

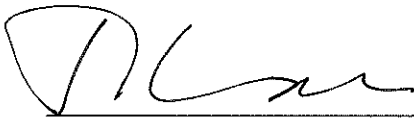
# ASB Biodiesel (Hong Kong) Limited

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

Monthly EM&A Report

July 2011

(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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## **EXECUTIVE SUMMARY**

### **Introduction**

1. This is the 26<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". This report documents the findings of EM&A Works conducted in July 2011.
2. The major site activities undertaken in the reporting month included:
  - General site cleaning and tidying.

### **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, An Environmental Permit No. EP-319/2009 and EP-319/2009/A was 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-RE0401-11) and Wastewater Discharge License (WT00004508-2009).

### **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 June 2011	Submitted to EPD on 22 July 2011	Verified by IEC	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

**Future Key Issues**

6. Major site activities for the coming two months will include:
  - General site cleaning and tidying.
7. The future environmental concerns are air 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 m<sup>3</sup> 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 ASB Biodiesel (Hong Kong) Limited to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. China Harbour Engineering Company Limited is the Managing Contractor of

the Project. This is the 26<sup>th</sup> Monthly EM&A report summarizing the EM&A works for the Project in July 2011.

### Project Organizations

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

- Project Proponent – ASB Biodiesel (Hong Kong) Limited
- 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	
		Mr. Felix Kwan	Audit Team Leader	2151 2077	
Mannings	Independent Environmental Checker	Mr. Mark Cheung	Independent Environmental Checker	3168 2028	3168 2022
		Mr. Gavin Kwok	Assistant to Independent Environmental Checker	3168 2028	
CHEC	Contractor	Mr. Peter Chung	Project Manager	9471 2438	2623 9226
		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.

### 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 20<sup>th</sup> July 2011 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 No general refuse, no Inert Construction and Demolition (C&D) Waste and no Chemical Waste were generated in the reporting month. 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		
<b>Environmental Permit (EP)</b>				
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
<b>Registration of Chemical Waste Producer</b>				
WPN-5113-839-C1186-15	12/06/2009	-	Spent Lubrication oil.	Valid
<b>Construction Noise Permit (CNP)</b>				
GW-RE0401-11	02/06/2011	26/11/2011	Use of Powered Mechanical Equipment during 0700-2300 hours on general holidays (including Sundays), 1900-2300 hours on any day not being a general holiday.	Valid
<b>Wastewater Discharge License</b>				
WT00004508-2009	07/09/2009	-	-	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**

<b>Parameters</b>	<b>Date</b>	<b>Observations and Recommendations</b>	<b>Follow-up</b>
--	20/07/2011	No major environmental deficiency was observed during the site inspection.	--

### **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; and
- Accumulation of C&D waste and general waste on site.

#### Construction Program for the Next Month

3.2 A tentative construction programme is provided in **Appendix E**. The major construction activities in the coming month will include:

- General site cleaning and tidying.

## 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 of 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 Quality*

- 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.

#### *Air Quality*

- 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*

- 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.

