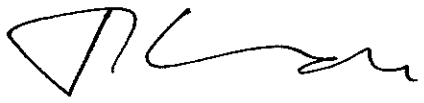
ASB Biodiesel (Hong Kong) Limited

Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

Quarterly EM&A Report

January – March 2017

(Version 1.0)

Certified By 

(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.

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Job No.	D1067	*Total Pages:*	1

Subject: **Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Quarterly EM&A Report (January - March 2017)**

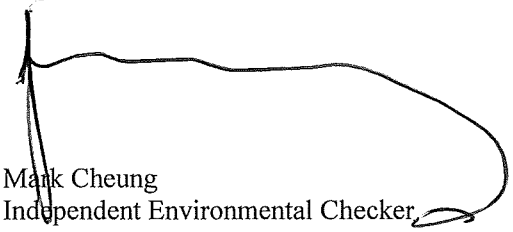
Dear Sir,

We refer to your submission of the Quarterly EM&A Report for January 2017 to March 2017 via email dated 15 May 2017.

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

However, it is also noted that there was a summons regarding the violation of water discharge license received in March 2017. Please make sure the causes of the exceedance of the concerned items are resolved

Regards,



Mark Cheung
Independent Environmental Checker

KTC/gk

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EXECUTIVE SUMMARY

Introduction

1. This is the 4th quarterly 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 – March 2017.

Environmental Licenses and Permits

2. Licenses/Permits granted to the Project include the followings:
   - Environmental Permit, EP-319/2009/D, granted on 28 January 2014;
   - Specified Process Licence, L-25-019(1), granted on 10 October 2013 &
   - Water Pollution Control Ordinance Licence, WT00022972-2015, granted on 16 December 2015.

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 no production in February 2017 due to lacking of feedstock, emission from stacks of boiler, biogas flare and process building cannot be sampled. Therefore, monitoring on emissions form these stacks was suspended in February 2017, and will be resumed in March 2017.

5. As there was limited production in March 2017 due to the lack of feedstock, emission from stacks of boiler and process building cannot be sampled. Therefore, monitoring on emissions form these stacks was suspended in March 2017, and will be resumed in April 2017.

6. As the BHO tank was not filled/refilled in February and March 2017, monitoring on the sulphur content in BHO was suspended in February and March 2017, and will be resumed in April 2017.

Key Information in the Reporting Month

7. Summary of key information in this reporting quarter (January – March 2017) is listed in **Table I**.

Table I Summary of Key Information in January – March 2017

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Exceedance of Action & Limit Levels	1	---	Exceedance events were investigated and measures have been proposed.	N/A	---
Complaint received	1	Oily substances and debris entering public sewerage system	Complaint was investigated and measures have been proposed	Incident Report was submitted	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	6	(1): Monthly EM&A Reports for Oct & Nov 2016 (2): Monthly EM&A Report for Dec 2016 (3): Monthly EM&A Report for Jan 2017 & Quarterly EM&A Report for Oct – Dec 2016 (4): Monthly EM&A Report for Feb 2017	Submitted to EPD on (1): 6 February 2017 (2): 21 February 2017 (3): 27 February 2017 (4): 13 March 2017	Verified by IEC	---
Notifications of any summons & prosecutions	1	Summons to defendant regarding the contravention of licence granted under the WPCO	N/A	N/A	---

1 INTRODUCTION

Background

1.1 Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate (hereafter referred to as "the Project") is to construct and operate a 100,000 tonnes per annum biodiesel plant at Tseung Kwan O Industrial Estate (see **Figure 1.1** for the location plan of Project Site). The plant will use a multi-feedstock which consists of used cooking oil (UCO), oil and grease recovered from grease trap waste (GTW), palm fatty acid distillate (PFAD) and animal fats. The proposed biodiesel plant offers a convenient recycling outlet for GTW and UCO, and converts oil and grease recovered from these wastes into useful products. The Project also offers a more environmental-friendly alternative to the diesel fuel market in Hong Kong.

1.2 This Project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499). An environmental impact assessment (EIA) was undertaken to identify and evaluate the impact on environment (e.g. air quality, noise, water quality and ecology), and propose possible measures to mitigate the impact. The EIA Report was approved by the Environmental Protection Department (EPD) on 26 February 2009.

1.3 Environmental Permit (EP) No. EP-319/2009 was issued on 11 March 2009 to ASB Biodiesel (Hong Kong) Limited as the Permit Holder. After several rounds of amendments, the latest version is EP No. EP-319/2009/D, which was issued on 28 January 2014.

1.4 Construction of the Biodiesel Plant has been completed since October 2013. After more than 2 years of commissioning trial, the Plant started to operate in April 2016. Cinotech Consultants Limited was commissioned by ASB Biodiesel (Hong Kong) Limited to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. This is the 4th Quarterly EM&A report summarizing the EM&A works in operational phase for the Project in January – March 2017.

Project Organizations

1.5 Different parties with different levels of involvement in the project organization include:

- Project Proponent & Operator – ASB Biodiesel (Hong Kong) Limited
- Independent Environmental Checker (IEC) – Mannings (Asia) Consultants Ltd
- Environmental Team (ET) – Cinotech Consultants Limited

1.6 The responsibilities of respective parties are detailed in Section 2 of the Final EM&A Manual of the Project.

1.7 The key contacts of the Project are shown in **Table 1-1**.

Table 1-1 Key Project Contacts

Party	Role	Name	Position	Phone No.
ASB	Permit Holder & Operator	Mr. Albert Kwan	Facilities and Operations Manager	3183 4209
		Ms. Fion Wong	Engineer	3183 4204
Mannings	Independent Environmental Checker	Mr. Mark Cheung	Independent Environmental Checker	3168 2028
		Mr. Gavin Kwok	Assistant to Independent Environmental Checker	3970 8628
Cinotech	Environmental Team	Dr. HF Chan	ET Leader	2151 2088
		Ms. Betty Choi	Project Coordinator	2151 2072

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; &
- Conditions listed in the SP License.

Status of Environmental Licensing and Permitting

1.9 All permits/licenses obtained for the Project are summarized in **Appendix A**.

2 ENVIRONMENTAL MONITORING REQUIREMENTS

Air Quality

2.1 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 patrol along the Project Site boundary is also required. Detailed monitoring criteria (i.e. frequency, parameter, and action & limit levels) are listed in **Appendix B**. If limit levels are exceeded, the event and action plan as shown in **Appendix C** should be implemented.

Water Quality

2.2 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. Detailed monitoring criteria (i.e. frequency, parameter, and limit levels) are listed in **Appendix B**. If limit levels are exceeded, the event and action plan as shown in **Appendix C** should be implemented.

Sulphur Content in Bio Heating Oil

2.3 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. Monitoring criteria (i.e. frequency, parameter, and limit level) for the sulphur content in BHO are listed in **Appendix B**. If limit level is exceeded, the following actions should be taken by the ET:

- Inform Project Proponent and IEC within 24 hours;
- 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.

3 MONITORING RESULTS

Air Quality

Emission from Stack of Boiler

3.1 Emission from stacks of boiler was sampled and analyzed monthly. As there was no production and only had limited production in February and March 2017 respectively due to lacking of feedstock, emission from the stack of boiler cannot be sampled. Therefore, monitoring on emission form the stack was suspended in February and March 2017, and will be resumed in April 2017. Monitoring result of boiler emission in January 2017 is summarized in **Table 3-1** below and graphical presentation of results is shown in **Appendix D**.

Table 3-1 Monitoring Result of the Emission from the Stack of Boiler

Parameter	Limit Level	Monitoring Result *		
		Jan-17	Feb-17 ***	Mar-17 ***
Nitrogen oxides (NO_X)	2.213 kg/h	1.12 kg/h	-	-
Carbon monoxide (CO)	0.553 kg/h	< 0.1 kg/h	-	-
Sulphur dioxide (SO_2)	0.797 kg/h	0.037 kg/h	-	-
Non-methane Organic Compounds (NMOC)	0.041 kg/h	0.017 kg/h	-	-
Exhaust gas velocity	7 m/s **	10.875 m/s	-	-

* Average result of all trials is presented. If one of the data was smaller than the limit of reporting, the smallest recordable value was used for calculation of average.
** Minimum level should be achieved.
*** Monitoring was suspended as there was no and limited production in February and March 2017 respectively.

3.2 No exceedance of Limit Level was reported in January – March 2017.

Emission from Stack of Biogas Flare

3.3 Emission from stacks of biogas flare was sampled and analyzed monthly. As there was no production in February 2017 due to lacking of feedstock, emission from the stack of biogas flare cannot be sampled. Therefore, monitoring on emission form the stack was suspended in February 2017, and was resumed in March 2017.Summary of monitoring result of the emission from the stack of biogas flare in January – March 2017 is presented in **Table 3-2** below and graphical presentation of results is shown in **Appendix D**.

Table 3-2 Monitoring Result of the Emission from the Stack of Biogas Flare

Parameter	Limit Level	Monitoring Result *		
		Jan-17	Feb-17 *****	Mar-17
Nitrogen oxides (NO_X)	0.053 kg/h	0.004 kg/h	-	< 0.01 kg/h
Carbon monoxide (CO)	0.018 kg/h	< 0.0189 kg/h ***	-	< 0.019 kg/h ***
Sulphur dioxide (SO_2)	0.039 kg/h	< 0.003 kg/h	-	0.06 kg/h ****
Non-methane Organic Compounds (NMOC)	0.0018 kg/h	0.0005kg/h	-	0.0003 kg/h
Exhaust gas velocity	0.54 m/s **	0.75 m/s	-	1.275 m/s

* Average result of all trials is presented. If one of the data was smaller than the limit of reporting, the smallest recordable value was used for calculation of average.
** Minimum level should be achieved.
*** As the emission of carbon monoxide is below reporting level, it is not considered as an exceedance event.
**** Exceedance of Limit Level
***** Monitoring was suspended as there was no production in February 2017.

3.4 One exceedance of Limit Level was reported in March 2017. Investigation of the exceedance event was finished and measures were proposed for countering the exceedance.

Emission from Stack of Process Building

3.5 Emission from stacks of process building was sampled and analyzed monthly. As there was no production and only had limited production in February and March 2017 respectively due to lacking of feedstock, emission from the stack of process building cannot be sampled. Therefore, monitoring on emission form the stack was suspended in February and March 2017, and will be resumed in April 2017. Summary of monitoring result of the emission from the stack of process building in January 2017 is presented in **Table 3-3** below and graphical presentation of results is shown in **Appendix D**.

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

Parameter	Limit Level	Monitoring Result *		
		Jan-17	Feb-17 ***	Mar-17 ***
Acetyldehyde	0.0975 kg/h	<0.001 kg/h	-	-
Methanol	0.0975 kg/h	0.015 kg/h	-	-
Exhaust gas velocity	0.79 m/s **	3.2 m/s	-	-

* Average result of all trials is presented. If one of the data was smaller than the limit of reporting, the smallest recordable value was used for calculation of average.
** Minimum level should be achieved.
*** Monitoring was suspended as there was no and limited production in February and March 2017 respectively.

3.6 No exceedance of Limit Level was reported in January – March 2017.

Odour Concentration at the Final Air Scrubber

3.7 Odour Concentration at the final air scrubber was sampled and analyzed monthly. Summary of monitoring result of odour concentrations at the final air scrubber in

January – March 2017 is presented in **Table 3-4** below and graphical presentation of results is shown in **Appendix D**.

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

Parameter	Limit Level	Monitoring Result *		
		Jan-17	Feb-17	Mar-17
Odour	200.3 OU/s	7.98 OU/s	5.45 OU/s	3.92 OU/s
Exhaust gas velocity	0.7 m/s **	0.91 m/s	0.93 m/s	0.76 m/s

* Average result of all trials is presented. If one of the data was smaller than the limit of reporting, the smallest recordable value was used for calculation of average.
** Minimum level should be achieved.

