ASB Biodiesel (Hong Kong) Limited

Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate

Monthly EM&A Report

(version 1.0)

January 2010

Certified By	Mar
	(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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EXECUTIVE SUMMARY

Introduction

- 1. This is the 8th 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 January 2010.
- 2. The major site activities undertaken in the reporting month included:
 - Pile cap construction.

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 (PP-RE0037-09) 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.

1

Table I	Summary Table for Key Information in the Reporting Month
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

E	Event Details		A	<u> </u>		
Event	Number	Nature	Action Taken	Status	Remark	
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 December 2009	Submitted to EPD on 11 January 2010 (EP condition 4.2)	Verified by IEC		
Notifications of any summons & prosecutions	0		N/A	N/A		

### **Future Key Issues**

- 6. Major site activities for the coming month will include:
  - Pile cap construction;
  - Reinforcement concrete structure;
  - Superstructure building process;
  - Steel equipment installation;
  - Steel structure erection and
  - Bunwall construction.
- 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 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 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 8th Monthly EM&A report summarizing the EM&A works for the Project in January 2010.

## **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 Ke	<b>Project Contacts</b>
--------------	-------------------------

Party	Role	Name	Position	Phone No.	Fax No.	
ASB	Permit Holder	Mr. Eddie Chung	Project Manager	9189 8118	37411661	
		Dr. HF Chan	ET Leader	2151 2088		
Cinotech	inotech Environmental Ms. Ivy Tam	Ms. Ivy Tam	Project Coordinator	2151 2090	3107 1388	
	Team	Ms. Cara Heung	Audit Team Leader	2151 2078		
Manuinas	Independent	Mr. Mark Cheung	Independent Environmental Checker	3168 2028	2168 2022	
Mannings Environmental Checker		Mr. Gavin Kwok	Assistant to Independent Environmental Checker	3168 2028	3168 2022	
CHEC	Contractor	Mr. Stephen Tse	Project Manager	8106 1848	2623 9226	
CHEC	Contractor	Mr. Fred Ho	Environmental Officer	9279 6226	2023 9220	

#### **Construction Programme**

- 1.10 The site activities undertaken in the reporting month were:
  - Pile cap construction.

#### 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 audit was 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 summaries of site audits are attached in **Appendix A**.
- 2.2 Site audit was conducted on 26th January 2010 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 1.3 x 1000 m³ of Construction and Demolition (C&D) Waste and no Chemical Waste are 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**.

Down:4 / Liconer N-	Valid Period		Det-9-	Status			
Permit / License No.	From To		Details				
Environmental Permit (EP)							
EP-319/2009/A	07/04/2009	N/A	Construction and operation of	Valid			
			(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 tran- 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				
Registration of Chemical Was							
WPN-5113-839-C1186-15	12/06/2009	-	Spent Lubrication oil.	Valid			
Construction Noise Permit (C	NP)						
PP-RE0037-09	11/08/2009	28/12/2009	To carry out percussive piling for the construction site during 0700- 1900 hours on all days except general holidays.	Expired			
GW-RE0561-09	10/12/2009	26/05/2010	Use of Powered Mechanical Equipment during 0000-2400 hours on general holidays (including Sundays), 0000-0700 hours on any day not being a general holiday.	Valid			
Wastewater Discharge Licens	e						
WT00004508-2009	07/09/2009	-	-	Valid			

Table 2.1Summary of Environmental Licensing and Permit Status

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

 Table 2.2
 Observations and Recommendations of Site Audit

Parameters	Date	<b>Observations and Recommendations</b>	Follow-up	
Air Quality	26-01-10	<u>Reminder</u> Maintain the cover for stockpiles properly after strong wind.	received from T	was The on

#### **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:
  - Pile cap construction;
  - Reinforcement concrete structure;
  - Superstructure building process;
  - Steel equipment installation;
  - Steel structure erection and
  - Bunwall construction.