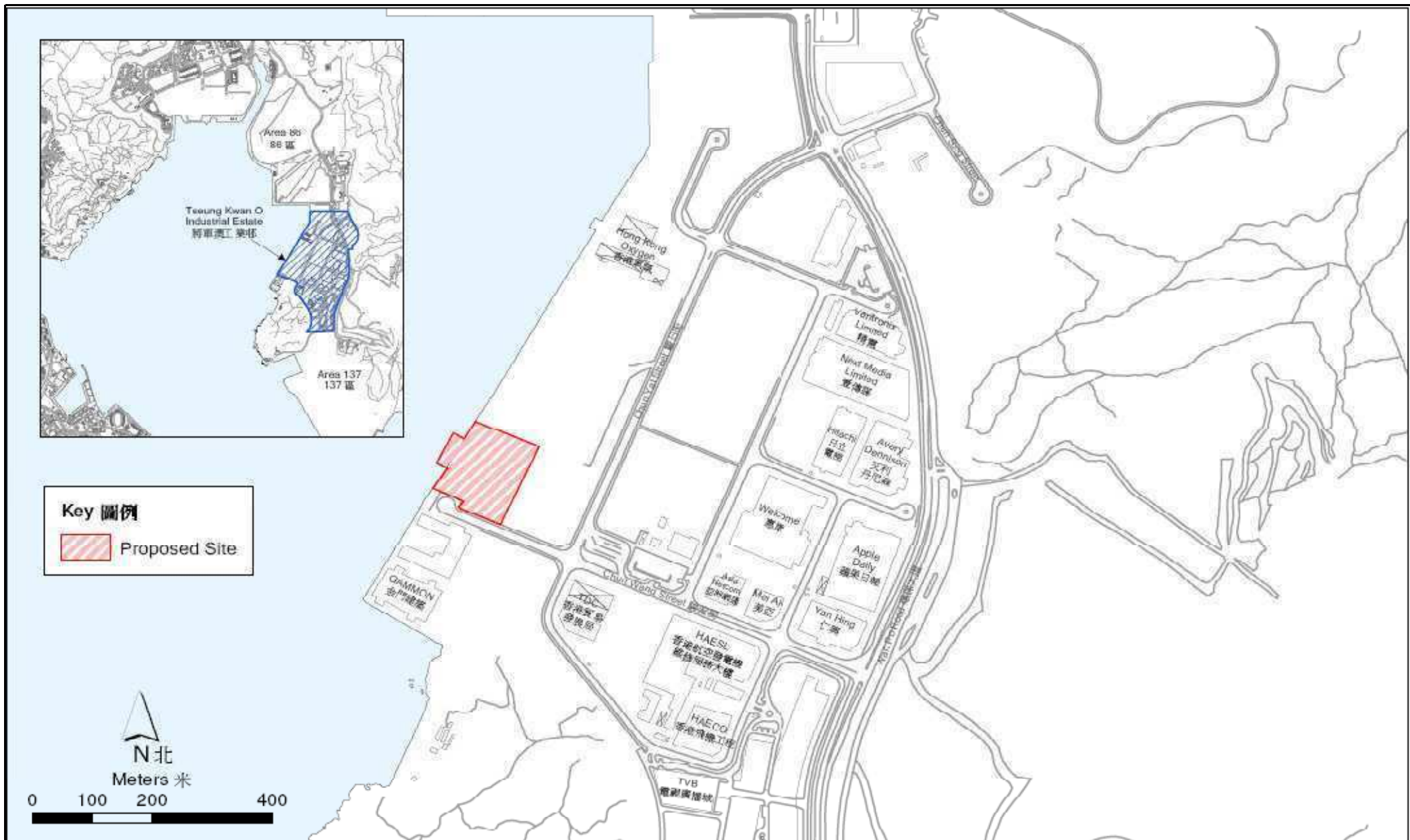
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## FIGURES

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



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**APPENDIX A  
SITE AUDIT SUMMARY**

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

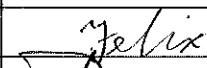

**Monthly Site Inspection Record Summary**

**Inspection Information**

Checklist Reference Number	110720
Date	20 July 2011 (Wednesday)
Time	15:20 – 16:20

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><b>A. Water Quality</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during site inspection.</li> </ul> <p><b>B. Air Quality</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during site inspection.</li> </ul> <p><b>C. Noise</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during site inspection.</li> </ul> <p><b>D. Waste / Chemical Management</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during site inspection.</li> </ul> <p><b>E. Permit / Licenses</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during site inspection.</li> </ul> <p><b>F. Reminders</b></p> <ul style="list-style-type: none"> <li>No environmental deficiency was identified during site inspection.</li> </ul> <p><b>G. Others</b></p> <ul style="list-style-type: none"> <li>Follow-up on previous audit section (Ref. No.:110622), all environmental deficiencies were improved/rectified by the Contractor.</li> </ul>	

	Name	Signature	Date
Recorded by	Felix Kwan		20 July 2011
Checked by	Dr. HF Chan		20 July 2011

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**APPENDIX B  
UPDATED ENVIRONMENTAL  
MITIGATION IMPLEMENTATION  
SCHEDULE**

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

Types of Impacts	Mitigation Measures	Status		
<p><b>Construction Dust</b></p>	<ul style="list-style-type: none"> <li>• Dust control measures such as water spraying on roads and dusty areas, covering of lorries by impervious sheets and controlling of the falling height of fill materials will be implemented;</li> <li>• Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level of the facility during the building construction;</li> <li>• All debris and materials will be covered or stored in a sheltered debris collection area;</li> <li>• Hoarding from ground level will be provided along the entire length of the site boundary except for a site entrance or exit;</li> <li>• 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;</li> <li>• Regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke emissions and to minimize gaseous emissions.</li> <li>• Monthly site audits will be conducted to ensure the implementation of suitable dust control measures and good site practices.</li> </ul>	<p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>		
		<p><b>Construction Noise</b></p>	<ul style="list-style-type: none"> <li>• Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction program;</li> <li>• Silencers or mufflers on construction equipment will be utilized and will be properly maintained during the construction program;</li> <li>• Mobile plant, if any, will be sited as far from NSRs as possible;</li> <li>• 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;</li> <li>• 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</li> <li>• Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from onsite construction activities.</li> </ul>	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

Types of Impacts	Mitigation Measures	Status
Water Quality	<p><u>Piling Activities</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul>	N/A
	<p><u>Construction Site Run-off and Drainage</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Exposed soil surfaces will be protected by paving or fill material as soon as possible to reduce the potential of soil erosion.</li> <li>Open stockpiles of construction materials or construction wastes on-site of more than 50m<sup>3</sup> will be covered with tarpaulin or similar fabric during rainstorms. These materials will not be placed near the seawall area.</li> </ul>	^  ^  ^  ^
	<p><u>General Construction Activities</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>	^  ^