3.8 No exceedance of Limit Level was reported in January – March 2017.

Odour Patrols along Site Boundary

3.9 Odour intensity were monthly monitored by the odour patrols. Odour patrols were carried out by a qualified odour panelist in both morning and afternoon on 5 January, 28 February and 6 March 2017. Summary of monitoring result of odour patrols in January – March 2017 is presented in **Table 3-5** below and graphical presentation of results is shown in **Appendix D**.

Table 3-5 Monitoring Result of Odour Patrols along Site Boundary

Date	Odour Intensity		
	Action Level	Limit Level	Range of Measured Level
January 2017	Odour intensity ≥Class 2 recorded; or One documented complaint received	Odour intensity ≥Class 3 recorded on 2 consecutive patrols	0 – 1~2
February 2017			0 – 1
March 2017			0 – 1

3.10 No exceedance of Action and Limit Levels was reported in January – March 2017.

Water Quality

Water Quality of Treated Effluent Discharged from Project Site

3.11 Water quality of treated effluent discharged from Project Site was sampled and analyzed monthly. Summary of water quality monitoring result of treated effluent discharge from Project Site in January – March 2017 is presented in **Table 3-6** below and graphical presentation of results is shown in **Appendix E**.

Table 3-6 Water Quality Monitoring Result of Treated Effluent Discharged from Project Site

Parameter	Limit Level	Monitoring Result		
		Jan-17	Feb-17	Mar-17
pH	Within the range of 6-10	8.10	7.86	8.20
Suspended Solids	800 mg/L	260 mg/L	32 mg/L	280 mg/L
Biochemical Oxygen Demand (BOD) (5 days, 20°C	800 mg/L	498 mg/L	420 mg/L	180 mg/L
Chemical Oxygen Demand (COD)	2000 mg/L	650 mg/L	520 mg/L	240 mg/L
Oil & Grease	50 mg/L	35 mg/L	16 mg/L	41 mg/L
Sulphate	1000 mg/L	10 mg/L	265 mg/L	295 mg/L
Total Nitrogen	200 mg/L	120 mg/L	90 mg/L	48 mg/L
Total Phosphorus	50 mg/L	35 mg/L	17.5 mg/L	12 mg/L
* Exceedance of Limit Level				

3.12 No exceedance of Limit Level was reported in January – March 2017.

Water Quality of Stormwater Discharge

3.13 Water quality of stormwater discharge was sampled and analyzed quarterly. Summary of water quality monitoring result of stormwater discharge in January – March 2017 is presented in **Table 3-7** below and graphical presentation of results is shown in **Appendix E**.

Table 3-7 Water Quality Monitoring Result of Stormwater Discharge

Parameter	Limit Level	Monitoring Result		
		Jan-17	Feb-17	Mar-17
pH	Within the range of 6-9	--	--	8.12
Suspended Solids	50 mg/L	--	--	25 mg/L
Biochemical Oxygen Demand (BOD) (5 days, 20°C	50 mg/L	--	--	20 mg/L
Chemical Oxygen Demand (COD)	100 mg/L	--	--	35 mg/L
Oil & Grease	30 mg/L	--	--	<10 mg/L
* Water quality of stormwater discharge from Project Site was sampled and analyzed quarterly				

3.14 No exceedance of Limit Level was reported in January – March 2017.

Sulphur Content in Bio Heating Oil

3.15 Sulphur content in bio heating oil was sampled and analyzed every tank load of the bio heating oil when the fuel tank(s) is being filled/refilled. As the BHO tank was not filled/refilled in February and March 2017, monitoring on the sulphur content in BHO was suspended in February and March 2017, and will be resumed in April 2017. Summary of monitoring result of Sulphur content in bio heating oil in January – March 2017 is presented in **Table 3-8** below and graphical presentation of results is shown in **Appendix F**.

Table 3-8 Monitoring Result of Sulphur Content in Bio Heating Oil

Parameter	Limit Level	Monitoring Result		
		Jan-17	Feb-17 *	Mar-17 *
Sulphur Content	346 ppm	320 ppm	--	--
* Monitoring was suspended as the BHO tank was not filled/refilled in February and March 2017				

3.16 No exceedance of Limit Level was reported in January – March 2017.

Summary of Exceedance Events in the Reporting Quarter

3.17 A summary of all exceedance events is presented in **Table 3-9** below. Investigation report for the exceedance in March 2017 is attached in the Monthly EM&A Report (March 2017).

Table 3-9 Summary of Exceedance Events in the Reporting Quarter

Parameter		Unit	Action Level	Limit Level	Monitoring Result
January 2017					
No exceedance event in January 2017					
February 2017					
No exceedance event in February 2017					
March 2017					
Stack of Biogas Flare (EP1)	Sulphur Dioxide (SO_2)	Kg/hr	- *	0.039	0.06
* No action level was set in the Final EM&A Manual of the Project, Environmental Permit, and in the Specified Process Licence					

4 SUMMARY OF COMPLAINT AND PROSECUTION

4.1 1 environmental related complaints were received on 6th February 2017 (see **Appendix H**).

4.2 1 notification of summons regarding the contravention of the WPCO licence (WT00022972-2015) was received in March 2017.

4.3 There were four environmental complaints, and 1 notification of summons received since the commencement of Project (operational phase). The Complaint Log is attached in **Appendix H**.

5 CONCLUSIONS

5.1 In January – March 2017, environmental monitoring and audit works were carried out in accordance with criteria and requirements listed in the Project EM&A Manual, Environmental Permit EP-319/2009D, Specified Process Licence L-25-019(1) and Water Pollution Control Ordinance Licence WT00022972-2015.

5.2 Monitoring of air quality, water quality and sulphur content in Bio Heating Oil were carried out at designated locations. In the reporting quarter, 1 exceedance was recorded at the Stack of Biogas Flare in March 2017. Investigation report of the exceedance is attached in the Monthly EM&A Report (March 2017).

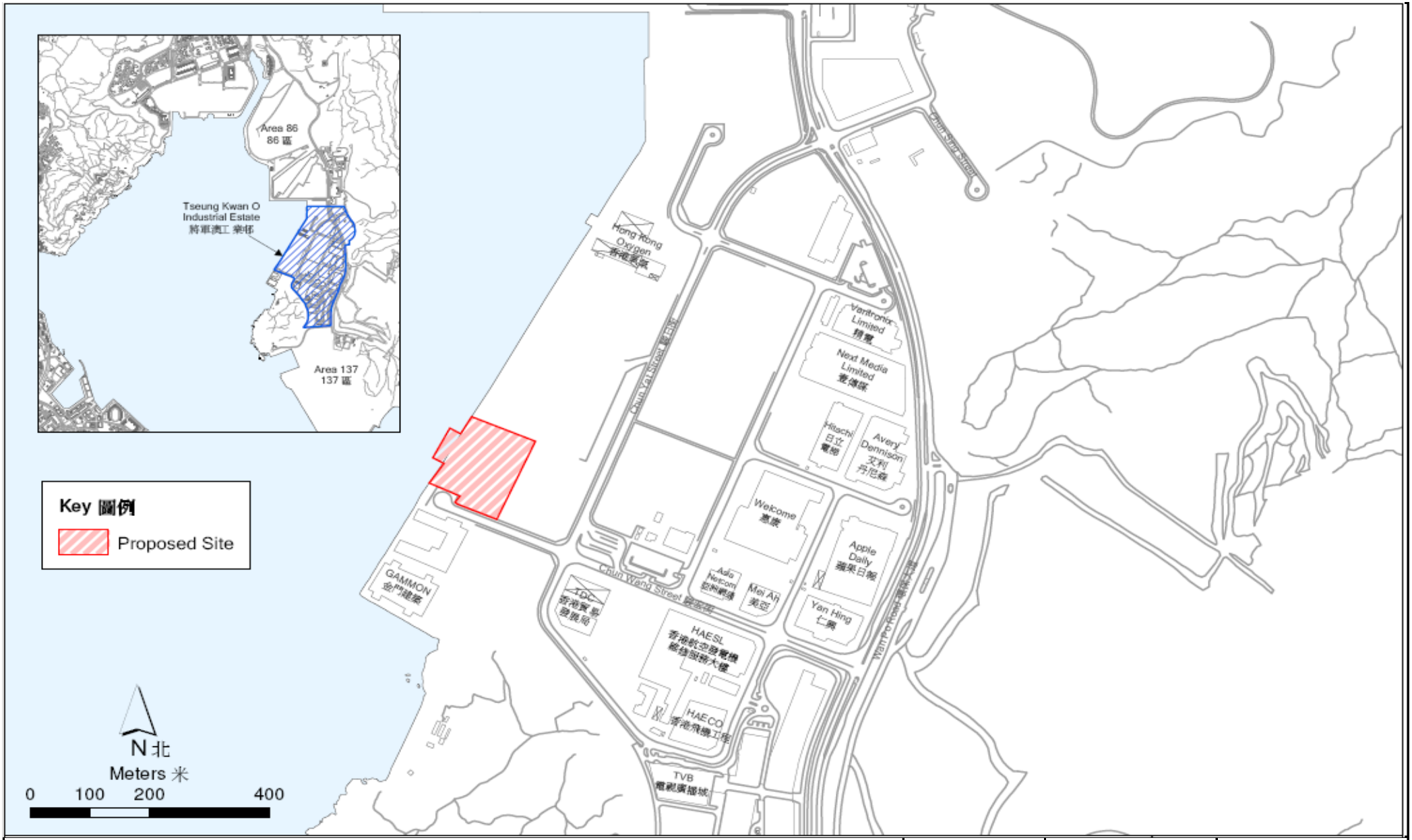
5.3 As there was no production in February 2017 due to lacking of feedstock, emission from stacks of boiler, biogas flare and process building cannot be sampled. Therefore, monitoring on emissions form these stacks was suspended in February 2017, and will be resumed in March 2017.

5.4 As there was limited production in March 2017 due to the lack of feedstock, emission from stacks of boiler and process building cannot be sampled. Therefore, monitoring on emissions form these stacks was suspended in March 2017, and will be resumed in April 2017.

5.5 As the BHO tank was not filled/refilled in February and March 2017, monitoring on the sulphur content in BHO was suspended in February and March 2017, and will be resumed in April 2017.

5.6 In the reporting quarter, 1 complaint was received on 6th February 2017, and 1 notification of summons was received in March 2017.

FIGURES



Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate	Scale: N.T.S	Project No.: MA15052	CINOTECH
Location Plan	Date: MAY 2016	Figure: 1.1	

APPENDIX A
Summary of Environmental Licensing and Permit Status

Appendix A Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Summary	Status
	From	To		
Environmental Permit (EP)				
EP-319/2009/D	28/01/2014	N/A	Operation of • a biochemical plant with a storage capacity of more than 500 tonnes and in which substances are processed and produced; • a storage, transfer and transhipment of oil facility with a storage capacity of not less than 1,000 tonnes; and • a dangerous goods godown with a storage capacity exceeding 500 tonnes	Valid
Specified Process (SP) Licence				
L-25-016(1)	10/10/2013	10/10/2015	• Emission of non-fugitive fixed point emissions	Under renewal
Water Pollution Control Ordinance (WPCO) Licence				
WT00022972-2015	16/12/2015	31/12/2017	Discharge of • effluent from wastewater treatment facilities to communal foul sewer; and • effluent from floor washing of operation areas to communal storm drain	Valid

