

ASB Biodiesel (Hong Kong) Limited

Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

Monthly EM&A Report

March 2012

(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.

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

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<i>From:</i>	Mr. Mark Cheung	<i>Ref:</i>	D1067/G01348
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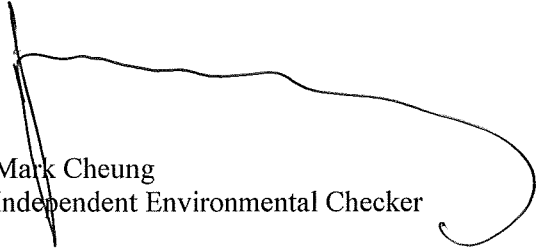
**SUBJECT: Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate
Monthly EM&A Report for March 2012**

Dear Sir / Madam,

We refer to your submission of the Monthly EM&A Report for March 2012 via email dated 13 April 2012.

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

Regards,


Mark Cheung
Independent Environmental Checker

KTC/gk

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EXECUTIVE SUMMARY

Introduction

1. This is the 34th 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". This report documents the findings of EM&A Works conducted in March 2012.
2. The major site activities undertaken in the reporting month included:
 - General site cleaning and tidying.
 - Zone 1A Administration Building – RC superstructure construction works
 - Zone 1A Administration Building – MEK Room Metal Works
 - Zone 1B Processing Building – Cladding system installation works
 - Zone 1B Fat Preparation and Steam Boiler Room Building – RC superstructure works
 - Zone 2A Tank Farm – RC footing concreting works.
 - Zone 2A Tank Farm – Steel Tank Erection Works.
 - WWTP – RC Footing concreting works
 - Jetty – Temporary piling works
 - Building Services – P&D U/G pipe cast-in works
 - Building Services – Fire Service U/G pipe cast-in works
 - Building Services – Cable duct cast-in works
 - Building Services – Pressure Test works

Environmental Monitoring and Audit Works

3. Environmental monitoring and audit works for the Project were performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. The implementation of the environmental mitigation measures and environmental complaint handling procedures were also checked.

Environmental Licenses and Permits

4. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project. Environmental Permits No. EP-319/2009 and EP-319/2009/A were issued on 11 March 2009 and 7 April 2009 respectively. The Contractor has applied for the Registration of Chemical Waste Producer (WPN-5113-839-C1186-15), Construction Noise Permit (GW-RE0212-12), Wastewater Discharge License (WT00004508-2009), Notification of Works under APCO (337009) and Waste Discharge Account (7013917). The new Construction Noise Permit (GW-RE0212-12) was issued by the EPD on 21 March 2012.

Key Information in the Reporting Month

5. Summary of key information in this reporting month is tabulated in **Table I**.

Table I Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
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 Report for February 2011	Submitted to EPD on 12 March 2012	Verified by IEC	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

Future Key Issues

6. Major site activities for the coming three months will include:

- General site cleaning and tidying.
- Administration Building – RC superstructure construction works
- Administration Building – Steel and metal works at MEK Room
- Administration Building – Installation of roof waterproofing system works
- Administration Building – Finishing works
- Processing Building – Cladding system installation works
- Fat Preparation Building – RC superstructure construction works
- Steam Boiler Room – RC superstructure construction works
- Fat Preparation Building and Boiler Room – Roof waterproofing system works
- Fat Preparation Building and Boiler Room – Steel works
- Tank Farm 2A – Footing and bund wall construction works
- Tank Farm 2A – Pipe support wall construction works.
- Tank Farm 2A – Tank erection works
- Grease Trap Waste Screening Room (GTWSR) – Foundation Construction Works
- Tank Farm 2B-2E Bund wall construction works
- WWTP – Foundation construction works
- WWTP – Structural construction works
- Jetty – Temporary construction and bored piles works
- Pipe Bridge – Pipe support construction works and pipe bridge erection works.
- External – Fence wall construction works.
- Building Services – Fire services works
- Building Services – MVAC works
- Building Services – Electrical works
- Building Services – P&D works

7. The future environmental concerns are air quality, water quality, waste management and surface runoff from construction works.