Types of Impacts	Mitigation Measures	Status
	<p data-bbox="369 277 846 305"><u>Sewage generated from On-site Workforce</u></p> <ul data-bbox="415 342 1856 469" style="list-style-type: none"> <li data-bbox="415 342 1856 402">• 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> <li data-bbox="415 407 1856 469">• 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.</li> </ul>	<p data-bbox="1913 342 1969 370">N/A</p> <p data-bbox="1913 407 1948 435">^</p>
<p data-bbox="201 521 296 548"><b>Ecology</b></p>	<ul data-bbox="415 505 1856 597" style="list-style-type: none"> <li data-bbox="415 505 1856 597">• 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.</li> </ul>	<p data-bbox="1913 521 1948 548">^</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.

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

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**APPENDIX D  
COMPLAINT LOG**

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**APPENDIX D – COMPLAINT LOG****Reporting Month:** July 2011

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

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

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**APPENDIX E**  
**CONSTRUCTION PROGRAMME**

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Activity ID	Activity Name	Duration	Start	Finish	Month																												
					-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
<b>C250MC-MP (Commence on Sep 11) Master Programme</b>					405	01-Sep-11	09-Oct-12	▼ 09-Oct-12, C250MC-MP																									
<b>Remaining Construction Works</b>					405	01-Sep-11	09-Oct-12	▼ 09-Oct-12, Remaining Construction Works																									
<b>1A - Administration Building</b>					319	01-Sep-11	15-Jul-12	▼ 15-Jul-12, 1A - Administration Building																									
<b>Administration Building Structural and Builder's Work</b>					189	01-Sep-11	07-Mar-12	▼ 07-Mar-12, Administration Building Structural and Builder's Work																									
A17430	AB-ABWF works excluding windows, louvers & doors	45	23-Jan-12	07-Mar-12	[Bar]																												
A17440	AB-Installation of roof waterproofing system works	30	24-Dec-11	22-Jan-12	[Bar]																												
A17410	AB-Installation of windows, louvers and doors 1st stage	20	23-Jan-12	11-Feb-12	[Bar]																												
A17420	AB-Installation of windows, louvers and doors 2nd stage	25	12-Feb-12	07-Mar-12	[Bar]																												
A17040	AB-Steel and Metal Works at MEK Room	30	24-Dec-11	22-Jan-12	[Bar]																												
A17030	AB-Superstructure Construction Remaining Works	21	03-Dec-11	23-Dec-11	[Bar]																												
A17000	AB-Superstructure Construction Works upto +10.15mPD (1st Floor)	30	01-Sep-11	30-Sep-11	[Bar]																												
A17010	AB-Superstructure Construction Works upto +14.17mPD (2nd Floor)	31	01-Oct-11	31-Oct-11	[Bar]																												
A17020	AB-Superstructure Construction Works upto +17.05mPD (Roof Floor)	32	01-Nov-11	02-Dec-11	[Bar]																												
<b>AB-Plumbing and Drainage</b>					205	24-Dec-11	15-Jul-12	▼ 15-Jul-12, AB-Plumbing and Drainage																									
A17110	AB-BS Piping works (P&D) 1st stage	40	24-Dec-11	01-Feb-12	[Bar]																												
A17120	AB-BS Piping works(P&D) 2nd stage	45	02-Feb-12	17-Mar-12	[Bar]																												
A17700	AB-BS Plumbing and Drainage Testing	60	17-May-12	15-Jul-12	[Bar]																												
A17155	AB-Installation of sanitary fittings	60	18-Mar-12	16-May-12	[Bar]																												
<b>AB-Electrical</b>					190	24-Dec-11	30-Jun-12	▼ 30-Jun-12, AB-Electrical																									
A17130	AB-BS Cable laying works(Electrical) 1st stage	30	24-Dec-11	22-Jan-12	[Bar]																												
A17140	AB-BS Cable laying works(Electrical) 2nd stage	30	23-Jan-12	21-Feb-12	[Bar]																												
A17610	AB-BS Electrical Testing	60	02-May-12	30-Jun-12	[Bar]																												
A17160	AB-BS Installation of switch board and cable termination works in Switch Rooms	40	07-Feb-12	17-Mar-12	[Bar]																												
A17190	AB-BS Lighting installation works	30	18-Mar-12	16-Apr-12	[Bar]																												
A17300	AB-Energization of Transformer	0	02-May-12	02-May-12	[Milestone]																												
A17210	AB-Installation of Generators, Day Tanks and associated equipment & pipe works	45	18-Mar-12	01-May-12	[Bar]																												
A17200	AB-Installation of switch board and cable termination works in Main Switch Room	40	07-Feb-12	17-Mar-12	[Bar]																												
A17500	AB-Lift Installation Works	45	29-Jan-12	13-Mar-12	[Bar]																												
A17600	AB-Lift Testing	45	02-May-12	15-Jun-12	[Bar]																												
<b>AB-MVAC</b>					190	24-Dec-11	30-Jun-12	▼ 30-Jun-12, AB-MVAC																									
A17150	AB-BS Installation of piping and ducting works (MVAC)	70	24-Dec-11	02-Mar-12	[Bar]																												
A17220	AB-BS MVAC Testing	60	02-May-12	30-Jun-12	[Bar]																												