APPENDIX B
Summary of Monitoring Criteria

Appendix B Summary of Monitoring Criteria

Air Quality				
	Frequency	**Parameter**	**Action Levels**	**Limit Levels**
Emission from Stack of Boiler (EP2)	Monthly for the first 12 months of operation. If the monitoring results of the first year monitoring meet the limit level, the monitoring will be reduced to half-yearly intervals for the whole operational stage. *	Nitrogen oxides (NO_X)	– **	2.213 kg/h
		Carbon monoxide (CO)		0.553 kg/h
		Sulphur dioxide (SO_2)		0.797 kg/h
		Non-methane Organic Compounds (NMOC)		0.041 kg/h
		Exhaust gas velocity		7 m/s (minimum)
Emission from Stack of Biogas Flare (EP1)		NO_X	– **	0.053 kg/h
		CO		0.018 kg/h
		SO_2		0.039 kg/h
		NMOC		0.0018 kg/h
		Exhaust gas velocity		0.54 m/s (minimum)
Emission from Stack of Process Building (EP3)		Acetyldehyde	– **	0.0975 kg/h
		Methanol		0.0975 kg/h
		Exhaust gas velocity		0.79 m/s (minimum)
Odour Concentrations at the Final Air Scrubber (EP5)	Monthly for the first 2 years of operation *	Odour	– **	200.3 OU/s
		Exhaust gas velocity		0.7 m/s (minimum)
Odour Patrols along the Project Site Boundary	Two times a day, one in the morning and one in the afternoon • Monthly for the first 12 months of operation. If the monitoring results of the first year monitoring meet the limit level, the monitoring frequency will be reduced to quarterly intervals in the second year; • If the action level is triggered during the second year of operation, the frequency will be resumed to monthly intervals until compliance with the action level for three consecutive months is obtained; • If the action level is not triggered for four consecutive quarterly monitoring, the monitoring can be terminated.	Odour Intensity	• Odour intensity ≥ Class 2 recorded; or • One documented complaint received	• Odour intensity ≥Class 3 recorded on 2 consecutive patrols

* Monitoring will not be carried out during raining days

** No action level is set in the Final EM&A Manual of the Project and in the Specified Process Licence

Appendix B Summary of Monitoring Criteria

Water Quality			
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 ^{o}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 ^{o}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			

Sulphur Content in Bio Heating Oil		
Frequency	**Parameter**	**Limit Levels**
Every tank load of the BHO for the BHO's sulphur content when the fuel tank(s) is being filled/refilled • This original frequency shall be adopted in the first three months of using BHO on site. After the first three months of the original monitoring regime, if all monitoring result in the first three months meet the limit level, the frequency may be reduced to one test for every two refills for the next three months; and after the first six months, the monitoring may be conducted once a month. • If exceedance occur, the monitoring shall be reverted to the original frequency of a test for every tank load of BHO, or at such a monitoring frequency to be advised and agreed by the EPD's Director.	Sulphur Content	346 ppm
* No action level was set in the EP of the Project		

APPENDIX C
Event and Action Plan

Appendix C Event and Action Plan

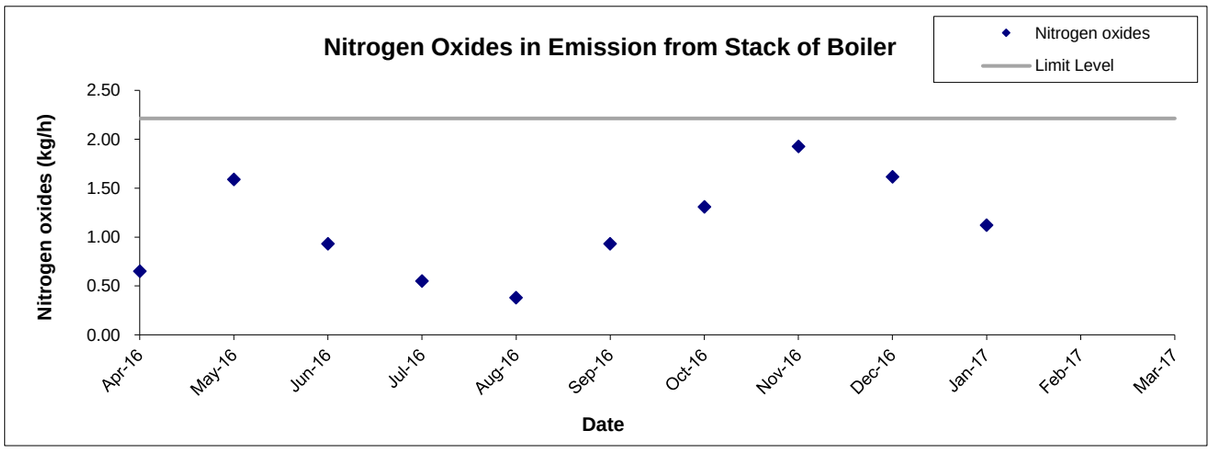
Air Quality			
Event	**Actions**		
	ET Leader	**IEC**	**Project Proponent**
Exceedance of Limit Level for stack emission from boiler, biogas flare, process building and final air scrubber	• Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours • Repeat measurement to confirm finding • Identify source(s) and investigate the cause(s) of exceedance • Inform Project Proponent whether the cause of exceedance is due to the Project • Prepare the Notification of Exceedance within 24 hours • Discuss remedial actions with the Project Proponent • Assess the effectiveness of Project Proponent's remedial actions • For the monitoring of emissions from the stacks of the boiler, biogas flare and process building, increase the monitoring frequency from half-yearly (for the second year onward) to monthly intervals. If results of three consecutive monthly monitoring show no exceedance of the limit level, the monitoring frequency will be reverted back to half-yearly intervals.	• Verify the Notification of Exceedance submitted by the ET Leader • Check with the Project Proponent on the operating activities and implementation of control measures • Discuss with ET Leader and Project Proponent on the possible remedial actions • Advise the Project Proponent on the effectiveness of the proposed remedial measures • Supervise implementation of remedial measures	• Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary
Exceedance of Action Level for odour	• Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours • Repeat measurement to confirm finding • Identify source(s) / reason of exceedance or complain • Prepare the odour complain form or the Notification of Exceedance within 24 hours • Inform Project Proponent whether the cause of exceedance is due to the Project • Discuss remedial actions with the Project Proponent • During the second year of operation, if the action level is triggered, the frequency will be resumed to monthly until compliance with the action level for three consecutive months is obtained and the frequency will be reduced to quarterly intervals thereafter.	• Verify the Notification of Exceedance submitted by the ET Leader	• Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary

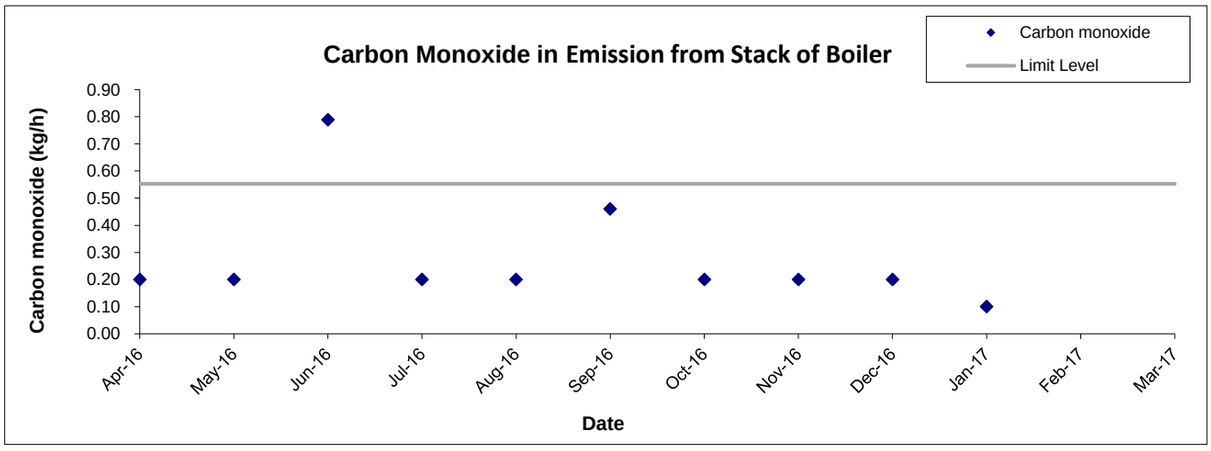
Exceedance of Limit Level for odour	• Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours • Repeat measurement to confirm finding • Identify source(s) / reason of exceedance or complain • Prepare the odour complain form or the Notification of Exceedance within 24 hours • Inform Project Proponent whether the cause of exceedance is due to the Project • Assess the effectiveness of Project Proponent's remedial actions or amended design	• Verify the Notification of Exceedance submitted by the ET Leader • Check with the Project Proponent on the operating activities and implementation of control measures • Discuss with ET Leader and Project Proponent on the possible remedial actions • Advise the Project Proponent on the effectiveness of the proposed remedial measures • Supervise implementation of remedial measures	• Rectify any unacceptable practice • Propose and implement remedial measures or amend design as required within 3 working days of notification • Resubmit proposals if problem still not under control

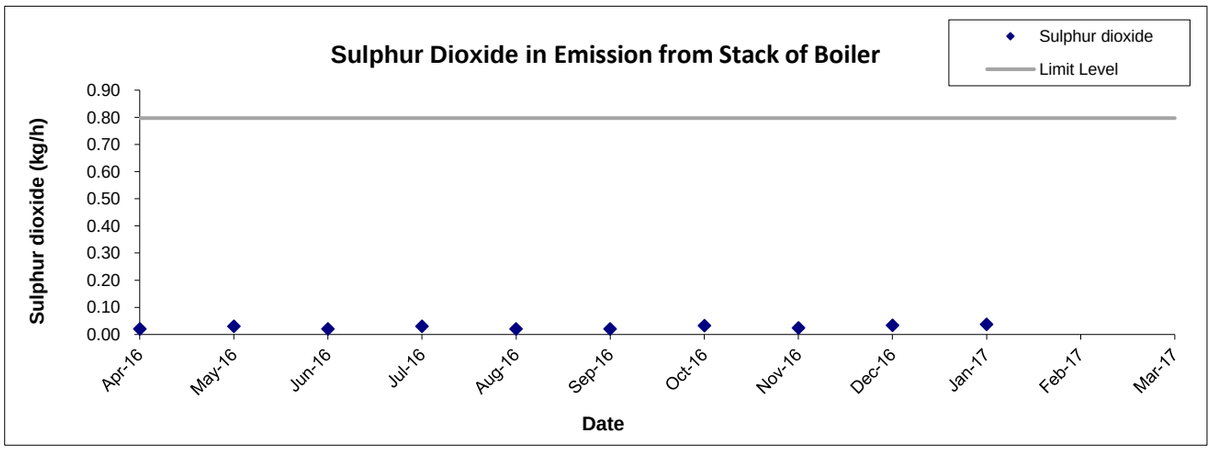
Appendix C Event and Action Plan

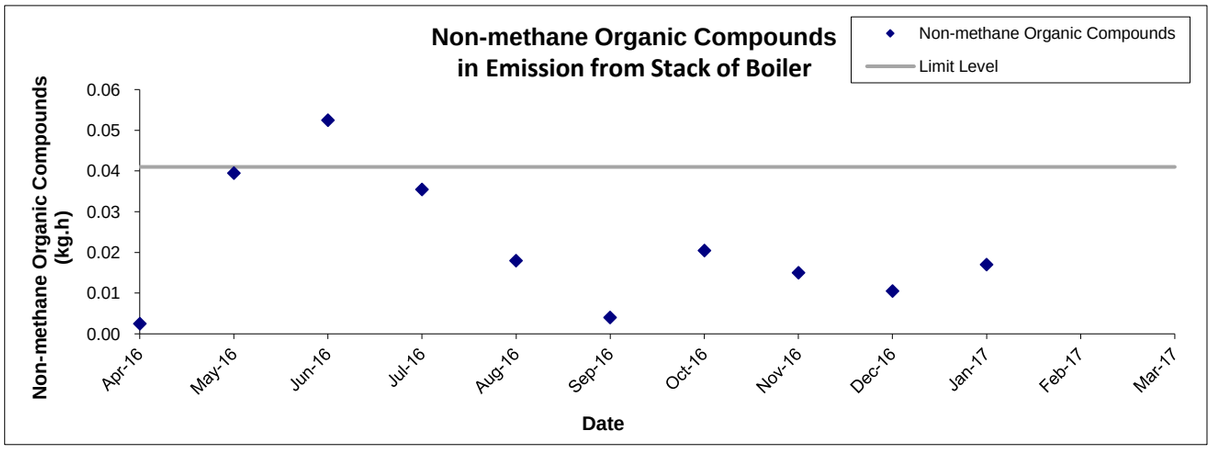
Water Quality			
Event	**Actions**		
	ET Leader	**IEC**	**Project Proponent**
Exceedance of Limit Level for Treated Effluent Discharged from Project Site	• Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours • Repeat measurement to confirm finding • Identify source(s) and investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Discuss remedial actions with the Project Proponent • Assess the effectiveness of Project Proponent's remedial actions	• Verify the Notification of Exceedance submitted by the ET Leader • Check with Contractor on the operating activities and implementation of landfill gas control measures • Discuss with ET Leader and Contractor on the possible remedial actions • Advise the IC on the effectiveness of the proposed remedial measures • Supervise implementation of remedial measures	• Check the performance of the on-site WWTP • Rectify any unacceptable performance • Carry out remedial measures or amend design as required • Implement amended design, if necessary
Exceedance of Limit Level for Stormwater Discharged from the Project Site	• Inform Project Proponent and IEC, and investigate and record the cause of exceedance within 24 hours • Repeat measurement to confirm finding • Identify source(s) and investigate the cause(s) of exceedance • Prepare the Notification of Exceedance within 24 hours • Discuss remedial actions with the Project Proponent • Assess the effectiveness of Project Proponent's remedial actions	• Verify the Notification of Exceedance submitted by the ET Leader • Check with Project Proponent on the operating activities • Discuss with ET Leader and Project Proponent on the possible remedial actions • Advise the Project Proponent on the effectiveness of the proposed remedial measures • Supervise implementation of remedial measures	• Propose and implement remedial measures or amend design as required • Rectify any unacceptable practice • Amend working methods as required • Implement amended working methods, if necessary

