Drainage Services Department

Harbour Area Treatment Scheme Stage 2A

Quarterly Environmental Monitoring and Audit Consolidated Report for Stonecutters Island Sewage Treatment Works for June to August 2010

Issue No. 3 | September 2010

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It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 24888/97

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Document Verification

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CONTENTS

Page

1.	EXECUTIVE SUMMARY	1
1.1	Purpose of this Report	1
1.2	Executive Summary for Contract No. DC/2007/23	1
1.3	Executive Summary for Contract No. DC/2009/05	1
1.4	Executive Summary for Contract No. DE/2009/02	1
2.	BASIC PROJECT INFORMATION	2
2.1	Project Organization	2
2.2	Scope of the Works	3
3.	ENVIRONMENTAL MONITORING REQUIREMENTS	5
3.1	Air Quality Monitoring	5
3.2	Noise Monitoring	5
3.3	Landscape and Visual Monitoring	6
4.	IMPLEMENTATION STATUS	6
5.	CONSOLIDATED MONITORING RESULTS	7
5.1	Air Quality Monitoring	7
5.2	Noise Monitoring	8
5.3	Waste Management	9
5.4	Landscape and Visual Monitoring	9
6.	ENVIRONMENTAL NON-CONFORMANCE	10
6.1	Summary of Monitoring Exceedance	10
6.2	Summary of Environmental Non-compliance	10
6.3	Summary of Environmental Complaint	10
6.4	Summary of Environmental Summon and Successful Prosecution	11
7.	FUTURE KEY ISSUES	11

LIST OF TABLES

Table 1	Project Organization of three active contracts in SCISTW	2
Table 2	Construction Programme for three active contracts in SCISTW	
Table 3	Location of air quality monitoring stations at SCISTW	5
Table 4	Action and limit levels for air quality parameter	
Table 5	Locations of noise monitoring stations at SCISTW	
Table 6	Action and limit levels for noise parameter	
Table 7	Air quality monitoring results for June 2010 to August 2010 at SCISTW	
Table 8	Noise monitoring results for June 2010 to August 2010 at SCISTW	
Table 9	Summary of waste generation for June 2010 to August 2010 at SCISTW	

APPENDICES

APPENDIX A

Locations of Air Quality and Noise Monitoring Stations

APPENDIX B

EM&A Report submitted under DC/2007/23 (SCISTW only)

APPENDIX C

EM&A Report submitted under DC/2009/05

APPENDIX D

EM&A Report submitted under DE/2009/02

1. EXECUTIVE SUMMARY

1.1 Purpose of this Report

This Report summarizes the key environmental monitoring and audit monthly reports for the following active construction contracts at the Stonecutters Island Sewage Treatment Works (SCISTW) under the Project of Harbour Area Treatment Scheme Stage 2A (the Project):

- (i) Contract No. DC/2007/23 Construction of Sewage Conveyance System from North Point to Stonecutters Island;
- (ii) Contract No. DC/2009/05 Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW; and
- (iii) Contract No. DE/2009/02 Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at SCISTW.

These three Contracts are under the same Environmental Permit (EP) No. EP-332/2008D and separate Environmental Teams (ETs) were appointed under each contract pursuant to Condition 2.1 of the EP.

This Report is prepared in response to the request from DSD to provide a consolidated quarterly summary of the environmental monitoring and audit (EM&A) at SCISTW for the purpose of ease of references. This Report, however, does not hold any responsibilities with respect to the EM&A requirements pursuant to the conditions of EP in which each contract is administered under their respective contract by different project teams including the Engineer, the Engineer's Representatives, the Contractor, and the Environmental Team.

The details of the EM&A for individual contracts can be found in the EM&A reports submitted as attached in the Appendices of this Report. This Report does not take any precedent or amendment to the individual EM&A reports. In case of ambiguity and discrepancy, the individual EM&A report shall prevail.

This Report is the third quarterly EM&A consolidated report covering the period from 1 June 2010 to 31 August 2010.

1.2 Executive Summary for Contract No. DC/2007/23

At SCISTW, air quality monitoring station demarcated AM6 and noise monitoring station demarcated NM5 were established and being monitored by the ET for Contract No. DC/2007/23. No exceedance was recorded during the reporting period.

1.3 Executive Summary for Contract No. DC/2009/05

At SCISTW, air quality monitoring station demarcated AM7 and noise monitoring station demarcated NM6 were established and being monitored by the ET for Contract No. DC/2009/05. One exceedance of noise monitoring were recorded on 10 July 2010 during evening-time period. Details of exceedance are given in Section 6.1.2 of this report.

1.4 Executive Summary for Contract No. DE/2009/02

At SCISTW, air quality monitoring station demarcated AM8 was established and being monitored by the ET for Contract No. DE/2009/02. No exceedance was recorded during the reporting quarter.

2. BASIC PROJECT INFORMATION

2.1 Project Organization

	DC/2007/22	D.C.(2000)/05	DE (2000 /02
Contract No.	DC/2007/23	DC/2009/05	DE/2009/02
Contract Title	HATS Stage 2A	HATS Stage 2A	HATS Stage 2A
	Construction of	Construction of	Provision of Covers and
	Sewage Conveyance	Interconnection	Deodourisation
	System from North	Tunnel and	Facilities to the Existing
	Point to Stonecutters Island	Diaphragm Wall for Main Pumping Station at SCISTW	Sedimentation Tanks at SCISTW
Consultant	Metcalf & Eddy – AECOM JV	Ove Arup & Partners HK Ltd	Ove Arup & Partners HK Ltd
The Engineer	Keith Tsang (Tel: 2605 6262)	S.Y. Chan (Tel: 2528 3031)	S.Y. Chan (Tel: 2528 3031)
The Engineer	Y. H. Fung	M.P. Gamini Ananda	M.P. Gamini Ananda
Representative	(Tel: 3713 3100)	(Tel: 2370 4311)	(Tel: 2370 4311)
ER's	Dominic Lam	William Yu	William Yu
coordinator	(Tel: 9221 6319)	(Tel: 9705 9566)	(Tel: 9705 9566)
Contractor	Gammon construction Limited	China State – Shanghai Tunnel Joint Venture	ATAL Engineering Ltd
Site agent	Max Ko (Tel: 9033 1292)	Ben Siu (Tel: 6432 1490)	Barry Lee (Tel: 9025 2410)
Environmental	Leo Chow	Chris Leung	L.C. Wong
Officer	(Tel: 9300 2013)	(Tel: 9210 7116)	(Tel:9376 0414)
Environmental	Environmental	AECOM Asia Co	Action-United
Team	Resources Management	Ltd	Environmental Services and Consulting (AUES)
Environmental	Winnie Ko	Edith Ng	T.W. Tam
Team Leader	(Tel: 2271 3147)	(Tel: 3105 8525)	(Tel: 2959 6059)

 Table 1
 Project Organization of three active contracts in SCISTW

2.2 Scope of the Works

2.2.1 Scope of the Works

The scopes of the works for the following contracts at SCISTW are briefly described as below:

Contract No. DC/2007/23

- i. Construction of sewage conveyance system between Sai Ying Pun junction shaft and Stonecutters Island Sewage Treatment Works;
- ii. Construction of riser shaft at Stonecutters Island Sewage Treatment Works;
- Construction of Stage 2 Connecting Adit between the riser shaft and Stage 2 Main Pumping Station side chamber (by others) at Stonecutters Islands Sewage Treatment Works.

Contract No. DC/2009/05

- i. Construction of Diaphragm wall, base slab and pile cap for the Main Pumping Station and its Inlet Chamber;
- ii. Excavation within the diaphragm walls for the Main Pumping Station and its Inlet Chamber to the founding levels;
- iii. Piling works for the Main Pumping Station;
- iv. Construction of Temporary launching shaft;
- v. Construction of Interconnection Tunnel between the Inlet Chamber of the Main Pumping Station and the existing Riser Shaft.

Contract No. DE/2009/02

- i. Design, supply, installation, construct, test and commissioning of covers and deodourisation facilities, including associated air ductworks and ancillary equipments and instruments, to the existing sedimentation tanks, flocculation tanks, prototype tanks, main distribution channels, effluent drop structures, scum pits at SCISTW.
- ii. The design and construction of civil structures and foundation piles for the deodourisation facilities at SCISTW.

2.2.2 Construction Programme

Contract No.	DC/2007/23	DC/2009/05	DE/2009/02
Contract	31 July 2009	17 Sep 2009	30 Oct 2009
Commencement Date			
Contract Completion	6 Nov 2013	18 Dec 2011	27 Jun 2012
Date			
Contract Period (days)	1560	823	972

 Table 2
 Construction Programme for three active contracts in SCISTW

2.2.3 Works Undertaken during the Reporting Quarter

The major construction works undertaken at SCISTW during the reporting quarter include:

Contract No. DC/2007/23

- Construction of guide wall and diaphragm wall at Stonecutters Island Production Shaft (SCIPS) and Stonecutters Island Riser Shaft (SCIRS);
- Transportation and temporary storage of excavated marine sediment to the derrick lighter berthed at Sai Ying Pun Junction Shaft.

Contract No. DC/2009/05

- Drainage work;
- Construction of diaphragm wall for the Main Pumping Station and its Inlet Chamber;
- Construction of diaphragm wall for Launching Shaft;
- Tree transplanting and protection; and
- Utility diversion work and construction of cable trough.

Contract No. DE/2009/02

- Piling works at DOU No. 1 and DOU No. 2;
- Testing and commission of prototype cover at Sedimentation Tank No. 43; and
- Cover installation at Sedimentation Tanks Nos. 33, 35 and 37.

3. ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Air Quality Monitoring

3.1.1 Locations of Air Quality Monitoring Stations

In summary, the following air quality monitoring stations are established at SCISTW:

Air Monitoring	Location	Monitor By
Station		
AM6	Works site boundary of DC/2007/23	DC/2007/23
AM7	North West Kowloon Sewage Pumping Station	DC/2009/05
AM8	Block A of Government Dockyard	DE/2009/02
Table 2 Lasst	an of air multimensite ring stations at COLCTW	

 Table 3
 Location of air quality monitoring stations at SCISTW

The locations of the above air quality monitoring stations are shown in Appendix A.

3.1.2 Action and Limit Levels for Air Quality Parameter

The Action and Limit Levels of 24-hour and 1-hour Total Suspended Particulates (TSP) levels are summarized as below:

Parameter	Air Monitoring Station	Action Level	Limit Level
		(μgm^{-3})	(μgm^{-3})
24-hour TSP	AM6	196	260
	AM7	207	260
	AM8	158	260
1-hour TSP	AM6	346	500
	AM7	322	500
	AM8	307	500

Table 4Action and limit levels for air quality parameter

3.2 Noise Monitoring

3.2.1 Locations of Noise Monitoring Stations

In summary, the following noise monitoring stations are established at SCISTW:

Noise	Location	Monitor By
Monitoring		
Station		
NM5	Near FSD Diving Rescue and Training Centre	DC/2007/23
NM6	Customs Marine Base	DC/2009/05
Table 5 Log	entions of noise monitoring stations at SCISTW	

Table 5Locations of noise monitoring stations at SCISTW

The locations of the above noise monitoring stations are shown in Appendix A.

3.2.2 Action and Limit Levels for Noise Parameter

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods. The Action and Limit Levels are given in the following table:

Noise	Action Level	Limit Level	
Monitoring Station	0700-1900 hours on normal weekdays		
NM5	When one or more documented	75 dB(A) of Leq(30min) during	
NM6	complaints are received	normal hours from 0700 to 1900 hours on normal weekdays	

 Table 6
 Action and limit levels for noise parameter

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (Leq) in decibels dB(A). Leq (30min) were used as the monitoring parameter for the time period in between 0700 -1900 hours on normal weekdays, and Leq (5min) were used as the monitoring parameter for all restricted periods.

3.3 Landscape and Visual Monitoring

Landscape and visual mitigation measures were implemented by the Contractors and the implementation status is given in Appendices.

4. IMPLEMENTATION STATUS

The details of the implementation status were reported under the individual contracts as described in the respective EM&A reports given in the Appendices.

In summary, all the contracts had implemented various environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual.

5. CONSOLIDATED MONITORING RESULTS

5.1 Air Quality Monitoring

The monitoring results for 24-hour TSP and 1-hour TSP for June 2010 to August 2010 are summarized as below:

Air Monitoring Station	Reporting	Average	Range	Action	Limit		
	Month	(μgm^{-3})	(µgm ⁻³)	Level	Level		
				(μgm^{-3})	(μgm^{-3})		
			nour TSP				
AM6	Jun 2010	105	102-112				
(monitored by DC/2007/23)	Jul 2010	104	92-115	196	260		
2 0, 200 , 20)	Aug 2010	103	94-114				
AM7	Jun 2010	41	29-57				
(monitored by DC/2009/05)	Jul 2010	42	34-57	207	260		
,	Aug 2010	45	26-65				
AM8	Jun 2010	50	30-95				
(monitored by DE/2009/02)	Jul 2010	27	13-42	158	260		
	Aug 2010	38	10-49	-			
	1-hour TSP						
AM6	Jun 2010	207	136-304				
(monitored by DC/2007/23)	Jul 2010	178	137-233	346	500		
20,200,120)	Aug 2010	197	158-227	-			
AM7	Jun 2010	71	35-107				
(monitored by DC/2009/05)	Jul 2010	66	37-85	322	500		
0 0 / 0 0 /	Aug 2010	78	69-84	-			
AM8	Jun 2010	57	38-78				
(monitored by DE/2009/02)	Jul 2010	48	15-82	307	500		
	Aug 2010	52	23-85	-			

 Table 7
 Air quality monitoring results for June 2010 to August 2010 at SCISTW

All 1-hour TSP and 24-hour TSP results were below the Action and Limit Level at all monitoring locations at SCISTW in the reporting quarter.

Detailed air quality monitoring results, graphical plot and the weather condition during the monitoring quarter are presented in the individual EM&A reports attached in the Appendices.

5.2 Noise Monitoring

The monitoring results for noise are summarized as below:

For t	he time period	between 0700 and 19	900 hours on norm	al weekdays
Noise Monitoring Station	Reporting Month	Average, dB(A), Leq (30 mins)	Range, dB(A), Leq (30 mins)	Limit Level, dB(A), Leq (30 mins)
NM5	Jun 2010	67.1	64.9-69.5	75.0
(monitored by	Jul 2010	68.3	65.8-71.0	
DC/2007/23)	Aug 2010	67.3	65.2-68.8	
NM6	Jun 2010	72.9	69.9-74.4	75.0
(monitored by	Jul 2010	72.1	67.0-74.0	
DC/2009/05)	Aug 2010	70.2	67.3-71.9	
For the	e evening perio	d between 1900 and	2300 hours on nor	mal weekdays
Noise Monitoring Station	Reporting Month	Average, dB(A), Leq (5 mins)	Range, dB(A), Leq (5 mins)	Limit Level, dB(A), Leq (5 mins)
NM6	Jun 2010	67.0	65.2-68.5	70.0
(monitored by	Jul 2010	71.7	62.8- <u>76.6</u>	
DC/2009/05)	Aug 2010	67.5	65.7-68.4	
For th	ne time period b	between 0700 and 19	00 hours during Pr	ublic Holiday
Noise Monitoring Station	Reporting Month	Average, dB(A), Leq (5 mins)	Range, dB(A), Leq (5 mins)	Limit Level, dB(A), Leq (5 mins)
NM5	Jun 2010	65.2	63.4-66.7	70.0
(monitored by	Jul 2010	66.6	65.0-67.9	1
DC/2007/23)	Aug 2010	62.8	57.7-64.8	1

Remarks: The bolded and underlined measured noise levels indicated the exceedance of Limit Level.

Table 8 Noise monitoring results for June 2010 to August 2010 at SCISTW

No noise complaint was received at SCISTW in the reporting quarter; hence, no Action Level exceedance was recorded.

One exceedance of noise monitoring was recorded at NM6 on 10 July 2010 during eveningtime period. Details of investigation are given in Section 6.1.2 of this report.

5.3 Waste Management

Construction and demolition (C&D) materials generated from each contract were being monitored and recorded by the individual contracts. The quantities of C&D material are reported under the individual EM&A reports and summarized as below:

Contract	Month / Year	Inert C&D Materials	Non-inert C&D Waste	Chemical Waste	Marine Deposit
		(Tonnes)	(Tonnes)	('000L)	$(`000 m^3)$
DC/2007/23*	Jun 2010	8,614	117.2	0.40	
	Jul 2010	8,401	88.8		0.43
	Aug 2010	6,002	41.6	0.20	1.91
DC/2009/05	Jun 2010	7,787	14.1	2.40	
	Jul 2010	6,170	9.5	1.40	
	Aug 2010	5,318	16.3	1.00	
DE/2009/02	Jun 2010	0	3.2		
	Jul 2010	252	0.5		
	Aug 2010	75	1.5		

(* note - the quantities of C&D materials are the total quantities for the all sites within DC/2007/23)

Table 9Summary of waste generation for June 2010 to August 2010 at SCISTW

5.4 Landscape and Visual Monitoring

Landscape and visual monitoring as described in the EM&A Manual has been implemented in the individual contracts on a monthly basis.

The major findings and recommendations are summarized as below:

Contract No. DC/2009/05 – 30 June 2010

- On 30 June 2010, it was observed that the Contractor had installed nylon netting as visual precautionary measures to prevent accidental damage to upper portion of trees that may be caused by machinery swing movements for trees retained within the tree protection zone in the Portion 2 area. However, it was noted that one of the anchor ropes was tied to the existing T5 tree trunk. The Contractor was requested to untie the anchor rope from the tree trunk and use other means to anchor the ropes.
- The Contractor had carried out tree protection works for all existing trees at the excavated material stockpile area. However, the Contractor was reminded to remove all the dead trees as soon as possible to prevent accidents that may be caused by falling of dead trees.

Contract No. DC/2009/05 - 28 July 2010

- On 28 July 2010, it was observed that the Contractor had removed the nylon netting anchor rope previously tied to the existing T5 tree trunk at Portion 2 planter area.
- The Contractor had transplanted the existing trees out of the excavated material stockpile area to holding nursery. However, removal of the dead trees was still outstanding. The Contractor was reminded to remove all the dead trees as soon as possible to prevent accidents that may be caused by dead trees fallen over.

• It was observed that the barriers used to demarcate the tree protection zone at Portion 2 area was either fallen over or dismantled. The Contractor was requested to properly reinstate the tree protection zone in order to prevent workers from trespass into the area.

Contract No. DC/2009/05 - 25 August 2010

- It was noted that removal of the dead trees at the excavated material stockpile area was still outstanding. The Contractor was reminded to remove all the dead trees as soon as possible to prevent accidents that may be caused by dead trees fallen over.
- Rectification of barriers demarcating the tree protection zone at the Portion 2 area was outstanding. The Contractor was reminded to rectify the barriers as soon as possible to prevent workers from trespassing and causing damage to the trees.

Implementation and maintenance of the landscape and visual mitigation measures are reported under the individual EM&A reports as attached in the Appendices.

6. ENVIRONMENTAL NON-CONFORMANCE

6.1 Summary of Monitoring Exceedance

6.1.1 Exceedance of Air Quality Monitoring

No exceedance of the Action and Limit Levels of air quality monitoring stations was recorded at SCISTW during the reporting period.

6.1.2 Exceedance of Noise Monitoring

One Limit Level exceedance was recorded at NM6 on 10 July 2010 during the evening time period for Contract No. DC/2009/05.

Based on on-site observation during the noise monitoring, Diaphragm Wall construction was the major work process within the Project site.

Other external noise sources, including construction noise from excavation work undergoing at the other construction site nearby, engine noise from barge anchored at nearby piers and traffic noise from aircrafts passing by and from nearby piers, were also noted during the monitoring period, which might have contributed to the measured noise levels.

According to the Contractor, two concrete lorry mixers, a hydromill, a bentonite filtering plan, a generator and a crane were operating within the Project site during the course of the noise measurement. Types and number of PME operated complies with the requirements as stipulated in the CNP (Ref.: GW-RW0154-10).

Therefore, it is believed that the Limit Level exceedance was not project-related and not solely caused by the Contractor's construction activities.

6.2 Summary of Environmental Non-compliance

No non-compliance event was recorded during the reporting quarter.

6.3 Summary of Environmental Complaint

No complaint was received during the reporting quarter.

6.4 Summary of Environmental Summon and Successful Prosecution

No summon was received during the reporting quarter.

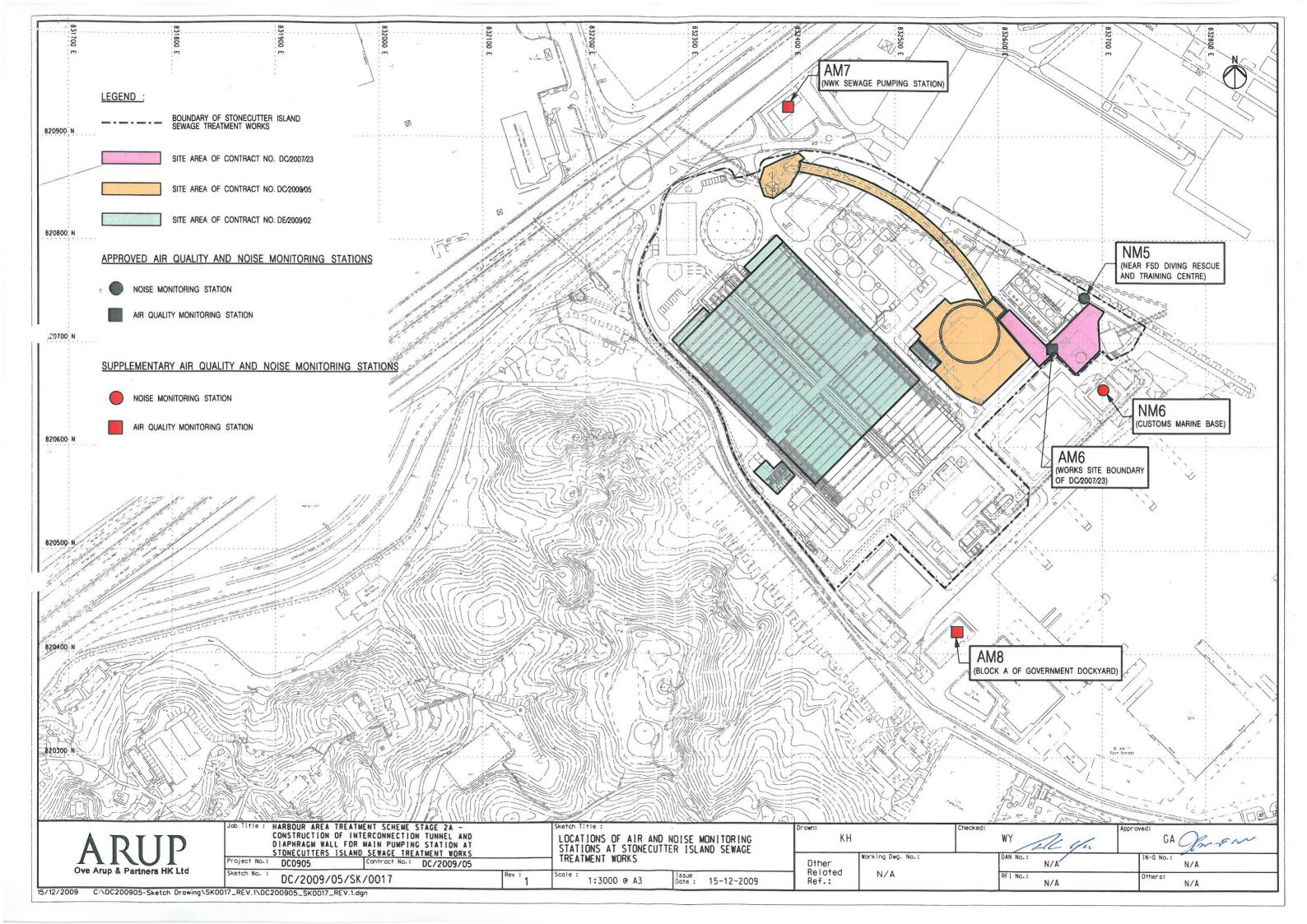
7. FUTURE KEY ISSUES

Potential environmental impacts arising from the construction activities are reported under the individual EM&A reports.