■ Actual Work      ▼ Summary  
■ Remaining Work  
■ Critical Remaining Work  
◆ Critical Milestone  
◆ Milestone

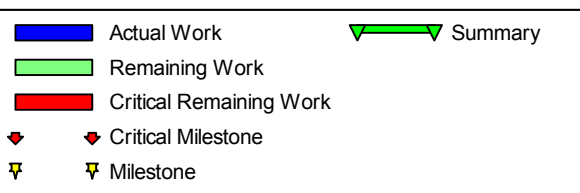
Proposed Biodiesel Plant at T.K.O.

## Master Programme (Main Contractor Proposal)

Date	Revision	Checked	Approved
11-Apr-11	Main Contractor Proposal		
08-Jun-11	REV.1 - Revised to incorporate Milestone		
17-Jun-11	REV.2 - Added Details		
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25-Jul-11	REV.4 - Combined OP Stages, revised Jetty and P..		



Activity ID	Activity Name	Duration	Start	Finish	Month																									
					-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
<b>AB-Fire Services</b>					30-Jun-12, AB-Fire Services																									
A17800	AB-BS Fire Service Testing	60	02-May-12	30-Jun-12	[Green bar from May 2 to Jun 30]																									
A17170	AB-BS Piping works(Fire Services) 1st stage	35	24-Dec-11	27-Jan-12	[Green bar from Dec 24 to Jan 27]																									
A17180	AB-BS Piping works(Fire Services) 2nd stage	35	28-Jan-12	02-Mar-12	[Green bar from Jan 28 to Mar 2]																									
A17185	AB-Control Room and Pump Room FS equipment installation and associated pipe works	30	17-Feb-12	17-Mar-12	[Green bar from Feb 17 to Mar 17]																									
<b>1B - Process Building</b>					28-Jul-12, 1B - Process Building																									
Processing Building Structural and Builder's Work					31-May-12, Processing Building Stru																									
A18230	PB-ABWF works excluding windows, louvers and doors	62	31-Mar-12	31-May-12	[Green bar from Mar 31 to May 31]																									
A18120	PB-Cladding roof for Processing Building	31	01-Dec-11	31-Dec-11	[Green bar from Dec 1 to Dec 31]																									
A18110	PB-Cladding wall for Processing Building	31	31-Oct-11	30-Nov-11	[Green bar from Oct 31 to Nov 30]																									
A18210	PB-Installation of windows, louvers and doors 1st stage	31	31-Mar-12	30-Apr-12	[Green bar from Mar 31 to Apr 30]																									
A18220	PB-Installation of windows, louvers and doors 2nd stage	31	01-May-12	31-May-12	[Green bar from May 1 to May 31]																									
A18090	PB-Material procurement	60	01-Sep-11	30-Oct-11	[Green bar from Sep 1 to Oct 30]																									
A18100	Primary support modification	60	01-Sep-11	30-Oct-11	[Green bar from Sep 1 to Oct 30]																									
<b>PB-Plumbing and Drainage</b>					28-Jul-12, PB-Plumbing and D																									
A18010	PB-BS Piping works(P&D) 1st stage	45	01-Jan-12	14-Feb-12	[Green bar from Jan 1 to Feb 14]																									
A18020	PB-BS Piping works(P&D) 2nd stage	45	15-Feb-12	30-Mar-12	[Green bar from Feb 15 to Mar 30]																									
A18300	PB-BS Plumbing and Drainage Testing	60	30-May-12	28-Jul-12	[Green bar from May 30 to Jul 28]																									
A18025	PB-Installation of sanitary fittings	60	31-Mar-12	29-May-12	[Green bar from Mar 31 to May 29]																									
<b>PB-Electrical</b>					30-Jun-12, PB-Electrical																									
A18055	PB-BS Electrical Testing	60	02-May-12	30-Jun-12	[Green bar from May 2 to Jun 30]																									
A18030	PB-Cable laying works(Electrical) 1st stage	45	01-Jan-12	14-Feb-12	[Green bar from Jan 1 to Feb 14]																									
A18040	PB-Cable laying works(Electrical) 2nd stage	45	15-Feb-12	30-Mar-12	[Green bar from Feb 15 to Mar 30]																									
A18050	PB-Lighting installation works	30	31-Mar-12	29-Apr-12	[Green bar from Mar 31 to Apr 29]																									
<b>PB-MVAC</b>					30-Jun-12, PB-MVAC																									
A18065	PB BS MVAC Testing	60	02-May-12	30-Jun-12	[Green bar from May 2 to Jun 30]																									
A18060	PB-BS Installation of piping and Ducting Works (MVAC)	90	01-Jan-12	30-Mar-12	[Green bar from Jan 1 to Mar 30]																									
<b>PB-Fire Services</b>					30-Jun-12, PB-Fire Services																									
A18070	PB-BS piping works (Fire Services) 1st stage	45	01-Jan-12	14-Feb-12	[Green bar from Jan 1 to Feb 14]																									
A18080	PB-BS piping works (Fire Services) 2nd stage	45	15-Feb-12	30-Mar-12	[Green bar from Feb 15 to Mar 30]																									
A18400	PB-Fire Service Testing	60	02-May-12	30-Jun-12	[Green bar from May 2 to Jun 30]																									
<b>PB-Processing Works</b>					22-Apr-12, PB-Processing Works																									
A17900	PB-BDI Piping, Electrical, Insulation & Instrumentation Works	175	31-Oct-11	22-Apr-12	[Green bar from Oct 31 to Apr 22]																									
<b>1B - Fat Preparation Building</b>					30-Jul-12, 1B - Fat Preparation																									
Fat Preparation Structural and Builder's Work					30-Jul-12, Fat Preparation Stru																									