1 INTRODUCTION

Background

- 1.1 Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate is a Designated Project (hereafter referred to as “the Project”) under the Environmental Impact Assessment Ordinance (Cap. 449). A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, ecological and identify possible mitigation measures associated with the works. An EIA Report was approved by the Environmental Protection Department (EPD) on 26 February 2009.
- 1.2 The project is to construct and operate a 100,000 tonnes per annum biodiesel plant at Tseung Kwan O Industrial Estate. The plant will use a multi-feedstock which consists of waste cooking oil (WCO), oil and grease recovered from grease trap waste (GTW), Palm Fatty Acid Distillate (PFAD) and animal fats. The proposed biodiesel plant not only offers a convenient recycling outlet for GTW and WCO but also converts the oil and grease recovered from these wastes into useful products. The Project also offers a cleaner alternative to diesel fuel to the Hong Kong market. The main processes include the followings:-
- Construction of feedstock reception and storage facilities, and offices;
 - Construction of a grease trap waste pre-treatment facility (with a designated treatment capacity of about 200,000 tonnes per annum);
 - Construction of a wastewater treatment plant (with a designed treatment capacity of about 170,000 m³ per annum);
 - Installation of biodiesel production and glycerine purification system;
 - Construction of product storage and ancillary facilities;
 - Pretreatment of grease trap waste;
 - Treatment of wastewater generated from feedstock pre-treatment and glycerine dewatering process, and filtrates from dewatering process of sludge treatment;
 - Transesterification of feedstock with alcohol-catalyst; and
 - Purification of biodiesel.
- 1.3 The general layout of the Project is shown in **Figure 1.1**.
- 1.4 Layout plan of tank farm **2A, 2B to 2E** is revised and a report is made by Environmental Resources Management (ERM) regarding such change. The report concluded that no deviation is found from the approved EIA report.
- 1.5 An Environmental Permit (EP) No. EP-319/2009 and EP-319/2009/A was issued on 11 March 2009 and 7 April 2009 respectively for Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate to ASB Biodiesel (Hong Kong) Limited as the Permit Holder.
- 1.6 Cinotech Consultants Limited was commissioned by the Contractor to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. This is the 34th Monthly EM&A report summarizing the EM&A works for the Project in March 2012.

Project Organizations

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

- Project Proponent – ASB Biodiesel (Hong Kong) Limited
- Project Manager – AECOM
- Contractor – China Harbour Engineering Company Limited (CHEC)
- Environmental Team (ET) – Cinotech Consultants Limited
- Independent Environmental Checker (IEC) – Mannings (Asia) Consultants Ltd.

1.8 The responsibilities of respective parties are detailed in Section 1.10 of the Final EM&A Manual of the Project.

1.9 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
ASB	Project Proponent	Ms. Sylvia Har	Senior Plant Engineer	9479 0949	3741 1661
Cinotech	Environmental Team	Dr. HF Chan	ET Leader	2151 2088	3107 1388
		Ms. Ivy Tam	Project Coordinator	2151 2090	
		Ms. Betty Choi	Audit Team Leader	2151 2072	
Mannings	Independent Environmental Checker	Mr. Mark Cheung	Independent Environmental Checker	3168 2028	3168 2022
		Mr. Gavin Kwok	Assistant to Independent Environmental Checker	3168 2028	
AECOM	Project Manager	Mr. Matthew Lau	Construction Manager	9363 5586	N/A
CHEC	Contractor	Mr. Peter Chung	Project Manager	9471 2438	2623 9226
		Mr. Anson Wong	Safety and Environmental Officer	9656 3837	
		Mr. Simon Li	Environmental Supervisor (Ass. Planning Engineer)	6152 7867	

Construction Programme

1.10 The site activities undertaken in the reporting month were:

- General site cleaning and tidying.
- Zone 1A Administration Building – RC superstructure construction works
- Zone 1A Administration Building – MEK Room Metal Works
- Zone 1B Processing Building – Cladding system installation works
- Zone 1B Fat Preparation and Steam Boiler Room Building – RC superstructure works
- Zone 2A Tank Farm – RC footing concreting works.
- Zone 2A Tank Farm – Steel Tank Erection Works.
- WWTP – RC Footing concreting works
- Jetty – Temporary piling works
- Building Services – P&D U/G pipe cast-in works
- Building Services – Fire Service U/G pipe cast-in works
- Building Services – Cable duct cast-in works
- Building Services – Pressure Test works

Summary of EM&A Requirements

1.11 The EM&A requirements are described in the following sections, including:

- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

1.12 The advice on the implementation status of environmental protection and pollution control/ mitigation measures is summarized in Section 3 of this report.

2 ENVIRONMENTAL AUDIT

Site Audits

- 2.1 Site audits were carried out by ET on monthly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summary of the site audit in this reporting month is attached in **Appendix A**.
- 2.2 Site audit was conducted on 14th March 2012 by ET in the reporting month. No non-compliance was observed during the site audits.

Status of Environmental Licensing and Permitting

- 2.3 All permits/licenses obtained for the Project are summarized in **Table 2.1**.

Status of Waste Management

- 2.4 The quantities of waste generated in this reporting month are summarized in **Appendix C**.

Implementation Status of Environmental Mitigation Measures

- 2.5 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the EMIS is provided in **Appendix B**.

