping. The Operator also carried out an incident sharing on 18 Dec 2018 to prevent recurrence of similar event.	Closed
COM-2017-11-011	Not Specified	21 <sup>st</sup> 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 fixed 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 <sup>th</sup> December 2017 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the Operator, and the Operator rectified the deficiencies.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2017-11-012	Not Specified	23 <sup>th</sup> November 2017	EPD referred that a complainant complained ASB biodiesel plant emitting malodour across Chun Wang Street.	<p>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 fixed the roller door.</p> <p>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.</p> <p>Besides, joint site visit on 11<sup>th</sup> December 2017 carried out by ET &amp; IEC identified several environmental deficiencies. Necessary actions were proposed to the Operator, and the Operator rectified the deficiencies.</p>	Closed
COM-2017-11-013	Not Specified	29 <sup>th</sup> 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 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>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.</p> <p>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<sup>th</sup> December 2017 identified several environmental deficiencies. Necessary actions were proposed to the Operator, and the Operator rectified the deficiencies.</p> <p>Regarding the complainant suspected that the odourous gas is toxic, investigation found no chemical leakage record. In addition, according to the monthly monitoring result, acetaldehyde and methanol emissions from the stack of process building were lower than reporting level in the reporting month. Therefore, the odourous gas is not likely to be due to chemicals.</p> <p>It is expected that the malodour was due to environmental deficiencies (e.g. sludge being left on ground, doors not being closed properly) identified by ET and IEC. It is because the complainant mentioned that the malodour had existed for a long time, and similar environmental deficiencies were identified in past site visits.</p>	Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2017-11-014	Not Specified	29 <sup>th</sup> November 2017	EPD referred that a complainant 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.	Investigation found that the diaphragm pump of S811 in the wastewater treatment plant was blocked. To prevent wastewater overflowing, the Operator placed a plastic tray underneath the pump. In addition, the Operator installed inflatable bladder to prevent wastewater flowing out via drainage channel. As the Operator had implemented measures to prevent wastewater being discharged via drainage channel, the event is not likely to be caused by the pump blockage.  Nevertheless, a joint site visit on 11 <sup>th</sup> December 2017 carried out by ET & IEC found oily substance being left near drainage channel. The Operator has 1.) cleaned up the oily substance; 2.) cleaned the oil interceptor; and 3.) cleaned the drainage system.	Closed
COM-2018-01-015	Not Specified	29 <sup>th</sup> January 2018	EPD referred that a complainant complained ASB biodiesel plant emitting malodour across Chun Wang Street.	Investigation found that the tricanter in the wastewater treatment plant was blocked on 29 <sup>th</sup> January 2018. During maintenance on the same day, some odourous material (e.g. sludge) spilled out. The Operator has cleaned up the spilled material.  Joint site visit on 5 <sup>th</sup> February 2018 carried out by ET & IEC identified several environmental deficiencies. Necessary actions were proposed to the Operator, and the Operator rectified the deficiencies.	Closed
COM-2018-04-016	Not Specified	13 <sup>th</sup> April 2018	EPD referred a complaint regarding continuous dark smoke emission from chimney on 12 Apr 2018 afternoon.	Investigation found that the dark smoke was emitted from the Stack of Boiler, which was under testing after the reparation of the boiler.  The Operator also pointed out that the dark smoke emission was due to cold starting of the boiler and is inevitable. As the boiler was cold and was not in optimized temperature, the fuel cannot be combusted completely for a short period of time. Nevertheless, in order to minimize dark smoke emission, the Operator had 1.) pre-heated the fuel and 2.) set the fan to the highest speed to provide enough air for combustion.  Although the Operator has camera for real-time monitoring at chimney, it is recommended that the Operator should provide a log on the duration of dark smoke emission. This allows the Operator to ensure that the inevitable dark smoke emission complies environmental license(s) granted.