Proposed Biodiesel Plant at T.K.O.

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A20110	BR-Installation of windows, louvers and doors 1st stage	30	30-May-12	28-Jun-12																										
A20120	BR-Installation of windows, louvers and doors 2nd stage	30	29-Jun-12	28-Jul-12																										
A19410	BR-RC superstructure construction works 1st stage	30	01-Sep-11	30-Sep-11																										
A19420	BR-RC superstructure construction works 2nd stage	30	01-Oct-11	30-Oct-11																										
A19430	BR-RC superstructure construction works 3rd stage	15	31-Oct-11	14-Nov-11																										
<b>BR-Plumbing and Drainage</b>		<b>90</b>	<b>31-Mar-12</b>	<b>28-Jun-12</b>																										
A20010	BR-BS piping works(P&D) 1st stage	30	31-Mar-12	29-Apr-12																										
A20020	BR-BS piping works(P&D) 2nd stage	30	30-Apr-12	29-May-12																										
A20200	BR-BS Plumbing and Drainage Testing	21	30-May-12	19-Jun-12																										
A20055	BR-Installation of sanitary fittings	30	30-May-12	28-Jun-12																										
<b>BR-Electrical</b>		<b>90</b>	<b>31-Mar-12</b>	<b>28-Jun-12</b>																										
A20030	BR-BS Cable laying works(Electrical) 1st stage	30	31-Mar-12	29-Apr-12																										
A20040	BR-BS Cable laying works(Electrical) 2nd stage	30	30-Apr-12	29-May-12																										
A20090	BR-BS Electrical Testing	21	30-May-12	19-Jun-12																										
A20060	BR-BS installation of switch board and cable termination works in Switch Rooms	30	30-May-12	28-Jun-12																										
A20050	BR-Lighting installation works	30	30-May-12	28-Jun-12																										
<b>BR-Fire Services</b>		<b>120</b>	<b>31-Mar-12</b>	<b>28-Jul-12</b>																										
A20070	BR-BS piping works(Fire Services) 1st stage	30	31-Mar-12	29-Apr-12																										
A20080	BR-BS piping works(Fire Services) 2nd stage	30	30-Apr-12	29-May-12																										
A20300	BR-Fire Service Testing	60	30-May-12	28-Jul-12																										
<b>BR-Processing Works</b>		<b>140</b>	<b>15-Nov-11</b>	<b>02-Apr-12</b>																										
A19600	BR-BDI Boiler Room & Utility Equipment Installation Works	70	15-Nov-11	23-Jan-12																										
A19700	BR-BDI Piping, Electrical, Insulation & Instrumentation Works	56	07-Feb-12	02-Apr-12																										
<b>2A - Tank Farm</b>		<b>362</b>	<b>01-Sep-11</b>	<b>27-Aug-12</b>																										
<b>Tank Farm 2A Structural and Builder's Work</b>		<b>362</b>	<b>01-Sep-11</b>	<b>27-Aug-12</b>																										
A20410	2A-1st pour concrete of Tank Farm 2A Footing	30	01-Sep-11	30-Sep-11																										
A20420	2A-2nd pour concrete of Tank Farm 2A Footing	31	01-Oct-11	31-Oct-11																										
A20430	2A-3rd pour concrete of Tank Farm 2A Footing	31	01-Nov-11	01-Dec-11																										
A21100	2A-ABWF works in Tank Farm 2A	30	29-Jul-12	27-Aug-12																										
A20510	2A-Bund walls structural concrete works 1st stage	39	24-Dec-11	31-Jan-12																										
A20520	2A-Bund walls structural concrete works 2nd stage	38	01-Feb-12	09-Mar-12																										
A20440	2A-Concreting works for RC pipe support wall	22	02-Dec-11	23-Dec-11																										
A20610	2A-Erection of tanks in Tank Farm 2A 1st stage	38	24-Dec-11	30-Jan-12																										
A20620	2A-Erection of tanks in Tank Farm 2A 2nd stage	38	31-Jan-12	08-Mar-12																										