Table 2.1 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-319/2009/A	07/04/2009	N/A	Construction and operation of (i) a biochemical plant with a storage capacity of more than 500 tonnes and in which substances are processed and produced; (ii) a storage, transfer and trans-shipment of oil facility with a storage capacity of not less than 1,000 tonnes; and (iii) a dangerous goods godown with a storage capacity exceeding 500 tonnes .	Valid
Registration of Chemical Waste Producer				
WPN-5113-839-C1186-15	12/06/2009	-	Spent Lubrication oil.	Valid
Construction Noise Permit (CNP)				
GW-RE0212-12	22/03/2012	21/04/2012	Use of Powered Mechanical Equipment during 0000-2400 hours on general holidays (including Sundays), 0000-0700 hours and 1900-2400 hours on any day not being a general holiday.	Valid
Wastewater Discharge License				
WT00004508-2009	07/09/2009	-	Discharge of wastewater from construction site including wheel washing water and chemical precipitation tank	Valid
Billing Account for Disposal of Construction Waste				
A/C No.: 7013917	-	-	-	Valid
Notification of Works under APCO				
Ref. no.: 337009	26/10/2011	-	-	Valid

- 2.6 During the site inspection in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit session are summarized in **Table 2.2**.

Table 2.2 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	14/03/2012	Ponding water should be cleared or larvicidal oil should be added to eliminate mosquito breeding ground.	Follow up action was taken by the Contractor.
Waste/Chemical Management	14/03/2012	Drip trays should be provided under chemical containers to prevent leakage and ponding water in drip tray should be removed.	Follow up action was taken by the Contractor.
	14/03/2012	Leaked paint should be cleaned.	Follow up action was taken by the Contractor.

Summary of Complaint and Prosecution

- 2.7 No environmental related complaint, prosecution or notification of summons was received in the reporting month.
- 2.8 There was no environmental complaint, prosecution or notification of summons received since the Project commencement. The Complaint Log is attached in **Appendix D**.

3 FUTURE KEY ISSUES

Key Issues for the Coming Month

- 3.1 Key issues to be considered in the coming month include:
- Noise from operation of the equipment and machinery on-site;
 - Effluent discharge generated from surface runoff;
 - Dust generated from excavation works and stockpile of dusty materials;
 - Maintenance of de-silting facilities and drainage system, such as U-channels;
 - Storage of chemicals/fuel and chemical waste/waste oil on site;
 - Accumulation of stagnant water in the site areas;
 - Accumulation of C&D waste and general waste on site; and
 - Suspended mud and sediment from marine piling work for jetty construction.
- 3.2 In March, temporary piles were constructed in the jetty area. During the site inspection, silt curtain was erected as a mitigation measure.

Construction Program for the Next Months

- 3.3 A tentative construction programme is provided in **Appendix E**. The major construction activities in the coming three months will include:
- General site cleaning and tidying.
 - Administration Building – RC superstructure construction works
 - Administration Building – Steel and metal works at MEK Room
 - Administration Building – Installation of roof waterproofing system works
 - Administration Building – Finishing works
 - Processing Building – Cladding system installation works
 - Fat Preparation Building – RC superstructure construction works
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 - External – Fence wall construction works.
 - Building Services – Fire services works
 - Building Services – MVAC works
 - Building Services – Electrical works
 - Building Services – P&D works

4 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 4.1 Environmental audit works were conducted in the reporting month. Site inspections were conducted on a monthly basis. The results were reviewed and checked.
- 4.2 There was no environmental complaint, prosecution or notification of summons received.

Recommendations

- 4.3 According to the environmental audit performed in the reporting month, the following recommendations were made:

Water Impact

- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To avoid accumulation of stagnant and ponding water on site.
- To clear the drainage channel regularly to prevent blockage.
- To set up silt curtain around marine piling work.

Dust Impact

- To remove fugitive dusty material on the haul road periodically.
- Excavated dusty materials or stockpile of dusty materials should be covered by impervious sheeting, or sprayed with water so as to maintain entire surface wet.