APPENDIX D
Graphical Presentation of Monitoring Results – Air Quality

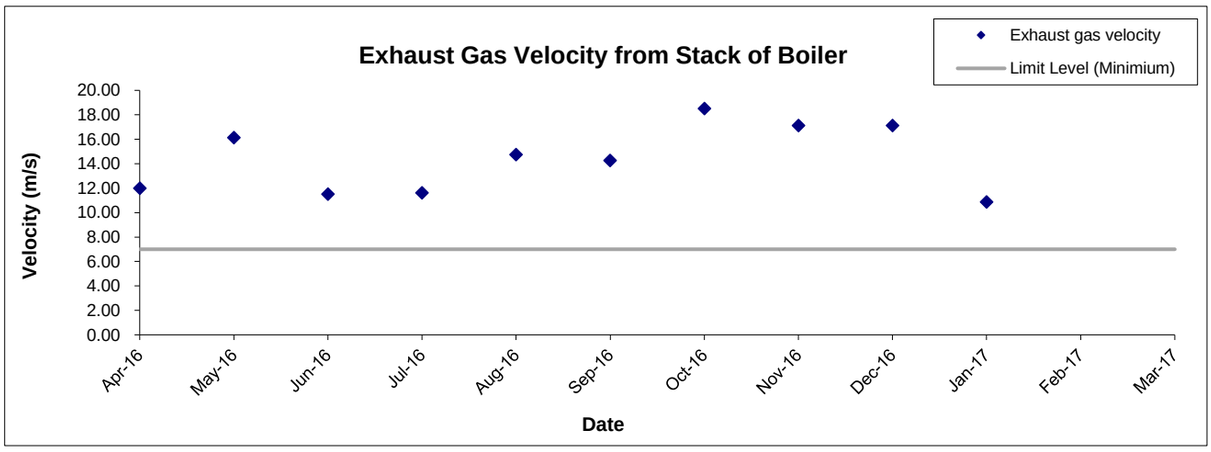






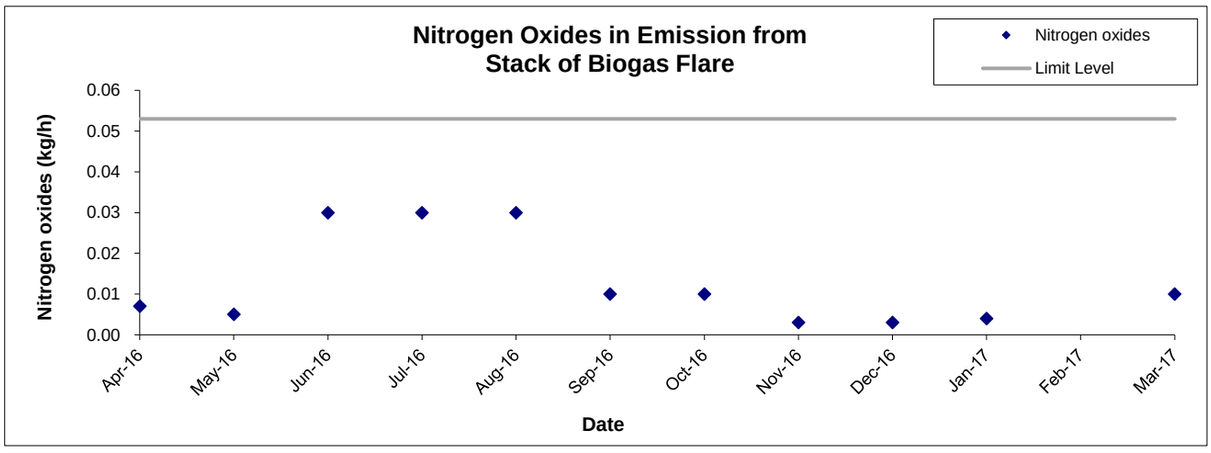


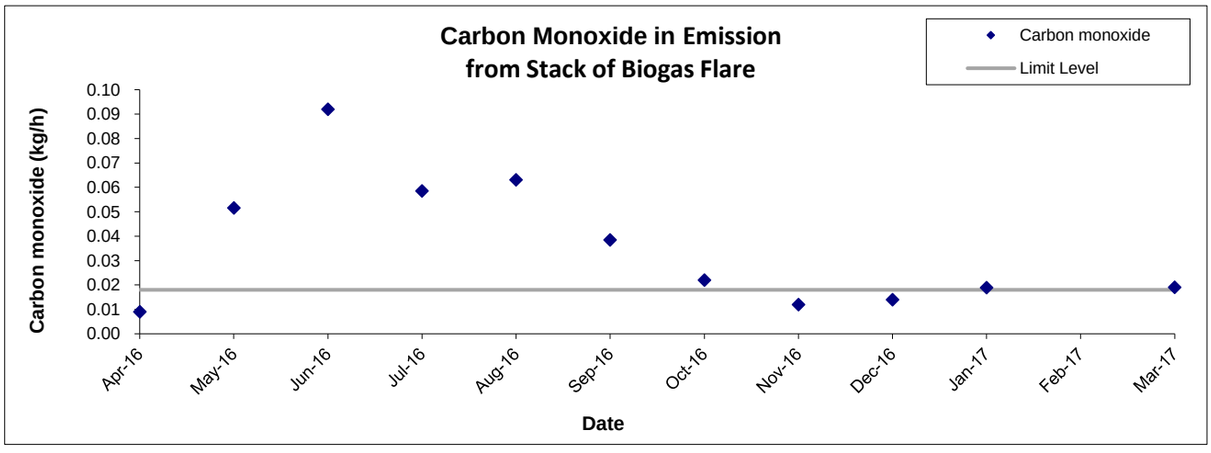
Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Air Quality (Emission from Stack of Boiler)	Scale: N.T.S	Project No.: MA15052	CINOTECH
	Date: Mar 17	Appendix: D-1	

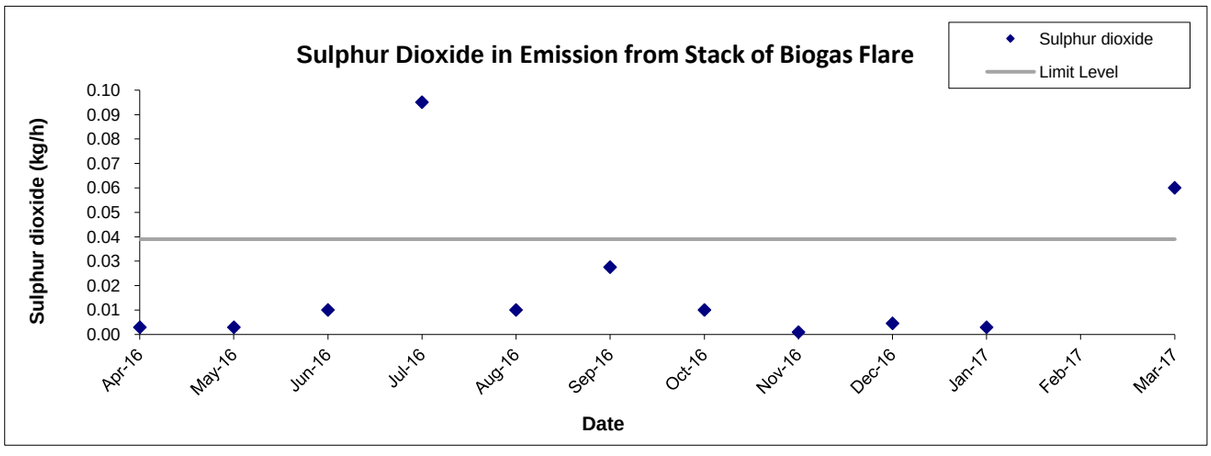


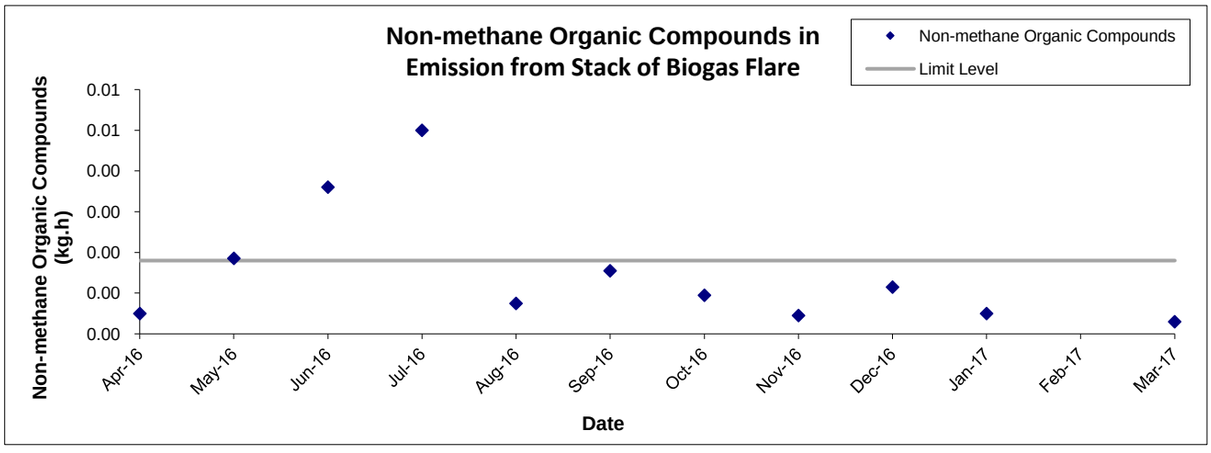
Remark: As there was no production in February 2017 due to lacking of feedstock, emission from stacks of boiler, biogas flare and process building cannot be sampled.
As there was limited production in March 2017 due to the lack of feedstock, emission from stacks of boiler and process building cannot be sampled.

Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Air Quality (Emission from Stack of Boiler)	Scale: N.T.S Date: Mar 17	Project No.: MA15052 Appendix: D-2	CINOTECH

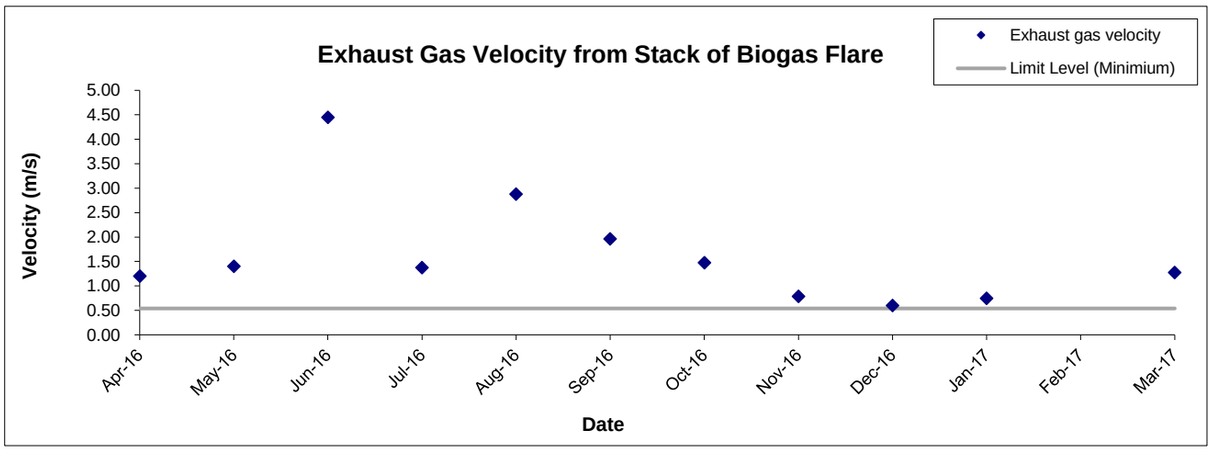






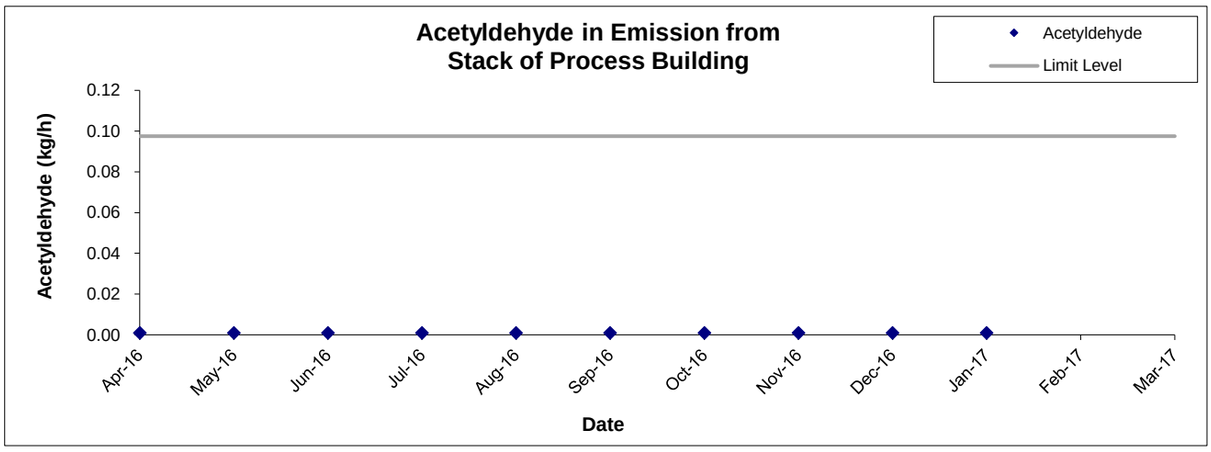


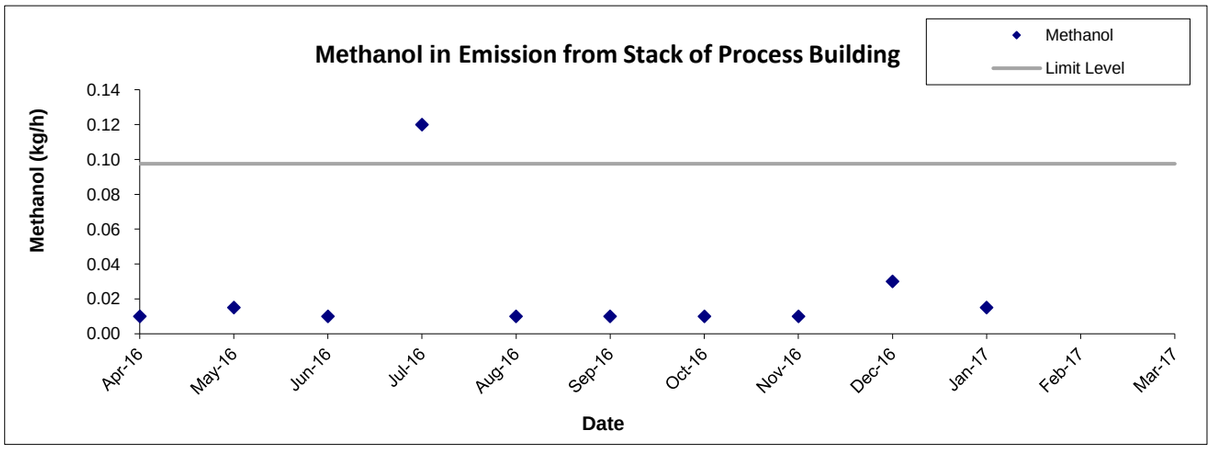
Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Air Quality (Emission from Stack of Biogas Flare)	Scale: N.T.S	Project No.: MA15052	CINOTECH
	Date: Mar 17	Appendix: D-3	

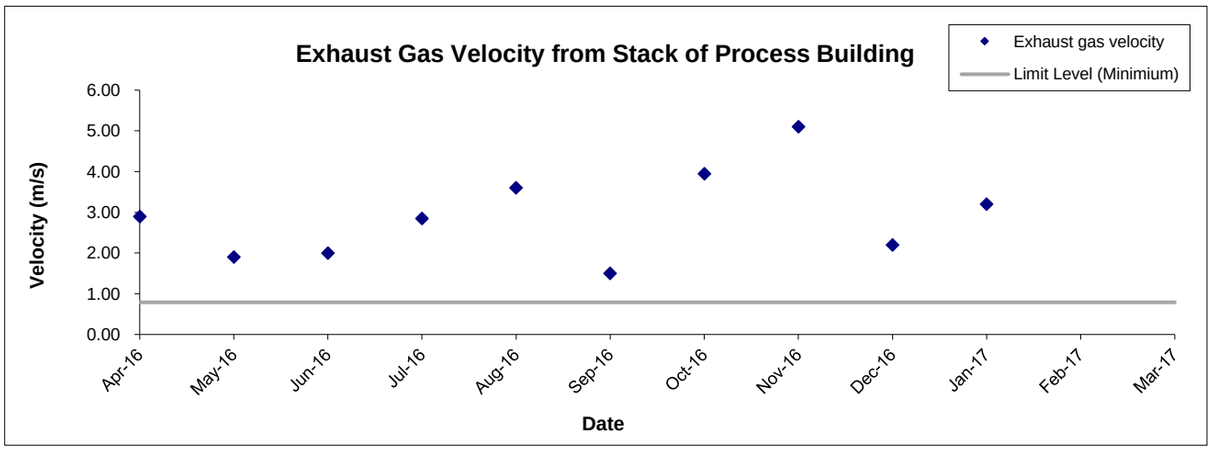


Remark: As there was no production in February 2017 due to lacking of feedstock, emission from stacks of boiler, biogas flare and process building cannot be sampled.

Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Air Quality (Emission from Stack of Biogas Flare)	Scale: N.T.S Date: Mar 17	Project No.: MA15052 Appendix: D-4	CINOTECH