Ove Arup & Partners HK Ltd (Arup), being the Engineer for DC/2009/05 and DE/2009/02, would continue to coordinate and prepare this consolidated report on the environmental monitoring activities at SCISTW. Shall there be any exceedance recorded or complaint received, Arup will inform the parties involved at SCISTW to respond immediately.

Appendix A

Location of Air Quality and Noise Monitoring Stations at SCISTW



APPENDIX B

EM&A Quarterly Report Submitted under DC/2007/23

(For SCISTW section only)

QUARTERLY EM&A REPORT

Gammon Construction Limited

Contract No. DC/2007/23 Harbour Area Treatment Scheme Stage 2A Construction of Sewage Conveyance System from North Point to Stonecutters Island: *Third Quarterly EM&A Report*

September 2010

Environmental Resources Management 21/F Lincoln House 979 King's Road Taikoo Place

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QUARTERLY EM&A REPORT

Gammon Construction Limited

Contract No. DC/2007/23 Harbour Area Treatment Scheme Stage 2A Construction of Sewage Conveyance System from North Point to Stonecutters Island: *Third Quarterly EM&A Report*

September 2010

Reference 0104887

For and on behalf of ERM-Hong Kong, Limited			
EKWI-HONG	Kong, Limited		
Approved by	y: Dr Robin Kennish		
Signed:			
Position:	Director		
Certified by:	When		
(Enviror	nmental Team Leader – Winnie Ko)		
Date:	20 September 2010		

CONTENTS

1.1 PURPOSE OF THE REPORT 1 1.2 STRUCTURE OF THE REPORT 1 1.2 STRUCTURE OF THE REPORT 1 2 PROJECT INFORMATION 5 2.1 BACKGROUND AND GENERAL SITE DESCRIPTION 5 2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED 5 2.3 PROJECT ORGANISATION 7 3 NORTH POINT PRODUCTION AND DROP SHAFTS 9 3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8 3.2 STATUS OF ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 9 3.3.2 Noise Monitoring 12 3.3.4 Landscape and Visual Monitoring 14 3.4 Landscape and Visual Monitoring 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.5.4 Cultural Heritage 19 3.7.1 Summary of Environmental Compliant 19 3.7.2 Summary of Envi		1	INTRODUCTION	1
1.2 STRUCTURE OF THE REPORT 1 2 PROJECT INFORMATION 5 2.1 BACKGROUND AND GENERAL SITE DESCRIPTION 5 2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED 6 SUBMISSIONS 6 5 2.3 PROJECT ORGANISATION 7 3 NORTH POINT PRODUCTION AND DROP SHAFTS 8 3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8 3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 12 3.3.2 Noise Monitoring 12 3.3.3 Cultural Heritage 14 3.4 Landscape and Visual Monitoring 14 3.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 15 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.3 Landscape and Visual 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.6 E		1.1	PURPOSE OF THE REPORT	1
2.1 BACKGROUND AND GENERAL SITE DESCRIPTION 5 2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED 6 SUBMISSIONS 6 2.3 PROJECT ORGANISATION 7 3 NORTH POINT PRODUCTION AND DROP SHAFTS 9 3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8 3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.1 Air Quality Monitoring 9 3.3.1 Air Quality Monitoring 12 3.3.3 Cultural Heritage 14 3.4 Landscape and Visual Monitoring 14 3.4 Implementation Status on Environmental PROTECTION REQUIREMENTS 15 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.5.4 Cultural Heritage 17 3.5.5 Waste Management 16 3.6 Environmental Non-Connopliance 19 3.7.1 Summar				
2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED SUBMISSIONS 6 2.3 PROJECT ORGANISATION 7 7 3 NORTH POINT PRODUCTION AND DROP SHAFTS 8.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8.3.1 CONSTRUCTION ACTIVITIES DURING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 12 3.3.3 Cultural Heritage 14 3.4 1.4 Indicacape and Visual Monitoring 14 3.4 1.4 Indicape and Visual 3.5.1 Air Quality 15 3.5.1 3.5.1 Air Quality 3.5.2 Noise 3.5.4 Cultural Heritage 15 3.5.4 16 3.5.5 3.7.1 Summary of Monitoring Exceedance 19 3.7.2 3.7.1 Summary of Environmental Summon and Successful Prosecution 19 3.7.4 3.7.2 Summary of Environmental Compliance <td< td=""><td></td><td>2</td><td>PROJECT INFORMATION</td><td>5</td></td<>		2	PROJECT INFORMATION	5
2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED SUBMISSIONS 6 2.3 PROJECT ORGANISATION 7 7 3 NORTH POINT PRODUCTION AND DROP SHAFTS 8.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8.3.1 CONSTRUCTION ACTIVITIES DURING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 12 3.3.3 Cultural Heritage 14 3.4 1.4 Indicacape and Visual Monitoring 14 3.4 1.4 Indicape and Visual 3.5.1 Air Quality 15 3.5.1 3.5.1 Air Quality 3.5.2 Noise 3.5.4 Cultural Heritage 15 3.5.4 16 3.5.5 3.7.1 Summary of Monitoring Exceedance 19 3.7.2 3.7.1 Summary of Environmental Summon and Successful Prosecution 19 3.7.4 3.7.2 Summary of Environmental Compliance <td< td=""><td></td><td>2.1</td><td>BACKGROUND AND GENERAL SITE DESCRIPTION</td><td>5</td></td<>		2.1	BACKGROUND AND GENERAL SITE DESCRIPTION	5
SUBMISSIONS 6 2.3 PROJECT ORGANISATION 7 3 NORTH POENT PRODUCTION AND DROP SHAFTS 9 3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8 3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.1 Air Quality Monitoring 12 3.3.1 Air Quality Monitoring 14 3.4 Landscape and Visual Monitoring 14 3.4 Landscape and Visual Monitoring 14 3.4 IAMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 15 5.5 3.5 MONITORING RESULTS 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.3 Landscape and Visual 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.6 Environmental Non-Confordmance 19 3.7.1 Summary of Environmental Summon and Successful Prosecution 19 3.7.4 Summary of Environmental Complaint 19 3.7.4				0
2.3 PROJECT ORGANISATION 7 3 NORTH POINT PRODUCTION AND DROP SHAFTS 9 3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8 3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONTORING REQUIREMENTS 9 3.1 Air Quality Monitoring 9 3.2. Noise Monitoring 12 3.3.1 Air Quality Monitoring 12 3.3.2 Noise Monitoring 14 3.4 Landscape and Visual Monitoring 14 3.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.3 Landscape and Visual 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.6 ENVIRONMENTAL STIE INSPECTION 17 3.7 ENVIRONMENTAL STIE INSPECTION 17 3.7.1 Summary of Honitoring Exceedance 19 3.7.2 Summary of Environmental Non-Compliance 19 3.7.4 Summ				6
3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD 8 3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 9 3.3.2 Noise Monitoring 12 3.3.3 Cultural Heritage 14 3.4 Landscape and Visual Monitoring 14 3.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 15 3.5 MONITORING RESULTS 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.6 ENVIRONMENTAL SITE INSPECTION 17 3.7.1 Summary of Monitoring Exceedance 19 3.7.2 Summary of Environmental Non-Compliance 19 3.7.4 Summary of Environmental Summon and Successful Prosecution 19 3.7.4 Summary of Environmental Summon and Successful Prosecution 19 4.1 DURING THE REPORTING PERIOD 20 4.2 STATUS OF ENVIRONMENTA		2.3		
3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 9 3.3.2 Noise Monitoring 12 3.3.3 Cultural Heritage 14 3.4 Landscape and Visual Monitoring 14 3.4 Implementation Status on Environmental Protection Requirements 15 3.5 MONITORING RESULTS 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.6 ENVIRONMENTAL SITE INSPECTION 17 3.7 ENVIRONMENTAL NON-CONFORMANCE 19 3.7.1 Summary of Environmental Non-Compliance 19 3.7.3 Summary of Environmental Complaint 19 3.7.4 Summary of Environmental Summon and Successful Prosecution 19 3.7.4 Summary of Environmental Approval Documents 20 CONSTRUCTION ACTIVITIES 20 20 CONSTRUCTION ACTIVITIES 20 20 <		3	NORTH POINT PRODUCTION AND DROP SHAFTS	
3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS 8 3.3 ENVIRONMENTAL MONITORING REQUIREMENTS 9 3.3.1 Air Quality Monitoring 9 3.3.2 Noise Monitoring 12 3.3.3 Cultural Heritage 14 3.4 Landscape and Visual Monitoring 14 3.4 Implementation Status on Environmental Protection Requirements 15 3.5 MONITORING RESULTS 15 3.5.1 Air Quality 15 3.5.2 Noise 15 3.5.4 Cultural Heritage 16 3.5.5 Waste Management 16 3.6 ENVIRONMENTAL SITE INSPECTION 17 3.7 ENVIRONMENTAL NON-CONFORMANCE 19 3.7.1 Summary of Environmental Non-Compliance 19 3.7.3 Summary of Environmental Complaint 19 3.7.4 Summary of Environmental Summon and Successful Prosecution 19 3.7.4 Summary of Environmental Approval Documents 20 CONSTRUCTION ACTIVITIES 20 20 CONSTRUCTION ACTIVITIES 20 20 <		31	CONCEPTION ACTIVITIES DUDING THE PEROPERTIC DEDUCD	/ 。
3.3ENVIRONMENTAL MONITORING REQUIREMENTS93.3.1Air Quality Monitoring93.3.2Noise Monitoring123.3.3Cultural Heritage143.4Landscape and Visual Monitoring143.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 153.5MONITORING RESULTS153.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Compliant193.7.4Summary of Environmental Compliant194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THEREPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.4Landscape and Visual Monitoring244.3.4Landscape and Visual Monitoring244.3.4Landscape and Visual Monitoring244.3.4Landscape and Visual Monitoring264.3.4Landscape and Visual Monitoring264.3.4Implementation Status ON ENVIRONMENTAL PROTECTION REQUIREMENTS 274.5MONITORING RESULTS27<				
3.3.1Air Quality Monitoring93.3.2Noise Monitoring123.3.3Cultural Heritage143.4Landscape and Visual Monitoring143.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS153.5MONITORING RESULTS153.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS214.3ENVIRONMENTAL MONTORING REQUIREMENTS214.3.4Landscape and Visual Monitoring214.3.4Landscape and Visual Monitoring244.3.4Landscape and Visual Monitoring264.3.4Landscape and Visual Monitoring274.5.4Air Quality27				
3.3.2Noise Monitoring123.3.3Cultural Heritage143.4Landscape and Visual Monitoring143.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 153.5MONITORING RESULTS153.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.4Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring244.3.4Implementation Nontoring274.5MONITORING RESULTS274.5/1Air Quality27				
3.3.3Cultural Heritage143.3.4Landscape and Visual Monitoring143.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 153.5MONITORING RESULTS153.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THEREPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.4Landscape and Visual Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.3Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5Air Quality27				
3.3.4Landscape and Visual Monitoring143.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 153.5MONITORING RESULTS3.5.1Air Quality3.5.2Noise3.5.3Landscape and Visual3.5.4Cultural Heritage3.5.5Waste Management3.6ENVIRONMENTAL SITE INSPECTION3.7ENVIRONMENTAL SITE INSPECTION3.7ENVIRONMENTAL NON-CONFORMANCE93.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THEREPORTING PERIOD4.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring244.3.2MOSE Monitoring254.3Cultural Heritage264.34.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.54.54.64.74.74.74.74.74.74.74.74.74.74.74.74.74.74			0	
3.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS3.5MONITORING RESULTS153.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONTORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.3Audity Monitoring264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 274.5MONITORING RESULTS27			8	
3.5MONITORING RESULTS153.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 27274.5MONITORING RESULTS274.5.1Air Quality27				
3.5.1Air Quality153.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.4Summary of Environmental Compliant193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.3Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS27				
3.5.2Noise153.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 27274.5MONITORING RESULTS274.5/1Air Quality27				
3.5.3Landscape and Visual153.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 27274.5MONITORING RESULTS274.5/1Air Quality27				
3.5.4Cultural Heritage163.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Summon and Successful Prosecution193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS20CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5.1Air Quality27				
3.5.5Waste Management163.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5.1Air Quality27				
3.6ENVIRONMENTAL SITE INSPECTION173.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS20CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5.1Air Quality27			e la	
3.7ENVIRONMENTAL NON-CONFORMANCE193.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS20CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5.1Air Quality27			0	
3.7.1Summary of Monitoring Exceedance193.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5.1Air Quality27				
3.7.2Summary of Environmental Non-Compliance193.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27				
3.7.3Summary of Environmental Complaint193.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27				
3.7.4Summary of Environmental Summon and Successful Prosecution194WAN CHAI EAST PRODUCTION AND DROP SHAFTS204CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5Air Quality27				
4WAN CHAI EAST PRODUCTION AND DROP SHAFTS20CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 274.5MONITORING RESULTS274.5.1Air Quality27				
CONSTRUCTION ACTIVITIES204.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		3.7.4	Summary of Environmental Summon and Successful Prosecution	19
4.1DURING THE REPORTING PERIOD204.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4	WAN CHAI EAST PRODUCTION AND DROP SHAFTS	20
4.2STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS204.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27			CONSTRUCTION ACTIVITIES	20
4.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4.1	DURING THE REPORTING PERIOD	20
4.3ENVIRONMENTAL MONITORING REQUIREMENTS214.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4.2	STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS	20
4.3.1Air Quality Monitoring214.3.2Noise Monitoring244.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4.3		21
4.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4.3.1	Air Quality Monitoring	21
4.3.3Cultural Heritage264.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4.3.2	Noise Monitoring	24
4.3.4Landscape and Visual Monitoring264.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS274.5MONITORING RESULTS274.5.1Air Quality27		4.3.3	Cultural Heritage	26
4.4IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS 274.5MONITORING RESULTS274.5.1Air Quality27		4.3.4	0	
4.5MONITORING RESULTS274.5.1Air Quality27		4.4		
4.5.1 Air Quality 27		4.5		
			Air Quality	
	~	4.5.2		

4.5.3	Landscape and Visual	
4.5.4	Cultural Heritage	28
4.5.5	Waste Management	/28
4.6	ENVIRONMENTAL SITE INSPECTION	/ 29
4.7	ENVIRONMENTAL NON-CONFORMANCE	31
4.7.1	Summary of Monitoring Exceedance	31
4.7.2	Summary of Environmental Non-Compliance	32
4.7.3	Summary of Environmental Complaint	32
4.7.4	Summary of Environmental Summon and Successful Prosecution	32
5	CENTRAL DROP SHAFT	33
5.1	CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD	33
5.2	STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS /	33
5.3	ENVIRONMENTAL MONITORING REQUIREMENTS	33
5.3.1	Air Quality Monitoring /	33
5.3.2	Noise Monitoring	37
5.3.3	Cultural Heritage	38
5.3.4	Landscape and Visual Monitoring	38
5.4	IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMEN	ITS 39
5.5	Monitoring Results	39
5.5.1	Air Quality	39
5.5.2	Noise	39
5.5.3	Landscape and Visual	39
5.5.4	Cultural Heritage	40
5.5.5	Waste Management /	40
5.6	ENVIRONMENTAL SITE INSPECTION	41
5.7	ENVIRONMENTAL NON-CONFORMANCE	41
5.7.1	Summary of Monitoring Exceedance	41
5.7.2	Summary of Environmental Non-Compliance	41
5.7.3	Summary of Environmental Complaint	41
5.7.4	Summary of Environmental Summon and Successful Prosecution	41
6	SAI YING PUN JUNCTION SHAFT	42
5.1	CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD	42
5.2	STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS	42
6.3	ENVIRONMENTAL MONITORING REQUIREMENTS	42
5.3.1	Air Quality Monitoring	42
5.3.2	Noise Monitoring	44
5.3.3	Cultural Heritage	45
5.3.4	Landscape and Visual Monitoring	45
5.4	IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMEN	
5.5	MONITORING RESULTS	46
5.5.1	/ Air Quality	46
5.5.2	Noise	46
6.5 <i>.</i> 3	Landscape and Visual	47
5.5.4	Cultural Heritage	47
5.5.5	Waste Management	47
5.6	ENVIRONMENTAL SITE INSPECTION	47 48
5.0 5.11	ENVIRONMENTAL SITE INSPECTION ENVIRONMENTAL NON-CONFORMANCE	40 49
7	Summary of Monitoring Exceedance	<u>49</u>

6.7.2	Summary of Environmental Non-Compliance	_49
6.7.3	Summary of Environmental Complaint	49
6.7.4	Summary of Environmental Summon and Successful Prosecution	-50
7	STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS	51
7.1	CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD	51
7.2	STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS	51
7.3	ENVIRONMENTAL MONITORING REQUIREMENTS	51
7.3.1	Air Quality Monitoring	51
7.3.2	Noise Monitoring	55
7.3.3	Cultural Heritage	57
7.3.4	Landscape and Visual Monitoring	57
7.4	IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS	55
7.5	MONITORING RESULTS	58
7.5.1	Air Quality	58
7.5.2	Noise	58
7.5.3	Landscape and Visual	58
7.5.4	Cultural Heritage	59
7.5.5	Waste Management	59
7.6	ENVIRONMENTAL SITE INSPECTION	60
7.7	ENVIRONMENTAL NON-CONFORMANCE	62
7.7.1	Summary of Monitoring Exceedance	62
7.7.2	Summary of Environmental Non-Compliance	62
7.7.3	Summary of Environmental Complaint	62
7.7.4	Summary of Environmental Summon and Successful Prosecution	62
8	CONCLUSIONS	63
8.1	NORTH POINT PRODUCTION AND DROP SHAFT	63
8.2	WAN CHAI EAST PRODUCTION AND DROP SHAFTS	63
8.3	CENTRAL DROP SHAFT	63
8.4	SAI YING PUN JUNCTION SHAFT	64
8.5	STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS	64

Table 6.2	Summary of Environmental Licensing, Notification and Permit Status
	at Sai Ying Pun Junction Shaft
Table 6.3	Construction Phase Air Monitoring Location at Sai Ying Pun Junction
Table 6.4	TSP Monitoring Parameter and Frequency at 8ai Ying Pun Junction Shaft
Table 6.5	Action and Limit Levels for Air Quality at Sai Ying Pun Junction Shaft
Table 6.6	Construction Phase Noise Monitoring Station at Sai Ying Pun Junction Shaft
Table 6.7	Noise Monitoring Equipment at Sai Ying Pun Junction Shaft
Table 6.8	Action and Limit Levels for Noise Monitoring at Sai Ying Pun Junction Shaft
Table 6.9	Quantities of Waste Generated from the Project for all Sites
Fable 6.10	-Summary of Complaint Received
Table 7.1	Summary of Construction Activities Undertaken from 1 June 2010 to 31
	August 2010 at Stonecutters Island Production and Riser Shafts
Table 7.2	Summary of Environmental Licensing, Notification and Permit Status at Stonecutters Island Production and Riser Shafts
Table 7.3	Construction Phase Air Monitoring Location at Stonecutters Island Production and Riser Shafts
Table 7.4	TSP Monitoring Parameter and Frequency at Stonecutters Island Production and Riser Shafts
Table 7.5	TSP Monitoring Equipment at Stonecutters Island Production and Riser Shafts
Table 7.6	Action and Limit Levels for Air Quality at Stonecutters Island Production and Riser Shafts
Table 7.7	Construction Phase Noise Monitoring Station at Stonecutters Island Production and Riser Shafts
Table 7.8	Noise Monitoring Equipment at Stonecutters Island Production and Riser Shafts
Table 7.9	Action and Limit Levels for Noise Monitoring at Stonecutters Island Production and Riser Shaft
Table 7.10	Quantities of Waste Generated from the Project for all Sites

LIST OF TABLES

Table 2.1	Summary of Environmental Licensing, Notification and Permit Status for the Contract (a)
Table 2.2	Status of Required Submission for all Sites
Table 3.1	Summary of Construction Activities Undertaken from 1 June 2010 to 31 August 2010 at North Point Production and Drop Shafts
Table 3.2	Summary of Environmental Licensing, Notification and Permit Status at North Point Production and Drop Shafts
Table 3.3	Construction Phase Air Monitoring Location at North Point Production and Drop Shafts
Table 3.4	TSP Monitoring Parameter and Frequency /
Table 3.5	TSP Monitoring Equipment for North Point Production and Drop Shafts Sites
Table 3.6	Action and Limit Levels for Air Quality at North Point Production and Drop Shafts
Table 3.7	Construction Phase Noise Monitoring Station at North Point Production and Drop Shafts
Table 3.8	Noise Monitoring Equipment at North Point Production and Drop Shafts
Table 3.9	Action and Limit Levels for Noise Monitoring at North Point Production and Drop Shafts
Table 3.10	Quantities of Waste Generated from the Project for all Sites
Table 4.1	Summary of Construction Activities Undertaken from 1 June 2010 to 31 August 2010 at Wan Chai East Production and Drop Shafts
Table 4.2	Summary of Environmental Licensing, Notification and Permit Status at Wan Chai East Production and Drop Shafts
Table 4.3	Construction Phase Air Monitoring Location at Wan Chai East Production and Drop Shafts
Table 4.4	TSP Monitoring Parameter and Frequency at Wan Chai East Production and Drop Shafts
Table 4.5	TSP Monitoring Equipment at Wan Chai East Production and Drop Shafts
Table 4.6	Action and Limit Levels for Air Quality at Wan Chai East Production and Drop Shafts
Table 4.8	Noise Monitoring Equipment at Wan Chai East Production and Drop Shafts
Table 4.9	Action and Limit Levels for Noise Monitoring at Wan Chai East Production and Drop Shafts
Table 4.10	Quantities of Waste Generated from the Project for all Sites
Table 4.11	Summary of Record of Exceedance at Wan Chai East Production and Drop Shafts
Table 5.1	Summary of Construction Activities Undertaken from 1 June 2010 to 31 August 2010 at Central Drop Shaft
Table 5.2	Summary of Environmental Licensing, Notification and Permit Status at Central Drop Shaft
Table 5.3	Construction Phase Air Monitoring Location at Central Drop Shaft
Table 5.4	TSP Monitoring Parameter and Frequency at Central Drop Shaft
Table 5.5 /	TSP Monitoring Equipment at Central Drop Shaft
Table 5.6	Action and Limit Levels for Air Quality at Central Drop Shaft
Table 5.7	Construction Phase Noise Monitoring Station at Central Drop Shaft
Table 5.8	Noise Monitoring Equipment at Central Drop Shaft
Table 5.9	Action and Limit Levels for Noise Monitoring at Central Drop Shaft
Table 5.10	Quantities of Waste Generated from the Project for all Sites
Table 5.10 Table 6.1	
/1 uule 0.1	Summary of Construction Activities Undertaken from 1 June 2010 to 31 August 2010 at Sai Ying Pun Junction Sheft

August 2010 at Sai Ying Pun Junction Shaft

LIST OF ANNEXES

Annex A	Location of Works Areas
Annex B	Project Organization Chart and Contact Detail
Annex C	North Point Production and Drop Shaft
Annex C1	Locations of Construction Activities during the Reporting period
Annex C2	Locations of Air Quality and Noise Monitoring Stations
Annex C3	Summary of Implementation Status
Annex C4	24-hour and 1-hour TSP Monitoring Results
Annex C5	Noise Monitoring Results
Annex C6	Cumulative Complaints and Summons/Prosecutions Log
Annex D	Wan Chai East Production and Drop Shaft
Annex D1	Locations of Construction Activities during the Reporting period
Annex D2	Locations of Air Quality and Noise Monitoring Stations
Annex D3	Summary of Implementation Status
Annex D4	24-hour and 1-hour TSP Monitoring Results
Annex D5	Noise Monitoring Results
Annex D6	Cumulative Complaints and Summons/Prosecutions Log
Annex E	Central Drop Shaft
Annex E1	Locations of Construction Activities during the Reporting period
Annex E2	Locations of Construction Action is during the Reporting period Locations of Air Quality and Noise Monitoring Stations
Annex E3	Summary of Implementation Status
Annex E4	24-hour and/1-hour TSP Monitoring Results
Annex E5	Noise Monitoring Results
Annex E6	Cumulative Complaints and Summons/Prosecutions Log
Annex F	Sal Ying Pun Junction Shaft
Annex F1	Locations of Construction Activities during the Reporting period
Annex F2 /	Locations of Air Quality and Noise Monitoring Stations
Annex FB	Summary of Implementation Status
Annex F4	24-hour and 1-hour TSP Monitoring Results
Annex F5	Noise Monitoring Results
Annex F6	Cumulative Complaints and Summons/Prosecutions Log
Annex G	Stonecutters Island Production and Riser Shaft
Annex G1	Locations of Construction Activities during the Reporting period
Annex G2	Locations of Air Quality and Noise Monitoring Stations
Annex G3	Summary of Implementation Status
Annex G4	24-hour and 1-hour TSP Monitoring Results

- Annex G5 Noise Monitoring Results
- Annex G6 Cumulative Complaints and Summons/Prosecutions Log

- Annex H Calibration Reports for HVSs and Sound Level Meters for All Sites
- Annex I Event / Action Plans for Air Quality, Noise and Landscape and Visual Monitoring
- Annex J Waste Flow Table for All Sites

EXECUTIVE SUMMARY

The construction works of **DC/2007/23 of Harbour Area Treatment Scheme Stage 2A (HATS2A) - Construction of Sewage Conveyance System from North Point to Stonecutters Island (the Project)** commenced on 1 December 2009. This is the third quarterly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 June 2010 to 31 August 2010 in accordance with the EM&A Manual.