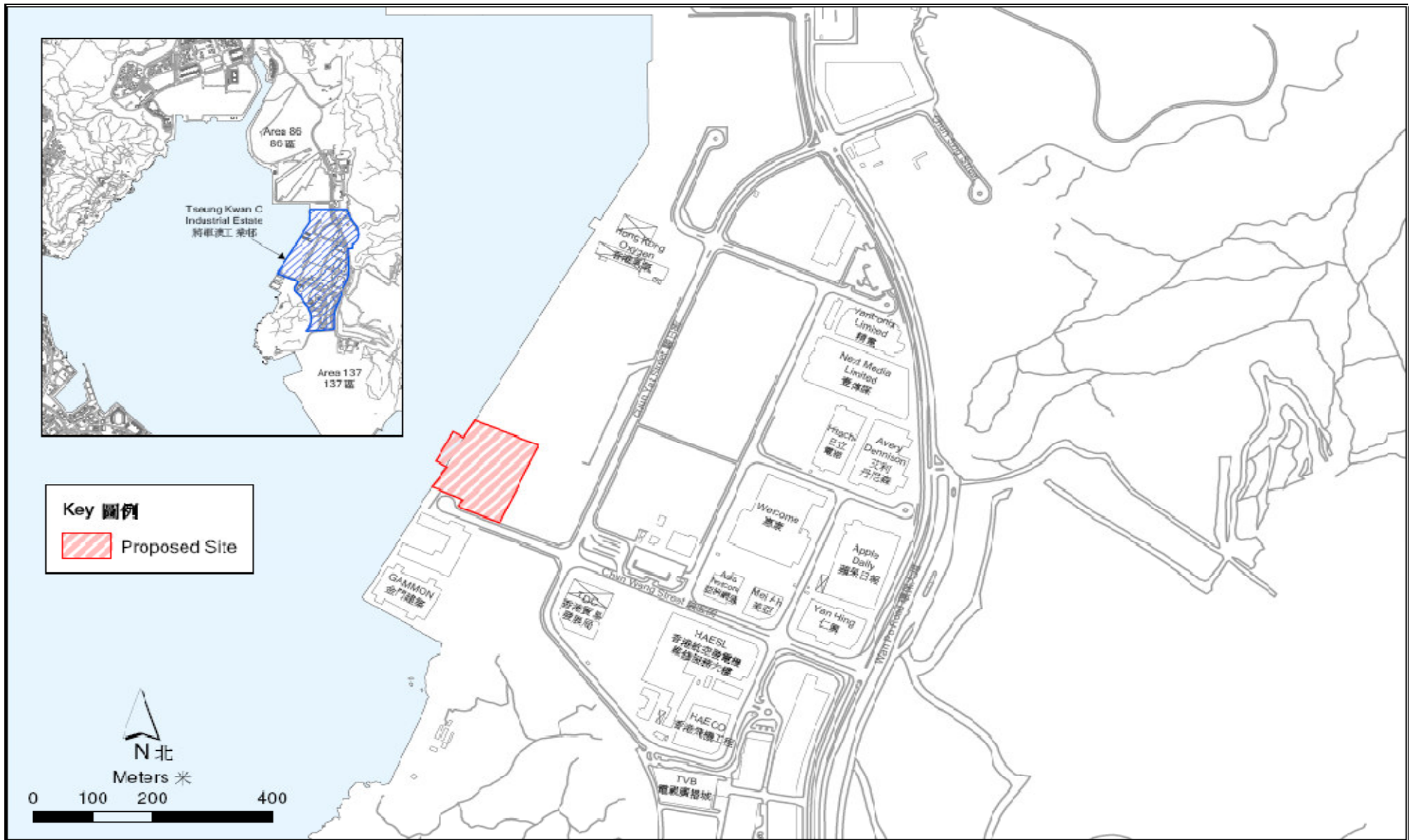
Noise Impact


- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To inspect the noise sources inside the site.

Waste / Chemical Management

- To provide proper rubbish bins / skips for waste collection.
- To provide proper storage area for oil container on site.
- To avoid and check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment.

FIGURES



Key 圖例
 Proposed Site

Title	Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate		Scale	N.T.S	Project No.	MA9021	CINOTECH
	Site Layout Plan		Date	Jun-09	Figure	1.1	

**APPENDIX A
SITE AUDIT SUMMARY**

Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

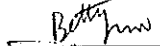
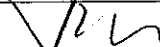
Monthly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	120314
Date	14 March 2012 (Wednesday)
Time	15:45 – 17:00

Ref. No.	Non-Compliance	Related Item No.
-	None	-

Ref. No.	Remarks/Observations	Related Item No.
120314-R01	<p>A. Water Quality</p> <ul style="list-style-type: none"> Ponding water should be cleared or larvicidal oil should be added to eliminate mosquito breeding ground. 	B13
120314- R02	<p>B. Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	E8
120314- R03	<p>C. Noise</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. <p>D. Waste / Chemical Management</p> <ul style="list-style-type: none"> Drip trays should be provided under chemical containers to prevent leakage and ponding water in drip tray should be removed. Leaked paint should be cleaned. 	E7
	<p>E. Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	<p>F. Reminders</p> <ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	<p>G. Others</p> <p>Follow-up on previous audit section (Ref. No.:120217):</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the last site inspection. 	