█ Actual Work     ▬ Summary  
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◆ Milestone

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A20630	2A-Erection of tanks in Tank Farm 2A 3rd stage	38	09-Mar-12	15-Apr-12																										
<b>2A-Plumbing and Drainage</b>					<b>78</b>	<b>09-May-12</b>	<b>25-Jul-12</b>																							
A20810	2A-BS Piping works(P&D) at Tank Farms 1st stage	32	09-May-12	09-Jun-12																										
A20820	2A-BS Piping works(P&D) at Tank Farms 2nd stage	32	10-Jun-12	11-Jul-12																										
A20900	2A-BS Plumbing and Drainage Testing	14	12-Jul-12	25-Jul-12																										
<b>2A-Electrical</b>					<b>78</b>	<b>09-May-12</b>	<b>25-Jul-12</b>																							
A20830	2A-BS Cable laying works(Electrical) at Tank Farms 1st stage	32	09-May-12	09-Jun-12																										
A20840	2A-BS Cable laying works(Electrical) at Tank Farms 2nd stage	32	10-Jun-12	11-Jul-12																										
A20870	2A-BS Electrical Testing	14	12-Jul-12	25-Jul-12																										
<b>2A-Fire Services</b>					<b>85</b>	<b>09-May-12</b>	<b>01-Aug-12</b>																							
A21000	2A-Fire Service Testing (excluding FSD Inspection)	21	12-Jul-12	01-Aug-12																										
A20850	2A-Piping works(Fire Services) at Tank Farms 1st stage	32	09-May-12	09-Jun-12																										
A20860	2A-Piping works(Fire Services) at Tank Farms 2nd stage	32	10-Jun-12	11-Jul-12																										
<b>2A-Processing Works</b>					<b>94</b>	<b>23-Apr-12</b>	<b>25-Jul-12</b>																							
A20700	2A-BDI Process Piping and Instrumentation Works	94	23-Apr-12	25-Jul-12																										
<b>2A - GTW Separation Room</b>					<b>390</b>	<b>01-Sep-11</b>	<b>24-Sep-12</b>																							
<b>GTWSR Structural and Builder's Work</b>					<b>390</b>	<b>01-Sep-11</b>	<b>24-Sep-12</b>																							
A22000	GTWSR-ABWF works including windows, louvers and door but excluding roller shutter	28	28-Aug-12	24-Sep-12																										
A21410	GTWSR-Concreting works for GTWSR 1st Stage	31	31-Dec-11	30-Jan-12																										
A21420	GTWSR-Concreting works for GTWSR 2nd Stage	31	31-Jan-12	01-Mar-12																										
A21210	GTWSR-Driving works of all sheet pile for ELS	30	01-Sep-11	30-Sep-11																										
A21220	GTWSR-Excavation and dewatering system for ELS	54	01-Oct-11	23-Nov-11																										
A21300	GTWSR-Foundation Construction	37	24-Nov-11	30-Dec-11																										
A22100	GTWSR-Testing for Ventilation System (odour test)	30	30-Apr-12	29-May-12																										
<b>GTWSR-Plumbing and Drainage</b>					<b>61</b>	<b>16-Mar-12</b>	<b>15-May-12</b>																							
A21910	GTWSR-BS piping works(P&D) 1st stage	23	16-Mar-12	07-Apr-12																										
A21920	GTWSR-BS piping works(P&D) 2nd stage	22	08-Apr-12	29-Apr-12																										
A22200	GTWSR-BS Plumbing and Drainage Testing	14	02-May-12	15-May-12																										
<b>GTWSR-Electrical</b>					<b>75</b>	<b>16-Mar-12</b>	<b>29-May-12</b>																							
A21930	GTWSR-BS Cable laying works(Electrical) 1st stage	23	16-Mar-12	07-Apr-12																										
A21940	GTWSR-BS Cable laying works(Electrical) 2nd stage	22	08-Apr-12	29-Apr-12																										
A21980	GTWSR-BS Electrical Testing	14	02-May-12	15-May-12																										
A21950	GTWSR-Lighting installation works	30	30-Apr-12	29-May-12																										
<b>GTWSR-Fire Services</b>					<b>61</b>	<b>16-Mar-12</b>	<b>15-May-12</b>																							
A21960	GTWSR-BS piping works(Fire Services) 1st stage	23	16-Mar-12	07-Apr-12																										