### 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 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.

#### **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.

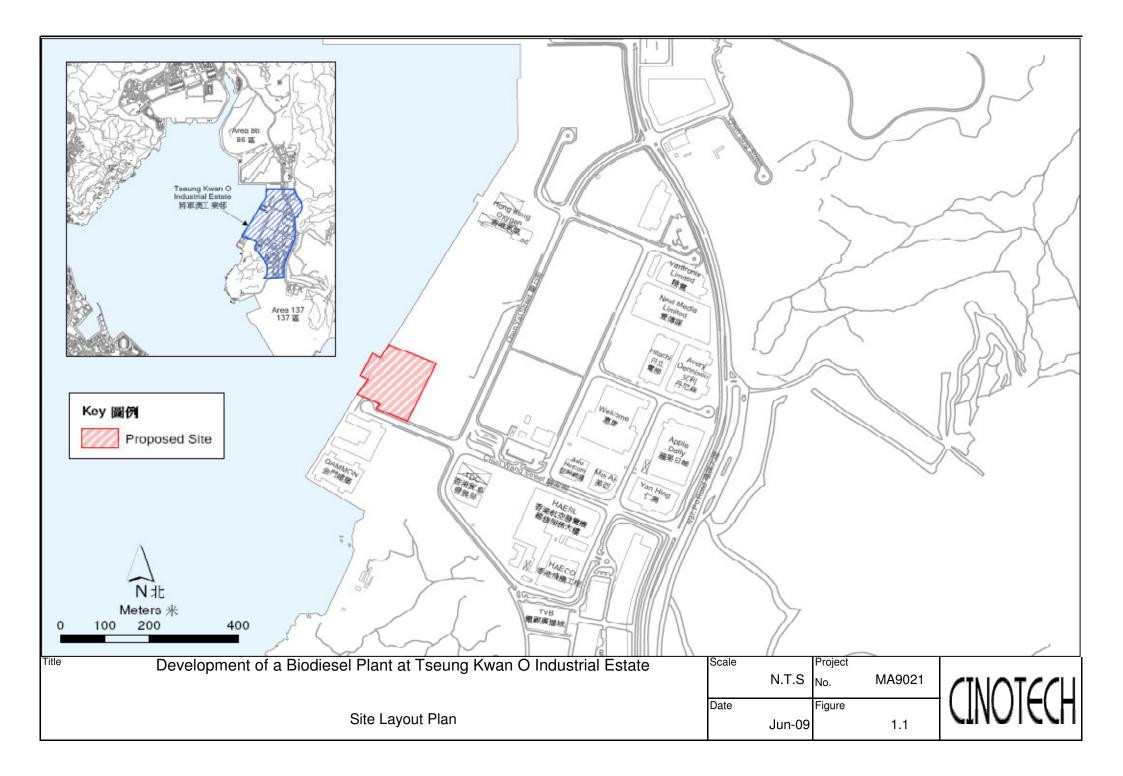
#### Noise Impact

- 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



APPENDIX A SITE AUDIT SUMMARY

#### Monthly Site Inspection Record Summary

#### **Inspection Information**

Checklist Reference Number	000126
Date	26 January 2010 (Tuesday)
Time	15:00 - 15:30

Ref. No.	Non-Compliance	Related Item No.	
-	None	-	٦

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	P. Ain Quality	
	B. Air Quality	
	Reminder	
000126-R01	• Maintain the cover for stockpiles properly after strong wind	C10
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
	No environmental deficiency was identified during site inspection.	
	E. Permit / Licenses	
	No environmental deficiency was identified during site inspection.	
	F. Reminders	
	<ul> <li>No environmental deficiency was identified during site inspection.</li> </ul>	
	G. Others	
	• Follow-up on previous audit section (Ref. No.:91222), all environmental	
	deficiencies were improved/rectified by contractor.	

	Name	Signature	Date
Recorded by	Cara Heung	127	28 January 2010
Checked by	Dr. HF Chan	Vin	28 January 2010

APPENDIX B UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

Types of Impacts	Mitigation Measures	Status
	• 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;	٨
	• Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level of the facility during the building construction;	N/A
	<ul> <li>All debris and materials will be covered or stored in a sheltered debris collection area;</li> </ul>	^
Construction	• Hoarding from ground level will be provided along the entire length of the site boundary except for a site entrance or exit;	^
Dust	• 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;	
	<ul> <li>Regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke</li> </ul>	^
	emissions and to minimize gaseous emissions.	^
	• Monthly site audits will be conducted to ensure the implementation of suitable dust control measures and good site practices.	^
	• Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction program;	٨
	• Silencers or mufflers on construction equipment will be utilized and will be properly maintained during the construction program;	^
	<ul> <li>Mobile plant, if any, will be sited as far from NSRs as possible;</li> </ul>	^
Construction	<ul> <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> </ul>	^
Noise	• 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	^
	• Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from onsite construction activities.	^