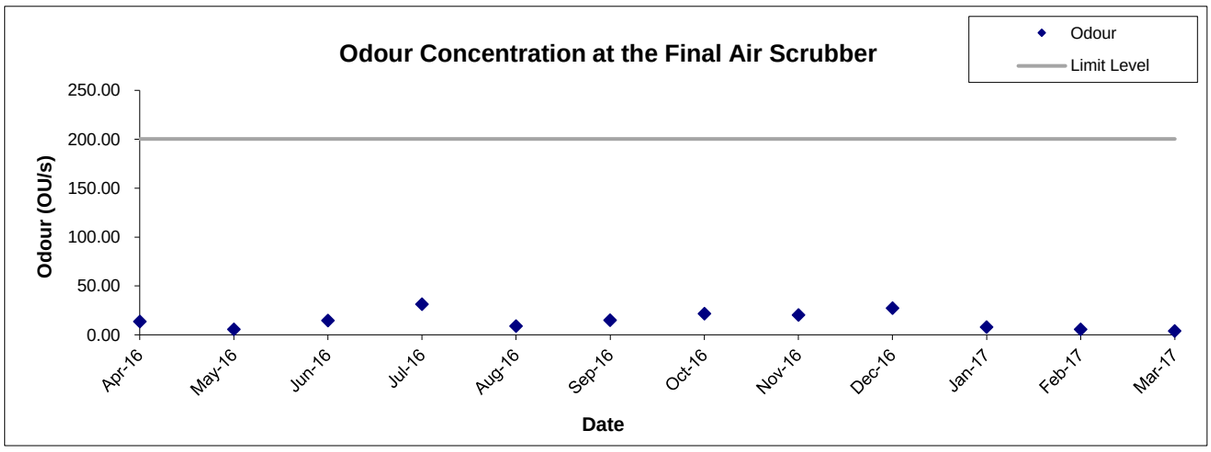


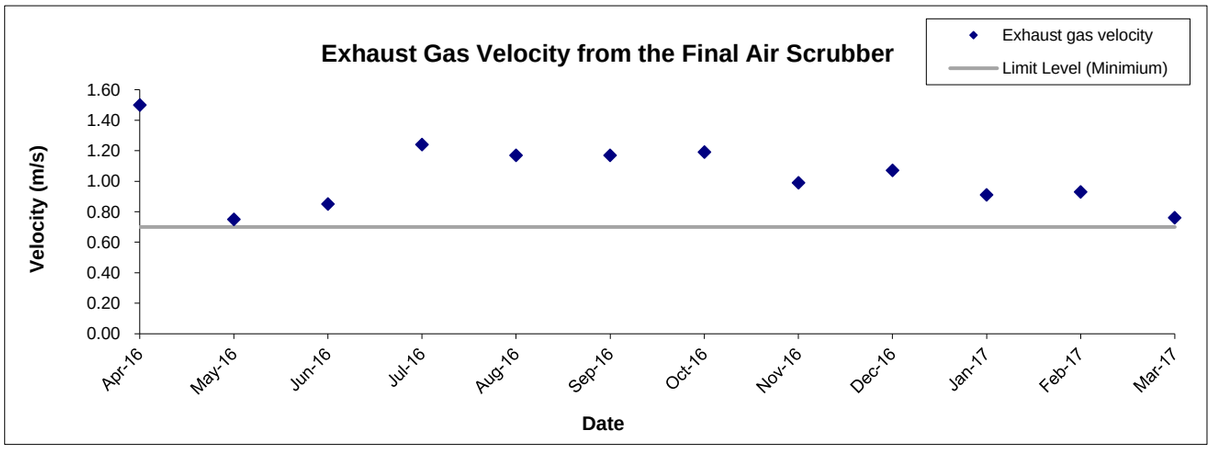




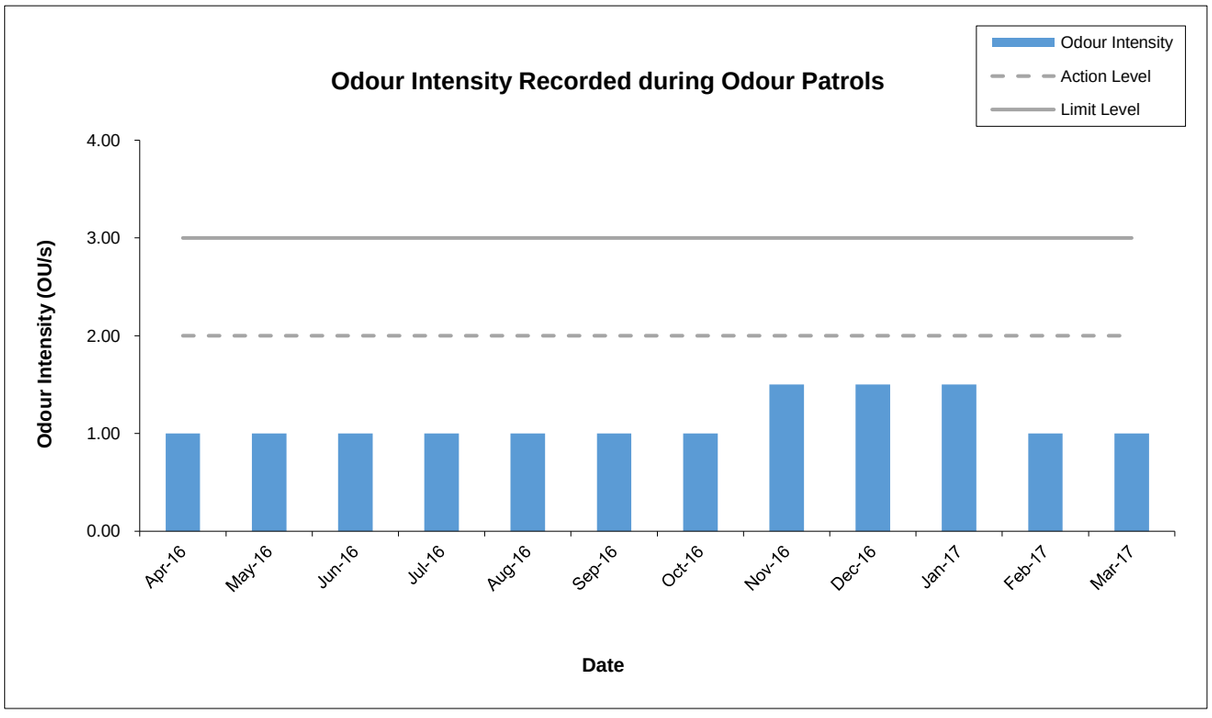
Remark: As there was no production in February 2017 due to lacking of feedstock, emission from stacks of boiler, biogas flare and process building cannot be sampled.
As there was limited production in March 2017 due to the lack of feedstock, emission from stacks of boiler and process building cannot be sampled.

Title		Scale	Project No.	
Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate		N.T.S	MA15052	CINOTECH
Graphical Presentation of Monitoring Results – Air Quality (Emission from Stack of Process Building)		Date: Mar 17	Appendix: D-5	



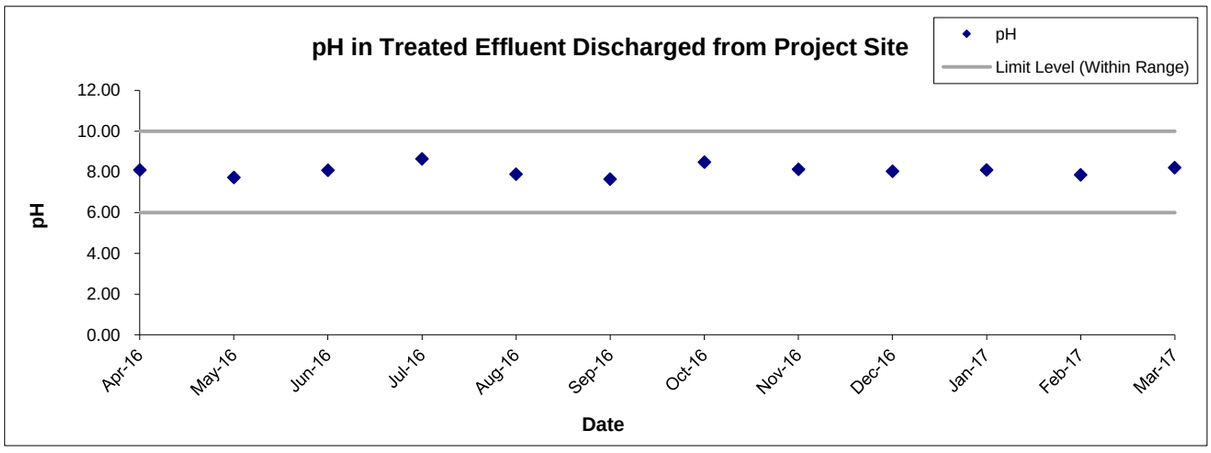


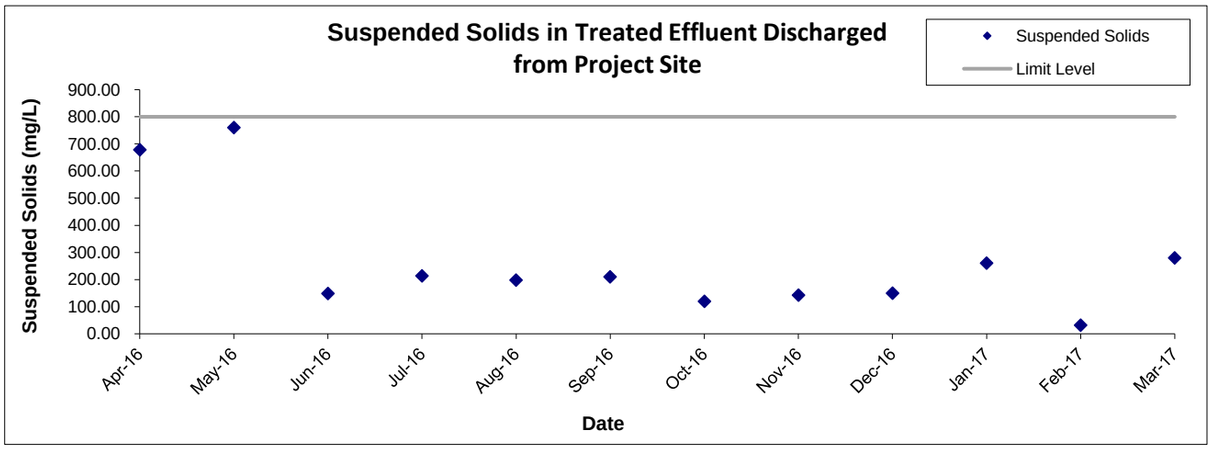
Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Air Quality (Odour Concentration at the Final Air Scrubber)	Scale: N.T.S Date: Mar 17	Project No.: MA15052 Appendix: D-6	CINOTECH

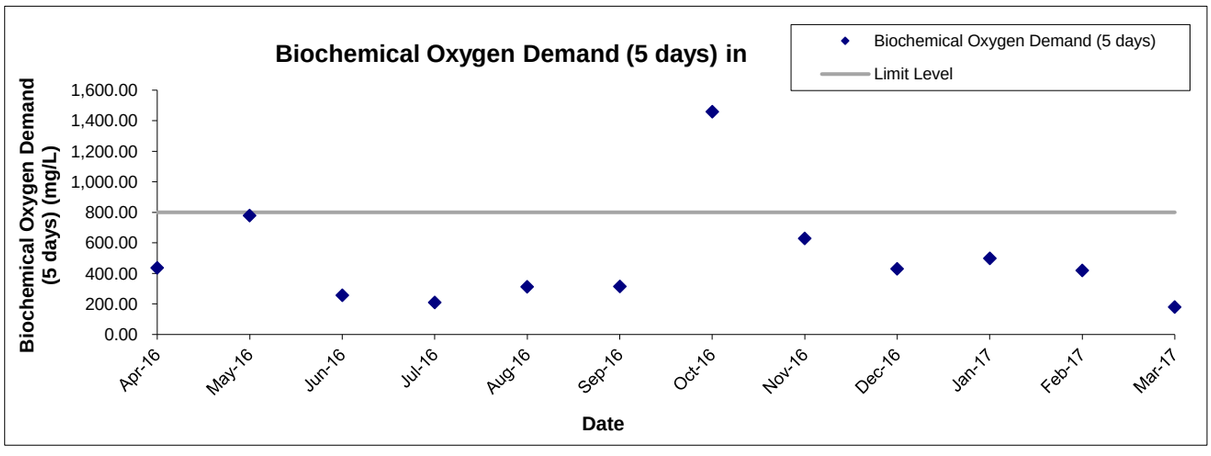


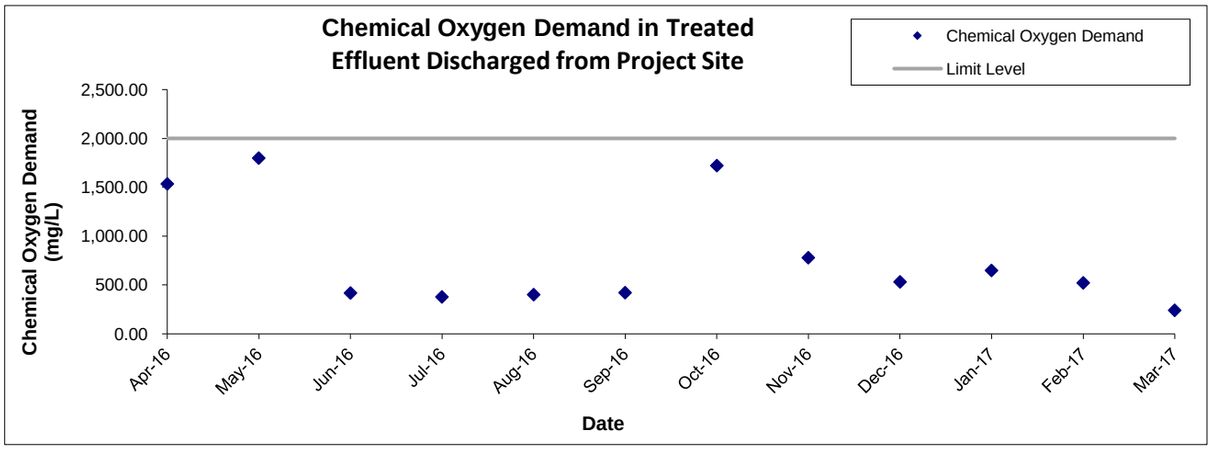
Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Air Quality (Odour Intensity Recorded during Odour Patrols)	Scale: N.T.S Date: Mar 17	Project No.: MA15052 Appendix: D-7	CINOTECH