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2018-11-017	Not Specified	13/11/2018	EPD referred a complaint in which the complainant stated that malodour was detected at Chun Wan street, near Gammon Technology Park, on 13 Nov 2018 afternoon when northern wind was prevailing.	<p>EPD referred a complaint in which the complainant stated that malodour was detected at Chun Wan street, near Gammon Technology Park, on 13 Nov 2018 afternoon when northern wind was prevailing.</p> <p>Joint site visit on 19<sup>th</sup> November 2018 carried out by ET &amp; IEC identified the pungent smell which is consistent with the smell detected outside the plant was detected near the WWTP. The operator has proposed the following mitigation measures to counteract the problem:</p> <ol style="list-style-type: none"> <li>1) Partitions will be provided in the WWTP sludge container room to facilitate the control of the negative pressure of the rooms</li> <li>2) Conduct an investigation on the equipment in WWT to ensure that no gaps are found.</li> <li>3) Modification of the outdoor sludge containers with the motorized covering to minimise the odour emission from the sludge</li> <li>4) Additional scrubbers shall be provided for WWTP sludge container room, fat preparation room and PB fertilizer room to improve the efficiency of the odour elimination by the scrubbers</li> </ol> <p><u>Jan 2019</u></p> <p>A Site audit was carried out on 7<sup>th</sup> January 2018 to check if the odour problem has been improved. The pungent smell that was detected earlier on previous site visit (19<sup>th</sup> November 2018) has been alleviated. However, a few environmental deficiencies was identified during the site audit within the WWTP, which was regarded as the odour source. The environmental deficiencies are as follows:</p> <ol style="list-style-type: none"> <li>1) The DAF/oil-water separators were not fully covered.</li> <li>2) A tank within the Pre-acidification/ buffer tank was not open to air and steam was seen rising out from the tank</li> </ol> <p>In addition, mitigation measures as stated were not implemented, therefore, this issue should be followed up in the next site audit</p>	Closed

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				<p><u>Feb 2019</u></p> <p>The Project Proponent/ operator has rectified / improved all environmental deficiencies identified in this investigation.</p>										
COM-2019-03-018	Not specific	18 <sup>th</sup> March 2019	<p>EPD referred a complaint in which the complainant stated that malodor was detected at Plant in Tseung Kwan O Industrial Estate on 18 Mar 2019. The complainant stated that malodor has adversely affected their mental and physical health. And the problem have not been solved since the previous complaints were made.</p>	<p>The WWTP has continuously been the source of the odour problem due to the presence of oil and grease in the wastewater and treatment process. Some of the facilities in the Plant have worn out over the years while some others were damaged by the typhoon mangkhut last year, which could have caused odour. The plant has provided maintenance and mitigation measures to the relevant facilities upon receipt of the odour related complaints. Following to the complaints, Site audit was carried out on 07th Jan, 25th March &amp; 17th May 2019. The Environmental Deficiencies Identified and the follow-up actions observed during site audits are summarized below:</p> <table border="1"> <thead> <tr> <th>Environmental Deficiencies Identified</th> <th>Follow-up Actions</th> <th>Recommendations</th> </tr> </thead> <tbody> <tr> <td>Pretreatment Tanks are exposed (Jan 19)</td> <td>Stainless steel covers have been provided for the pre-acidification tank ( March 19)</td> <td>N/A</td> </tr> <tr> <td>DAF- Odourous watsewater was exposed and small holes are created in the units due to rusting (Jan 19)</td> <td>- Covers of the DAF have been renovated, paints were provided to prevent rusting (March 19) - Adhesive tapes have been used to temporary sealed the doors of the DAF (March 19) - Sealing have been</td> <td>As doors of DAF are expected to be frequently used, providing permanent airtight door seal is</td> </tr> </tbody> </table>	Environmental Deficiencies Identified	Follow-up Actions	Recommendations	Pretreatment Tanks are exposed (Jan 19)	Stainless steel covers have been provided for the pre-acidification tank ( March 19)	N/A	DAF- Odourous watsewater was exposed and small holes are created in the units due to rusting (Jan 19)	- Covers of the DAF have been renovated, paints were provided to prevent rusting (March 19) - Adhesive tapes have been used to temporary sealed the doors of the DAF (March 19) - Sealing have been	As doors of DAF are expected to be frequently used, providing permanent airtight door seal is	Closed