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

Types of Impacts	Mitigation Measures	Status
	<ul> <li><u>Piling Activities</u></li> <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> <li><u>Construction Site Run-off and Drainage</u></li> </ul>	N/A
Water Quality	• 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.	۸
Water Quality	<ul> <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 50m3 will be covered with tarpaulin or cimilar fabric during rainstorms. These metarials will not be placed near the sequell area.</li> </ul>	^ ^ ^
	<ul> <li>similar fabric during rainstorms. These materials will not be placed near the seawall area.</li> <li><u>General Construction Activities</u></li> <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
	Sewage generated from On-site Workforce	
	<ul> <li>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>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>	N/A ^
Ecology	• 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.	^

Remarks: ^ Compliance of mitigation measure;

- X Non-compliance of mitigation measure;
- Non-compliance but rectified by the contractor;
- N/A Not Applicable at this stage;
   Non-compliance but 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

	Actu	ual Quantities of Ind	ert C&D Materia	ils Generated / Imp	Actual Quantities of Other C&D Materials / Wastes Generated						
Month	Total Quantities Generated [a+b+c+d]	Broken Concrete (including rock for recycling into aggregates) ( a )	Reused in the Contract ( b )	Reused in Other Projects ( c )	Disposed as Public Fill ( d )	Imported C&D Material	Metal (in '000 kg)	Paper/ cardboard packaging (in '000kg)	Plastics (bottles/containers, plastic sheets/ foams from package material) (in '000kg)	Chemical Waste (in '000kg)	Others (e.g. General Refuse etc.) (in '000m3)
January	1.3	0	0	0	1.3	0	0	0.05	0.01	0	0.02
February											
March											
April											
May											
June											
Half-year Total											
July											
August											
September											
October											
November											
December											
Yearly Total											

APPENDIX D COMPLAINT LOG

# **APPENDIX D – COMPLAINT LOG**

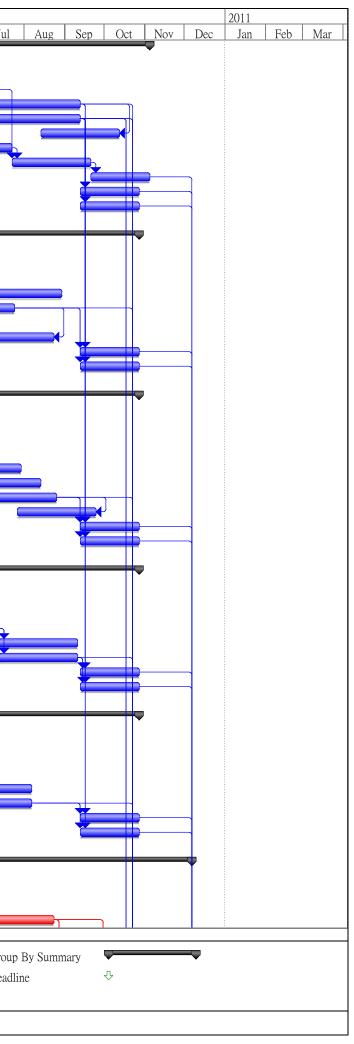
# **Reporting Month**: January 2010

Log Ref.	Location	Received DateDetails 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