	Name	Signature	Date
Recorded by	Betty Choi		19 March 2012
Checked by	Dr. HF Chan		19 March 2012

**APPENDIX B
UPDATED ENVIRONMENTAL
MITIGATION IMPLEMENTATION
SCHEDULE**

Appendix B - Summary of Environmental Mitigation Implementation Schedule (Construction Phase)

Types of Impacts	Mitigation Measures	Status
<p>Construction Dust</p>	<ul style="list-style-type: none"> • Dust control measures such as water spaying on roads and dusty areas, covering of lorries by impervious sheets and controlling of the falling height of fill materials will be implemented; 	<p>^</p>
	<ul style="list-style-type: none"> • Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level of the facility during the building construction; 	<p>^</p>
	<ul style="list-style-type: none"> • All debris and materials will be covered or stored in a sheltered debris collection area; 	<p>^</p>
	<ul style="list-style-type: none"> • Hoarding from ground level will be provided along the entire length of the site boundary except for a site entrance or exit; 	<p>^</p>
	<ul style="list-style-type: none"> • Every stockpile of dusty materials will be covered entirely by impermeable sheeting or placed in an area sheltered on the top and the 3 sides; 	<p>^</p>
	<ul style="list-style-type: none"> • Regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke emissions and to minimize gaseous emissions. 	<p>^</p>
	<ul style="list-style-type: none"> • Monthly site audits will be conducted to ensure the implementation of suitable dust control measures and good site practices. 	<p>^</p>
<p>Construction Noise</p>	<ul style="list-style-type: none"> • Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction program; 	<p>^</p>
	<ul style="list-style-type: none"> • Silencers or mufflers on construction equipment will be utilized and will be properly maintained during the construction program; 	<p>^</p>
	<ul style="list-style-type: none"> • Mobile plant, if any, will be sited as far from NSRs as possible; 	<p>^</p>
	<ul style="list-style-type: none"> • Machines and plant (such as trucks) that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum; 	<p>^</p>
	<ul style="list-style-type: none"> • Plant known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and 	<p>^</p>
	<ul style="list-style-type: none"> • Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from onsite construction activities. 	<p>^</p>

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
 N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
 * Recommendation was made during site audit but improved/rectified by the contractor;
 # Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
Water Quality	<p><u>Piling Activities</u></p> <ul style="list-style-type: none"> Silt curtain will be installed around the marine piling area to contain any suspended mud and sediments generated during the piling works. Silt removal facilities such as silt traps or sedimentation facilities will be provided to remove silt particles from groundwater (if pumping is required) to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities will be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures will be inspected monthly and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. 	^
	<p><u>Construction Site Run-off and Drainage</u></p> <ul style="list-style-type: none"> Silt removal facilities such as silt traps or sedimentation facilities will be provided to remove silt particles from runoff to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities will be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures will be inspected monthly and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Careful programming of the works to minimise surface excavations for the construction works during the wet season. If excavation of soil cannot be avoided during the wet season, exposed slope surfaces will be covered by a tarpaulin or other means. Other measures that need to be implemented before, during, and after rainstorms are summarised in ProPECC PN 1/94. Exposed soil surfaces will be protected by paving or fill material as soon as possible to reduce the potential of soil erosion. Open stockpiles of construction materials or construction wastes on-site of more than 50m³ will be covered with tarpaulin or similar fabric during rainstorms. These materials will not be placed near the seawall area. 	^ ^ ^ ^
	<p><u>General Construction Activities</u></p> <ul style="list-style-type: none"> Debris and refuse generated on-site will be collected, handled and disposed of properly to avoid entering the nearby water sensitive receivers (WSRs). Stockpiles of cement and other construction materials will be kept covered when not being used. Oils and fuels will only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas will be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund will be drained of rainwater after a rain event. 	^ ^

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
	<p data-bbox="394 225 902 256"><u>Sewage generated from On-site Workforce</u></p> <ul data-bbox="443 296 1980 427" style="list-style-type: none"> <li data-bbox="443 296 1980 360">• Temporary sanitary facilities, such as portable chemical toilets, will be provided on-site. A specialised contractor will be responsible for regular collection and appropriate disposal of the sewage and maintenance of these facilities. <li data-bbox="443 363 1980 427">• Monthly site inspections will be carried out during construction to ensure that the mitigation measures listed above are properly implemented. The site audit frequency will be increased to weekly intervals during the piling works. 	<p data-bbox="2040 296 2101 320">N/A</p> <p data-bbox="2056 363 2085 387">^</p>
<p data-bbox="215 488 315 520">Ecology</p>	<ul data-bbox="443 472 1980 563" style="list-style-type: none"> <li data-bbox="443 472 1980 563">• Mitigation measures for minimising water quality impacts are presented in detail above. These measures will be properly implemented and good construction practices will be adopted to minimise potential adverse impacts to marine ecological resources. 	<p data-bbox="2056 488 2085 512">^</p>

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

**APPENDIX C
WASTE GENERATION IN THE
REPORTING MONTH**

**APPENDIX D
COMPLAINT LOG**

APPENDIX D – COMPLAINT LOG**Reporting Month:** March 2012

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A	N/A

Remarks: No environmental complaint was received in the reporting month.