Summary of Construction Works undertaken during Reporting Period

The major construction works undertaken included:

- Construction of diaphragm wall at Stonecutters Island Production Shaft and Riser Shaft; and
- Transportation and temporary storage of excavated marine sediment to the derrick lighter berthed at Sai Ying Pun Junction Shaft; and
- Toe grouting and fissure grouting at Stonecutters Island Production Shaft.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

٠	24-hour TSP Monitoring at AM6	17 sets
•	1-hour TSP Monitoring at AM6	51 sets
٠	Construction Noise Monitoring during Normal Weekdays at NM5	14 times
•	Construction Noise Monitoring during Restricted Hours at NM5	12 times
•	Joint Environmental Site Inspection	13 times
•	Landscape & Visual Monitoring	3 times

Air Quality

Seventeen sets of 24-hour TSP and fifty-one sets of 1-hr TSP measurements were carried out at the designated monitoring station during the reporting period. No exceedance was recorded during the reporting period.

Noise

Forteen sets of 30-minute construction noise measurements were carried out at the monitoring station NM5 during normal weekdays of the reporting period. Twelve sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 0700 and 1900 hours on Sundays and public holidays) on 6, 13, 20, 27 June 2010, 4, 11, 18, 25 July and 1, 8, 15, 22, 29 August 2010. No exceedance was recorded during the reporting period.

Landscape & Visual

Landscape and visual monitoring commenced in December 2009. Details of the audit findings and implementation status are presented in *Section* 7.5.3.

Cultural Heritage

No vibration monitoring was required to be conducted for this reporting period as the blasting of tunnel / shaft works has not started.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. A total of 23,017.03 tonnes of inert C&D materials, 247.6 tonnes of non-inert C&D materials, 1,210 m³ of type 1 marine deposit, 1,123 m³ of type 2 marine deposit and 9 m³ of type 3 marine deposit were generated for this Project during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill, respectively. Paper/cardboard packaging generated was sent to recyclers for recycling. The type 1, type 2 and type 3 marine deposit generated from the Project were disposed of at MP21 with the South Cheung Chau Spoil Disposal Area, the East Sha Chau Contaminated Mud Disposal and SENT Landfill respectively.

Environmental Site Inspection

Thirteen weekly joint environmental site inspections were carried out by the representatives of the Contractor, the Engineer and the Environmental Team (ET). Details of the audit findings and implementation status are presented in *Section 7.6*.

Environmental Exceedance/Non-conformance/Complaint/Summons and Prosecution

No exceendance was recorded during the reporting period.

No non-compliance event was recorded during the reporting period.

No environmental complaint, summon or prosecution was received in this reporting period.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by Gammon Construction Limited (the Contractor) as an Environmental Team (ET) to undertake Environmental Monitoring and Audit (EM&A) programme for the Contract No. *DC*/2007/23 of Harbour Area Treatment Scheme Stage 2A (HATS2A) -Construction of Sewage Conveyance System from North Point to Stonecutters Island (the Project).

1.1 PURPOSE OF THE REPORT

This is the third quarterly EM&A report which summarizes the impact monitoring results and audit findings for the EM&A programme during the reporting period from **1 June 2010** to **31 August 2010**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1: Introduction

details the scope and structure of the report.

Section 2: Project Information

summarizes background and scope of the project, site description, project organization and contact details

Section 3: North Point Production and Drop Shafts

• Construction Activities

summarizes the construction activities conducted during the reporting period.

• Status of Environmental Approval Documents

summarizes the environmental documents submissions under the EP condition during the reporting period.

• Environmental Monitoring Requirement

summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

• Implementation Status on Environmental Mitigation Measures

summarizes the implementation of environmental protection measures during the reporting period.

• Monitoring Results

summarizes the monitoring results obtained in the reporting period.

• Environmental Site Inspection

summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

• Environmental Non-conformance summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 4: Wan Chai East Production and Drop Shafts

• Construction Activities

summarizes the construction activities conducted during the reporting period.

Status of Environmental Approval Documents

summarizes the environmental documents submissions under the EP condition during the reporting period.

• Environmental Monitoring Requirement

summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

• Implementation Status on Environmental Mitigation Measures

summarizes the implementation of environmental protection measures during the reporting period.

• Monitoring Results

summarizes the monitoring results obtained in the reporting period.

• Environmental Site Inspection

summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

• Environmental Non-conformance

summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 5: Central Drop Shaft

• Construction Activities

summarizes the construction activities conducted during the reporting period.

• Status of Environmental Approval Documents

summarizes the environmental documents submissions under the EP condition during the reporting period.

• Environmental Monitoring Requirement

summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

• Implementation Status on Environmental Mitigation Measures

summarizes the implementation of environmental protection measures during the reporting period.

• Monitoring Results

summarizes the monitoring results obtained in the reporting period.

• Environmental Site Inspection

summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

• Environmental Non-conformance

summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 6: Sai Ying Pun Junction Shaft

• Construction Activities

summarizes the construction activities conducted during the reporting period.

• Status of Environmental Approval Documents

summarizes the environmental documents submissions under the EP condition during the reporting period.

• Environmental Monitoring Requirement

summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

• Implementation Status on Environmental Mitigation Measures

summarizes the implementation of environmental protection measures during the reporting period.

• Monitoring Results

summarizes the monitoring results obtained in the reporting period.

• Environmental Site Inspection

summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

• Environmental Non-conformance

summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 7: Stonecutters Island Production and Riser Shafts

Construction Activities

summarizes the construction activities conducted during the reporting period.

• Status of Environmental Approval Documents

summarizes the environmental documents submissions under the EP condition during the reporting period.

• Environmental Monitoring Requirement

summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

• Implementation Status on Environmental Mitigation Measures

summarizes the implementation of environmental protection measures during the reporting period.

• Monitoring Results

summarizes the monitoring results obtained in the reporting period.

• Environmental Site Inspection

summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

• Environmental Non-conformance

summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 8: Conclusions

2.1 BACKGROUND AND GENERAL SITE DESCRIPTION

The Project comprises the construction of production shafts, drop shafts and riser shaft and approximately 12km of tunnel excavation from North Point via Sai Ying Pun to Stonecutters Island. Shafts vary in depth from 140m and 170m below ground with 10 - 12m diameter. Tunnel face area ranges from 16 m² to 23 m². Embedded drainage pipelines will be installed upon the completion of tunnel excavation.

Construction works to be carried out under this Contract include the following major items:

- construction of sewage conveyance system (SCS) from North Point Preliminary Treatment Works (NP PTW) to Stonecutters Island Sewage Treatment Works (SCI STW) via Wan Chai East Preliminary Treatment Works (WCE PTW), Central Preliminary Treatment Works (CEN PTW) and Fung Mat Street Sai Ying Pun (SYP) junction shaft;
- construction of drop shafts at NP PTW, WCE PTW and CEN PTW;
- construction of riser shaft at SCI STW;
- construction of junction shaft at SYP;
- construction of temporary production shafts at NP, WCE and SCI to provide access for the construction of SCS;
- construction of connection channels, pipes, chambers and tunnel connecting the proposed drop shafts / riser shaft to the facilities of the preliminary treatment works / sewage treatment works;
- carrying out survey of existing buildings, taking over of existing and installation of new piezometers and ground settlement markers and subsequent monitoring thereof and vibration monitoring along the alignment of the SCS;
- miscellaneous building, civil, electrical and mechanical works; and
- landscape works.

The potential environmental impacts of the Project have been studied in the *"Harbour Area Treatment Scheme (HATS) Stage 2A"* (EIAO Register No: AEIAR-121/2008). The EIA was approved on 2 June 2008 under the *Environmental Impact Assessment Ordinance* (EIAO) and an updated Environmental Permit (EP-322/2008/D) for the works was granted on 14 July 2010. Under the requirements of Condition 4.1 of Environmental Permit EP-322/2008/D,

EM&A programme as set out in the EM&A Manual is required to be implemented.

The construction works of this Project commenced on 1 December 2009 and are scheduled to be completed by 2014.

The general layout plan of the Project is shown in *Annex A*.

2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED SUBMISSIONS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 is presented in *Table 2.1*.

Table 2.1Summary of Environmental Licensing, Notification and Permit Status for the
Contract (a)

Permit/ Licences/	Reference	Validity Period	Remarks
Notification		-	
Environmental Permit	EP-322/2008	Expired on 10 July 2009	 Permit granted on 19 November 2008. Superseded on 10 July 2009.
	EP-322/2008/A	Expired on 2 November 2009	 Permit granted on 10 July 2009. Superseded on 2 November 2009.
	EP-322/2008/B	Expired on 14 May 2010	 Permit granted on 2 November 2009. Superseded on 14 May 2010.
	EP-322/2008/C	Expired on 14 July 2010	 Permit granted on 14 May 2010 Superseded on 14 July 2010.
	EP-322/2008/D	Throughout the Contract	• Permit granted on 14 July 2010
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation		04 August 2009 – 06 November 2013	 Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136
Marine Dumping Perm			
Type 1 Marine Deposit	EP/MD/10-078	18 March 2010 – 17 September 2010	
Type 2 Marine Deposit	EP/MD/11-019	14 June 2010 – 13 July 2010	Superseded by EP/MD/11-038
	EP/MD/11-038	28 July 2010 – 27 August 2010	
Type 3 Marine Deposit	8477	18 February 2010 – 17 August 2010	Superseded by 8771
	8771	23 July 2010 – 22 January 2011	
Note:			

ENVIRONMENTAL RESOURCES MANAGEMENT

GAMMON CONSTRUCTION LIMITED

	it/ Licences/ ication	Reference	Validity Period	Remarks
(a)	The status on en	vironmental licensing and	permit for each work	site is discussed in the
	following section	ıs.		

Status of required submissions under the EP during the reporting period is presented in *Table 2.2*.

Table 2.2Status of Required Submission for all Sites

EP Condition	Submission	Submission Date
Condition 1.11	Notification on Commencement of Construction of	17 November 2009
	the Project	
Condition 2.3	Notification on Management Organization of the	18 September 2009
	Main Construction Company	
Condition 4.3	Submission of Baseline Monitoring Report (final	18 December 2009
	version incorporating comments from EPD)	
Condition 4.4	Submission of seventh Monthly EM&A Report	14 July 2010
	Submission of eighth Monthly EM&A Report	15 August 2010
	Submission of ninth Monthly EM&A Report	11 September 2010

2.3 PROJECT ORGANISATION

The project organization chart and contact details are shown in *Annex B*.

STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

7.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in this reporting period is shown in *Table 7.1*. The locations of the construction activities are shown in *Annex G1*.

Table 7.1Summary of Construction Activities Undertaken from 1 June 2010 to 31August 2010 at Stonecutters Island Production and Riser Shafts

Construction Activities Undertaken

7

- Toe grouting and fissure grouting at Stonecutters Island Production Shaft Transportation and temporary storage of excavated marine sediment to the derrick lighter berthed at Sai Ying Pun Junction Shaft
- Construction of diaphragm wall at Stonecutters Island Production and Riser Shaft

7.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 is presented in *Table 7.2*.

Table 7.2Summary of Environmental Licensing, Notification and Permit Status at
Stonecutters Island Production and Riser Shafts

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	Stonecutters Island Production Shaft and Riser Shaft WT00005069-2009	06 October 2009 - 31 October 2014	
Chemical Waste Producer Registration	Stonecutters Island Production Shaft and Riser Shaft 5213-269-G2449-07		
Construction Noise Permit	Stonecutters Island Production Shaft and Riser Shaft GW-RW0066-10	8 February 2010 - 7 August 2010	Superceded by GW- RW0405-10
	Stonecutters Island Production Shaft and Riser Shaft GW-RW0405-10	16 August 2010 - 15 February 2011	

7.3 Environmental Monitoring Requirements

7.3.1 Air Quality Monitoring

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour Total Suspended Particulates (TSP) levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction air quality monitoring station for this Contract is listed in *Table 7.3* and shown in *Annex G2*.

Table 7.3Construction Phase Air Monitoring Location at Stonecutters Island
Production and Riser Shafts

Worksite	Construct	ion Air Q	Quality Monitoring Station	
	ID in	ID	Location	Remark
	EM&A			
	Manual			
SCISTW	_	AM6	Works Site Boundary	 Power Access supply for operation of HVS was not feasible to the rooftop of Government Dockyard Offices (CM_SCI1). For COSCO HIT Terminal (CM_SCI2), access application was verbally rejected. Club House (CM_SCI3) is blocked by a high building which will deteriorate the dust levels during measurement. Work Site Boundary (near Ngong Shuen Chau Barracks Group 2 (CM_SCI4) was designed for the HATS2A Disinfection Facilities works and the station is separated by a small hill. Baseline dust monitoring data measured under HATS2A – Provision of Disinfection Facilities at SCISTW will also be obtained for the establishment of the action level for the impact monitoring.

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 7.4*).

Table 7.4TSP Monitoring Parameter and Frequency at Stonecutters Island Production
and Riser Shafts

Parameter	Frequency
24-hour TSP	Once in every 6 days
1-hour TSP	3 times in every 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)" as stipulated in US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). Table 7.5 summarizes the equipment that was deployed for the 24-hour and 1-hour TSP monitoring.

Table 7.5TSP Monitoring Equipment at Stonecutters Island Production and Riser
Shafts

Monitoring Station	Monitoring Equipment (HVS and Calibrator)	
24-hr and 1-hr TSP		
AM6	GMW GS-2310 (S/N 1254), CM-AIR-43 (S/N 9833620)	

Monitoring Methodology

Installation

The setup location of the HVS at monitoring station was listed in *Table 7.3*. The HVS was free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind were provided at AM6;
- a minimum of 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame.
 The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish runtemperature conditions;
- a new flowrate record sheet was set into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 -1.37 m³min⁻¹ which were within the range specified in the EM&A Manual (ie 0.6 - 1.7 m³min⁻¹);
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folder in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

Maintenance and Calibration

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring

equipments were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated on a bi-monthly basis. The calibration record for the HVS is given in *Annex H*.

Wind Data Monitoring

The nearest weather station to Stonecutters Island Production and Riser Shafts is Tsing Yi Station. Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological station at Tsing Yi of the Hong Kong Observatory (HKO) and are presented in *Annex G4*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 7.6*. The baseline air monitoring data (24-hr and 1-hr TSP average) measured under *HATS2A – Provision of Disinfection Facilities at SCISTW* (DF) is also included to establish the Action Level at AM6.

Table 7.6Action and Limit Levels for Air Quality at Stonecutters Island Production
and Riser Shafts

Parameter	Air Monitoring Station	Action Level, µgm ⁻³	Limit Level, µgm ⁻³	
24-hour TSP	AM6 (with 24-hr TSP data from	196	260	
	DF project)			
1-hour TSP	AM6 (with 1-hr TSP data from DF project)	346	500	

Event and Action Plan

The Event and Action Plan (EAP) for air quality monitoring is presented in *Annex I*.

7.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring location for this Contract is listed in *Table 7.7* and is shown in *Annex G2*.

Worksite	Constructi	on Noise	Monitoring Station		
	ID in	ID	Location	Type of	Remark
	EM&A			Measurement	
	Manual				
SCISTW	-	NM5	A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary	Free-Field (3dB(A) was added to the measured results)	 Access to FSD Fire Rescue and Diving Training Centre (M11) wa rejected. NM5 is located next to the original proposed location.

Table 7.7Construction Phase Noise Monitoring Station at Stonecutters Island
Production and Riser Shafts

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{eq (30min)}$ were used as the monitoring parameter for the time period in between 0700 – 1900 hours on normal weekdays, and $L_{eq (5min)}$ were used as the monitoring parameter for all restricted periods. Supplementary information for data auditing, two statistical sound levels L_{10} and L_{90} ; the levels exceeded for 10 and 90 percent of the time respectively, were also recorded during the monitoring for reference. The measured noise levels were logged in every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM)* issued under the *Noise Control Ordinance (NCO)* (Cap.400).

The sound level meters and calibrator used for the noise measurement, as listed in *Table 7.8,* complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Table 7.8Noise Monitoring Equipment at Stonecutters Island Production and Riser
Shafts

Monitoring Station	Monitoring Equipment (Sound Level Metre and Calibrator)		
NM5	 Calibrator: Rion NC-73 (S/N 10786708) or RION - NC73 (S/N 10997142) or B&K4231 (S/N 2699361) 		
	 Sound Level Meters: Rion NL-31 (S/N 00320533) or Rion NL- 31 (S/N 00410224) or Rion NA-73 (S/N 10786708) or Rion NA- 73 (S/N 10997142) or Rion NL-31 (S/N 00983400) 		

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Measurements were accepted as the calibration level from before and after the noise measurement agree to within 1.0 dB. A correction of +3dB(A) was made to the free field measurement at NM5.

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in *Table 7.9*.

Table 7.9Action and Limit Levels for Noise Monitoring at Stonecutters Island
Production and Riser Shaft

Noise Monitoring Location	Measurement Parameter	Noise Criteria (dB(A))	Remark
NM5	Leq(30mins)	75	Normal working hours during
			weekdays
	Leq(5mins)	70	Evening (1900-2300); and
			Sundays and public holidays (0700-
			2300)
	L _{eq(5mins)}	55	Night-time (2300-0700)

Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is presented in Annex I.

7.3.3 *Cultural Heritage*

No vibration monitoring is required for this reporting period as no blasting of tunnel / shaft works was carried out.

7.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring is carried out on site within the environmental site inspection. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

The Event and Action Plan (EAP) for landscape and visual monitoring is presented in *Annex I*.

7.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex G3*.

7.5 MONITORING RESULTS

7.5.1 *Air Quality*

A total of seventeen sets of 24-hour and fifty-one sets of 1-hour TSP measurements were carried out at AM6 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex G4*.

The weather condition during the monitoring period varied from sunny to rainy. The local impacts near the monitoring stations of AM6 were mainly associated with vehicle emissions. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP were recorded during the reporting period.

7.5.2 Noise

A total of fourteen sets of 30-minute construction noise measurements were carried out at the monitoring station NM5 during normal weekdays of the reporting period. Construction work was also conducted on public holidays and Sundays starting on 20 December 2009. Twelve sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 0700 and 1900 hours on Sundays and public holidays) on 6, 13, 20 June 2010, 4, 11, 18, 25 July and 1, 8, 15, 22, 29 August 2010. The restricted hours noise monitoring on 27 June was cancelled due to bad weather. The monitoring results together with graphical presentations are presented in *Annex G5*. The local impacts observed near the monitoring stations of NM5 included operations at the Government Dockyard, other construction sites activities and traffic within the SCI STW in the vicinity.

No exceedance of Action and Limit Levels of construction noise was recorded during the reporting period.

7.5.3 Landscape and Visual

In general, maintenance of landscape and visual mitigation measures has been implemented by Contractor. Major findings observed during the reporting period are summarised as follows:

- On 29 July, protective fencing for trees near the site entrance on the north eastern end of the site was observed to be damaged. The Contractor was recommended to repair the protective fencing as soon as possible to avoid intrusion of site personnel or equipment to within the tree protection zones.
- On 5 August, construction equipments were placed near retained tree No. 260 without fencing near the entrance of the site. The Contractor was recommended to implement proper protective measures (erection of fencing) to avoid damages to the retained trees.
- On 26 August, the protective fencing of a retained tree near the entrance of the site was damaged after demobilisation of equipment on site. The Contractor was recommended to reinstate the fencing around the tree as soon as possible to avoid potential damages.

Follow-up actions were undertaken as reported by the Contractor and observed in the weekly site inspections conducted in the reporting period.

7.5.4 *Cultural Heritage*

No vibration monitoring was conducted for this reporting period as the blasting of tunnel / shaft works have not started.

7.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*).

The waste statistics provided in this section represent the cumulative quantity of wastes generated from all sites in this Project. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting period are summarised in *Table 7.10*. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. 0.252 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period. The type 1, type 2 and type 3 marine deposit generated from the Project were disposal Area, the East Sha Chau Contaminated Mud Disposal and SENT Landfill respectively.

Month / Year			Quantity			
	C&D Materials	C&D Materials	Chemical	Marine Deposit ^(c)		
	(inert) ^(a)	(non-inert) ^(b)	Waste	Type 1	Type 2	Type 3
June 2010 to	23017.03 tonnes	247.6 tonnes	600 L	1,210 m ³	1,123 m ³	9 m ³
August 2010						
Notes:						
(m) Inert C&I	O materials includ	e bricks, concrete,	, building de	ebris, rubble	e and excava	ted soil.
No inert (C&D material was	reused in this Pro	piect during	the reporting	ng period.	Non-
		were disposed of				
		an Barging Point.		i wiun / neu	507 Iscung I	Kwan O
					. 1	1
		nclude steel, pape				
other was	tes such as genera	al refuse. Steel m	aterials gen	erated from	n the project -	are
grouped i	nto non-inert C&l	D materials as the	materials w	vere not disp	oosed of with	h other
0 1		non-inert C&D m				
		f at SENT Landfill				
	raboara packagin	g were sent to rec	yclers for re	cycling dur	ing the repoi	rting
period.						
(o) The type	1, type 2 and type	3 marine deposit	generated f	rom the Pro	oject were dis	sposed of
MP21 wit	h the South Cheu	ng Chau Spoil Dis	posal Area,	the East of	Sha Chau	-
			1 '	_		

7.6 Environmental Site Inspection

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Thirteen site inspections were conducted on 3, 10, 17, 24, 29 June 2010, 7, 15, 22, 29 July 2010 and 5, 12, 19, 26 August 2010. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarized as follows:

Contaminated Mud Disposal and SENT Landfill respectively.