APPENDIX E
Graphical Presentation of Monitoring Results – Water Quality

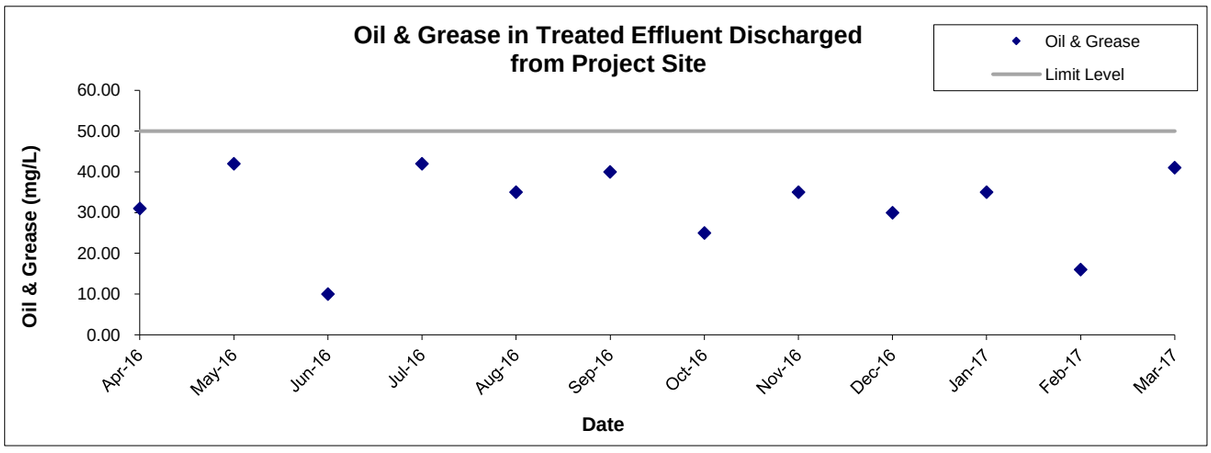


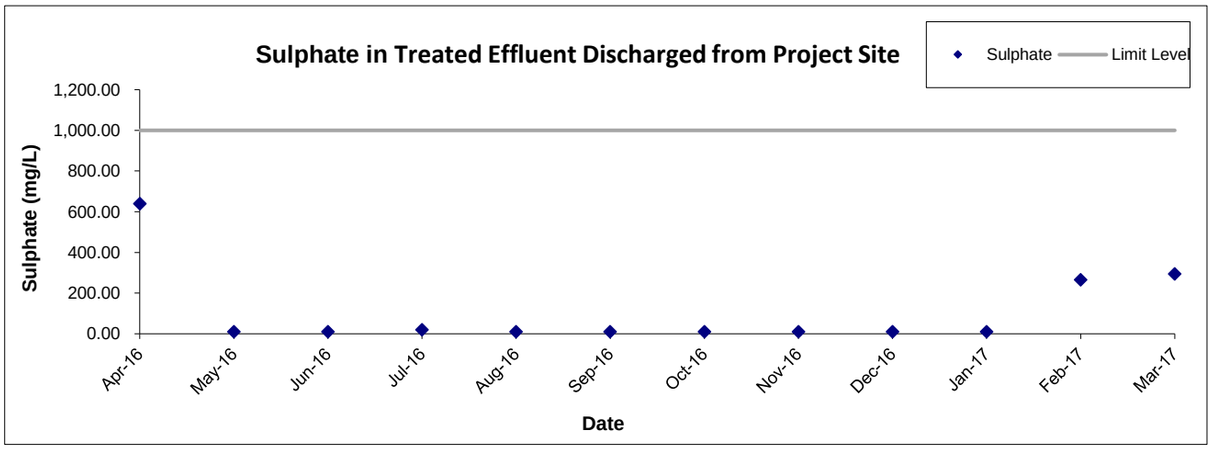


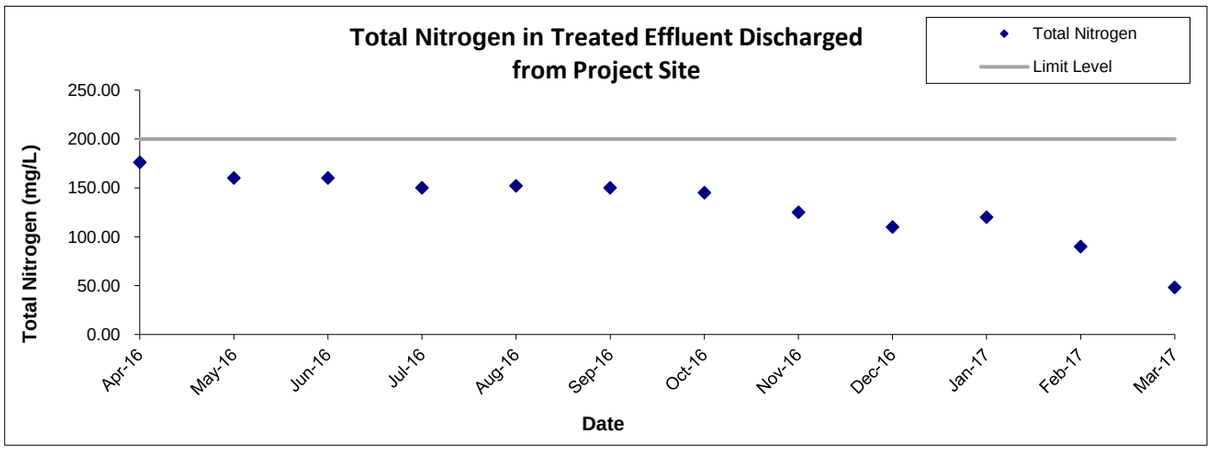


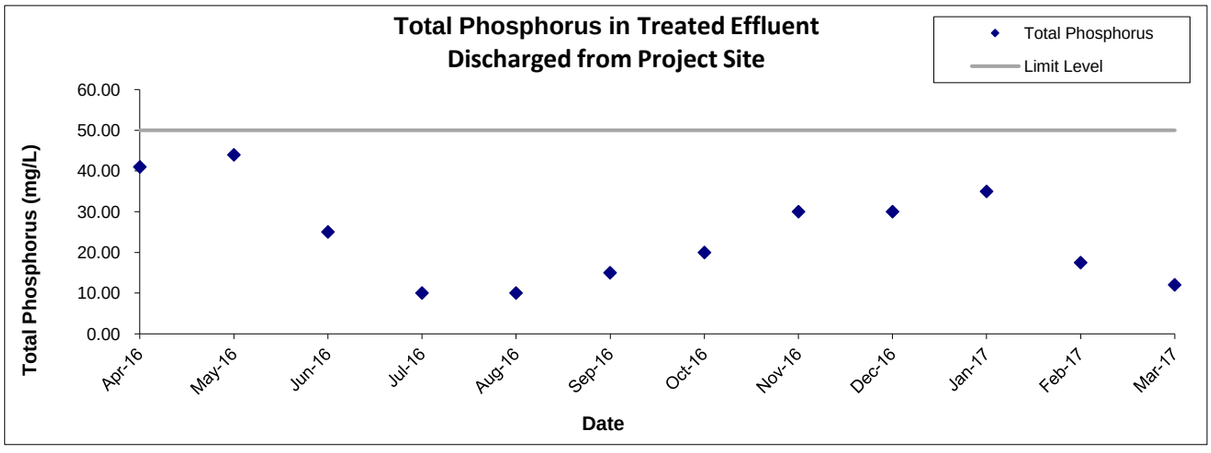


Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Water Quality (Treated Effluent Discharged from Project Site)	Scale: N.T.S	Project No.: MA15052	CINOTECH
	Date: Mar 17	Appendix: E-1	



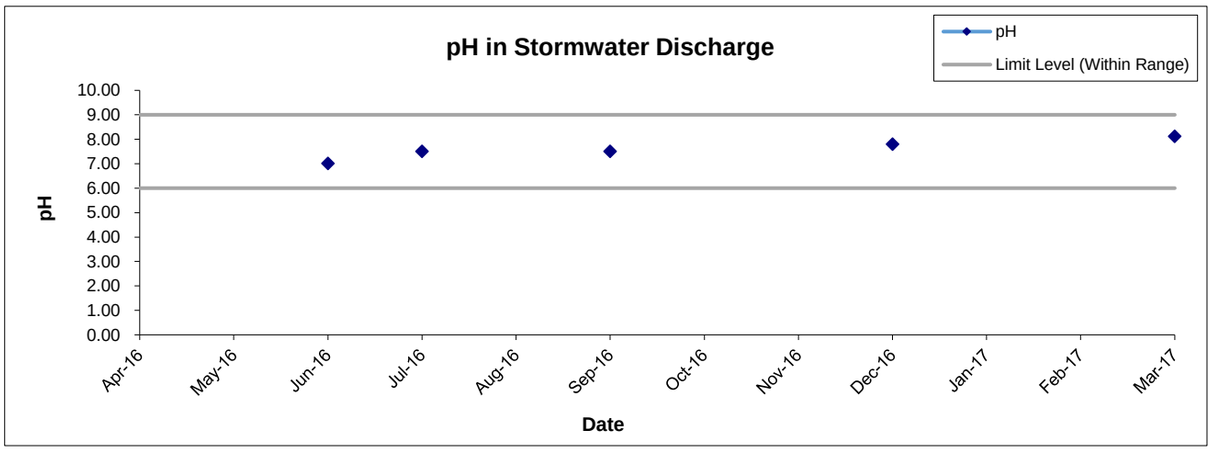


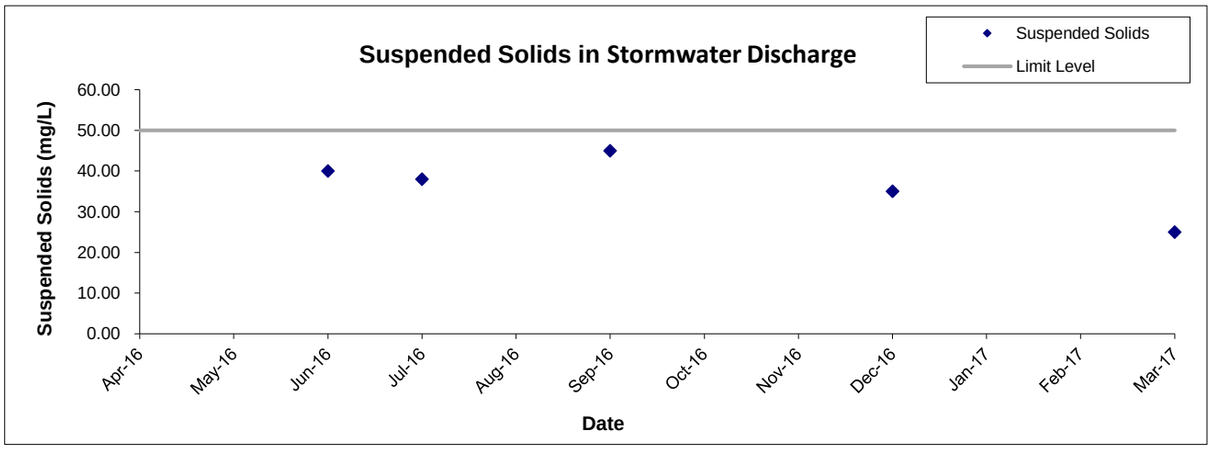


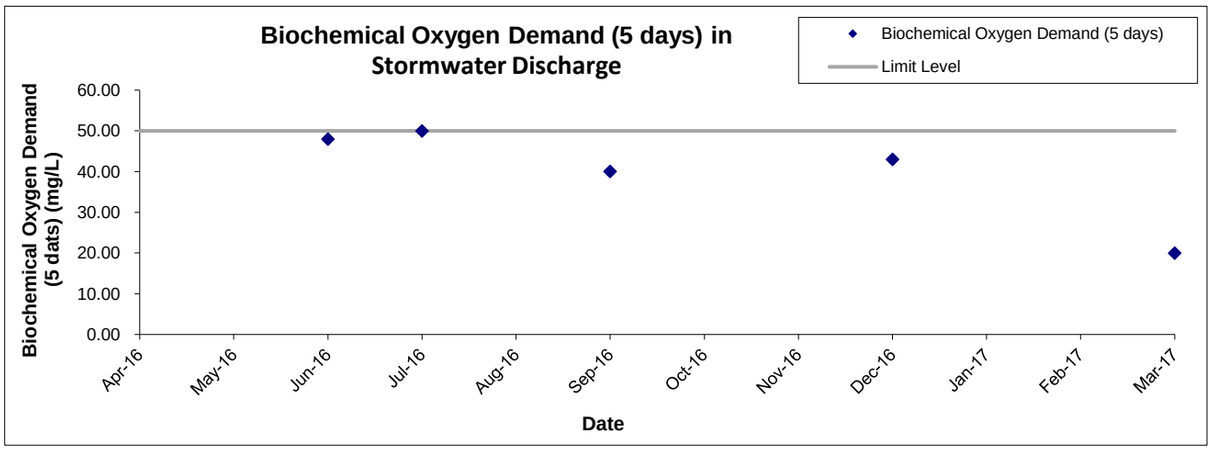


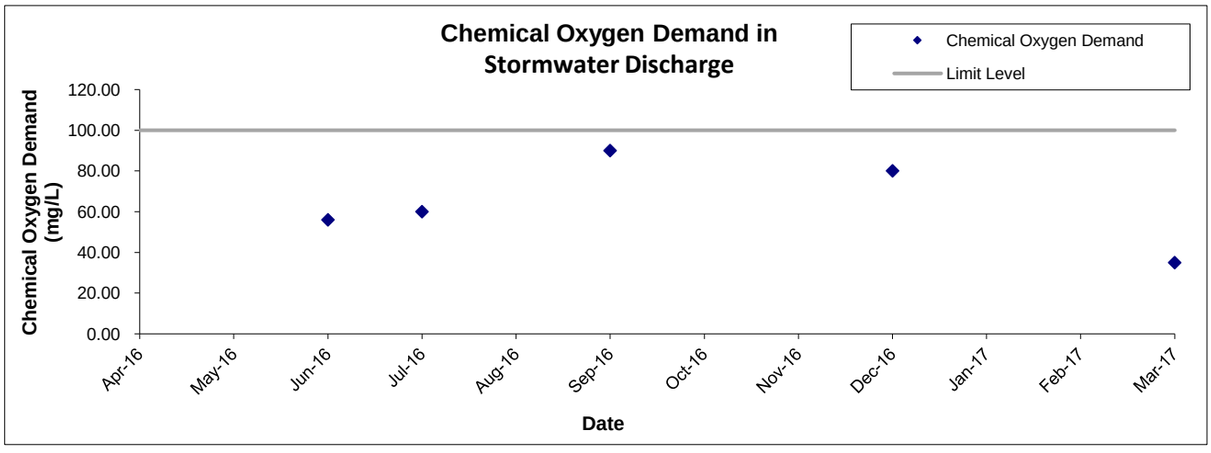
Title	Scale	Project No.
Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Water Quality (Treated Effluent Discharged from Project Site)	N.T.S	MA15052
	Date: Mar 17	Appendix: E-2