APPENDIX E
CONSTRUCTION PROGRAMME



Activity ID	Activity Name	Duration	Start	Finish	2012			
					Mar 5	Apr 6	May 7	Jun 8
C270MC-3M-Rolling Programme Ver.1.1 (300312)		220	30-Dec-11 A	12-Sep-12	[Summary bar]			
Milestones		106	29-Feb-12 A	29-Jun-12	[Milestone bar]			
Remaining Construction Works		220	30-Dec-11 A	12-Sep-12	[Summary bar]			
Major Equipment and Material Procurement and Delivery		180	01-Mar-12 A	27-Aug-12	[Summary bar]			
1A - Administration Building		106	16-Mar-12 A	29-Jun-12	[Summary bar]			
Administration Building Structural and Builder's Work		96	16-Mar-12 A	19-Jun-12	[Summary bar]			
A17020	AB-Superstructure Construction Works upto +17.05mPD (Roof Floor)	14	16-Mar-12 A	27-Mar-12 A	[Actual Work bar]			
A17030	AB-Superstructure Construction Remaining Works	21	17-Mar-12 A	05-Apr-12	[Actual Work bar]			
A17040	AB-Steel and Metal Works at MEK Room	30	06-Apr-12	05-May-12	[Critical Remaining Work bar]			
A17410	AB-Installation of windows, louvers and doors 1st stage	20	06-May-12	25-May-12	[Remaining Work bar]			
A17420	AB-Installation of windows, louvers and doors 2nd stage	25	26-May-12	19-Jun-12	[Remaining Work bar]			
A17430	AB-ABWF works excluding windows, louvers & doors	45	06-May-12	19-Jun-12	[Remaining Work bar]			
A17440	AB-Installation of roof waterproofing system works	30	06-Apr-12	05-May-12	[Critical Remaining Work bar]			
AB-Electrical		85	06-Apr-12	29-Jun-12	[Summary bar]			
A17130	AB-BS Cable laying works(Electrical) 1st stage	30	06-Apr-12	05-May-12	[Critical Remaining Work bar]			
A17140	AB-BS Cable laying works(Electrical) 2nd stage	30	06-May-12	04-Jun-12	[Critical Remaining Work bar]			
A17160	AB-BS Installation of switch board and cable termination works in Switch Rooms	40	21-May-12	29-Jun-12	[Critical Remaining Work bar]			
A17200	AB-Installation of switch board and cable termination works in Main Switch Room	40	21-May-12	29-Jun-12	[Critical Remaining Work bar]			
AB-Fire Services		85	06-Apr-12	29-Jun-12	[Summary bar]			
A17170	AB-BS Piping works(Fire Services) 1st stage	35	06-Apr-12	10-May-12	[Critical Remaining Work bar]			
A17180	AB-BS Piping works(Fire Services) 2nd stage	35	11-May-12	14-Jun-12	[Critical Remaining Work bar]			
A17185	AB-Control Room and Pump Room FS equipment installation and associated pipe v	30	31-May-12	29-Jun-12	[Remaining Work bar]			
AB-Plumbing and Drainage		85	06-Apr-12	29-Jun-12	[Summary bar]			
A17110	AB-BS Piping works (P&D) 1st stage	40	06-Apr-12	15-May-12	[Critical Remaining Work bar]			
A17120	AB-BS Piping works(P&D) 2nd stage	45	16-May-12	29-Jun-12	[Critical Remaining Work bar]			
AB-MVAC		70	06-Apr-12	14-Jun-12	[Summary bar]			
A17150	AB-BS Installation of piping and ducting works (MVAC)	70	06-Apr-12	14-Jun-12	[Critical Remaining Work bar]			
1B - Process Building		181	06-Feb-12 A	04-Aug-12	[Summary bar]			
Processing Building Structural and Builder's Work		91	06-Feb-12 A	06-May-12	[Summary bar]			
A18110	PB-Cladding wall for Processing Building	31	06-Feb-12 A	05-Apr-12	[Actual Work bar]			
A18120	PB-Cladding roof for Processing Building	31	06-Apr-12	06-May-12	[Critical Remaining Work bar]			
PB-Plumbing and Drainage		90	07-May-12	04-Aug-12	[Summary bar]			
A18010	PB-BS Piping works(P&D) 1st stage	45	07-May-12	20-Jun-12	[Critical Remaining Work bar]			
A18020	PB-BS Piping works(P&D) 2nd stage	45	21-Jun-12	04-Aug-12	[Critical Remaining Work bar]			
PB-Electrical		90	07-May-12	04-Aug-12	[Summary bar]			
A18030	PB-Cable laying works(Electrical) 1st stage	45	07-May-12	20-Jun-12	[Critical Remaining Work bar]			
A18040	PB-Cable laying works(Electrical) 2nd stage	45	21-Jun-12	04-Aug-12	[Critical Remaining Work bar]			
PB-MVAC		90	07-May-12	04-Aug-12	[Summary bar]			
A18060	PB-BS Installation of piping and Ducting Works (MVAC)	90	07-May-12	04-Aug-12	[Critical Remaining Work bar]			
PB-Fire Services		90	07-May-12	04-Aug-12	[Summary bar]			
A18070	PB-BS piping works (Fire Services) 1st stage	45	07-May-12	20-Jun-12	[Critical Remaining Work bar]			
A18080	PB-BS piping works (Fire Services) 2nd stage	45	21-Jun-12	04-Aug-12	[Critical Remaining Work bar]			
1B - Fat Preparation Building		123	14-Mar-12 A	16-Jul-12	[Summary bar]			