		1	I		Sep Oct Nov	Dec Jan	Feb Mar	Apr May	Jun Jul
Administration Building	351 days	19 Nov '09	4 Nov '10			Dee Juii		Tipi May	Jun Jun
					_	·			
					_				
				r	_				
					-				
				F+30 days	_		-		
Lift Procument	190 days	14 Jan '10	22 Jul '10		_				
Lift Installation Works	60 days	23 Jul '10		1					
	45 days						-		
					_				
Fire Service Testing	45 days	13 Sep '10	27 Oct 10 5,6	1	_				
Process Building	365 dave	28 Oct 100	27 Oct '10						
Substructure Construction works (Include Ground Slab)							i		
							£		
				.16					
BDI Process Equipment Installation Works	126 days	26 Apr '10	29 Aug '10 17						
Building Service Installation Works	90 days	26 Apr '10	24 Jul '10 17						
Cladding Works	55 days	26 Apr '10			_				<b>_</b>
					_		i		
					-		i		
Fire Service Lesting	45 days	13 Sep 10	27 Oct 10 19,	0	_				
Fat Preparation Building & Boilor Room	330 dave	2 Dec '00	27 Oct '10		-				
					-		<u> </u>		
					_				
		2 Mar '10		27	-				
Steel Slab Erection Works	30 days	31 May '10	29 Jun '10 28				-	<u> </u>	
Chimney Works	30 days	30 Jun '10	29 Jul '10 29						
					_				
					_				
					_				
					_		i		
	45 uays	15 Sep 10	27 Oct 10 52,	.0	_				
Tank Farm 2A	330 days	2 Dec '09	27 Oct '10		- t				
Foundation Construction	90 days	14 Jan '10			-				
Bunwall Construction	90 days	28 Feb '10		FF+45 days					
	90 days	2 Dec '09	1 Mar '10		_				
				.38					
					_				
				6	_		i -		-
					_				
	45 uays	15 560 10	27 Oct 10 45,	.0	-				
Tank Farm 2B-E	330 days	2 Dec '09	27 Oct '10		-   (	~			
Foundation Construction	75 days	14 Jan '10	29 Mar '10				Т		
Bunwall Construction	60 days	28 Feb '10	28 Apr '10 48F	FF+30 days					
					_			,	
				50	_		-		▶
					_				
				6	_		i -	,	
							-		
	15 days	15 560 10	27 000 10 55,	.0	_		1		
Waste Water Treatment Plant	362 days	10 Dec '09	6 Dec '10		_			<del></del>	_
Foundation Design, BD Approval and Consent	90 days	10 Dec '09	9 Mar '10						
Foundation Construction	77 days	10 Mar '10	25 May '10 58		_				
				SF	_				
Supersturcture Construction including IC reactor	90 days	26 May '10	23 Aug '10 59				<u>.                                    </u>		
	Milestone	•		Rolled Up (	Critical Task	Split			Grou
0 Critical Task	Summary	$\square$		Rolled Up N	Vilestone 🛇	Extern	nal Tasks		Dead
Progress	Rolled Up	Task 🧲		Rolled Up I	Progress	Proiec	et Summary	$\bigtriangledown$	
	Substructure Construction Works Superstructure Design and BD Approval and Concent Superstructure Design and BD Approval and Concent Lift Procument Lift Procument Lift Procument Lift Process Faing Fire Service Testing Fire Service Testing Process Building Substructure Construction works (Include Ground Slab) Superstructure Design and BD Approval and Concent Superstructure Construction Works BDI Process Equipment Installation Works Cladding Service Installation Works BDI Process Equipment Installation Works Suberstructure Construction Works Superstructure Construction Works Superstructure Design and BD Approval and Concent Superstructure Construction Works BDI Process Equipment Installation Works BDI	Substructure Construction Works     70 days       Superstructure Construction Works     90 days       Building Service Installation Works     90 days       I'rinsform Room Works     90 days       I'rinsform Room Works     60 days       Lift Installation Works     60 days       Process Building     45 days       Process Building     365 days       Superstructure Construction works (Include Ground Slab)     56 days       Superstructure Construction Works     126 days       Building Service Installation Works     126 days       Building Service Installation Works     126 days       Building Service Testing     45 days       Fire Service Testing     45 days       Fire Service Testing     45 days       Fire Service Testing     45 days       Substructure Construction Works     30 days       S	Substructure Construction Works     10 Apry 50       Superstructure Construction Works     90 days     17 Dec 79       Building Service Installation Works     90 days     15 Jun 10       Transform Room Works     90 days     15 Jun 10       Lift Procennent     100 days     14 Aug 10       Lift Treating     45 days     13 Sep 10       Process Building     365 days     28 Oct 79       Substructure Construction works (Include Ground Slab)     56 days     28 Oct 79       Superstructure Construction Works     106 days     26 days     19 Nov 79       Superstructure Construction Works     106 days     26 days     19 Nov 79       Superstructure Construction Works     106 days     26 days     19 Nov 79       Superstructure Construction Works     106 days     26 days     26 Apr 10       Building Service Testing     45 days     13 Sep 10     11 Brit10       Fire Service Testing     45 days     13 Sep 10     11 Brit10       Fire Service Testing     45 days     30 days     2 Dec 79       Substructure Construction Works     30 days     2 Dec 79       Substructure Con	Substructure Construction Works         10 days         19 Nov '09         27 Jan '10           Superstructure Construction Works         90 days         17 Dec '09         16 Mar '10           Superstructure Construction Works         90 days         15 Jun '10         12 Sep '1044           Tauaform Room