CINOTECH

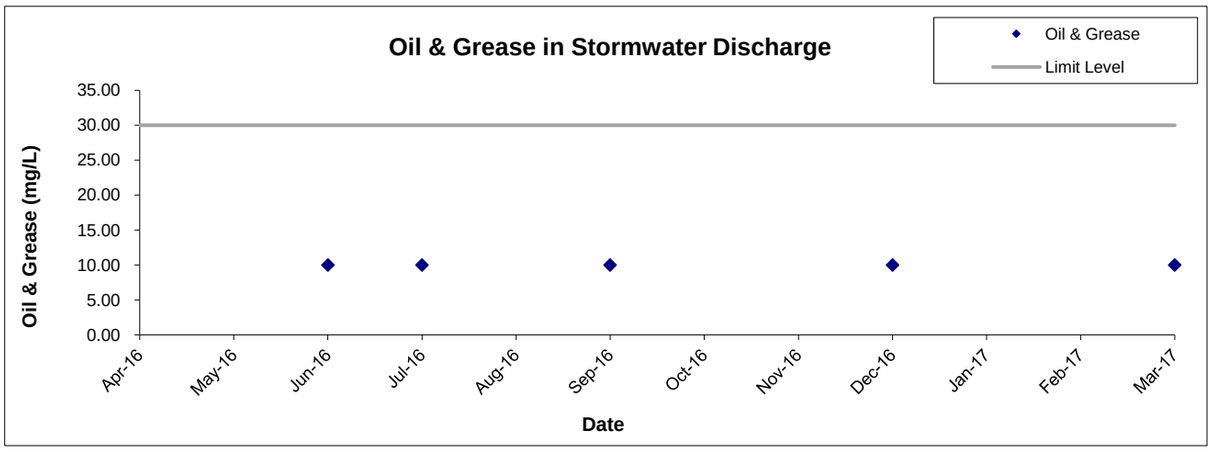






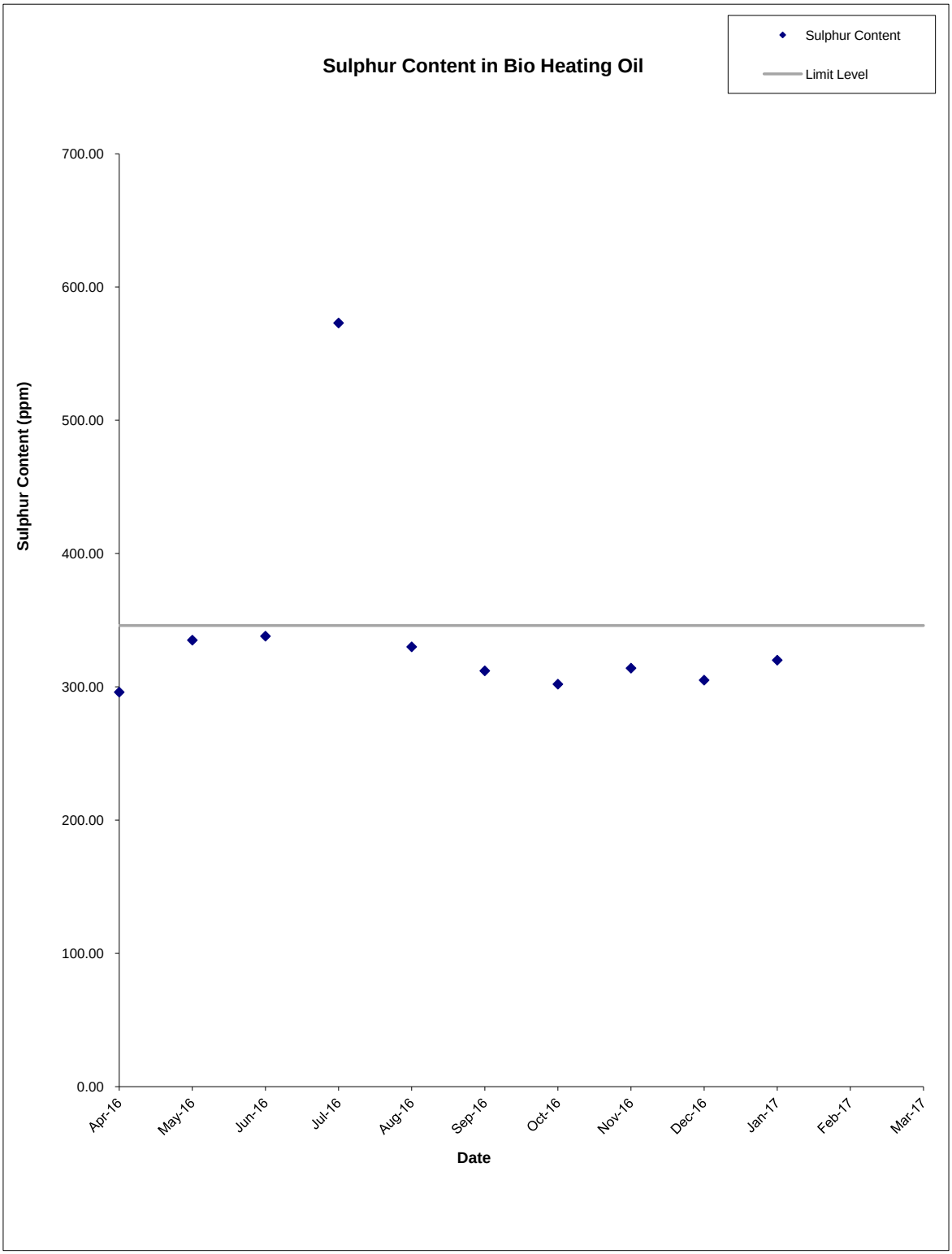


Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Water Quality (Stormwater Discharge)	Scale: N.T.S	Project No.: MA15052	CINOTECH
	Date: Mar 17	Appendix: E-3	



Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Water Quality (Stormwater Discharge)	Scale: N.T.S Date: Mar 17	Project No.: MA15052 Appendix: E-4	CINOTECH

APPENDIX F
Graphical Presentation of Monitoring Results – Sulphur Content in Bio Heating Oil



Remarks: As the BHO tank was not filled/refilled in February and March 2017, no monitoring was carried out in these reporting months.

Title: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate Graphical Presentation of Monitoring Results – Sulphur Content in Bio Heating Oil	Scale: N.T.S Date: Mar 17	Project No.: MA15052 Appendix: F	CINOTECH

APPENDIX G
Exceedance Report

Exceedance Report

(A) Exceedance Report for Air Quality

Environmental Monitoring	Sources	Parameter	No. of Exceedance	
			Action Level	Limit Level
Air Quality	Stack of Boiler	Nitrogen oxides (NO_X)	N.A.	0
		Carbon monoxide (CO)	N.A.	0
		Sulphur dioxide (SO_2)	N.A.	0
		Non-methane Organic Compounds (NMOC)	N.A.	0
		Exhaust gas velocity	N.A.	0
	Stack of Biogas Flare	Nitrogen oxides (NO_X)	N.A.	0
		Carbon monoxide (CO)	N.A.	0
		Sulphur dioxide (SO_2)	N.A.	1
		Non-methane Organic Compounds (NMOC)	N.A.	0
		Exhaust gas velocity	N.A.	0
	Stack of Process Building	Acetyldehyde	N.A.	0
		Methanol	N.A.	0
		Exhaust gas velocity	N.A.	0
	Odour Concentrations at the Final Air Scrubber	Odour	N.A.	0
		Exhaust gas velocity	N.A.	0
	Odour Patrols	Odour	0	0

(B) Exceedance Report for Water Quality

Environmental Monitoring	Sources	Parameter	No. of Exceedance	
			Action Level	Limit Level
Water Quality	Treated Effluent Discharged from Project Site	pH	N.A.	0
		Suspended Solids	N.A.	0
		Biochemical Oxygen Demand (BOD) (5 days, 20°C	N.A.	0
		Chemical Oxygen Demand (COD)	N.A.	0
		Oil & Grease	N.A.	0
		Sulphate	N.A.	0
		Total Nitrogen	N.A.	0
		Total Phosphorus	N.A.	0
	Stormwater Discharge	pH	N.A.	0
		Suspended Solids	N.A.	0
		Biochemical Oxygen Demand (BOD) (5 days, 20°C	N.A.	0
		Chemical Oxygen Demand (COD)	N.A.	0
		Oil & Grease	N.A.	0

(C) Exceedance Report for Sulphur Content in Bio Heating Oil

Parameter	No. of Exceedance	
	Action Level	Limit Level
Sulphur Content	N.A.	0

APPENDIX H
Complaint Log

APPENDIX H – COMPLAINT LOG

Reporting Quarter: January – March 2017

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2016-09-001	Not Specified	24th September, 2016	2 Gammon engineers complained about strong odour and oily discharge at 9:15 am	The incident was due to the pump P101A was tripped and leaded to an overflow of wastewater at Influent Pit T101. 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). Operator then immediately stopped the wastewater feeding to Influent Pit T101, and put sand bags around the stormwater grating outside the pedestrian walkway of Bar Screen Room to block wastewater leaking into storm water drainage. Afterwards, operator cleaned up the area. The problem was resolved at 10:30 am at the same day, and no irritation smell was sensed outside the project site. To prevent recurrence, the following measures are recommended: - Cover the storm water grating outside the bar screen room pedestrian walkway by steel plate; - Modify the pump P101A temporary control circuit to feedback overload trip signal back to Process Control System. Maintenance will set up periodic inspection programme to monitor pump performance; and - Review the emergency handling procedures.	Closed
COM-2016-10-002	Not Specified	5th October, 2016	EPD referred that a councilor complained about constant smell released from the Project	Investigation found out that housekeeping of the plant was unsatisfactory and improvements are required. Operator has improved housekeeping, including: - Always keep the gate of the grease trap waste screening room closed; - Always keep sludge containers closed; - Frequent cleaning of drainage system; and - Always keep the work site clean and tidy	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2016-10-003	Not Specified	18th October, 2016	EPD referred that a complaint on malodour from the Project was received on 11th 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	6th February, 2017	EPD referred complaints from Drainage Service Department (DSD) and neighboring sites regarding the blockage of public sewerage system along Chun Wang Street. DSD reported to EPD that some oily substances and debris had blocked the sewerage system.	Investigation found similar substances (i.e. oily substances and debris) at the foul manhole within the Plant. Investigation also found that untreated effluent was discharged to a foul manhole within the Plant. Follow-up action (i.e. cleaning of internal sewerage system, from FMH01 to TFMH01) was carried out in early February. In addition, operator has put the best effort (e.g. carry out staff training) to ensure that all effluent are treated properly by wastewater treatment facilities before discharge.	Closed