Riser Shaft

- On 3, 24 and 29 June, stagnant water was observed on the ground, tarpaulin covers and drip trays in the inspected sites after raining. The Contractor was recommended to arrange clearance of the stagnant water as soon as possible to avoid mosquito breeding as part of a good housekeeping practice. The Contractor was also recommended to keep drip trays dry so that sufficient capacity is maintained for containment of potential spillages.
- On 10 June, stagnant water was observed underneath the wetsep near the riser shaft after raining. The Contractor was recommended to arrange clearance of the stagnant water as soon as possible to avoid mosquito breeding as part of a good housekeeping practice.
- On 24 June, an oil sheen was observed near the Wetsep. The Contractor has immediately cleared the oil sheen to avoid runoff into drainages. The Contractor was also recommended to dispose of the collected chemical wastes via licensed collectors.
- On 7 July, stagnant water was observed in the u-channel at the intersection of the production shaft site and the access road and in a waste steel storage tank near the bentonite filtering plan. The Contractor was recommended to arrange clearance of the stagnant water after raining as soon as possible to avoid mosquito breeding as part of a good housekeeping practice.

- On 15 July, a stop plug for the drip tray underneath an air compressor near the bentonite silos was observed to be missing. Oil sheens were also observed near the outlet of the drip tray. The Contractor was recommended to provide stop plugs for all drip trays on site and clear all oil sheens and dispose as chemical waste as soon as possible.
- On 15 July, stagnant water was observed along the northern border of the production shaft site. The Contractor was recommended to clear all stagnant water on site, especially after rainy weather, as part of a good housekeeping practice to avoid mosquito breeding.
- On 22 July, a stop plug for the drip tray underneath an air compressor near the bentonite silos was observed to be missing. The stop plug was replaced by the Contractor immediately. The Contractor was recommended to check if stop plugs were provided for all drip trays on site to avoid any oil leakage.
- On 22 July, a tin of chemical was placed on the ground without a drip tray. The Contractor removed the chemical container immediately for proper storage.
- On 19 August, oil sheens were observed at multiple places on site. The Contractor was recommended to immediately clear the oil sheens to avoid runoff into drainages and dispose of the chemical wastes via licensed chemical waste collector.
- On 26 August, stagnant water was observed on site at multiple locations. The Contractor was recommended to inspect and clear stagnant water inside containers, trays and depressed areas on-site regularly as part of good housekeeping practices, especially after rainy weather, to avoid surface water run-off from site and mosquito breeding.

Production Shaft

- On 3, 24 and 29 June, stagnant water was observed on the ground, tarpaulin covers and drip trays in the inspected sites after raining. The Contractor was recommended to arrange clearance of the stagnant water as soon as possible to avoid mosquito breeding as part of a good housekeeping practice. The Contractor was also recommended to keep drip trays dry so that sufficient capacity is maintained for containment of potential spillages.
- On 10 June, bentonite slurry was observed to be overflowing from the bentonite slurry tank adjacent to the bentonite filtering plant. The Contractor was recommended to keep checking the capacity of the bentonite slurry tank and provide proper mitigation measures as soon as possible to avoid further overflow.
- On 7 July, stagnant water was observed in the u-channel at the intersection of the production shaft site and the access road and in a waste steel storage tank near the bentonite filtering plan. The Contractor was recommended to arrange clearance of the stagnant water after raining as soon as possible to avoid mosquito breeding as part of a good housekeeping practice.
- On 5 August, oil sheens were observed near the bentonite filtering plant. The Contractor was recommended to immediately clear the oil sheens to avoid runoff into drainages and dispose of the chemical wastes via licensed chemical waste collector.

- On 12 August, a tin of chemical without drip tray and label were observed behind the bentonite filtering plant. The Contractor was recommended to provide a proper label and secondary spillage containments for the chemicals. The Contractor was recommended to provide secondary spillage containments for all chemicals on site to avoid leakage/ spillage.
- On 19 August, oil sheens were observed at multiple places on site. The Contractor was recommended to immediately clear the oil sheens to avoid runoff into drainages and dispose of the chemical wastes via licensed chemical waste collector.
- On 26 August, muddy water was observed in the bushes behind the bentonite silos at the production shaft site. The Contractor was recommended to clear the muddy water as soon as possible. The Contractor was also recommended to implement proper control measures to avoid site run-off into adjacent areas. All discharges from site should also be properly treated by sedimentation facilities prior to discharge.
- On 26 August, stagnant water was observed on site at multiple locations. The Contractor was recommended to inspect and clear stagnant water inside containers, trays and depressed areas on-site regularly as part of good housekeeping practices, especially after rainy weather, to avoid surface water run-off from site and mosquito breeding.

Follow-up actions were undertaken as reported by the Contractor and observed in the site inspection conducted in the reporting period.

7.7 Environmental Non-conformance

7.7.1 Summary of Monitoring Exceedance

No exceedance of the Action and Limit Levels of 1-hour TSP and 24-hour TSP were recorded at monitoring stations during the reporting period.

No exceedance of the Action and Limit Levels of construction noise was recorded at monitoring stations during the reporting period.

7.7.2 Summary of Environmental Non-Compliance

No non-compliance event was recorded during the reporting period.

7.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period. The cumulative complaint log is shown in *Annex G6*.

7.7.4 Summary of Environmental Summon and Successful Prosecution

No summon or prosecution was received during the reporting period. The cumulative summon and prosecution log is shown in *Annex G6*.

8 CONCLUSIONS

The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 June 2010 to 31 August 2010 in accordance with EM&A Manual and the requirement under EP-322/2008/C. The conclusions for different sites were summarised as below.

8.1 NORTH POINT PRODUCTION AND DROP SHAFT

No exceedances of Action and Limit Levels of 24-hour TSP and 1-hour TSP were recorded at the air quality monitoring stations during the reporting period.

No exceedances of Action and Limit Levels for construction noise were recorded at the noise monitoring station during the reporting period.

No non-compliance event was recorded during the reporting period.

There was no complaint or summons/prosecution received during the reporting period.

8.2 WAN CHAI EAST PRODUCTION AND DROP SHAFTS

No exceedances of Action and Limit Levels of 24-hour TSP and 1-hour TSP were recorded at the air quality monitoring station during the reporting period.

Two exceedances of the noise limit level during restricted hours were reported at NM2 on 22 and 29 August 2010. Investigations into the incidents were made and concluded that the traffic noise in the vicinity of the Project was the major cause of the noise levels recorded. However, the Contractor of this Project was reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures to avoid exceedance of noise limit levels or causing noise nuisance.

No non-compliance event was recorded during the reporting period.

There was no complaint or summons/prosecution received during the reporting period

8.3 CENTRAL DROP SHAFT

No exceedances of Action and Limit Levels of 24-hour TSP and 1-hour TSP were recorded at the air quality monitoring station during the reporting period.

No exceedances of Action and Limit Levels for construction noise were recorded at the monitoring station during the reporting period. No non-compliance event was recorded during the reporting period.

There was no complaint or summons/prosecution received during the reporting period.

8.4 SAI YING PUN JUNCTION SHAFT

No exceedance of Action and Limit Levels of 24-hour TSP and 1-hour TSP were recorded at the air quality monitoring station during the reporting period.

No exceedance of Action and Limit Levels of construction noise was recorded at the monitoring station during the reporting period.

No non-compliance event was recorded during the reporting period.

One complaint regarding the night-time general construction noise from 2300 to 0100 on both 27 and 28 July 2010 was received in the reporting month. Investigations into the complaint were conducted on 29 July 2010 and it revealed that no works were conducted at the worksite of Contract 23 after 1930 hours on both 27 and 28 July 2010 and this has also been confirmed by the Engineer Representative on 29 July 2010. As a result, the detected night-time construction noise is unrelated to Contract 23's works and should be due to other construction activities in the area. No further action was therefore, required. However, the Contractor will continue to ensure all requirements in the CNP are strictly complied with to avoid nuisance to nearby sensitive receivers.

There was no summons/prosecution received during the reporting period

8.5 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

No exceedance of Action and Limit Levels of 24-hour TSP and 1-hour TSP were recorded at the monitoring stations during the reporting period.

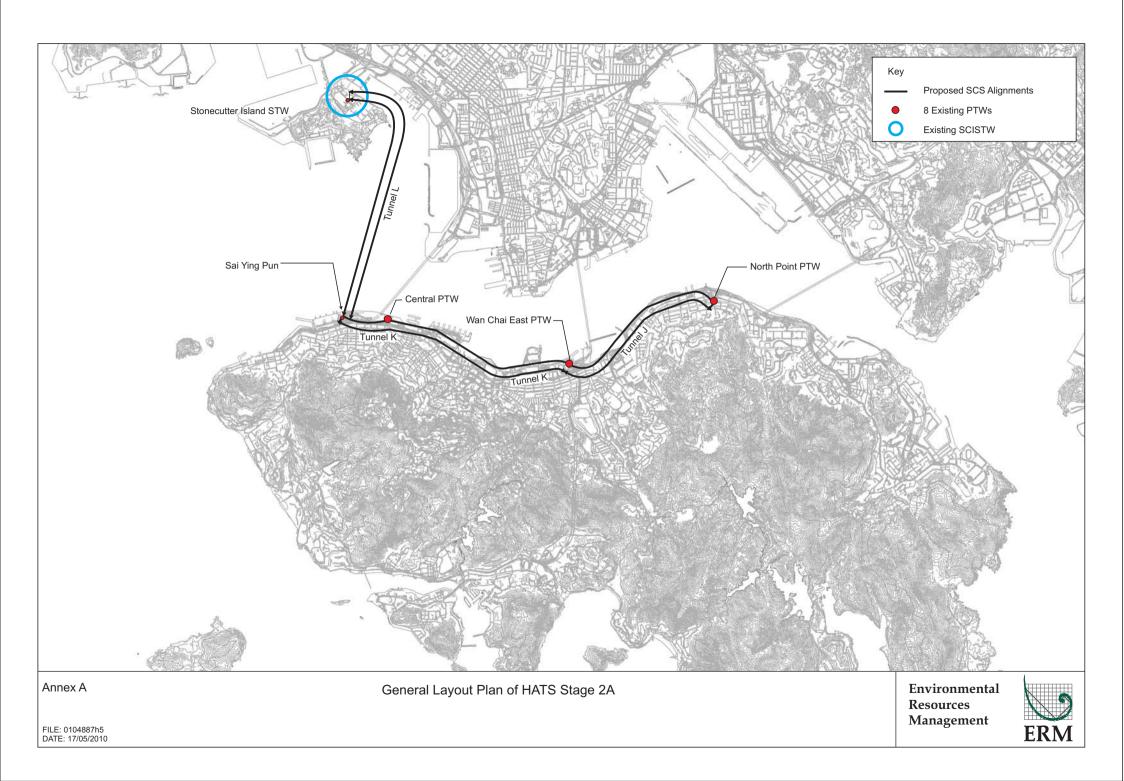
No exceedance of Action and Limit Levels of construction noise was recorded at the monitoring stations during the reporting period.

No non-compliance event was recorded during the reporting period.

There was no complaint, summon or prosecution received during the reporting period.

The ET will keep track of the EM&A programme to monitor compliance of environmental requirements and the proper implementation of all necessary mitigation measures. Annex A

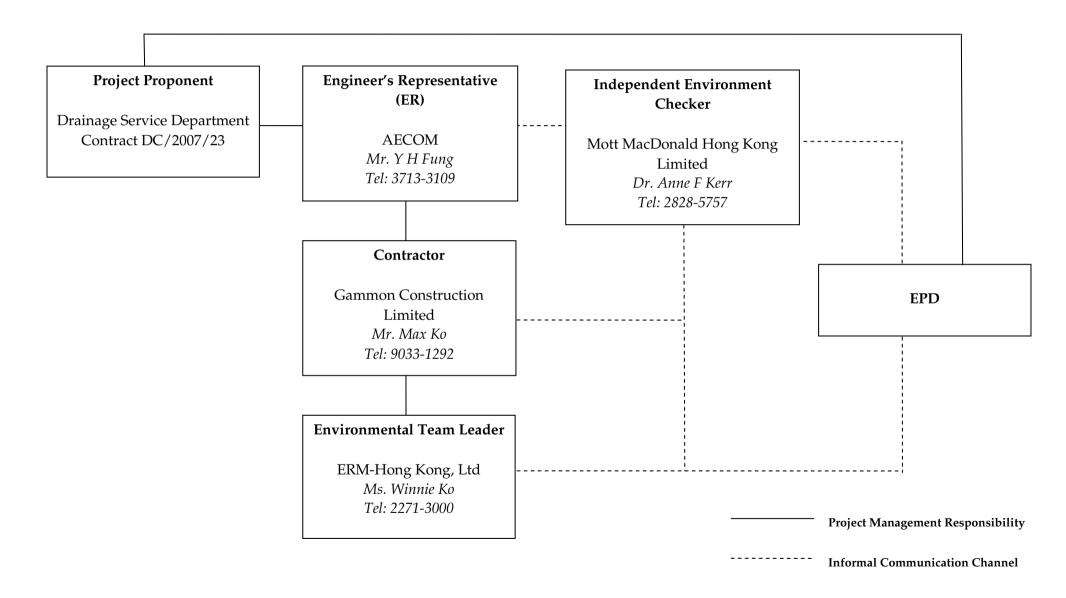
Locations of Works Areas



Annex B

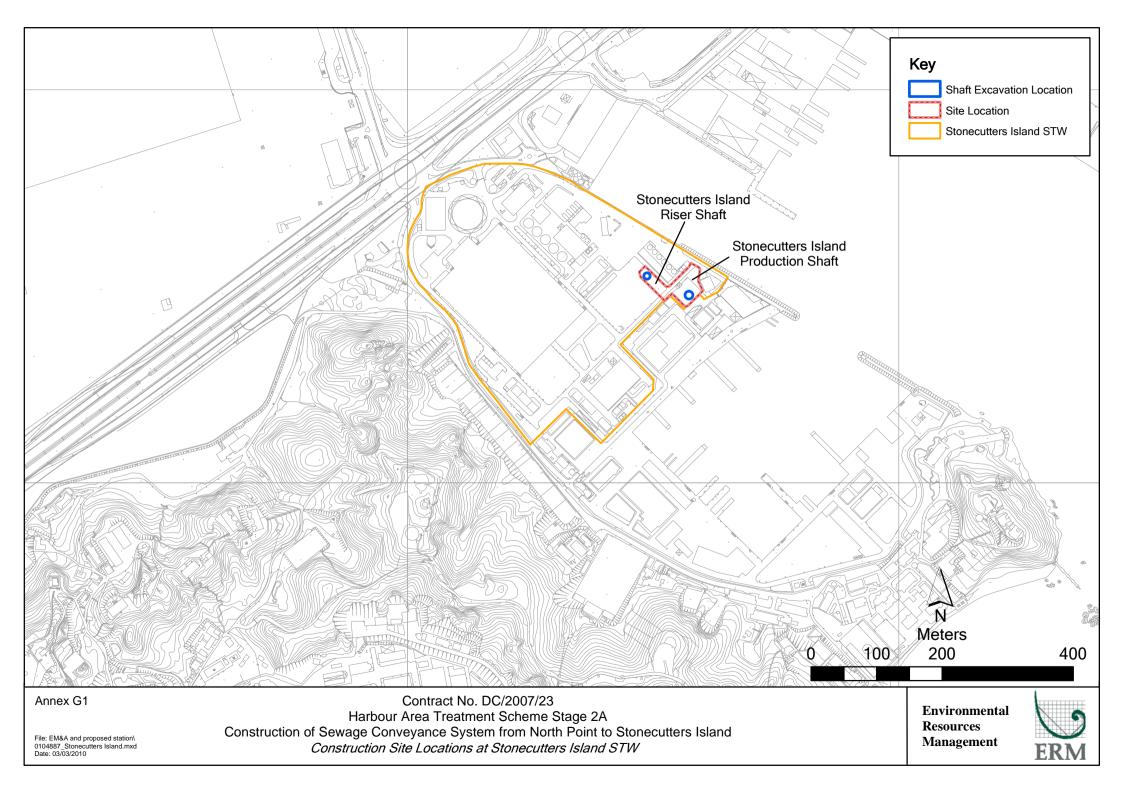
Project Organization Chart and Contact Detail

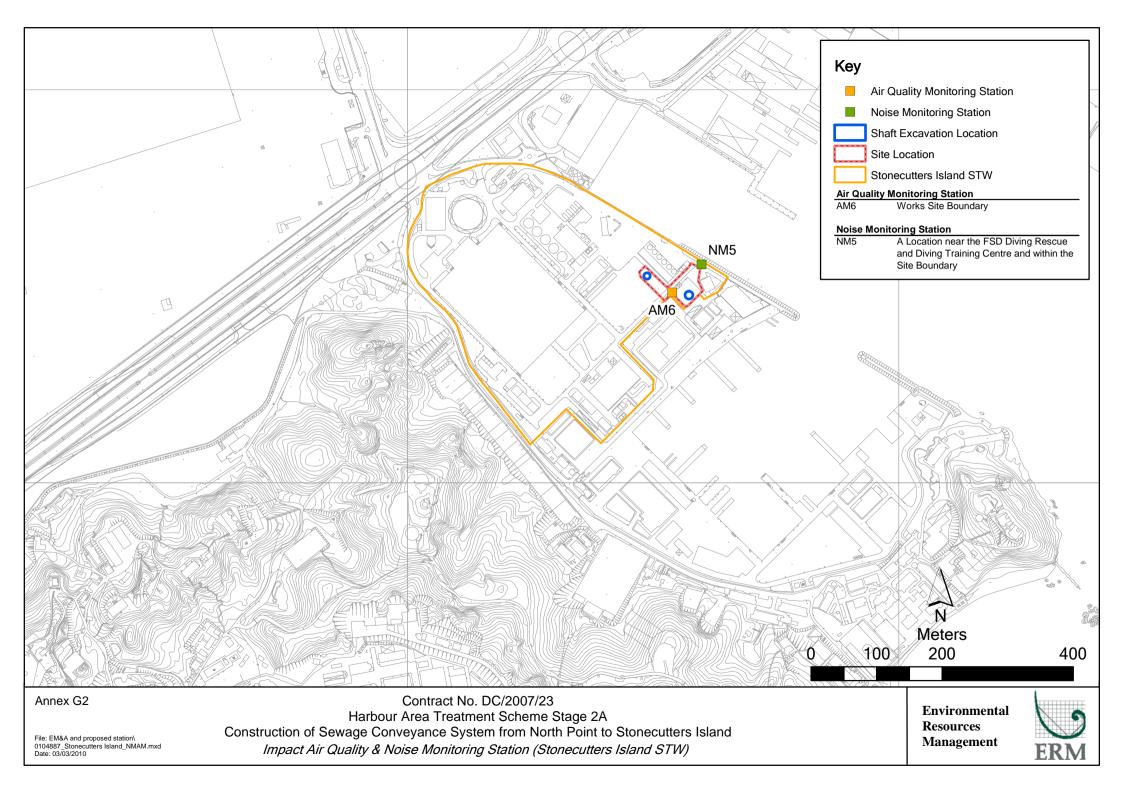
Project Organization



Annex G

Stonecutters Island Production and Riser Shafts





Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	 The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimize construction dust impact. Control measures relevant to this Project are listed below: skip hoist for material transport should be totally enclosed by impervious sheeting; every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. 		

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to	All work sites / during construction	
	control the fugitive dust impacts:		
	 the barging points should be continuous watering throughout the 		
	whole unloading process; and		
	 watering 8 times per day within worksites at the SCS works area at 		
	SCISTW and the Disinfection Facilities of SCISTW.		
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below	All work sites / during construction	NA. Measures not required
	should be followed to ameliorate any odour impact from the		until commencement of
	plant and these standard practices should be included in the		operational phase
	plant operator manual.		
	• Screens should be cleaned regularly to remove any accumulated organic debris		
	• Grit and screening transfer systems should be flushed regularly with		
	water to remove organic debris and grit		
	• Grit and screened materials should be transferred to closed		
	containers to minimize odour escape		
	• Scum and grease collection wells and troughs should be emptied and		
	flushed regularly to prevent putrefaction of accumulated organics		
	• Skim and remove floating solids and grease from primary clarifiers		
	regularly		
	• Frequent sludge withdrawal from tanks is necessary to prevent the		
	production of gases		
	• Sludge cake should be transferred to closed containers		
	• Sludge containers should be flushed with water regularly		
Air Quality	To avoid excessive extraction of the foul air from the drop	SCISTW /during operational phase	NA. Measures not required
	shafts of the sedimentation tanks and also from the effluent		until commencement of
	flume structure of SCISTW to deodorization system, the		operational phase
	extraction vent(s) of the deodorization system should be		1 1
	located away from the top openings of the drop shafts.		
Air Quality	Commissioning tests for all deodorization system should be	All PTW and SCISTW/ during	NA. Measures not required
~	included in the Design and Construction Contract Document.	operational phase	until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	
Noise	 Good Site Practice: only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; mobile plant, if any, should be sited as far from NSRs as possible; machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented. 		√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	\checkmark

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge	All work sites / during construction	
	There is a need to apply to EPD for a discharge licence for		
	discharge of effluent from the construction site under the		
	WPCO. The discharge quality must meet the requirements		
	specified in the discharge licence. If monitoring of the treated		
	effluent quality from the works areas is required during the		
	construction phase of the Project, the monitoring should be		
	carried out in accordance with the WPCO license which is		
	under the ambit of regional office (RO) of EPD. Minimum		
	distances of 100 m should be maintained between the		
	discharge points of construction site effluent and the existing		
	saltwater intakes.		
Water Quality	Accidental Spillage of Chemicals	All work sites / during construction	Δ
	Contractor must register as a chemical waste producer if		
	chemical wastes would be produced from the construction		
	activities. The Waste Disposal Ordinance (Cap 354) and its		
	subsidiary regulations in particular the Waste Disposal		
	(Chemical Waste) (General) Regulation should be observed		
	and complied with for control of chemical wastes.		
Water Quality	Any service shop and maintenance facilities should be located	All work sites / during construction	\checkmark
	on hard standings within a bunded area, and sumps and oil		
	interceptors should be provided. Maintenance of vehicles and		
	equipment involving activities with potential for leakage and		
	spillage should only be undertaken within the areas		
	appropriately equipped to control these discharges.		

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the	All work sites / during construction	Δ
	Waste Disposal Ordinance. The Code of Practice on the Packaging,	Ū.	
	Labelling and Storage of Chemical Wastes published under the Waste		
	Disposal Ordinance details the requirements to deal with chemical		
	wastes.		
	General requirements are given as follows:		
	• Suitable containers should be used to hold the chemical wastes to		
	avoid leakage or spillage during storage, handling and transport.		
	• Chemical waste containers should be suitably labelled, to notify and		
	warn the personnel who are handling the wastes, to avoid accidents.		
	• Storage area should be selected at a safe location on site and adequate		
	space should be allocated to the storage area.		