■ Actual Work ◆ Critical Milestone
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Activity ID	Activity Name	Duration	Start	Finish	2012			
					Mar 5	Apr 6	May 7	Jun 8
Fat Preparation Structural and Builder's Work								
A18530	FP-RC superstructure construction works upto +20.0mPD (roof floor)	17	14-Mar-12 A	01-Apr-12				
A18600	FP-Fat Preparation Steel Works	30	02-Apr-12	01-May-12				
A18700	FP-Cooling Tower Installation	62	16-Apr-12	16-Jun-12				
A19140	FP-Installation of roof waterproofing system works	30	02-Apr-12	01-May-12				
FP-Plumbing and Drainage								
A19010	FP-BS piping works(P&D) 1st stage	30	17-Jun-12	16-Jul-12				
FP-Electrical								
A19030	FP-BS Cable laying works(Electrical) 1st stage	30	17-Jun-12	16-Jul-12				
FP-Fire Services								
A19070	FP-BS piping works(Fire Services) 1st stage	30	17-Jun-12	16-Jul-12				
FP-Processing Works								
A18800	FP-BDI Fat Prep. Equipment Installation Works	29	02-May-12	30-May-12				
1B - Boiler Room								
Boiler Room Structural and Builder's Work								
A19430	BR-RC superstructure construction works 3rd stage	15	13-Mar-12 A	28-Mar-12 A				
A19435	BR-RC superstructure all remaining RC works	21	24-Mar-12 A	13-Apr-12				
A19500	BR-Boiler Room Steel Works	70	10-Apr-12	19-Jun-12				
A19800	BR-Cladding Roof Installation	31	19-Jun-12	20-Jul-12				
A19900	BR-Chimney Works	31	19-Jun-12	20-Jul-12				
A20140	BR-Installation of roof waterproofing system works	30	02-Apr-12	01-May-12				
BR-Processing Works								
A19600	BR-BDI Boiler Room & Utility Equipment Installation Works	70	30-Mar-12	07-Jun-12				
2A - Tank Farm								
Tank Farm 2A Structural and Builder's Work								
A20430	2A-3rd pour concrete of Tank Farm 2A Footing	31	07-Mar-12 A	16-Mar-12 A				
A20440	2A-Concreting works for RC pipe support wall	22	30-Dec-11 A	12-Apr-12				
A20520	2A-Bund walls structural concrete works 2nd stage	38	17-Mar-12 A	19-Apr-12				
A20610	2A-Erection of tanks in Tank Farm 2A 1st stage	38	15-Mar-12 A	22-Apr-12				
A20620	2A-Erection of tanks in Tank Farm 2A 2nd stage	38	23-Apr-12	30-May-12				
A20630	2A-Erection of tanks in Tank Farm 2A 3rd stage	38	31-May-12	07-Jul-12				
2A - GTW Separation Room								
GTWSR Structural and Builder's Work								
A21220	GTWSR-Excavation and dewatering system for ELS	54	16-Feb-12 A	05-Apr-12				
A21300	GTWSR-Foundation Construction	37	06-Apr-12	12-May-12				
A21410	GTWSR-Concreting works for GTWSR 1st Stage	31	13-May-12	12-Jun-12				
A21420	GTWSR-Concreting works for GTWSR 2nd Stage	31	13-Jun-12	13-Jul-12				
GTWSR-Processing Works								
A21500	GTWSR-Paques Process Equipment Installation Works	62	13-May-12	13-Jul-12				
2B-E Tank Farm								
Tank Farm 2B-2E Structural and Builder's Work								
A22410	2BE-Bund wall concreting works 1st stage	39	02-Apr-12	22-Apr-12				
A22420	2BE-Bund wall concreting works 2nd stage	39	23-Apr-12	13-May-12				
A22510	2BE-Erection tanks in Tank Farm 2B-2E 1st stage	31	19-May-12	18-Jun-12				