- █ Actual Work      ▾ Summary
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A21970	GTWSR-BS piping works(Fire Services) 2nd stage	22	08-Apr-12	29-Apr-12																														
A22300	GTWSR-Fire Service Testing	14	02-May-12	15-May-12																														
<b>GTWSR-Processing Works</b>		<b>259</b>	<b>31-Dec-11</b>	<b>14-Sep-12</b>																														
A21800	GTWSR-BDI Piping, Electrical, Insulation & Instrumentation Works	45	01-Aug-12	14-Sep-12																														
A21700	GTWSR-BDI Unloading Equipment Installation Works	7	25-Jul-12	31-Jul-12																														
A21600	GTWSR-Paques Piping, Electrical, Insulation & Instrumentation Works	60	02-Mar-12	30-Apr-12																														
A21500	GTWSR-Paques Process Equipment Installation Works	62	31-Dec-11	01-Mar-12																														
<b>2B-E Tank Farm</b>		<b>314</b>	<b>18-Nov-11</b>	<b>26-Sep-12</b>																														
<b>Tank Farm 2B-2E Structural and Builder's Work</b>		<b>314</b>	<b>18-Nov-11</b>	<b>26-Sep-12</b>																														
A23100	2BE-ABWF works in Tank Farm 2B-2E	30	28-Aug-12	26-Sep-12																														
A22410	2BE-Bund wall concreting works 1st stage	39	18-Nov-11	26-Dec-11																														
A22420	2BE-Bund wall concreting works 2nd stage	39	27-Dec-11	03-Feb-12																														
A22510	2BE-Erection tanks in Tank Farm 2B-2E 1st stage	31	26-Feb-12	27-Mar-12																														
A22520	2BE-Erection tanks in Tank Farm 2B-2E 2nd stage	31	28-Mar-12	27-Apr-12																														
<b>Tank Farm 2B-2E-Plumbing and Drainage</b>		<b>107</b>	<b>29-Apr-12</b>	<b>13-Aug-12</b>																														
A22810	2BE-BS Piping works(P&D) at Tank Farms 1st stage	32	29-Apr-12	30-May-12																														
A22820	2BE-BS Piping works(P&D) at Tank Farms 2nd stage	32	31-May-12	01-Jul-12																														
A22900	2BE-BS Plumbing and Drainage Testing	43	02-Jul-12	13-Aug-12																														
<b>Tank Farm 2B-2E-Electrical</b>		<b>95</b>	<b>29-Apr-12</b>	<b>01-Aug-12</b>																														
A22830	2BE-BS Cable laying works(Electrical) at Tank Farms 1st stage	32	29-Apr-12	30-May-12																														
A22840	2BE-BS Cable laying works(Electrical) at Tank Farms 2nd stage	32	31-May-12	01-Jul-12																														
A22870	2BE-BS Electrical Testing	31	02-Jul-12	01-Aug-12																														
<b>Tank Farm 2B-2E-Fire Services</b>		<b>107</b>	<b>29-Apr-12</b>	<b>13-Aug-12</b>																														
A23000	2BE-Fire Service Testing	43	02-Jul-12	13-Aug-12																														
A22850	2BE-Piping works(Fire Services) at Tank Farms 1st stage	32	29-Apr-12	30-May-12																														
A22860	2BE-Piping works(Fire Services) at Tank Farms 2nd stage	32	31-May-12	01-Jul-12																														
<b>Tank Farm 2B-2E-Processing Works</b>		<b>126</b>	<b>05-Apr-12</b>	<b>08-Aug-12</b>																														
A22600	2BE-BDI Process Equipment Installation Works	62	05-Apr-12	05-Jun-12																														
A22700	2BE-BDI Process Piping and Instrumentation Works	64	06-Jun-12	08-Aug-12																														
<b>3 - Waste Water Treatment Plant</b>		<b>308</b>	<b>24-Nov-11</b>	<b>26-Sep-12</b>																														
<b>Waste Water Treatment Plant Structural and Builder's Work</b>		<b>308</b>	<b>24-Nov-11</b>	<b>26-Sep-12</b>																														
A24030	WWTP- ABWF works excluding windows, louvers and doors	30	28-Aug-12	26-Sep-12																														
A23200	WWTP-Foundation Construction	39	24-Nov-11	01-Jan-12																														
A23400	WWTP-IC Reactor Erection	21	17-Feb-12	08-Mar-12																														
A24010	WWTP-Installation of roof waterproofing system	30	02-Apr-12	01-May-12																														
A24020	WWTP-Installation of windows, louvers and doors	30	28-Aug-12	26-Sep-12																														