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront	All work sites / during construction	\checkmark
	To minimize the potential water quality impacts from the construction		
	works located at or near any watercourse, the practices outlined below		
	should be adopted where applicable.		
	 The use of less or smaller construction plants may be specified to 		
	reduce the disturbance to the storm water courses or marine environment.		
	• Temporary storage of materials (e.g. equipment, filling materials,		
	chemicals and fuel) and temporary stockpile of construction materials		
	should be located well away from any water courses during carrying out of the construction works.		
	• Stockpiling of construction materials and dusty materials should be		
	covered and located away from any water courses.		
	• Construction debris and spoil should be covered up and/or disposed		
	of as soon as possible to avoid being washed into the nearby water receivers.		
	• Construction activities, which generate large amount of wastewater,		
	should be carried out in a distance away from the waterfront, where		
	practicable.		
	• Proper shoring may need to be erected in order to prevent soil/mud		
	from slipping into the storm culvert or sea		

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Temporary Sewage Bypass	SCISTW/ construction period	
	It is recommended that the temporary sewage bypass required for (i) the		
	modification to the existing pumping station at SCISTW and (ii) the		
	interconnection between the existing		
	main pumping station and the new pumping station on		
	Stonecutters Island, if needed, should be scheduled at the		
	same time as far as practicable in order to minimise the		
	temporary discharge duration. It is also recommended that all		
	the modification and interconnection to the existing facilities		
	(including the modification to the existing NWKPS) should be		
	programmed to avoid temporary sewage bypass in wet or		
	bathing season (March to October) to minimize the potential		
	impacts. Relevant government departments including EPD		
	and LCSD should be informed of the planned sewage bypass		
	prior to any discharge. During the sewage bypass period,		
	water quality monitoring should be carried out at the water		
	sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also,		
	a framework of the response procedures has been formulated to minimize the impact of temporary discharges. Details		
	are provided in the standalone EM&A		
	Manual.		
Operational Phase	Manual.		
Water Quality	Dual power supply, standby facilities for the main treatment	SCISTW and all the	NA. Measures not required
	units and standby equipment parts / accessories should be provided as	Stage 2 PTWs / Operation Stage	until commencement of
	far as possible at the SCISTW to minimize the		operational phase
	chance of emergency discharge.		
Water Quality	The response procedure and monitoring requirements for	SCISTW / Operation Stage	NA. Measures not required
	emergency discharge as stated in EM&A Manual should be		until commencement of
	followed.		operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS) system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m3/day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km2 and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma Wan Fish Culture Zone). This is due to the elevated oxidized nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimize the potential TIN exceedances.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	All work sites / during the construction period	V
Waste	 All waste materials should be segregated into categories covering: excavated materials suitable for reuse on-site; excavated materials suitable for public filling facilities; remaining C&D waste for landfill; chemical waste; and general refuse for landfill. 	All work sites / during the construction period	\checkmark
Waste	 Recommendations to achieve waste reduction include: Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; Any unused chemicals or those with remaining functional capacity shall be recycled; and Proper storage and site practices to minimise the potential for damage or contamination of construction materials. 	All work sites / during the construction period	

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	 Recommendations for good site practices during construction activities include:- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site Training of site personnel in proper waste management and chemical waste handling procedures Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. Provision of sufficient waste disposal points and regular collection of waste Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors 	All work sites / during the construction period	\checkmark
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	\checkmark
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	\checkmark
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	\checkmark
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	\checkmark

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	Δ
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	\checkmark
Operation Phase			
Waste	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase

Environmental Protection Measures	Location / Timing	Status
Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
 Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. Existing trees to be retained on site should be carefully protected during construction. Trees unavoidably affected by the works should be transplanted where practical. Compensatory tree planting should be provided to compensate for felled trees. Control of night-time lighting. Erection of decorative screen hoarding compatible with the surrounding setting. 	All the works areas, PTWs and SCISTW/ during the construction period	Δ
•		
 Aesthetic design of the façade of PTW and associated structures to harmonize with the surrounding settings. Shrub and Climbing Plants to soften proposed structures / Roof Greening. Buffer Tree and Shrub Planting to screen proposed associated structures. 	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
	 Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers. Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. Existing trees to be retained on site should be transplanted during construction. Trees unavoidably affected by the works should be transplanted where practical. Compensatory tree planting should be provided to compensate for felled trees. Control of night-time lighting. Erection of decorative screen hoarding compatible with the surrounding setting. Aesthetic design of the façade of PTW and associated structures to harmonize with the surrounding settings. Shrub and Climbing Plants to soften proposed associated 	 Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers. Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. Existing trees to be retained on site should be carefully protected during construction. Trees unavoidably affected by the works should be transplanted where practical. Compensatory tree planting should be provided to compensate for felled trees. Control of night-time lighting. Erection of decorative screen hoarding compatible with the surrounding setting. Aesthetic design of the façade of PTW and associated structures to harmonize with the surrounding settings. Shrub and Climbing Plants to soften proposed associated Buffer Tree and Shrub Planting to screen proposed associated

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.10 and 15.11. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:

- $\sqrt{}$ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
- NA Not Applicable

24-hour TSP Monitoring Results

Station AM6

								d Time	Sampling			2	TSP	Action	Limit			
Start		Finish		Weather	Filter Weight (g)		Reading		Time	Flow Rate (m ³ /min)		n³/min)	Conc.	Level	Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m³)	(µg/m ³)	(µg/m ³)		ID	ID
1-Jun-10	12:06	2-Jun-10	12:06	Fine	2.8494	3.0177	6384.03	6408.03	24.00	1.13	1.13	1.13	103	196	260	Construction work in progress	1254	6392
7-Jun-10	16:16	8-Jun-10	16:16	Sunny	2.8495	3.0178	6411.03	6435.03	24.00	1.13	1.13	1.13	103	196	260	Construction work in progress	1254	6357
11-Jun-10	16:14	12-Jun-10	16:14	Fine	2.8571	3.0387	6438.03	6462.03	24.00	1.13	1.13	1.13	112	196	260	Construction work in progress	1254	6479
17-Jun-10	16:11	18-Jun-10	16:11	Fine	2.8356	3.0014	6465.03	6489.03	24.00	1.13	1.13	1.13	102	196	260	Construction work in progress	1254	6483
23-Jun-10	16:06	24-Jun-10	16:06	Cloudy	2.8381	3.0140	6492.03	6516.03	24.00	1.13	1.13	1.13	108	196	260	Construction work in progress	1255	6367
29-Jun-10	16:24	30-Jun-10	16:24	Sunny	2.8727	3.0421	6519.03	6543.03	24.00	1.13	1.13	1.13	104	196	260	Construction work in progress	1255	6551
												Min.	102					
												Max.	112					
												Average	105					

24-hour TSP Monitoring Results

Station AM6

							Elapse	d Time	Sampling				TSP	Action	Limit			[
Start		Finis	h	Weather	Filter V	Veight (g)	Rea	ding	Time	Flow	v Rate (n	n ³ /min)	Conc.	Level	Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m³)	(µg/m ³)	(µg/m ³)		ID	ID
5-Jul-10	16:16	6-Jul-10	16:16	Sunny	2.8807	3.0685	6546.03	6570.03	24.00	1.13	1.13	1.13	115	196	260	Construction work in progress	1254	6555
9-Jul-10	16:26	10-Jul-10	16:26	Sunny	2.8345	3.0086	6573.03	6597.03	24.00	1.13	1.13	1.13	107	196	260	Construction work in progress	1254	6571
15-Jul-10	16:16	16-Jul-10	16:16	Cloudy	2.8610	3.0269	6600.03	6624.03	24.00	1.13	1.13	1.13	102	196	260	Construction work in progress	1254	6683
21-Jul-10	12:16	22-Jul-10	12:16	Rainy	2.8751	3.0249	6627.03	6651.03	24.00	1.13	1.13	1.13	92	196	260	Construction work in progress	1254	6687
27-Jul-10	14:07	28-Jul-10	14:07	Cloudy	2.8357	2.9989	6654.03	6678.03	24.00	1.11	1.11	1.11	102	196	260	Construction work in progress	1255	6757
												Min.	92					
												Max.	92					
												Average	92					

24-hour TSP Monitoring Results

Station AM6

							Elapse	d Time	Sampling			-	TSP	Action	Limit			
Start		Finis	h	Weather	Filter V	Veight (g)	Rea	ding	Time	Flow	v Rate (n	n ³ /min)	Conc.	Level	Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m³)	(µg/m ³)	(µg/m ³)		ID	ID
2-Aug-10	14:09	3-Aug-10	14:09	Sunny	2.8701	3.0229	6681.03	6705.03	24.00	1.13	1.13	1.13	94	196	260	Construction work in progress	1254	6761
6-Aug-10	16:18	7-Aug-10	16:18	Sunny	2.8255	2.9912	6708.03	6732.03	24.00	1.13	1.13	1.13	102	196	260	Construction work in progress	1254	6805
12-Aug-10	16:23	13-Aug-10	16:23	Sunny	2.8215	3.0008	6735.03	6759.03	24.00	1.13	1.13	1.13	110	196	260	Construction work in progress	1254	6809
18-Aug-10	17:06	19-Aug-10	17:06	Fine	2.8566	3.0199	6762.03	6786.03	24.00	1.13	1.13	1.13	100	196	260	Construction work in progress	1254	6813
24-Aug-10	16:16	25-Aug-10	16:16	Rainy	2.8696	3.0234	6789.03	6813.03	24.00	1.11	1.11	1.11	96	196	260	Construction work in progress		6817
30-Aug-10	16:16	31-Aug-10	16:16	Sunny	2.8309	3.0124	6816.03	6840.03	24.00	1.11	1.11	1.11	114	196	260	Construction work in progress	1255	6821
												Min.	94					
												Max.	114					
												Average	103					

Annex G4 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

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				TSP					Wind Speed		
	Start	Finish	Weather	Concentration	Action Level	Limit Level	Site Conditions /	Temperature	*	Sampler	Filter
Date	Time	Time		(µg/m³)	(µg/m³)	(µg/m ³)	Observations / Remarks	(℃)	(m/s)	ID	ID
1-Jun-10	9:00	10:00	Fine	283	346	500	Construction work in progress	24		1254	6389
1-Jun-10	10:02	11:02	Fine	304	346	500	Construction work in progress	24		1254	6390
1-Jun-10	11:04	12:04	Fine	254	346	500	Construction work in progress	24		1254	6391
7-Jun-10	13:10	14:10	Sunny	226	346	500	Construction work in progress	28		1254	6354
7-Jun-10	14:12	15:12	Sunny	260	346	500	Construction work in progress	28		1254	6355
7-Jun-10	15:14	16:14	Sunny	208	346	500	Construction work in progress	28		1254	6356
11-Jun-10	14:10	15:10	Fine	190	346	500	Construction work in progress	27		1254	6476
11-Jun-10	15:12	16:12	Fine	168	346	500	Construction work in progress	27		1254	6477
11-Jun-10	16:14	17:14	Fine	180	346	500	Construction work in progress	27		1254	6478
17-Jun-10	13:05	14:05	Fine	136	346	500	Construction work in progress	29		1254	6480
17-Jun-10	14:07	15:07	Fine	152	346	500	Construction work in progress	29		1254	6481
17-Jun-10	15:09	16:09	Fine	177	346	500	Construction work in progress	29		1254	6482
23-Jun-10	13:00	14:00	Cloudy	220	346	500	Construction work in progress	29		1254	6364
23-Jun-10	14:02	15:05	Cloudy	192	346	500	Construction work in progress	29		1254	6365
23-Jun-10	15:04	16:04	Cloudy	202	346	500	Construction work in progress	29		1254	6366
29-Jun-10	13:18	14:18	Sunny	195	346	500	Construction work in progress	30		1254	6548
29-Jun-10	14:20	15:20	Sunny	201	346	500	Construction work in progress	30		1254	6459
29-Jun-10	15:22	16:22	Sunny	184	346	500	Construction work in progress	30		1254	6550
			Min.	136							

Max.304Average207

Wind Speed data is presented in the Meteorological Data table

Annex G4 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

*

				TSP					Wind Speed		
	Start	Finish	Weather	Concentration	Action Level	Limit Level	Site Conditions /	Temperature	*	Sampler	Filter
Date	Time	Time		(µg/m³)	(µg/m³)	(µg/m³)	Observations / Remarks	(°°)	(m/s)	ID	ID
5-Jul-10	13:10	14:10	Sunny	167	346	500	Construction work in progress	31		1254	6552
5-Jul-10	14:12	15:12	Sunny	137	346	500	Construction work in progress	31		1254	6553
5-Jul-10	15:14	16:14	Sunny	152	346	500	Construction work in progress	31		1254	6554
9-Jul-10	13:20	14:20	Sunny	181	346	500	Construction work in progress	33		1254	6558
9-Jul-10	14:22	15:22	Sunny	180	346	500	Construction work in progress	33		1254	6559
9-Jul-10	15:24	16:24	Sunny	187	346	500	Construction work in progress	33		1254	6570
15-Jul-10	13:10	14:10	Cloudy	169	346	500	Construction work in progress	30		1254	6680
15-Jul-10	14:12	15:12	Cloudy	161	346	500	Construction work in progress	30		1254	6681
15-Jul-10	15:14	16:14	Cloudy	202	346	500	Construction work in progress	30		1254	6682
21-Jul-10	9:10	10:10	Rainy	180	346	500	Construction work in progress	27		1254	6684
21-Jul-10	10:12	11:12	Rainy	233	346	500	Construction work in progress	27		1254	6685
21-Jul-10	11:14	12:14	Rainy	170	346	500	Construction work in progress	27		1254	6686
27-Jul-10	10:10	11:10	Cloudy	170	346	500	Construction work in progress	29		1254	6754
27-Jul-10	11:12	12:12	Cloudy	185	346	500	Construction work in progress	29		1254	6755
27-Jul-10	13:05	14:05	Cloudy	200	346	500	Construction work in progress	29		1254	6756
			Min.	137							
			Max.	233							
			Average	178							

Wind Speed data is presented in the Meteorological Data table

Annex G4 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

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				TSP					Wind Speed		
	Start	Finish	Weather	Concentration	Action Level	Limit Level	Site Conditions /	Temperature	*	Sampler	Filter
Date	Time	Time		(µg/m³)	(µg/m³)	(µg/m³)	Observations / Remarks	(℃)	(m/s)	ID	ID
2-Aug-10	11:00	12:00	Sunny	194	346	500	Construction work in progress	31		1254	6758
2-Aug-10	12:05	13:05	Sunny	192	346	500	Construction work in progress	31		1254	6759
2-Aug-10	13:07	14:07	Sunny	158	346	500	Construction work in progress	31		1254	6760
6-Aug-10	13:10	14:10	Sunny	206	346	500	Construction work in progress	32		1254	6802
6-Aug-10	14:12	15:12	Sunny	215	346	500	Construction work in progress	32		1254	6803
6-Aug-10	15:16	16:16	Sunny	206	346	500	Construction work in progress	32		1254	6804
12-Aug-10	13:17	14:17	Sunny	188	346	500	Construction work in progress	31		1254	6806
12-Aug-10	14:19	15:19	Sunny	227	346	500	Construction work in progress	31		1254	6807
12-Aug-10	15:21	16:21	Sunny	194	346	500	Construction work in progress	31		1254	6808
18-Aug-10	14:00	15:00	Fine	177	346	500	Construction work in progress	30		1254	6810
18-Aug-10	15:02	16:02	Fine	183	346	500	Construction work in progress	30		1254	6811
18-Aug-10	16:04	17:04	Fine	222	346	500	Construction work in progress	30		1254	6812
24-Aug-10	13:10	14:10	Rainy	170	346	500	Construction work in progress	28		1254	6814
24-Aug-10	14:12	15:12	Rainy	198	346	500	Construction work in progress	28		1254	6815
24-Aug-10	15:14	16:14	Rainy	201	346	500	Construction work in progress	28		1254	6816
30-Aug-10	13:10	14:10	Sunny	206	346	500	Construction work in progress	31		1254	6818
30-Aug-10	14:12	15:12	Sunny	212	346	500	Construction work in progress	31		1254	6819
30-Aug-10	15:14	16:14	Sunny	200	346	500	Construction work in progress	31		1254	6820
			Min.	158							

 Min.
 158

 Max.
 227

 Average
 197

Wind Speed data is presented in the Meteorological Data table

Meteorological Data Extracted from the Hong Kong Observatory

			Ki	ng's Park Statior		-
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
6/1/2010	Rainy	24	70-96	16.1	8-30	E
6/3/2010	Rainy	22.9	75-98	1.0	0-18	NE
6/4/2010	Rainy	24.8	75-94	Trace	0-14	E
6/7/2010	Sunny	26.2	67-89	0.0	6-20	E
6/9/2010	Rainy	25.7	83-98	16.7	0-20	E
6/10/2010	Rainy	25.7	93-99	58.4	0-16	E
6/11/2010	Rainy	27.8	74-96	Trace	0-18	W
6/14/2010	Rainy	29.2	76-91	6.4	5-17	SW
6/15/2010	Rainy	29.4	81-87	0.1	3-17	SW
6/17/2010	Rainy	30.2	72-84	Trace	4-20	SW
6/19/2010	Rainy	30.0	71-82	Trace	2-18	SW
6/21/2010	Rainy	30.2	69-87	1.4	0-15	SW
6/23/2010	Rainy	27.3	75-99	41.0	0-15	SW
6/25/2010	Rainy	28.7	77-87	2.9	0-18	W
6/26/2010	Rainy	26.4	84-97	127.6	0-15	W
6/29/2010	Rainy	27.7	80-97	0.1	0-15	E

			T	sing Yi Station		
Date	Weather	Average Air Temperature (℃)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
6/1/2010	Rainy	24	70-96	16.1	4-30	E
6/3/2010	Rainy	22.9	75-98	1.0	0-11	NW
6/4/2010	Rainy	24.8	75-94	Trace	4-11	SE
6/7/2010	Sunny	26.2	67-89	0.0	3-23	SE
6/9/2010	Rainy	25.7	83-98	16.7	0-23	E
6/10/2010	Rainy	25.7	93-99	58.4	0-18	SE
6/11/2010	Rainy	27.8	74-96	Trace	0-13	SE
6/14/2010	Rainy	29.2	76-91	6.4	6-18	SE
6/15/2010	Rainy	29.4	81-87	0.1	6-18	SE
6/17/2010	Rainy	30.2	72-84	Trace	8-17	-
6/19/2010	Rainy	30.0	71-82	Trace	3-18	SE
6/21/2010	Rainy	30.2	69-87	1.4	3-19	SE
6/23/2010	Rainy	27.3	75-99	41.0	0-24	SE
6/25/2010	Rainy	28.7	77-87	2.9	2-24	S
6/26/2010	Rainy	26.4	84-97	127.6	0-21	SE
6/29/2010	Rainy	27.7	80-97	0.1	3-15	E

			Kai Tak Station							
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction				
6/1/2010	Rainy	24	70-96	16.1	10-32	E				
6/3/2010	Rainy	22.9	75-98	1.0	0-18	SE				
6/4/2010	Rainy	24.8	75-94	Trace	0-16	SE				
6/7/2010	Sunny	26.2	67-89	0.0	0-20	E				
6/9/2010	Rainy	25.7	83-98	16.7	2-24	SE				
6/10/2010	Rainy	25.7	93-99	58.4	0-23	SE				
6/11/2010	Rainy	27.8	74-96	Trace	0-18	SE				
6/14/2010	Rainy	29.2	76-91	6.4	8-26	SW				
6/15/2010	Rainy	29.4	81-87	0.1	7-26	SW				
6/17/2010	Rainy	30.2	72-84	Trace	6-19	-				
6/19/2010	Rainy	30.0	71-82	Trace	4-23	SW				
6/21/2010	Rainy	30.2	69-87	1.4	0-18	S				
6/23/2010	Rainy	27.3	75-99	41.0	0-25	S				
6/25/2010	Rainy	28.7	77-87	2.9	12-34	SW				
6/26/2010	Rainy	26.4	84-97	127.6	0-17	SW				
6/29/2010	Rainy	27.7	80-97	0.1	3-19	E				

			Gre	en Island Station	1	
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
6/1/2010	Rainy	24	70-96	16.1	5-65	NE
6/3/2010	Rainy	22.9	75-98	1.0	1-24	N
6/4/2010	Rainy	24.8	75-94	Trace	1-21	S
6/7/2010	Sunny	26.2	67-89	0.0	0-37	NE
6/9/2010	Rainy	25.7	83-98	16.7	4-28	-
6/10/2010	Rainy	25.7	93-99	58.4	1-32	S,N
6/11/2010	Rainy	27.8	74-96	Trace	0-27	S,N
6/14/2010	Rainy	29.2	76-91	6.4	25-42	S
6/15/2010	Rainy	29.4	81-87	0.1	17-38	S
6/17/2010	Rainy	30.2	72-84	Trace	24-39	S
6/19/2010	Rainy	30.0	71-82	Trace	15-32	S
6/21/2010	Rainy	30.2	69-87	1.4	16-30	S
6/23/2010	Rainy	27.3	75-99	41.0	0-42	S
6/25/2010	Rainy	28.7	77-87	2.9	10-53	S
6/26/2010	Rainy	26.4	84-97	127.6	5-40	S
6/29/2010	Rainy	27.7	80-97	0.1	1-30	NE

* king's park data

data were not available -

less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

			Ki	ng's Park Station		
Date	Weather	Average Air Temperature (℃)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2/7/2010	Sunny	30.3	55-90	0.0	0-12	W
5/7/2010	Sunny	30.8	68-87	0.0	3-18	W
7/7/2010	Rainy	30.5	66-87	Trace	0-17	W
8/7/2010	Rainy	31.0	65-89	0.4	0-15	W
9/7/2010	Rainy	29.5	68-85	1.7	4-18	W
13/7/2010	Rainy	30.5	69-85	Trace	0-20	SE
14/7/2010	Sunny	31.1	64-88	0.0	0-20	SE
15/7/2010	Rainy	29.5	74-97	8.4	3-24	SE
19/7/2010	Sunny	30.5	57-92	0.0	0-14	E
20/7/2010	Sunny	25.8	81.0	0.0	0-16	SE
21/7/2010	Rainy	25.8	91.0	29.6	7-28	E
24/7/2010	Rainy	25.6	86.0	1.1	0-18	E
26/7/2010	Sunny	25.3	80.0	0.0	0-21	E
27/7/2010	Rainy	25.2	86.0	33.6	0-23	W
30/7/2010	Rainy	25.8	80.0	5.1	0-16	W
31/7/2010	Rainy	25.7	78.0	0.8	0-118	W

			Т	sing Yi Station		
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2/7/2010	Sunny	30.3	55-90	0.0	0-15	SE
5/7/2010	Sunny	30.8	68-87	0.0	0-18	SE
7/7/2010	Rainy	30.5	66-87	Trace	3-17	SE
8/7/2010	Rainy	31.0	65-89	0.4	3-18	SE
9/7/2010	Rainy	29.5	68-85	1.7	6-17	SE
13/7/2010	Rainy	30.5	69-85	Trace	0-18	SE
14/7/2010	Sunny	31.1	64-88	0.0	0-22	SE
15/7/2010	Rainy	29.5	74-97	8.4	0-34	SE
19/7/2010	Sunny	30.5	57-92	0.0	0-16	SE
20/7/2010	Sunny	25.8	81.0	0.0	0-21	SE
21/7/2010	Rainy	25.8	91.0	29.6	3-28	E
24/7/2010	Rainy	25.6	86.0	1.1	0-12	E
26/7/2010	Sunny	25.3	80.0	0.0	0-21	NW
27/7/2010	Rainy	25.2	86.0	33.6	0-23	SE
30/7/2010	Rainy	25.8	80.0	5.1	0-15	SE
31/7/2010	Rainy	25.7	78.0	0.8	0-17	SE

				Kai Tak Station							
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction					
2/7/2010	Sunny	30.3	55-90	0.0	3-18	W					
5/7/2010	Sunny	30.8	68-87	0.0	9-25	W					
7/7/2010	Rainy	30.5	66-87	Trace	5-23	W					
8/7/2010	Rainy	31.0	65-89	0.4	3-17	SW					
9/7/2010	Rainy	29.5	68-85	1.7	1-19	SW					
13/7/2010	Rainy	30.5	69-85	Trace	3-20	SE					
14/7/2010	Sunny	31.1	64-88	0.0	2-24	SE					
15/7/2010	Rainy	29.5	74-97	8.4	7-27	E					
19/7/2010	Sunny	30.5	57-92	0.0	3-20	SE					
20/7/2010	Sunny	25.8	81.0	0.0	0-22	SE					
21/7/2010	Rainy	25.8	91.0	29.6	12-45	E					
24/7/2010	Rainy	25.6	86.0	1.1	3-19	SE					
26/7/2010	Sunny	25.3	80.0	0.0	0-20	SE					
27/7/2010	Rainy	25.2	86.0	33.6	0-27	SW					
30/7/2010	Rainy	25.8	80.0	5.1	0-17	SW					
31/7/2010	Rainy	25.7	78.0	0.8	0-15	SW					