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COM-2019-04-19	WWTP	25 <sup>th</sup> April 2019	<p>EPD referred a complaint in which the complainant stated that malodor was detected at Chun Wan Street, near Gammon construction site on 24 April 2019. The complainant suspected that the odour was occurred as a result</p>		Closed									

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action			Status	
			of not clearing the wastewater in ASB frequent enough. The southeasterly winds also brought the malodor to LOHAS park.		provided at the joints of pipes to improve air-tightness (March 19)	considered more effective for long-term use  Gaps at the doors of the plant room shall hinder the negative pressure induced in the rooms and thus reducing the odour-removal efficiency		
				Gaps and openings at certain plant rooms due to impaired doors (May 19)	- Roller door for the sludge dewatering room have been replaced in April 19 - Door for Fertilizer room are still pending to replaced - Gaps are still found at Fat Preparation Room			

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2019-05-20	Not Specified	29 May 2019	Noise nuisance from the plant at Night.	<p>According to the EM&amp;A Manual, no adverse noise impacts were predicted at the identified representative NSRs during the operational phase and hence no operational noise monitoring is required.</p> <p>The pumps and barriers are kept in good condition as recorded by the Operator. However the doors of a number of plant rooms are still observed to be either opened or contain gaps. Although noise emitted by the fixed plants to the surroundings is expected to be low, the improvement in this regard is still expected to be made in order to minimise the noise impact.</p> <p>As the residential developments in Lohas Park are located at over 800m away from the Plant. Therefore, no NSRs within 300m are expected during the night-time operation of the Plant. With the proper implementation of the mitigation measures, no residual impact is expected.</p>	Closed
COM-2019-06-21	ASB Biodiesel	22 June 2019	EPD referred a complaint in which the complainant stated that many residents from Lohas Park has detected odour, some even has identified that the smell is similar to hydrogen sulphide.	<p>The monitoring result of the odour patrol in the period of the complaints (June 2019) are reviewed. No exceedance of Action and Limit Levels was reported. Hydrogen sulphide (H<sub>2</sub>S) concentration has been monitored using a gas meter at various point within deck of the WWTP, and no detectable H<sub>2</sub>S level has been recorded. The environmental Deficiencies Identified are summarized below:</p> <ul style="list-style-type: none"> <li>- DAF &amp; WWT tanks - Odourous wastewater was exposed via gaps in the units</li> <li>- Accumulation of sediment was found inside the tanks of the WWTP</li> </ul> <p>The follow-up actions were taken upon receiving the complaint</p> <ul style="list-style-type: none"> <li>- Replacing a cover for a tank in WWTP was proposed, and odour shall be monitored continuously to evaluate the effectiveness of the cover</li> <li>- Cleaning was provided for the DAF and pre-acidification tank and regular cleaning of the tanks should be provided</li> </ul> <p>Details of complaint investigation should be referred to the Monthly Report (June 2019) The door of the Fertilizer room is replaced in July 2019.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2020-05-22	ASB Biodiesel	20 May 2020	EPD referred a complaint in which the complainant stated that many residents from Lohas Park has detected malodors. EPD inspection team has scented the oil & grease odour from ASB at Wan O Road	The monitoring results of the odour patrol in the period of the complaints (May 2020) are reviewed. No exceedance of Action and Limit Levels was reported. A site audit has been conducted on 21 <sup>st</sup> May 2020. Environmental Deficiencies Identified have been summarized below: - DAF tanks - Odourous wastewater was exposed via gaps in the units	Closed
COM-2020-05-23	ASB Biodiesel	20 May 2020	EPD referred a complaint in which the complainant stated that many residents from Lohas Park has detected malodors. EPD inspection team has scented the oil & grease odour from ASB at Wan O Road	The follow-up action was taken after site audit: - Adhesive agents have been used to temporary sealed the windows of the DAF 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-2020-06-24	Not specified	9 July 2020	EPD referred a complaint in which the complainant stated that many residents from Le Prestige Block 1 in Lohas Park has detected malodors on 11 Jun 2020. EPD inspection team has scented the oil & grease odour emitted from ASB at Wan O Road on 2/7/2020	<p>The monitoring results of the odour patrol in the period of the complaints (June 2020) are reviewed. No exceedance of Action and Limit Levels was reported.