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<b>Jetty-Fire Services</b>					<b>09-Oct-12, Jetty-Fire</b>																									
A24530	4A-BS piping works(Fire Services) at Jetty	65	16-Jul-12	18-Sep-12																										
A24600	4A-Jetty E&M and FS testing	21	19-Sep-12	09-Oct-12																										
<b>Pipe Bridge &amp; Pipe Trench Works</b>					<b>31-May-12, Pipe Bridge &amp; Pipe Trench</b>																									
A24920	Erection of pipe bridge between Tank Farm 2A and Tank Farm 2B-2E	30	24-Nov-11	23-Dec-11																										
A24910	Erection of steel pipe racks at Tank Farm 2A	30	24-Nov-11	23-Dec-11																										
A24930	Erection of steel pipe racks at Tank Farm 2B-2E	30	24-Nov-11	23-Dec-11																										
A25000	Pipe Bridge Between PB and FP	34	18-Nov-11	21-Dec-11																										
A24900	Pipe Bridge Between Tank Farms	30	24-Nov-11	23-Dec-11																										
A25100	Pipe Trench from 2A to Jetty	60	02-Apr-12	31-May-12																										
<b>External Works</b>					<b>30-Sep-12, External W</b>																									
A25500	Boundary Wall	60	03-Jul-12	31-Aug-12																										
A25530	Boundary Wall-ABWF works	30	01-Sep-12	30-Sep-12																										
A25510	Boundary Wall-structural concreting works 1st stage	30	03-Jul-12	01-Aug-12																										
A25520	Boundary Wall-structural concreting works 2nd stage	30	02-Aug-12	31-Aug-12																										
A25200	External Drainage Works. (Divided into 6 Areas)	160	24-Dec-11	31-May-12																										
A25360	External Plumbing Works	90	16-Apr-12	14-Jul-12																										
A25460	External Service Cable Works	90	16-May-12	13-Aug-12																										
A25270	Faul Water manhole and the pipe works between the manholes with the associated branch pipes 1st stage	30	24-Dec-11	22-Jan-12																										
A25280	Faul Water manhole and the pipe works between the manholes with the associated branch pipes 2nd stage	30	23-Jan-12	21-Feb-12																										
A25290	Faul Water manhole and the pipe works between the manholes with the associated branch pipes 3rd stage	30	22-Feb-12	22-Mar-12																										
A25300	Faul Water manhole and the pipe works between the manholes with the associated branch pipes 4th stage	30	23-Mar-12	21-Apr-12																										
A25310	Faul Water manhole and the pipe works between the manholes with the associated branch pipes 5th stage	40	22-Apr-12	31-May-12																										
A25370	Installation of external fresh watermain 1st stage	30	16-Apr-12	15-May-12																										
A25380	Installation of external fresh watermain 2nd stage	30	16-May-12	14-Jun-12																										
A25390	Installation of external fresh watermain 3rd stage	30	15-Jun-12	14-Jul-12																										
A25400	Installation of external salt watermain 1st stage	30	16-Apr-12	15-May-12																										
A25410	Installation of external salt watermain 2nd stage	30	16-May-12	14-Jun-12																										
A25420	Installation of external salt watermain 3rd stage	30	15-Jun-12	14-Jul-12																										
A25600	Road Works	90	17-Jun-12	14-Sep-12																										

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Activity ID	Activity Name	Duration	Start	Finish	Month																										
					-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
A25610	Road Works with associated surface channels and catch pits 1st stage	30	17-Jun-12	16-Jul-12																											
A25620	Road Works with associated surface channels and catch pits 2nd stage	30	17-Jul-12	15-Aug-12																											
A25630	Road Works with associated surface channels and catch pits 3rd stage	30	16-Aug-12	14-Sep-12																											
A25210	Storm water manhole works 1st stage	9	24-Dec-11	01-Jan-12																											
A25220	Storm water manhole works 2nd stage	31	02-Jan-12	01-Feb-12																											
A25230	Storm water manhole works 3rd stage	30	02-Feb-12	02-Mar-12																											
A25240	Storm water manhole works 4th stage	30	03-Mar-12	01-Apr-12																											
A25250	Storm water manhole works 5th stage	30	02-Apr-12	01-May-12																											
A25260	Storm water manhole works 6th stage	30	02-May-12	31-May-12																											
<b>Water Supply Works</b>		<b>108</b>	<b>28-Apr-12</b>	<b>13-Aug-12</b>																											
A25800	WSD inspection and installation of watermeter (WVO46)	30	15-Jul-12	13-Aug-12																											
A25700	WSD pipe laying Works	78	28-Apr-12	14-Jul-12																											

13-Aug-12, Water Supply W

- Actual Work
- Remaining Work
- Critical Remaining Work
- Critical Milestone
- Milestone
- Summary

Proposed Biodiesel Plant at T.K.O.

## Master Programme (Main Contractor Proposal)

Date	Revision	Checked	Approved
11-Apr-11	Main Contractor Proposal		
08-Jun-11	REV.1 - Revised to incorporate Milestone		
17-Jun-11	REV.2 - Added Details		
15-Jul-11	REV.3 - Post Contractors' Meeting		
25-Jul-11	REV.4 - Combined OP Stages, revised Jetty and P...		