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A22520	2BE-Erection tanks in Tank Farm 2B-2E 2nd stage	31	19-Jun-12	19-Jul-12				
Tank Farm 2B-2E-Processing Works		63	19-Jun-12	20-Aug-12				
A22600	2BE-BDI Process Equipment Installation Works	63	19-Jun-12	20-Aug-12				
3 - Waste Water Treatment Plant		151	30-Mar-12	27-Aug-12				
Waste Water Treatment Plant Structural and Builder's Work		121	30-Mar-12	28-Jul-12				
A23310	WWTP-Structural concreting works 1st pour	30	30-Mar-12	28-Apr-12				
A23320	WWTP-Structural concreting works 2nd pour	30	29-Apr-12	28-May-12				
A23330	WWTP-Structural concreting works 3rd pour	31	29-May-12	28-Jun-12				
A23400	WWTP-IC Reactor Erection	21	09-May-12	29-May-12				
A24010	WWTP-Installation of roof waterproofing system	30	29-Jun-12	28-Jul-12				
WWTP-Plumbing and Drainage		30	29-Jun-12	28-Jul-12				
A23610	WWTP-BS piping works(P&D) at WWTP 1st stage	30	29-Jun-12	28-Jul-12				
WWTP-Electrical		30	29-Jun-12	28-Jul-12				
A23630	WWTP-Cable laying works (Electrical) at WWTP 1st stage	30	29-Jun-12	28-Jul-12				
WWTP-Fire Services		30	29-Jun-12	28-Jul-12				
A23660	WWTP-Piping works(Fire Services) at WWTP 1st stage	30	29-Jun-12	28-Jul-12				
WWTP-Processing Works		90	30-May-12	27-Aug-12				
A23500	WWTP-Treatment Equipment Installation Works	90	30-May-12	27-Aug-12				
4A - Jetty		128	14-Mar-12 A	19-Jul-12				
Jetty Temporary Works design amendment		56	14-Mar-12 A	08-May-12				
A50000	4A-Temporary Piling Platform Amendment Design Works	14	14-Mar-12 A	10-Apr-12				
A50010	4A-Temporary Piling Platform Design Amendment Submission to BD	28	11-Apr-12	08-May-12				
Jetty Structural and Builder's Work		112	19-Mar-12 A	19-Jul-12				
A24106	4A -2600 Temporary Casing Erection (7 nos) and level of Platform Formation at sea	30	19-Mar-12 A	17-Apr-12				
A24108	4A-Tem Platform Erection Stage 1 (Mid)	20	09-May-12	28-May-12				
A24117	4A-Temporary Platform Erection Stage 2 (RHS)	20	29-May-12	17-Jun-12				
A24118	4A-Temporary Platform Erection Stage 3 (LHS)	20	18-Jun-12	07-Jul-12				
A24120	4A-Construct upto 2 nos of Jetty Bored Piles	24	29-May-12	21-Jun-12				
A24130	4A-Construct upto 6 nos of Jetty Bored Piles	28	22-Jun-12	19-Jul-12				
Pipe Bridge & Pipe Trench Works		104	16-Apr-12	28-Jul-12				
A24900	Pipe Bridge Between FAT and WWTP	30	29-Jun-12	28-Jul-12				
A24920	Erection of pipe bridge between Tank Farm 2A and Tank Farm 2B-2E	30	16-Apr-12*	15-May-12				
A24930	Erection of steel pipe racks at Tank Farm 2B-2E	30	16-Apr-12*	15-May-12				
A25000	Pipe Bridge Between PB and FP	34	16-May-12	18-Jun-12				
External Works		160	06-Apr-12	12-Sep-12				
A25200	External Drainage Works. (Divided into 6 Areas)	160	06-Apr-12	12-Sep-12				
A25210	Storm water manhole works 1st stage	9	06-Apr-12	14-Apr-12				
A25220	Storm water manhole works 2nd stage	31	15-Apr-12	15-May-12				
A25230	Storm water manhole works 3rd stage	30	16-May-12	14-Jun-12				
A25240	Storm water manhole works 4th stage	30	15-Jun-12	14-Jul-12				
A25270	Faul Water manhole and the pipe works between the manholes with the associated	30	06-Apr-12	05-May-12				
A25280	Faul Water manhole and the pipe works between the manholes with the associated	30	06-May-12	04-Jun-12				
A25290	Faul Water manhole and the pipe works between the manholes with the associated	30	05-Jun-12	04-Jul-12				

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Works By Other Contractors		126	01-Mar-12 A	04-Jul-12	[Summary bar]			
Works By BDI		126	01-Mar-12 A	04-Jul-12	[Summary bar]			
P3210	BDI-Commencement of Contract	0	01-Mar-12 A		[Milestone marker]			
BDI Preliminaries		126	01-Mar-12 A	04-Jul-12	[Summary bar]			
P3220	Procurement and Prefabrication of Pipes	126	01-Mar-12 A	04-Jul-12	[Actual Work bar]			

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