			Gre	en Island Station		
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2/7/2010	Sunny	30.3	55-90	0.0	3-30	S
5/7/2010	Sunny	30.8	68-87	0.0	22-46	SW
7/7/2010	Rainy	30.5	66-87	Trace	17-35	SW
8/7/2010	Rainy	31.0	65-89	0.4	12-35	SW
9/7/2010	Rainy	29.5	68-85	1.7	14-30	SW
13/7/2010	Rainy	30.5	69-85	Trace	0-32	S
14/7/2010	Sunny	31.1	64-88	0.0	1-40	NE
15/7/2010	Rainy	29.5	74-97	8.4	12-48	NE
19/7/2010	Sunny	30.5	57-92	0.0	9-34	S
20/7/2010	Sunny	25.8	81.0	0.0	0-15	NE
21/7/2010	Rainy	25.8	91.0	29.6	12-40	NE
24/7/2010	Rainy	25.6	86.0	1.1	6-31	NE
26/7/2010	Sunny	25.3	80.0	0.0	6-21	NE
27/7/2010	Rainy	25.2	86.0	33.6	8-56	S
30/7/2010	Rainy	25.8	80.0	5.1	13-28	S
31/7/2010	Rainy	25.7	78.0	0.8	9-31	S

* king's park data

data were not available -

less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

			Ki	ng's Park Station		-
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2/8/2010	Rainy	30	64-90	1.1	0-17	SE
5/8/2010	Rainy	29.0	63-95	41.6	0-45	W
6/8/2010	Rainy	29.0	69-91	1.6	0-19	SE
9/8/2010	Rainy	30.0	71-93	0.2	1-18	E
11/8/2010	Rainy	29.0	81-98	22.2	0-20	SE
12/8/2010	Rainy	30.0	60-95	3.0	0-17	SE
17/8/2010	Rainy	30.0	68-95	3.2	0-18	SE
18/8/2010	Sunny	28.0	72-94	0.0	0-100	E
23/8/2010	Rainy	28.0	75-97	23.7	5-23	E
24/8/2010	Rainy	27.0	77-99	42.6	0-18	E
28/8/2010	Rainy	27.0	67-96	30.1	0-24	W
30/8/2010	Sunny	30.0	62-87	0.0	0-17	W

			Т	sing Yi Station		-
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2/8/2010	Rainy	30	64-90	1.1	3-24	E
5/8/2010	Rainy	29.0	63-95	41.6	0-37	E
6/8/2010	Rainy	29.0	69-91	1.6	0-13	E
9/8/2010	Rainy	30.0	71-93	0.2	1-17	E
11/8/2010	Rainy	29.0	81-98	22.2	0-15	SE
12/8/2010	Rainy	30.0	60-95	3.0	0-17	SE
17/8/2010	Rainy	30.0	68-95	3.2	0-21	SE
18/8/2010	Sunny	28.0	72-94	0.0	0-18	SE
23/8/2010	Rainy	28.0	75-97	23.7	3-25	SE
24/8/2010	Rainy	27.0	77-99	42.6	0-28	SE
28/8/2010	Rainy	27.0	67-96	30.1	0-14	NW
30/8/2010	Sunny	30.0	62-87	0.0	0-21	NW

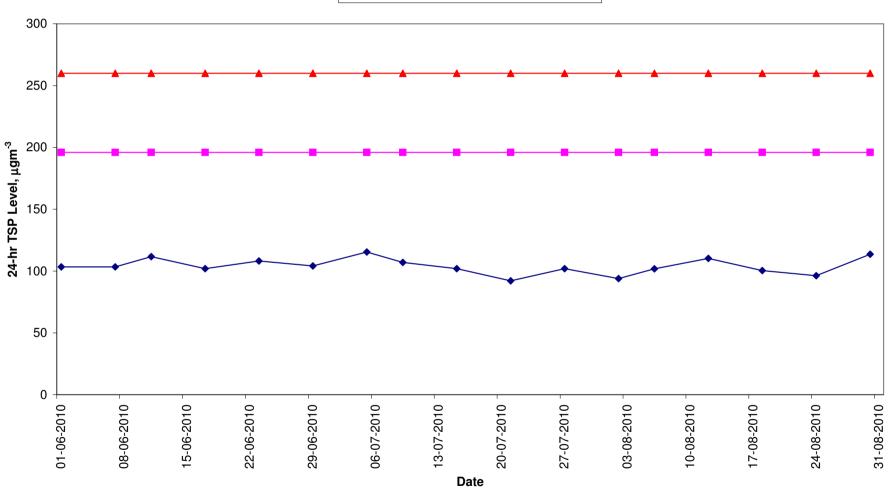
				Kai Tak Station		
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2/8/2010	Rainy	30	64-90	1.1	3-13	SE
5/8/2010	Rainy	29.0	63-95	41.6	0-40	SW
6/8/2010	Rainy	29.0	69-91	1.6	0-24	E
9/8/2010	Rainy	30.0	71-93	0.2	6-20	E
11/8/2010	Rainy	29.0	81-98	22.2	0-21	SE
12/8/2010	Rainy	30.0	60-95	3.0	0-17	SE
17/8/2010	Rainy	30.0	68-95	3.2	0-20	SE
18/8/2010	Sunny	28.0	72-94	0.0	0-26	E
23/8/2010	Rainy	28.0	75-97	23.7	0-32	E
24/8/2010	Rainy	27.0	77-99	42.6	0-27	E
28/8/2010	Rainy	27.0	67-96	30.1	0-24	SW
30/8/2010	Sunny	30.0	62-87	0.0	0-23	W

			Green Island Station										
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction							
2/8/2010	Rainy	30	64-90	1.1	0-35	S							
5/8/2010	Rainy	29.0	63-95	41.6	1-15	NE							
6/8/2010	Rainy	29.0	69-91	1.6	10-43	NE							
9/8/2010	Rainy	30.0	71-93	0.2	10-34	NE							
11/8/2010	Rainy	29.0	81-98	22.2	0-30	S							
12/8/2010	Rainy	30.0	60-95	3.0	0-31	S							
17/8/2010	Rainy	30.0	68-95	3.2	0-31	S							
18/8/2010	Sunny	28.0	72-94	0.0	2-37	S							
23/8/2010	Rainy	28.0	75-97	23.7	10-45	NE							
24/8/2010	Rainy	27.0	77-99	42.6	4-50	NE							
28/8/2010	Rainy	27.0	67-96	30.1	1-43	NW							
30/8/2010	Sunny	30.0	62-87	0.0	3-30	NW							

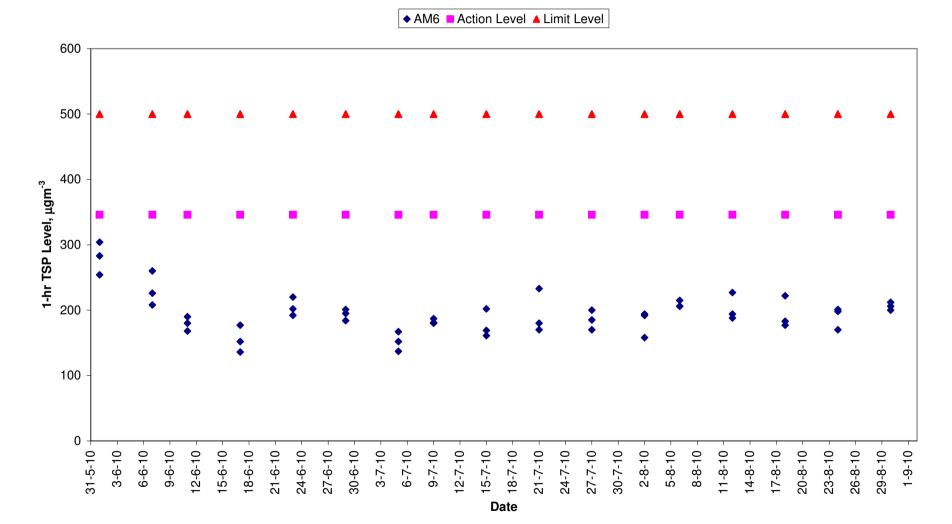
king's park data *

data were not available less than 24 hourly observations per day #

24-hr TSP Level AM6 (Stonecutters Island Sewage Treatment Works



AM6 ----- Action Level ----- Limit Level



1-hr TSP Level AM6 (Stonecutters Island Sewage Treatment Works)

Daytime Noise Monitoring Results

Station NM5

				Noise	level (dB(A)), 30 min	Major Construction	Other Noise			Wind	Noise Meter	Calibrator
Date	Start Time	End Time	Weather	Leq	L10	L90	Noise Source(s) Observed	Source(s) Observed	Remarks	Temp. (℃)	Speed (m/s)	Model / ID	Model / ID
1-Jun-10	11:08	11:38	Fine	64.9	66.0	63.9	Mobile cranes movement, generator and excavator	Traffic Noise	-	26	0.3	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
7-Jun-10	15:20	15:50	Sunny	67.8	69.1	66.8	Mobile cranes movement, generator and excavator	Traffic Noise	-	28	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
17-Jun-10	13:10	13:40	Fine	66.3	67.2	65.3	Mobile cranes movement, generator and excavator	Traffic Noise	-	28	0.7	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
23-Jun-10	13:18	13:48	Cloudy	67.0	67.4	66.3	Mobile cranes movement, generator and excavator	Traffic Noise	-	29	0.4	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
29-Jun-10	13:25	13:55	Sunny	69.5	70.5	68.2	Mobile cranes movement, generator and excavator	Traffic Noise	-	30	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	64.9									

Max. 69.5

Restricted Hours Noise Monitoring Results

				Noise	level (dB(A)), 5 min	Major Construction	Other Noise					
Date	Start Time	End Time	Weather	Leq	L10	L90	Noise Source(s) Observed	Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
	11:00	11:05	Fine	63.8	65.1	62.6			-				
	11:05	11:10	Fine	63.4	64.4	62.5			-	1			
	11:10	11:15	Fine	64.1	65.2	62.7	Mobile cranes					RION- NL31	RION - NC73
6-Jun-10	11:00	11:15	Fine	63.8	64.9	62.6	movement, generator	Traffic Noise	Average results during 15 min monitoring	25	0.7	(S/N 00201194)	(S/N 10786708)
	10:12	10:17	Fine	65.3	66.3	64.0			-				
	10:17	10:22	Fine	65.7	66.9	64.0			-				
	10:22	10:27	Fine	65.1	65.8	64.3	Mobile cranes movemnt,		-			RION- NA27	RION - NC73
13-Jun-10	10:12	10:27	Fine	65.4	66.4	64.1	Generator	Traffic Noise	Average results during 15 min monitoring	29	0.5	(S/N 00201194)	(S/N 10786708)
	10:10	10:15	Fine	66.7	67.1	65.9			-				
	10:15	10:20	Fine	66.1	66.8	65.2			-				
	10:20	10:25	Fine	66.3	67.0	65.5	Mobile cranes movemnt,		-			RION- NA27	RION - NC73
20-Jun-10	10:10	10:25	Fine	66.4	67.0	65.5	Generator	Traffic Noise	Average results during 15 min monitoring	31	0.5	(S/N 00201194)	(S/N 10786708)
									Noise				
							4		monitoring was				
27-Jun-10									cancelled due to bad weather.				
	1		Min.	66.1			1		1				
			Max.	66.7									

Daytime Noise Monitoring Results

				Noise	level (dB(A))), 30 min	Major Construction	Other Noise			Wind	Noise Meter	Calibrator
Date	Start Time	End Time	Weather	Leq	L10	L90	Noise Source(s) Observed	Source(s) Observed	Remarks	Temp. (℃)	Speed (m/s)	Model / ID	Model / ID
5-Jul-10	13:18	13:48	Sunny	67.4	69.2	65.9	Mobile cranes movement, generator and excavator	Traffic Noise	-	31	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
15-Jul-10	13:57	14:27	Cloudy	71.0	71.5	70.2	Mobile cranes movement, generator and excavator	Traffic Noise	-	30	0.3	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
21-Jul-10	9:18	9:48	Rainy	65.8	66.4	65.2	Mobile cranes movement, generator and excavator	Traffic Noise	-	28	0.5	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
27-Jul-10	10:15	10:45	Cloudy	68.9	70.0	67.7	Mobile cranes movement, generator and excavator	Traffic Noise	-	29	0.2	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	65.8									
			Max.	71.0									

Restricted Hours Noise Monitoring Results

				Noise	level (dB(A)), 5 min	Major Construction	Other Noise				Notes Mar	Ocliburat
Date	Start Time	End Time	Weather	Leq	L10	L90	Noise Source(s) Observed	Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
	10:15	10:20	Sunny	65.9	67.5	64.8			-				
	10:20	10:25	Sunny	65.8	67.1	64.8			-				
	10:25	10:30	Sunny	65.7	67.0	64.7	Mobile cranes					RION- NA27	RION - NC7
4-Jul-10	10:15	10:30	Sunny	65.8	67.2	64.8	movement, generator, excavator	Traffic Noise	Average results during 15 min monitoring	32	0.3	(S/N 00201194)	(S/N 10786708)
	10:18	10:23	Sunny	67.9	69.0	66.7			-				
	10:23	10:28	Sunny	67.6	68.6	66.5			-				
	10:28	10:33	Sunny	67.8	69.0	66.7	Mahila ayan as mayan at		-			RION- NL31	D.9.164001.00
11-Jul-10	10:18	10:33	Sunny	67.8	68.9	66.6	Mobile cranes movemnt, Generator, excavator	Traffic Noise	Average results during 15 min monitoring	33	0.3	(S/N 00410224)	B&K4231 (S 2699361)
	13:55	14:00	Sunny	65.1	66.0	64.3			-				
	14:00	14:05	Sunny	65.0	65.7	64.1			-	1			
	14:05	14:10	Sunny	65.3	66.0	64.2	Mahila aranga mayamat		-	1		RION- NL31	RION - NC
18-Jul-10	13:55	14:10	Sunny	65.1	65.9	64.2	 Mobile cranes movemnt, Generator 	Traffic Noise	Average results during 15 min monitoring	31	0.3	(S/N 00320533)	(S/N 10786708
	10:12	10:17	Sunny	67.9	68.7	67.2			-				
	10:17	10:22	Sunny	67.8	68.4	67.2			-				
	10:22	10:27	Sunny	67.8	68.5	67.1	Mobile cranes movemnt,		-			RION- NL31	RION - NC
25-Jul-10	10:12	10:27	Sunny	67.8	68.5	67.2	Generator	Traffic Noise	Average results during 15 min monitoring	31	0.5	(S/N 00320533)	(S/N 10786708
	·		Min.	65.0		•			·				
			Max.	67.9	4								

Daytime Noise Monitoring Results

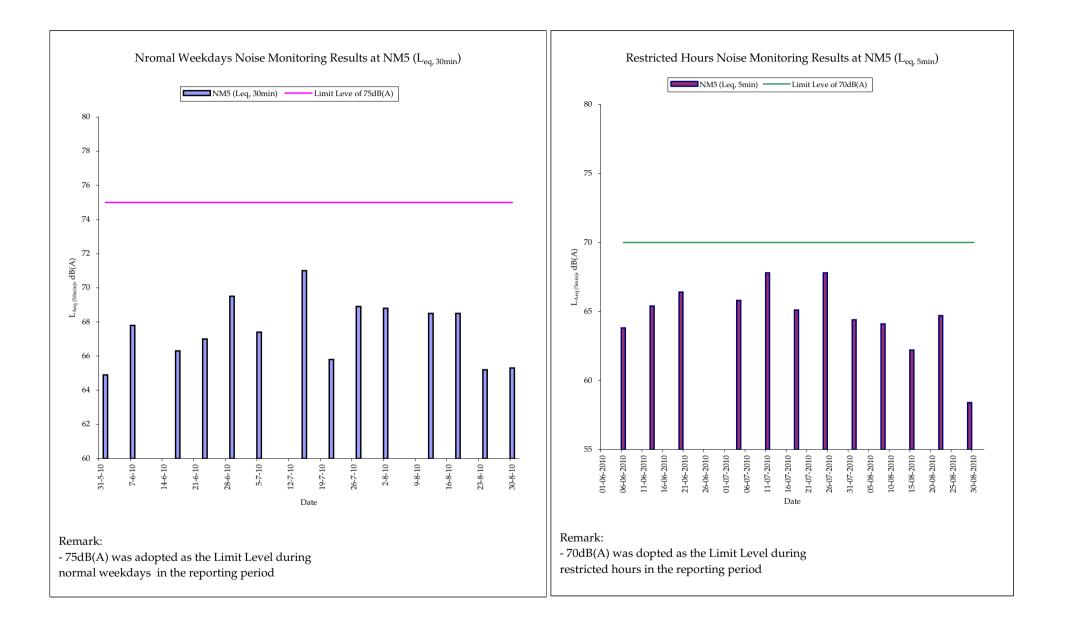
Station NM5

				Noise	level (dB(A)), 30 min	Major Construction	Other Noise			Wind	Noise Meter	Calibrator
Date	Start Time	End Time	Weather	Leq	L10	L90	Noise Source(s) Observed	Source(s) Observed	Remarks	Temp. (℃)	Speed (m/s)	Model / ID	Model / ID
2-Aug-10	13:10	13:40	Sunny	68.8	69.6	68.0	Mobile cranes movement, generator and excavator	Traffic Noise	-	31	0.3	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
12-Aug-10	14:25	14:55	Sunny	68.5	69.4	67.7	Mobile cranes movement, generator and excavator	Traffic Noise	-	31	0.5	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
18-Aug-10	15:10	15:40	Fine	68.5	69.5	67.6	Mobile cranes movement, generator and excavator	Traffic Noise	-	30	0.2	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
24-Aug-10	13:18	13:48	Rainy	65.2	66.1	64.0	Mobile cranes movement, generator and excavator	Traffic Noise	-	28	0.5	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
30-Aug-10	13:18	13:48	Sunny	65.3	66.2	64.5	Mobile cranes movement, generator and excavator	Traffic Noise	-	31	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	65.2									

Max. 68.8

Restricted Hours Noise Monitoring Results

				Noise	e level (dB(A))), 5 min	Major Construction	Other Noise			Wind	Noise Meter	Calibrator
Date	Start Time	End Time	Weather	Leq	L10	L90	Noise Source(s) Observed	Source(s) Observed	Remarks	Temp. (℃)	Speed (m/s)	Model / ID	Model / ID
	10:18	10:23	Sunny	64.4	64.8	64.0			-				
	10:23	10:28	Sunny	64.3	64.8	63.8			-				
	10:28	10:33	Sunny	64.5	65.0	64.0	Mobile cranes					RION- NA27	RION - NC73
1-Aug-10	10:18	10:33	Sunny	64.4	64.9	63.9	movement, generator	Traffic Noise	Average results during 15 min monitoring	33	0.6	(S/N 00201194)	(S/N 10786708)
	10:20	10:25	Sunny	64.2	65.1	63.4			-				
	10:25	10:30	Sunny	64.2	65.2	63.5			-				
	10:30	10:35	Sunny	64.0	64.9	63.4	Mobile cranes movemnt,		-			RION- NL31	RION - NC73
8-Aug-10	10:20	10:35	Sunny	64.1	65.1	63.4	Generator	Traffic Noise	Average results during 15 min monitoring	30	0.5	(S/N 00320533)	(S/N 10786708)
	13:12	13:17	Fine	62.3	62.6	61.7			-				
	13:17	13:22	Fine	62.0	62.5	61.5	7		-				
	13:22	13:27	Fine	62.2	62.5	61.6	Mobile cranes movemnt,		-			RION- NL31	RION - NC73
15-Aug-10	13:12	13:27	Fine	62.2	62.5	61.6	Generator	Traffic Noise	Average results during 15 min monitoring	29	0.3	(S/N 00320533)	(S/N 10786708)
	10:20	10:25	Sunny	64.8	65.5	63.7			-				
	10:25	10:30	Sunny	64.6	65.3	63.6			-				
	10:30	10:35	Sunny	64.6	65.3	63.5	Mobile cranes movemnt,		-			RION- NL31	RION - NC73
22-Aug-10	10:20	10:35	Sunny	64.7	65.4	63.6	Generator, excavator	Traffic Noise	Average results during 15 min monitoring	32	0.8	(S/N 00320533)	(S/N 10786708)
	10:00	10:05	Sunny	57.7	58.7	56.7			-				
	10:05	10:10	Sunny	57.7	59.2	56.9			-				
	10:10	10:15	Sunny	59.9	60.7	57.7]		-			RION- NL31	RION - NC73
29-Aug-10	10:00	10:15	Sunny	58.4	59.5	57.1	Generator	Traffic Noise	Average results during 15 min monitoring	32	0.5	(S/N 00320533)	(S/N 10786708)
			Min.	57.7									
			Max.	64.8									



Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2009	0	0
January 2010	0	0
February 2010	0	0
March 2010	0	0
April 2010	0	0
May 2010	0	0
June 2010	0	0
July 2010	0	0
August 2010	0	0
Overall Total	0	0

Annex G6 Cumulative Complaint and Summons/Prosecutions Log

Annex H

Calibration Reports for HVSs and Sound Level Meters for All Sites

TSP Monitoring Equipment

Monitoring	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
Station ID					
24-hr and 1-hr TSP		HVS	Calibrator		
AM1	Chan's Creative School (formerly known as Madam Chan	GMW GS-2310 (S/N 1808)	CM-AIR-43 (S/N 9833620)	24 July 2010	24 September 2010
	Wai Chow Memorial School)				
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 9833620)	24 July 2010	24 September 2010
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 9833620)	24 July 2010	24 September 2010
AM4	A Location within the DSD Central PTW	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 9833620)	24 July 2010	24 September 2010
AM5	Western Wholesale Food Market	GMW GS-2310 (S/N 2145)	CM-AIR-43 (S/N 9833620)	25 July 2010	25 September 2010
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 9833620)	24 July 2010	24 September 2010

Monitoring Equipment

Monitoring Station ID Monitoring Equipment Mode		Model & Serial No.	Last Calibration Date	Next Calibration Date
		Rion NC-73 (S/N 10786708)	10 July 2009	10 July 2010
	Calibrator	Rion NA-73 (S/N 10997142)	13 July 2010	13 July 2011
		B&K4231 (S/N 2699361)	29 December 2009	29 December 2010
NM1 – NM5 (a) –		Rion NL-31 (S/N 00320533)	13 July 2010	13 July 2011
	Sound Level Meter	Rion NL-31 (S/N 00410224)	31 May 2010	31 May 2011
		Rion NA-73 (S/N 10786708)	13 July 2010	13 July 2011
		Rion NL-31 (S/N 00983400)	23 October 2009	23 October 2010

(a) The sound level meter (Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194) or Rion NL-31 (S/N 00983400) or Rion NA-73 (S/N 10786708)) and the calibrator (Rion NC-73 (S/N 10786708) or B&K4231 (S/N 2699361) or Rion NA-73 (S/N 10997142)) is used in NM1, NM2, NM3, NM4 and NM5.