</p> <table border="1"> <thead> <tr> <th>Environmental Deficiencies Identified</th> <th>Follow-up Actions</th> <th>Recommendations</th> </tr> </thead> <tbody> <tr> <td>Odour problems are occurred when wind flows from south to north and affect residents nearby.</td> <td>To cover the odour-emitted sources by canvas when there is a south wind.</td> <td>Actions for eliminating oil &amp; grease odour should be completed to reduce the odour intensity.</td> </tr> </tbody> </table>	Environmental Deficiencies Identified	Follow-up Actions	Recommendations	Odour problems are occurred when wind flows from south to north and affect residents nearby.	To cover the odour-emitted sources by canvas when there is a south wind.	Actions for eliminating oil & grease odour should be completed to reduce the odour intensity.	Closed
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COM-2020-07-25	Not specified	9 July 2020	EPD referred a complaint in which the complainant stated that many residents from Wings at Sea in Lohas Park has detected malodors on 7 Jul 2020. EPD inspection team has scented the oil & grease odour emitted from ASB at Wan O Road on 2/7/2020	<p>The monitoring results of the odour patrol in the period of the complaints (July 2020) are reviewed. No exceedance of Action and Limit Levels was reported.</p> <table border="1"> <thead> <tr> <th>Environmental Deficiencies Identified</th> <th>Follow-up Actions</th> <th>Recommendations</th> </tr> </thead> <tbody> <tr> <td>Odour problems are occurred when wind flows from south to north and affect residents nearby.</td> <td>To cover the odour-emitted sources by canvas when there is a south wind.</td> <td>Actions for eliminating oil &amp; grease odour should be completed to reduce the odour intensity.</td> </tr> </tbody> </table>	Environmental Deficiencies Identified	Follow-up Actions	Recommendations	Odour problems are occurred when wind flows from south to north and affect residents nearby.	To cover the odour-emitted sources by canvas when there is a south wind.	Actions for eliminating oil & grease odour should be completed to reduce the odour intensity.	Closed
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COM-2020-09-26	Not specified	17 September 2020	<p>EPD referred complaints from LOHAS Park Resident and at Tseung Kwan O Industrial Estate on 12 September 2020 about:-</p> <ul style="list-style-type: none"> <li>- malodors from the roundabout at the western end of Chun Wang Street and;</li> <li>- suspected discharge of oily substances to the sea outside the Chun Wang Street Outfall.</li> </ul>	<p><u>Malodour &amp; Suspected Oil Discharge</u></p> <p>The odour monitoring results of the emissions from stacks, scrubber and patrol in the period of the complaints (September 2020) have been reviewed. An exceedance of Limit Level of odour emission from scrubber was reported in the reporting month, however, the cause of the exceedance was identified as the maintenance works in the aeration tank that were conducted during the monitoring period and not during complaint period. No other exceedance was conducted.</p> <p>An inspection form Hong Kong Fire Service Department was conducted for potential gas leakage. A gases detector was used to check the source of malodour at perimeter of the plant but revealed no abnormalities during inspection.</p> <p>Furthermore, no source of the oil spillage has been identified as no setback nor oil spillage has been found in the plant. A standard procedure and oil/grease trap has already been deployed at the terminal stormwater manhole of the plant, after the gate valve, to ensure that the stormwater has no oil content before being discharged. The standard procedure is outlined as follows:</p> <ol style="list-style-type: none"> <li>1) The sluice gate in the upstream of the terminal manhole would be lowered to control water flow to the terminal manhole and prevent contaminated water from entering the Junk Bay via the outfall.</li> <li>2) Water samples from the manholes would be collected and tested for O&amp;G;</li> <li>3) Tanker away contaminated water from the stormwater drain and direct the water to the WWTP for further treatment ;</li> <li>4) Review operation in the WWTP and implement mitigation measures if necessary.</li> </ol> <p>A visual inspection at the terminal manhole was carried out by the operator on 12 September and no oil discharge was identified.</p> <p>Other sources in the vicinity of ASB are also under suspicion for the cause of the incident during the complaint period, including the marine activities at Gammon Technology Park and the increased maritime traffic due to marine construction activities.</p>	Closed