Works         90 days         14 Jun '10         12 Sep '1044           Handford         60 days         14 Jun '10         12 Sep '1044           Hinding Works         60 days         21 Jun '10         12 Sep '1044           Lift Frexument         60 days         21 Sep '104         4 Nov '109           Building Service Testing         45 days         13 Sep '104         4 Nov '109           Building Service Testing         45 days         13 Sep '104         4 Nov '109           Superstructure Construction Works         10 days         26 day '104         27 Oct '10           Superstructure Construction Works         10 days         26 day '102         21 Ap '10           Superstructure Construction Works         10 days         26 Apr '10         23 Jan '10           Superstructure Construction Works         10 days         26 Apr '10         24 Aur '1017           Building Service Testing         45 days         13 Sep '10         27 Oct '10           Bu	Substructure Construction Works         70 days         70 days         70 hor 27 Jan '10           Superstructure Construction Works         90 days         17 Mar '10         14 Jun '10.3.2.           Building Service Installation Works         90 days         15 Jun '10         12 Sep '10.4           Transform Room Works         90 days         15 Jun '10         12 Sep '10.4           Transform Room Works         90 days         14 Jun '10.3.2         Sep '10.4           Transform Room Works         100 days         14 Jun '10.3.2         Sep '10.4           Lift Installation Works         100 days         14 Jun '10.3         Sep '10.4.8           Lift Installation Works         100 days         14 Jun '10.3         Sep '10.4.8           Lift Installation Works         100 days         13 Sep '10.2         7 Cox '10.5.6           Proces Building         45 days         13 Sep '10.2         7 Cox '10.5.6           Substructure Construction works (Include Ground Stab)         50 days         20 Aur '10.2         24 Jun '10.1           Superstructure Construction works         100 days         26 Aur '10.2         24 Jun '10.1         20 Jun '10.1           Building Service Installation Works         12 days         13 day '10.2         29 Jun '10.2         20 days'2.2         20 Aur '10.2         24	sitestructure Construction Works       70 drew       19 Nor UP       27 Jun 10         Sprestructure Construction Works       90 days       17 Mar 10       12 Spr 104         Transform Roott Works       90 days       15 Jun 10       12 Spr 104         Transform Roott Works       90 days       15 Jun 10       12 Spr 104         Transform Roott Works       90 days       15 Jun 10       12 Spr 104         Transform Roott Works       90 days       12 Jun 100       12 Spr 104         Transform Roott Works       90 days       12 Jun 100       12 Spr 104         Transform Roott Works       90 days       12 Jun 100       12 Spr 104         Transform Roott Works       90 days       13 Jun 10       12 Spr 104         Transform Roott Works       90 days       24 days       13 Ser 10       27 Oct 105 6         Transform Roott Park       90 days       26 Crt 90       27 Oct 106 f       13 Jun 10         Substructure Construction Works       90 days       26 Jun 10       25 Jar 10       25 Jar 10       13 Jun 10         Substructure Construction Works       90 days       26 Jun 10       25 Jar 10       13 Jun 10       10 Jun 10       14 Jun 1017         Building Service Installation Works       90 days       25 har 10       27 Oct	Substructure Construction Works       71 darg       10 bev 70       27 Jun 10         Superstructure Construction Works       90 darg       17 bev 70       67 Jun 10         Substructure Construction Works       90 darg       17 bev 70       67 Jun 10         Substructure Construction Works       90 darg       17 bev 70       67 Jun 10         Filt Hall Interview       90 darg       17 Jun 10       17 Jun 10         Filt Hall Interview       90 darg       17 Jun 10       17 Jun 10         Lift Power       10 darg       25 Jun 10       10 Dev 10       10 Preve 30 darg         Bioluling Service Testing       <5 darg	Set encoder: One-solution Works       17 days       9 No. N9       27 Ja. '10         Superstructure: Construction Works       19 days       17 Mar '10       11 Ja. '10 Ja. '1	Subtractary Conductor Works       70 days       70 Her 10         Subtractary Conductor All DA Arroyol and Concert       90 days       71 Her 10         Transfer Room Works       90 days       70 km 10         Transfer Room Works       90 days       70 km 10         Lin Hornson       90 days       70 km 10         Packing Strive Testing       74 days       13 km 10         Systematic Violation west (and/or Count Stay)       90 days       21 days       13 km 10         Systematic Works       90 days       21 days       13 km 10         Systematic Works       90 days       22 days       13 km 10         Systematic Works       90 days       22 days       13 km 10         Systematic Works       90 days       22 days       13 km 10         Systematic Works       90 days       22 days       10 days       10 days         Systematic Works       90 days       22 days       10 days       10 days