Remarks

Monitoring Station ID	Location
NM1	Rooftop of Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)
NM2	Rooftop of Hyde Building
NM3	Rooftop of Goldfield Building
NM4	Rooftop of Block A, Kwan Yick Building Phase III
NM5	A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary

High-Volume TSP Sampler 5-Point Calibration Record

Location Calibrated by Date	: : :	AM6 P.F.Yeung 22/07/2010
<u>Sampler</u> Model Serial Number	:	GMWS-2310 ACCU-VOL S/N 1254
Calibration Orfice and Sta	ndard Ca	libration Relationship
Serial Number	:	1785
Service Date	:	10 May 2010
Slope (m)	:	2.01637
Intercept (b)	:	-0.02316
Correlation Coefficient(r)	:	0.99996
Standard Condition		
Pstd (hpa)	:	1013
Tstd (K)	:	298.18
Calibration Condition	_	
Pa (hpa)	:	1005
Ta(K)	:	303

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)		
1	18 holes	8.5	2.875	1.437	60	59.2
2	13 holes	7.0	2.609	1.305	54	53.3
3	10 holes	5.3	2.270	1.137	46	45.4
4	7 holes	3.3	1.791	0.900	35	34.5
5	5 holes	2.7	1.620	0.815	30	29.6

Sampler Calibration Relationship

Slope(m):<u>47.102</u> Intercept(b): <u>-8.334</u>

Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan

Date: 24/07/2010



Certificate No. : C103766

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator Manufacturer : Rion Model No. : NC-73 Serial No. : 10786708

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C103766.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue: 13 July 2010

Certified by : KC Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103766

RELATIVE HUMIDITY : $(55 \pm 20)\%$

JOB NO. : IC10-1738

Calibration Report

ITEM TESTED

DESCRIPTION	:	Sound Level Calibrator
MANUFACTURER	:	Rion
MODEL NO.	:	NC-73
SERIAL NO.	:	10786708

TEST CONDITIONS

AMBIENT TEMPERATURE: $(23 \pm 2)^{\circ}C$ LINE VOLTAGE:---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 12 July 2010

TEST RESULTS

The results apply to the particular unit-under-test only. All results are within manufacturer's specification. The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

- Agilent Technologies, USA

- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany
- The Bruel & Kjaer Calibration Laboratory, Denmark

Tested by :

L L Cheung

Date : 13 July 2010

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Report No. : C103766

Calibration Report

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.
- 2. The results presented are the mean of 3 measurements at each calibration point.
- 3. Test equipment :

CL130 Universa	g Amplifier C101008

- 4. Test procedure : MA100N.
- 5. Results :

5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.0	± 0.5	± 0.2

5.2 Frequency Accuracy

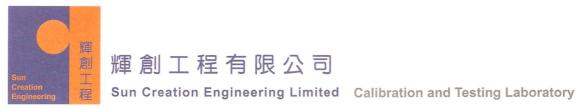
UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value	
(kHz)	(kHz)	Spec.	(Hz)	
1	0.991 0	$1 \text{ kHz} \pm 2 \%$	± 0.1	

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Certificate No.: C103778

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter Manufacturer : Rion Model No. : NL-31 Serial No. : 00320533

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C103778.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue: 13 July 2010

Certified by : K Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 E-mail: callab@suncreation.com Website: www.suncreation.com Fax: 2744 8986



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103778

RELATIVE HUMIDITY : $(55 \pm 20)\%$

JOB NO. : IC10-1738

Calibration Report

ITEM TESTED

DESCRIPTION	:	Sound Level Meter
MANUFACTURER	:	Rion
MODEL NO.	:	NL-31
SERIAL NO.	:	00320533

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}$ C LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 12 July 2010

TEST RESULTS

The results apply to the particular unit-under-test only. All results are within manufacturer's specification. The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies, USA
- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany
- The Bruel & Kjaer Calibration Laboratory, Denmark

Tested by :

L L Cheung

Date : 13 July 2010

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103778

Calibration Report

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- 2. Self-calibration was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C100067
CL281	Multifunction Acoustic Calibrator	C1005490

- 5. Test procedure : MA101N.
- 6. Results :
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

	UUT	[Setting		Applied	Value	UUT	IEC 60651
Range	Mode	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	L _A	А	Fast	94.00	1	94.3	± 0.7

6.1.2 Linearity

	UUT	Γ Setting		Applied	d Value	UUT
Range	Mode	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
30 - 120	LA	А	Fast	94.00	1	94.3 (Ref.)
				104.00		104.3
				114.00		114.3

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

	UU	JT Setting		Applie	d Value	UUT	IEC 60651
Range	Mode	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	LA	А	Fast	94.00	1	94.3	Ref.
			Slow			94.2	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103778

Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

	UI	UT Setting		App	lied Value	UUT	IEC 60651
Range	Mode	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
30 - 120	L _A	А	Fast	94.00	31.5 Hz	55.3	-39.4 ± 1.5
					63 Hz	68.4	-26.2 ± 1.5
					125 Hz	78.4	-16.1 ± 1.0
					250 Hz	85.8	-8.6 ± 1.0
					500 Hz	91.1	-3.2 ± 1.0
					1 kHz	94.3	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
					4 kHz	94.5	$+1.0 \pm 1.0$
					8 kHz	90.5	-1.1 (+1.5 ; -3.0)
					12.5 kHz	85.0	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

	UI	JT Setting		App	lied Value	UUT	IEC 60651
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
30 - 120	L _C	C	Fast	94.00	31.5 Hz	91.5	-3.0 ± 1.5
					63 Hz	93.7	-0.8 ± 1.5
					125 Hz	94.2	-0.2 ± 1.0
					250 Hz	94.4	0.0 ± 1.0
					500 Hz	94.4	0.0 ± 1.0
					1 kHz	94.3	Ref.
					2 kHz	94.0	-0.2 ± 1.0
					4 kHz	92.8	-0.8 ± 1.0
					8 kHz	88.7	-3.0 (+1.5 ; -3.0)
					12.5 kHz	82.4	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

	UU	T Setting				UUT	IEC 60804			
Range (dB)	Mode	Frequency Weighting	Time Weighting	Freq. (kHz)	Burst Duration	Burst Duty	Burst Level	Equivalent Level	Reading (dB)	Type 1 Spec.
(02)		noighting	in enginning	(1112)	(ms)	Factor	(dB)	(dB)	(42)	(dB)
20 - 110	L _{Aeq}	А	60 sec.	4	1	1/10 ³	110.0	80	80.7	± 1.0
			5 min.			1/104		70	70.7	± 1.0

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103778

Calibration Report

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

-	Uncertainties of Applied Value	:	94 dB :	:	31.5 Hz - 125 Hz	:	$\pm 0.35 \text{ dB}$
					250 Hz - 1 kHz	:	$\pm 0.30 \text{ dB}$
					2 kHz - 4 kHz	:	$\pm 0.35 \text{ dB}$
					8 kHz	:	$\pm 0.45 \text{ dB}$
					12.5 kHz	:	$\pm 0.70 \text{ dB}$
			104 dB :	:	1 kHz	:	± 0.10 dB (Ref. 94 dB)
			114 dB :	:	1 kHz	:	\pm 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Certificate No. : C102904

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter Manufacturer : Rion Model No. : NL-31 Serial No. : 00410224

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C102904.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 31 May 2010

Certified by : K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Report No.	:	C102904
reportion		· · · · · ·

Calibration Report

ITEM TESTED

DESCRIPTION	:	Sound Level Meter
MANUFACTURER	:	Rion
MODEL NO.	:	NL-31
SERIAL NO.	:	00410224

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}C$ LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 31 May 2010

JOB NO. : IC10-1356

RELATIVE HUMIDITY : $(55 \pm 20)\%$

TEST RESULTS

The results apply to the particular unit-under-test only. All results are within manufacturer's specification. The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

- Rohde & Schwarz Laboratory, Germany

- Fluke Everett Service Center, USA

- Agilent Technologies, USA

Tested by :

Date : 31 May 2010

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102904

Calibration Report

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- 2. Self-calibration was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C100067
CL179	Acoustical Calibrator	C095223

- 5. Test procedure : MA101N.
- 6. Results :
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

	UUT	[Setting		Applied	Value	UUT	IEC 60651
Range	Mode	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	LA	А	Fast	94.00	1	93.9	± 0.7

6.1.2 Linearity

	UUT	Γ Setting		Applied	l Value	UUT
Range	Mode	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
30 - 120	L _A	А	Fast	94.00	1	93.9 (Ref.)
				114.00		113.9

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

	UL	JT Setting		Applie	d Value	UUT	IEC 60651
Range	Mode	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	L _A	А	Fast	94.00	1	93.9	Ref.
			Slow			93.8	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102904

Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT Setting				lied Value	UUT	IEC 60651	
Range	Mode	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.	
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)	
30 - 120	L _A	А	Fast	94.00	31.5 Hz	54.2	-39.4 ± 1.5	
					63 Hz	67.6	-26.2 ± 1.5	
					125 Hz	77.7	-16.1 ± 1.0	
					250 Hz	85.2	-8.6 ± 1.0	
					500 Hz	90.6	-3.2 ± 1.0	
					1 kHz	93.9	Ref.	
					2 kHz	95.2	$+1.2 \pm 1.0$	
					4 kHz	95.0	$+1.0 \pm 1.0$	
					8 kHz	92.9	-1.1 (+1.5 ; -3.0	
					12.5 kHz	90.0	-4.3 (+3.0 ; -6.0	

6.3.2 C-Weighting

UUT Setting					lied Value	UUT	IEC 60651	
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)	
30 - 120	L _C	С	Fast	94.00	31.5 Hz	90.6	-3.0 ± 1.5	
					63 Hz	93.1	-0.8 ± 1.5	
					125 Hz	93.7	-0.2 ± 1.0	
					250 Hz	93.9	0.0 ± 1.0	
					500 Hz	93.9	0.0 ± 1.0	
					1 kHz	93.9	Ref.	
					2 kHz	93.9	-0.2 ± 1.0	
					4 kHz	93.3	-0.8 ± 1.0	
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)	
					12.5 kHz	88.1	-6.2 (+3.0 ; -6.0)	

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C102904

Calibration Report

6.4

Time Averaging

	UU	T Setting				UUT	IEC 60804			
Range (dB)	Mode	Frequency Weighting	Time Weighting	Freq. (kHz)	Burst Duration	Burst Duty	Burst Level	Equivalent Level	Reading (dB)	Type 1 Spec.
					(ms)	Factor	(dB)	(dB)		(dB)
20 - 110	LAcq	А	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						1/10 ²		90	90.0	± 0.5
			60 sec.			$1/10^{3}$		80	80.0	± 1.0
			5 min.			1/104		70	70.0	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

-	Uncertainties of Applied Value :	94 dB	31.5 Hz - 125 H	z :	± 0.35 dB
			250 Hz - 1 kHz	:	± 0.30 dB
			2 kHz - 4 kHz	:	± 0.35 dB
			8 kHz	:	± 0.45 dB
			12.5 kHz	:	$\pm 0.70 \text{ dB}$
		114 dB	1 kHz	:	± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



輝創工程有限公司 Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C095683

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter Manufacturer : Rion Model No. : NL-31 Serial No. : 00983400

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C095683.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 23 October 2009

Certified by : K Q Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F. Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



Calibration Report

ITEM TESTED

DESCRIPTION	:	Sound Level Meter
MANUFACTURER	:	Rion
MODEL NO.	:	NL-31
SERIAL NO.	:	00983400

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}C$ LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 22 October 2009

JOB NO. : IC09-2709

RELATIVE HUMIDITY : $(55 \pm 20)\%$

TEST RESULTS

The results apply to the particular unit-under-test only. All results are within manufacturer's specification. The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via : - The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Tested by :

L L Cheung

Date : 23 October 2009

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



Calibration Report

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- 2. Self-calibration was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

- 5. Test procedure : MA101N.
- 6. Results :
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

	UUT Setting			Applied	d Value	UUT	IEC 61672
Range	Mode	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	± 1.1

6.1.2 Linearity

	UUT Setting				l Value	UUT
Range	Mode	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
30 - 120	LA	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

IEC 61672 Class 1 Spec. : \pm 0.6 dB per 10 dB step and \pm 1.1 dB for overall different.

6.2 Time Weighting

	UL	UT Setting		Applie	d Value	UUT	IEC 61672
Range	Mode	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	L _A	A	Fast	94.00	1	94.2	Ref.
			Slow			94.2	± 0.3

The test equipment used for calibration are traceable to the National Standards as specified in this report.

This report shall not be reproduced except in full and with prior written approval from this laboratory.



Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

		JT Setting		App	lied Value	UUT	IEC 61672
Range	Mode	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
30 - 120	L _A	А	Fast	94.00	31.5 Hz	54.3	-39.4 ± 2.0
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.5
					250 Hz	85.4	- 8.6 ± 1.4
					500 Hz	90.9	-3.2 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	95.5	$+1.2 \pm 1.6$
					4 kHz	95.3	$+1.0 \pm 1.6$
					8 kHz	93.2	-1.1 (+2.1 ; -3.1)
					12.5 kHz	90.3	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

	0 0		JT Setting		App	lied Value	UUT	IEC 61672
Rai	nge	Mode	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(d)	3)		Weighting	Weighting	(dB)	_	(dB)	(dB)
30 -	120	L _C	С	Fast	94.00	31.5 Hz	90.9	-3.0 ± 2.0
						63 Hz	93.3	-0.8 ± 1.5
						125 Hz	94.0	-0.2 ± 1.5
						250 Hz	94.2	0.0 ± 1.4
						500 Hz	94.2	0.0 ± 1.4
						1 kHz	94.2	Ref.
						2 kHz	94.1	-0.2 ± 1.6
						4 kHz	93.5	-0.8 ± 1.6
						8 kHz	91.3	-3.0 (+2.1 ; -3.1)
						12.5 kHz	88.4	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Calibration Report

Remarks : - Mfr's Spec. : IEC 61672 Class 1

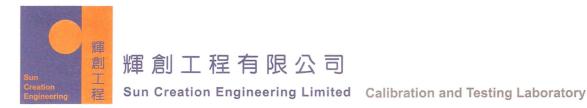
- Uncertainties of Applied Value : 94 of	dB : 31.5 Hz - 125 Hz 250 Hz - 500 Hz 1 kHz 2 kHz - 4 kHz	: $\pm 0.35 \text{ dB}$: $\pm 0.30 \text{ dB}$: $\pm 0.20 \text{ dB}$: $\pm 0.35 \text{ dB}$
	8 kHz	$\pm 0.35 \text{ dB}$: $\pm 0.45 \text{ dB}$
	12.5 kHz	: $\pm 0.70 \text{ dB}$
104	dB: 1 kHz	$\pm 0.10 \text{ dB}$ (Ref. 94 dB)
114	dB: 1 kHz	: $\pm 0.10 \text{ dB}$ (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.



Certificate No.: C103765

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator Manufacturer : Rion Model No. : NC-73 Serial No. : 10997142

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C103765.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue: 13 July 2010

Certified by : K C/Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.sur E-mail: callab@suncreation.com Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103765

RELATIVE HUMIDITY : $(55 \pm 20)\%$

JOB NO. : IC10-1738

Calibration Report

ITEM TESTED

DESCRIPTION	:	Sound Level Calibrator
MANUFACTURER	:	Rion
MODEL NO.	:	NC-73
SERIAL NO.	:	10997142

TEST CONDITIONS

AMBIENT TEMPERATURE : $(23 \pm 2)^{\circ}C$ LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 12 July 2010

TEST RESULTS

The results apply to the particular unit-under-test only. All results are within manufacturer's specification. The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

- Agilent Technologies, USA

- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany
- The Bruel & Kjaer Calibration Laboratory, Denmark

Tested by :

L L Cheung

Date : 13 July 2010

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C103765

Calibration Report

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.
- 2. The results presented are the mean of 3 measurements at each calibration point.
- 3. Test equipment :

Equipment ID TST150A CL130 CL281 <u>Description</u> Measuring Amplifier Universal Counter Multifunction Acoustic Calibrator <u>Certificate No.</u> C101008 C103289 C1005490

- 4. Test procedure : MA100N.
- 5. Results :
- 5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.1	± 0.5	

5.2 Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(Hz)
1	0.991 1	$1 \text{ kHz} \pm 2 \%$	± 0.1

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the National Standards as specified in this report. This report shall not be reproduced except in full and with prior written approval from this laboratory.

the second se		
в	Calibrati	on Chart
Brüel & Kjær	Туре 4231	Serial No. 2699361
(re 20 μPa at re	elerence cono	
Frequency: 10	000 Hz ±0.1%	2
Distortion: <1		
Reference Co Temperature: Pressure: Humidity: Load:	23°C 101.325 kP	a ∕₂″ Brüel & Kjær Mic.)
Load.		

Dater 29.12.9 Signed: 40

8.8

 \bar{S}^2

B K	Sound Calibrator Type 4231
Equivalent Diffu Equivalent Diffu Pressure Field:	
Frequency: 1 Conforms to	000 Hz : 1984 and IEC 60942 (2003) Class 1 & LS
Ambient Co Temperature	nditions: : -10° to 50°C, Class LS +16° to 30°C 65 kPa to 108 kPa 25% to 90% RH Iformation refer to the User Manual BC0210-12

Brüel & Kjær 🆛

Packing Note

1 / 1 Page

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ltem	Description						
-4231	Sound Calibrator Class 1 and LS, 94 and 114 dB, 1 kHz Akustischer Kalibrator der Klasse 1 - 94 dB / 1 kHz und 114 dB / 1 kHz - Bauartgeprüft und elchfähig Calibreur acoustique de classe 1 (94 et 114 dB à 1kHz)						
ltem	Qty Description						
BA-5341	1 Trilingual Manual Pack for Type 4231 Trilingual Manual Pack for Type 4231 Trilingual Manual Pack for Type 4231						
BC-0210	Calibration Chart Type 4231 Calibration Chart Type 4231 Calibration Chart Type 4231 Calibration Chart Type 4231						
KE-0317	1 Leather Case for 4231 Teilverpackung Leather Case for 4231						
QB-0013	2 Battery 1,5V Alkaline, Non-Rechargeable, size AA (LR6) Ø14,5x 50,5mm Battery 1,5V Alkaline, Non-Rechargeable, size AA (LR6) Ø14,5x 50,5mm Battery 1,5V Alkaline, Non-Rechargeable, size AA (LR6) Ø14,5x 50,5mm						



If the accessories Included in the Product Data Sheet or Manual differ from the items supplied, the items mentioned on the Packing Note/List are valid. A27111

(0)



	Packing Li	st	
Del	ivery Number	Ship Date (DD-MM-YYYY)	Page
2314552		05-02-2010	1/1

Ship To)	Forwarder Geodis Wilson / Airfreight			
		Sales Order Number	6551240		
	Spectris China Ltd. Attn. Jacky Leung 132 Nathan Road	Your Reference SF# 1-201034558			
		Our Reference			
	Unit 706, 7/F Miramar Tower Tsimshatsui Kawlaa	No. of Colli 1 Gross	Weight 1 kg Net Weight 0.45 kg Volume 0.006 m ³		
	Kowloon Hong Kong				

Colli	B&K Item No.	QTY	Net Weight	Serial No.	Description	Included in Item
1	-4231	1	0.45 kg	2699361	Sound Calibrator Class 1 and LS, 94 and 114 dB, 1 kHz	

Note

If the accessories included specified in the Product Data Sheet or Manual differ from the items supplied, the items mentioned on the Packing Slip are valid. In case of any question, please contact your local Brüel & Kjær office. Annex I

Event / Action Plans for Air Quality, Noise and Landscape and Visual Monitoring

Table I1	Event Action Plan for Air Quality Monitoring
----------	--

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Action Level				
Exceedance for one sample	 Identify source, investigate the causes of exceedance and propose remedial measures; Inform IEC and ER; Repeat measurement to confirm finding; and, Increase monitoring frequency to daily. 	 Check monitoring data submitted by ET; and, Check Contractor's working method. 	Notify Contractor	 Rectify any unacceptable practice; and, Amend working methods if appropriate.
Exceedance for two or more consecutive samples	 Identify source; Inform IEC and ER; Advise the ER on the effectiveness of the proposed remedial measures; Repeat measurements to confirm findings; Increase monitoring frequency to daily; and, Discuss with IEC and Contractor on remedial actions required; 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ET on the effectiveness of the proposed remedial measures; and, Supervise Implementation of remedial measures. 	 Confirm receipt of notification of failure in writing; Notify Contractor, and, Ensure remedial measures properly implemented. 	 Submit proposals for remedial to ER within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Limit Level Exceedance for one sample	 Identify source, investigate the causes of exceedance and propose remedial measures; Inform ER, Contractor and EPD; Repeat measurement to confirm finding; Increase monitoring frequency to daily; and, Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures; and, Supervise implementation of remedial measures. 	 Confirm receipt of notification of failure in writing; Notify Contractor; and, Ensure remedial measures properly implemented. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; and, Amend proposal if appropriate.
Exceedance for two or more consecutive samples	 Notify IEC, ER, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and, If exceedance stops, cease additional monitoring. 	actions whenever necessary to assure their effectiveness and advise the ER accordingly; and,	 Confirm receipt of notification of failure in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly implemented; and, If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Resubmit proposals if problem still not under control; and, Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Action Level being exceeded	 Notify ER, IEC and Contractor; Carry out investigation; Report the results of investigation to the IEC, ER and Contractor; Discuss with the IEC and Contractor on remedial measures required; and, Increase monitoring frequency to check mitigation effectiveness. 	 Review the investigation results submitted by the ET; Review the proposed remedial measures by the Contractor and advise the ER accordingly; and, Advise the ER on the effectiveness of the proposed remedial measures. 	 Confirm receipt of notification of failure in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; and, Supervise the implementation of remedial measures. 	 Submit noise mitigation proposals to IEC and ER; and, Implement noise mitigation proposals.

Table I2Event Action Plan for Noise Monitoring

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Limit Level being exceeded	 Inform IEC, ER, Contractor and EPD; Repeat measurements to confirm findings; Increase monitoring frequency; Identify source and investigate the cause of exceedance; Carry out analysis of Contractor's working procedures; Discuss with the IEC, Contractor and ER on remedial measures required; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and, If exceedance stops, cease additional monitoring. 	 Discuss amongst ER, ET, and Contractor on the potential remedial actions; and, Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 	 Confirm receipt of notification of failure in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures; and, If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC and ER within 3 working days of notification; Implement the agreed proposals; Submit further proposal if problem still not under control; and, Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Action Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	Identify source Inform the IEC and the ER Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial action until rectification has been completed	Check report Check the Contractor's working method Discuss with the ER and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures	Notify the Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non- conformity	Identify source Inform the IEC and the ER Increase monitoring (site audit) frequency Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial actions until rectification has been completed If exceedance stops, cease additional monitoring (site audit)	Check report Check the Contractor's working method Discuss with the ER and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures	Notify the Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake remedial measures or any necessary replacement

Table I3Event and Action Plan for Landscape and Visual Impact - Construction Phase

Annex J

Waste Flow Table for All Sites

<u>Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System</u> <u>from North Point to Stonecutters Island</u>

Contract No. : DC/2007/23 Monthly Summary Waste Flow Table for 2009 (year)

	Actua	I Quantities of Inert	C&D Materials	Generated Mon	thly	А	ctual Quantities of C&	D Wastes Ge	nerated Mo	nthly	Marine Deposit		
Month	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse	Type 1	Type 2	Type 3
	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)
Jan													
Feb													
Mar													
Apr													
Мау													
June													
Sub- total													
July													
Aug													
Sept													
Oct													
Nov													
Dec	5197.55	0	0	0	5197.55	1	0.036	0	0	45.29	0	0	0
Total	5197.55	0	0	0	5197.55	1	0.036	0	0	45.29	0	0	0

Notes: (1) Metal and paper/cardboard packaging will be collected by recycler for recycling.

Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.

Plastics refer to plastic bottles/containers, plasti
 Broken concrete for recycling into aggregates

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23 Monthly Summary Waste Flow Table for 2010 (year)

	Act	ual Quantities of Iner	t C&D Materials	Generated Mon	thly	Act	ual Quantities of C	&D Wastes	Generated N	lonthly	Ma	arine Depo	osit
Month	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse	Type 1	Type 2	Туре 3
	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)
Jan	7986.1	0	0	0	7986.1	0	0.144	0	0.8	44.5	0	0	0
Feb	4116.23	0	0	0	4116.23	0	0	0	0	41.75	0	0	0
Mar	7876.37	0	0	0	7876.37	0	0.09	0	0	44.58	0.46	0.42	0.027
Apr	7239.31	0	0	0	7239.31	0	0.054	0	0	33.34	0.39	0	0.005
Мау	9998.4	0	0	0	9998.4	0	0.144	0	0.3	37.79	0	0.661	0.012
June	8614	0	0	0	8614	0	0.09	0	0.4	117.2	0	0	0
Sub-total	45830.4	0	0	0	45830.4	0	0.522	0	1.5	319.16	0.85	1.081	0.044
July	8401.37	0	0	0	8401.37	0	0.162	0	0	88.77	0	0.422	0.009
Aug	6001.66	0	0	0	6001.66	0	0	0	0.2	41.63	1.21	0.701	0
Sept													
Oct													
Nov													
Dec													
Total	60233.43	0	0	0	60233.43	0	0.684	0	1.7	449.56	2.06	2.204	0.053

Notes: (1) Metal and paper/cardboard packaging will be collected by recycler for recycling.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.