ID	ID	Task Name	Duration	Start	Finish	Predecessors					2010						
							Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
	62	Treatment Equipment Installation Works	60 days	24 Aug '10	22 Oct '10												
	63	Process Equipment Installation Works.	60 days	24 Aug '10	22 Oct '10												
	64	Building Service Installation Works	60 days	24 Aug '10	22 Oct '10												
65	65	Building Service Testing	45 days	23 Oct '10	6 Dec '1												
66	66	Fire Service Testing	45 days	23 Oct '10	6 Dec '1	) 64,6											
	67																
	68	Loading and Unloading Area	351 days	16 Dec '09	1 Dec '10												
	69	Foundation Design, BD Approval and Consent	90 days	16 Dec '09	15 Mar '10												
70	70	Foundation Construction	61 days	16 Mar '10	15 May '10								Ċ				
	71	Superstructure Design and BD Approval and Concent	90 days	15 Feb '10	16 May '10												
	72	RC Structure Construction	80 days	16 May '10	3 Aug '1												
	73	Steel Structure Construction	60 days	5 Jul '10		72FS-30 days										C	
74	74	Cladding Roof Installation	30 days	3 Sep '10	2 Oct '10	) 73											
75	75	Process Equipment Installation Works.	45 days	3 Sep '10	17 Oct '10	) 73											
76	76	Building Service Installation Works	45 days	3 Sep '10	17 Oct '10	)73	1										
77	77	Finish Works	60 days	18 Sep '10	16 Nov '10	) 76FF+30 days											
78	78	Building Service Testing	45 days	18 Oct '10	1 Dec '1	) 6,76											
79	79	Fire Service Testing	45 days	18 Oct '10	1 Dec '1	) 76,6											
80	80						1										
81	81	Pipe Bridge Works	300 days	29 Dec '09	24 Oct '10	)	1										
	82	Foundation Design, BD Approval and Consent	90 days	29 Dec '09	28 Mar '10	)	1			d							
	83	Foundation Construction	30 days	29 Mar '10	27 Apr '10	) 82	1						Č				
84	84	Superstructure Design and BD Approval and Concent	90 days	28 Jan '10		) 82SS+30 days	1			Ľ							
85	85	Bridge Construction	90 days	28 Apr '10	26 Jul '10	) 84,83,17								<b>(</b>			
86	86	Pipe Installation	90 days	27 Jul '10	24 Oct '10	) 85											
	87						1										
	88	External works	150 days	25 Jun '10	21 Nov '10		1									<u> </u>	
89	89	External Drainage Works.	90 days	25 Jun '10	22 Sep '10	) 4,17,28,39,49,61FI										L L	
	90	External Plumbing Works	90 days	25 Jun '10		) 4,17,28,39,49,61FI											
91	91	External FS Plumbing Works	90 days	25 Jun '10		)4,17,28,39,49,61FI											
92	92	External Service Cable Works	90 days	25 Jun '10		)4,17,28,39,49,61FI											
93	93	Boundary Wall	30 days	23 Sep '10	22 Oct '10	89,90,92											
	94	Road Works	30 days	23 Oct '10	21 Nov '10	)93	1										
	95						1										
96	96	Water Supply Works	325 days	1 Jan '10	21 Nov '10	)	1			I.	÷						
97	97	Water Supply Application	0 days	1 Jan '10	1 Jan '1	)					<b>.</b>						
98	98	WSD XP Application	180 days	1 Jan '10	29 Jun '10	) 97	1										<u>h</u>
	99	WSD pipe laying works	60 days	30 Jun '10	28 Aug '10	) 98	1										Č –
	100	WSD inspection and installation of watermeter (WWO46)	30 days	23 Oct '10		99,90,5,19,32,43,5	3										
	101						1										
	102	FS & OP Inspection	60 days	7 Dec '10	4 Feb '11		1										
103	103	FS Inspection	30 days	7 Dec '10	5 Jan '1	11,12,22,23,34,35,	2										
	104	OP Inspection	30 days	6 Jan '11	4 Feb '1		1										