Plastics refer to plastic bottles/containers, plasti
 Broken concrete for recycling into aggregates.

APPENDIX C

EM&A Quarterly Report Submitted under DC/2009/05

China State – Shanghai Tunnel Joint Venture

Contract No. DC/2009/05

Harbour Area Treatment Scheme Stage 2A, Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works

Quarterly EM&A Report for June 2010 to August 2010 (3rd Quarterly EM&A Report)

September 2010

	Name	Signature
Prepared & Checked:	Cyrus Lau	Oc.
Reviewed & Approved:	Edith Ng (ETL)	XN

Version: 0

Date: 27 September 2010

Disclaimer

This report is prepared for China State – Shanghai Tunnel Joint Venture and is given for its sole benefit in relation to and pursuant to Contract No. DC/2009/05 Harbour Area Treatment Scheme Stage 2A, Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works and may not be disclosed to, quoted to or relied upon by any person other than China State – Shanghai Tunnel Joint Venture without our prior written consent. No person (other than China State – Shanghai Tunnel Joint Venture) into whose possession a copy of this report comes may rely on this report without our express written consent and China State – Shanghai Tunnel Joint Venture may not rely on it for any purpose other than as described above.

AECOM Asia Co. Ltd.

11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong Tel: (852) 3105 8686 Fax: (852) 2317 7609 www.aecom.com



Our ref KMY/PEJ/AFK/TK/bl/T261332/22.01/L-0105

- т 2828 5757
- Anne.kerr@mottmac.com.hk

Your ref

CE/Harbour Area Treatment Scheme Drainage Services Department Sewage Services Branch Harbour Area Treatment Scheme Division 5/F, Western Magistracy, 2A Pokfulam Road, Hong Kong

> 29 September 2010 By Fax (2833 9162) and Post

Attn: Mr. Danny Tang

Dear Sir,

Agreement No. CE 8/2009(EP) Harbour Area Treatment Scheme (HATS) Stage 2A Independent Environmental Checker for Construction Phase – Investigation

Contract No. DC/2009/05 Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works Submission of 3rd Quarterly EM&A Report for June to August 2010

We refer to the revised Quarterly EM&A Report for June to August 2010 received on 28 September 2010 and we confirm we have no further comment.

Yours faithfully for MOTT MACDONALD HONG KONG LIMITED

Dr. Anne F Kerr Independent Environmental Checker

c.c. ARUP AECOM CSSTJV Mr. Gamini Ananda Ms. Edith Ng Mr. Y L Chan Fax: 2370 4377 Fax: 2891 0305 Fax: 2370 2086

20/F Two Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong T +852 2828 5757 F +852 2827 1823 W www.mottmac.com.hk Mott MacDonald Hong Kong Limited

Table of Content

China State - Shanghai Tunnel Joint Venture

EXE	CUTIVE	SUMMARY <u>1</u>
1	INTR	ODUCTION
	1.1	Background4
	1.2	Scope of Report
	1.3	Project Organization
	1.4	Summary of Construction Works5
2	SUM	MARY OF EM&A PROGRAMME REQUIREMENTS6
	2.1	Monitoring Parameters and Locations
	2.2	Environmental Quality Performance Limits (Action/Limit Levels)
	2.3	Environmental Mitigation Measures7
3	MON	ITORING RESULTS
	3.1	Air Quality8
	3.2	Construction Noise
	3.3	Landscape and Visual 12
	3.4	Environmental Site Inspection
4	ADVI	CE ON SOLID AND LIQUID WASTE MANAGEMENT STATUS
	4.1	Solid and Liquid Waste Management Status and Recommendations
5	SUM	MARY OF NON-COMPLIANCE (EXCEEDANCES) OF ENVIRONMENTAL QUALITY FORMANCE LIMITS (ACTION AND LIMIT LEVELS)
	PERF	ORMANCE LIMITS (ACTION AND LIMIT LEVELS)
	5.1	Summary of Exceedances and Review of the Reasons for and the Implications of Non-compliance
		Non-compliance
6	СОМ	PLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION 18
	6.1	Summary of Complaints, Notification of Summons and Successful Prosecutions 18
7	СОМ	MENTS, RECOMMENDATIONS AND CONCLUSIONS
	7.1	Comments on Mitigation Measures
	7.2	Recommendations on EM&A Programme
	7.3	Conclusions

China State - Shanghai Tunnel Joint Venture

List of Tables	
Table 1-1	Contact Information of Key Personnel5
Table 2-1	Locations of Air Quality Monitoring Station6
Table 2-2	Air Quality Monitoring Parameters, Frequency and Duration
Table 2-3	Locations of Impact Noise Monitoring Station6
Table 2-4	Noise Monitoring Parameters, Frequency and Duration
Table 3-1	Summary of Number of Exceedances for 1-hr and 24-hr TSP Concentration
Table 3-2	Summary of Number of Exceedances for Daytime, Evening Time and Night-time
	Construction Impact Noise Monitoring 11
Table 4-1	Summary of Quantity of Waste for Disposal 16
Table 6-1	Summary of Environmental Complaints and Prosecutions

List of Figures

Figure 1.1	General Layout Plan of the Project Site
Figure 2.1	Location of Air Quality Monitoring Station During Impact Monitoring
Figure 3.1	Location of Noise Monitoring Station During Impact Monitoring

List of Appendices

- Appendix A Project Organization Structure
- Appendix B Construction Programme
- Appendix C Implementation Schedule of Environmental Mitigation Measures (EMIS)
- Appendix D Summary of Action and Limit Levels
- Appendix E Graphical Presentation of Air Quality Monitoring Results over Past Four Months
- Appendix F Graphical Presentation of Noise Monitoring Results over Past Four Months
- Appendix G Cumulative Statistics on Exceedances, Complaints, Notification of Summons and Successful Prosecutions

EXECUTIVE SUMMARY

The proposed construction of interconnection tunnel and diaphragm wall for main pumping station at Stonecutters Island Sewage Treatment Works (SCISTW) (the Project) is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and is governed by an Environmental Permit (EP-322/2008/D). The Project comprises the construction of Interconnection Tunnel between the Inlet Chamber of the Main Pumping Station and the existing Riser Shaft and diaphragm wall for the Main Pumping Station.

China State - Shanghai Tunnel Joint Venture was commissioned as the Contractor of the Project. AECOM Asia Co. Ltd. was employed by China State - Shanghai Tunnel Joint Venture as the Environmental Team to undertake the EM&A works for the Project.

The construction phase of the Project commenced on 10 December 2009. The impact environmental monitoring and audit (EM&A) programme of the Project, which includes air quality, noise and landscape and visual monitoring and environmental site inspections, was commenced on 10 December 2009.

This is the third Quarterly Environmental Monitoring and Audit Report prepared for the captioned Project. This report documents the findings of EM&A works conducted in the period between 1 June 2010 and 31 August 2010. As informed by the Contractor, construction activities in the reporting quarter were:

- Drainage work;
- Tree transplanting and protection;
- Construction of diaphragm wall for the main pumping station and its inlet chamber and at launching shaft region of interconnection tunnel; and
- Construction of Utility diversion and cable trough.

Environmental Monitoring Works

EM&A Programme

A summary of monitoring and audit activities conducted in the reporting quarter is listed below:

24-hour TSP monitoring	14 sessions*
1-hour TSP monitoring	45 sessions
Daytime Noise monitoring	13 sessions
Evening Time Noise monitoring	39 sessions
Night-time Noise monitoring	0 sessions
Landscape and Visual Inspection	3 sessions
Environmental Site Inspection	13 sessions

Remarks: * The scheduled monitoring on 3 July 2010 was suspended due to malfunction of High Volume Sampler.

Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Level was recorded for both 1-hour TSP and 24-hour TSP monitoring in the reporting quarter.

Breaches of Action and Limit Levels for Noise

According to the information provided by the Contractor, no Action Level exceedance was recorded since no noise related complaint was received in the reporting quarter.

No Limit Level exceedance of noise was recorded at all monitoring station in the reporting quarter, except the measured noise levels recorded on 10 July 2010 during evening time period.

Based on on-site observations during the course of noise measurements, diaphragm wall construction was the major work process undertaking within the Project site.

Other external noise sources were also noted during the monitoring periods, which may have attributed to the measured noise levels.

Referring to the information provided by the Contractor, type and number of PMEs operated within the Project site on exceedance day comply with the requirements in the CNP (Ref: GW-RW0154-10).

Therefore, it is believed that the Limit Level exceedances are not project-related and not solely caused by the Contractor's construction activities.

According to the EIA report, no noise sensitive receiver was identified near the site area except the FSD Diving Rescue and Diving Training Centre. It is believed that the noise exceedance recorded would have unlikely caused any impact at NSRs farther away. No public complaints have been received in relation to the construction noise from the site during the restricted hours on 10 July 2010.

Complaint, Notification of Summons and Successful Prosecution

According to the information provided by the Contractor, no complaint, notification of summons and successful prosecution was received in the reporting quarter.

Reporting Changes

As confirmed by the Officer from FSD Diving Rescue and Diving Rescue Centre, there is no class during night-time for Year 2010. According to the EIA report, no other noise sensitive receiver was identified near the site area. Thus, the noise monitoring during the night-time period was considered not necessary for Year 2010.

With the approval from IEC & ER, the noise monitoring at monitoring station (NM6) during night-time period was suspended from April 2010 until the end of Year 2010. The necessity of conducting noise monitoring at this station from Year 2011 will be reviewed later.

1 INTRODUCTION

1.1 Background

- 1.1.1 The proposed construction of interconnection tunnel and diaphragm wall for main pumping station at Stonecutters Island Sewage Treatment Works (SCISTW) (the Project) is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and is governed by an Environmental Permit (EP-322/2008/D).
- 1.1.2 The Project site is located in the Sham Shui Po District. It is located within the existing Stonecutters Island Sewage Treatment Works (SCISTW), which is bounded by Ngong Shung Road to the north and the west. The general layout plan of the Project site showing the contract area is shown in Figure 1.1.
- 1.1.3 The objective of the Project "Harbour Area Treatment Scheme (HATS) Stage 2A -Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works (SCISTW)" under Contract DC/2009/05 is to provide Interconnection Tunnel between the Inlet Chamber of the Main Pumping Station and the existing Riser Shaft and diaphragm wall for the Main Pumping Station.
- 1.1.4 The scope of the Project comprises mainly:
 - Construction of Interconnection Tunnel with concrete lining between the Inlet Chamber of the Main Pumping Station and the existing Riser Shaft;
 - Construction of diaphragm wall, base slab and pile cap for the Main Pumping Station and its Inlet Chamber;
 - Excavation within the diaphragm walls for the Main Pumping Station and its Inlet Chamber to founding levels;
 - Piling works for the Main Pumping Station;
 - Utilities upgrading and diversion works;
 - Temporary launching shaft to be handed over to MPS Contractor;
 - Carrying out ground monitoring and instrumentation works;
 - Carrying out pumping test;
 - Miscellaneous building, civil and electrical and mechanical works; and
 - Landscape works.
- 1.1.5 The Project is anticipated to complete in mid 2012.
- 1.1.6 According to the Environmental Permit (EP-322/2008/D) and the EM&A Manual of the Project, there is a need of an EM&A programme including air quality and noise monitoring and landscape and visual impacts and environmental site inspections.
- 1.1.7 AECOM Asia Co. Ltd. was employed by the Contractor, China State Shanghai Tunnel Joint Venture, as the Environmental Team (ET) to undertake the EM&A works for the Project. In accordance with the EM&A Manual of the Project, environmental monitoring of air quality, noise and landscape and visual impacts and environmental site inspections would be required for this Project.
- 1.1.8 The construction phase of the Project commenced on 10 December 2009. The impact environmental monitoring and audit (EM&A) programme of the Project, which includes air quality, noise and landscape and visual monitoring and environmental site inspections, was commenced on 10 December 2009.

China State - Shanghai Tunnel Joint Venture

1.2.1 This is the third Quarterly Environmental Monitoring and Audit (EM&A) Report under the Contract DC/2009/05 – Harbour Area Treatment Scheme (HATS) Stage 2A - Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works (SCISTW). This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for the Project in the period between 1 June 2010 and 31 August 2010.

1.3 **Project Organization**

1.3.1 The project organization structure is shown in Appendix A. The key personnel contact names and numbers are summarized in Table 1-1.

Party	Position	Name	Telephone	Fax
	The Engineer	S.Y. Chan	2528 3031	2370 4377
ER (Ove Arup)	The Engineer Representative	M.P. Gamini Ananda	2370 4311	2370 4377
(Ove Alup)	The Engineer Representative's Coordinator	William Yu	9705 9566	2370 4377
IEC (Mott MacDonald)	Independent Environmental Checker	Anne Kerr	2828 5793	2827 1823
Contractor (China State –	Site Agent	Ben Siu	6432 1490	2370 2086
Shanghai Tunnel Joint Venture)	Environmental Officer	Chris Leung	2704 2095	2370 2086
ET (AECOM)	ET Leader	Edith Ng	3105 8525	2891 0305

Table 1-1 Contact Information of Key Personnel

1.4 Summary of Construction Works

- 1.4.1 As informed by the Contractor, the Contactor has carried out the following major activities in the reporting quarter:
 - Drainage work;
 - Tree transplanting and protection;
 - Construction of diaphragm wall for the main pumping station and its inlet chamber and at launching shaft region of interconnection tunnel; and
 - Construction of Utility diversion and cable trough.
- 1.4.2 The latest Construction Programme of the Project is shown in Appendix B.
- 1.4.3 The mitigation measures implementation schedule (EMIS) are presented in Appendix C.

2 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

2.1 Monitoring Parameters and Locations

2.1.1 The EM&A Manual and Monitoring Proposal designated locations for the monitoring of environmental impacts in terms of construction noise and air quality impact due to the Project. The description of monitoring parameters, frequencies and durations and detailed locations of monitoring stations for air quality and construction noise are listed below. The monitoring stations for air quality impact and construction noise are depicted in Figure 2.1 and 3.1 respectively.

Table 2-1 Locations of Air Quality Monitoring Station

ID	Location	Monitoring Station
AM7	West Kowloon No. 2 Sewage Pumping Station	Roof top of the premise

Table 2-2 Air Quality Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Frequency and Duration
AM7	1-hour TSP	At least 3 times every 6 days
AWI7	24-hour TSP	At least once every 6 days

Table 2-3 Locations of Impact Noise Monitoring Station

ID	Location	n Monitoring Station		
NM6	Customs' Marine Base	1m from the exterior of the roof top façade of Block H of Government Dockyard		

Table 2-4 Noise Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameters and Duration	Frequency
	30-min measurement at monitoring station between 0700 and 1900 on normal weekdays.	
NM6	3 times of 5-min measurement at monitoring station during restricted hours if construction works were carried out.	At least once per week
	L_{eq} , L_{10} and L_{90} would be recorded.	

2.1.2 The EM&A Manual also required monthly landscape and visual audit and weekly environmental site inspections for air quality, noise, water quality, as well as waste management.

2.2 Environmental Quality Performance Limits (Action/Limit Levels)

2.2.1 The environmental quality performance limits, i.e. Action and Limit Levels for air quality impact and construction noise monitoring works were derived from the baseline monitoring results as detailed in the EM&A Manual and Monitoring Proposal. Appendix D shows the established Action and Limit Levels for all monitoring parameters.

2.3 Environmental Mitigation Measures

2.3.1 Relevant environmental mitigation measures as recommended in the Project EIA final report were stipulated in the EM&A Manual and environmental requirement in contract documents for the Contractor to adopt. A list of mitigation measures and their implementation statuses, i.e. Implementation Schedule of Mitigation Measures (EM(S), are given in Appendix C.

3 MONITORING RESULTS

3.1 Air Quality

- 3.1.1 Air quality monitoring, including 1-hr and 24-hr TSP, was conducted for at least three times every 6 days (for 1-hr TSP) and for at least once every 6 days (for 24-hr TSP)respectively at the designated monitoring station (AM7, Rooftop of West Kowloon No.2 Sewage Pumping Station), in accordance with the EM&A Manual and Monitoring Proposal.
- 3.1.2 Forty-five (45) sessions of 1-hr TSP monitoring and fourteen (14) sessions of 24-hr TSP monitoring were conducted at the designated monitoring station (AM7) in the reporting quarter. The scheduled monitoring on 3 July 2010 was suspended due to malfunction of High Volume Sampler.
- 3.1.3 The weather was mostly sunny, with occasional cloudy/rainy events in the reporting quarter. The trend of air quality monitoring results for the reporting quarter is given in Appendix E. Major dust source included construction activities of the Project and nearby traffic emissions.
- 3.1.4 There was no Action and Limit Level exceedance recorded for 1-hr TSP and 24-hr TSP in the reporting quarter.
- 3.1.5 Table 3-1 presents the number of exceedances recorded in each month of the reporting quarter. The number of monitoring events included regular impact monitoring events and additional ones, if any.

Monitoring	Location	Level of Exceedance		Month	
Parameter			Jun 10	Jul 10	Aug 10
1-hr TSP	AM7	No. of monitoring events	15	15	15
		Action	0	0	0
		Limit	0	0	0
		Total	0	0	0
24-hr TSP	AM7	Total No. of monitoring events	0 5	0 4*	0 5
24-hr TSP	AM7		•		Ŭ
24-hr TSP	AM7	No. of monitoring events	5	4*	5

Table 3-1Summary of Number of Exceedances for 1-hr and 24-hr TSP
Concentration

Remarks: * The scheduled monitoring on 3 July 2010 was suspended due to malfunction of High Volume Sampler.

3.2 Construction Noise

- 3.2.1 Noise measurement was conducted at the designed monitoring station NM6, rooftop of Customs' Marine Base (Block H of Government Dockyard), for at least once per week during the construction phase (daytime (0700 1900) and evening time (1900 2300)) of the Project. Monitoring station (NM6) serves as an alternative location for FSD Diving Rescue and Diving Training Centre, which is regarded as a Noise Sensitive Receiver (NSR) as it is an institution.
- 3.2.1 As informed by the Contractor, the construction works had extended to include works during the evening time period (1900 to 2300) on all weekdays and during daytime and evening time period (0700 to 2300) on Sundays and Public Holidays in the reporting quarter, except on 1 July 2010. Moreover, construction works had been further extended to the night-time period (2300 to 0700 of next day) on all days, except on 1 July 2010. The construction works were conducted in accordance with the granted Construction Noise Permit (CNP) under NCO.
- 3.2.2 As confirmed by the Officer from FSD Diving Rescue and Diving Rescue Centre, there is no class during night-time period (from 2300 to 0700) for Year 2010. According to the EIA report, no noise sensitive receiver was identified near the site area except the FSD Diving Rescue and Diving Training Centre. Thus, the noise monitoring during the night-time period was considered not necessary for Year 2010.
- 3.2.3 With the approval from IEC & ER, the noise monitoring at monitoring station (NM6) during night-time period (from 2300 to 0700) was suspended from April 2010 until the end of Year 2010. The necessity of conducting noise monitoring at this station from Year 2011 will be reviewed later.
- 3.2.4 Thirteen (13) daytime noise monitoring events and thirty-nine (39) evening time noise monitoring events were carried out at the designated monitoring station (NM6) in the reporting quarter.
- 3.2.5 The weather was mostly sunny, with occasional cloudy events in the reporting quarter. The trend of construction noise impacts for the reporting quarter is given in Appendix F. Major noise source included construction activities of the Project, other construction sites nearby, operational noise form cargo transportation, engine noise from ships anchored at nearby piers, community noise and traffic noise from nearby piers.
- 3.2.6 According to the Contractor's information, no noise complaint was received in the reporting quarter; hence, no Action Level exceedance was recorded.
- 3.2.7 No Limit Level exceedance of noise was recorded at monitoring station NM6 in the reporting quarter, except the measured noise levels recorded on 10 July 2010 during evening time period.

Based on on-site observations during the course of noise measurements, diaphragm wall construction was the major work process undertaking within the Project site.

Other external noise sources, including construction noise from excavation work undergoing at other construction site nearby, engine noise from barge anchored at nearby piers and traffic noise from aircrafts passing by and from nearby piers, were also noted during the monitoring period, which may have attributed to the measured noise levels.

According to the information provided by the Contractor, two concrete lorry mixers, a hydromill, a bentonite filtering plant, a generator and a crane were operating within the Project site during the course of noise measurement. Type and number of PMEs operated comply with the requirements in the CNP (Ref: GW-RW0154-10).

China State - Shanghai Tunnel Joint Venture

Therefore, it is believed that the Limit Level exceedances are not project-related and not solely caused by the Contractor's construction activities.

Meanwhile, the Contractor is reminded to strictly implement all noise mitigation measures as stated in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid any further noise Limit Level exceedance and any public complaints.

Moreover, the Contractor was reminded to ensure that the types and number of PME deployed on site during the restricted hours should strictly comply with the granted CNPs.

According to the EIA report, no noise sensitive receiver was identified near the site area except the FSD Diving Rescue and Diving Training Centre. It is believed that the noise exceedance recorded would have unlikely caused any impact at NSRs farther away. No public complaints have been received in relation to the construction noise from the site during the restricted hours on 10 July 2010.

Please refer to the monthly EM&A report (July 2010) accordingly for the details of the captioned exceedances.

China State - Shanghai Tunnel Joint Venture

3.2.8 Table 3-2 presents the number of exceedances recorded in each month of the reporting quarter. The number of monitoring events included regular monitoring events and additional ones, if any.

Table 3-2Summary of Number of Exceedances for Daytime, Evening Time and
Night-time Construction Impact Noise Monitoring

Monitoring Parameter	Location	Level of Exceedance	Month		
			Jun 10	Jul 10	Aug 10
Daytime Construction Noise	NM6	No. of monitoring events	5	4	4
		Action	0	0	0
		Limit	0	0	0
	Total		0	0	0
Evening Time Construction Noise	NM6	No. of monitoring events	15	12	12
		Action	0	0	0
		Limit	0	0	0
	Total		0	0	0
Night-time Construction Noise	NM6	No. of monitoring events	0	0	0
		Action	0	0	0
		Limit	0	0	0
	Total		0	0	0

Remarks: Exceedances which are not project-related are not presented in this table.

3.3 Landscape and Visual

- 3.3.1 In accordance with the EM&A Manual, during the construction phase of the Project, landscape and visual monitoring should be carried out monthly with supervision by a Registered Landscape Architect (RLA). The landscape and visual monitoring is to check if the design, implementation and maintenance of the landscape and visual mitigation measures are fully effectuated.
- 3.3.2 A Baseline Review was conducted prior to the commencement of the construction contracts. The Baseline Review is to review the landscape and visual baseline conditions associated with the Project. Based on the findings given in the Baseline Review Report, the baseline landscape resources, landscape character areas and visually sensitive receivers originally identified within the EIA study area are generally unchanged and remain valid. Changes to the landscape and visual baseline are thus judged to be Insignificant.
- 3.3.3 Three (3) landscape and visual audits were conducted in the reporting quarter. Observations recorded during the audits in the reporting quarter are described below.

Protection of Existing Trees and Tree Works:

- 3.3.4 The Contractor had installed nylon netting as visual precautionary measures to prevent accidental damage to upper portion of trees that may be caused by machinery swing movements for trees retained within the tree protection zone in the Portion 2 area. However, it was noted that one of the anchor ropes was tied to the existing T5 tree trunk. The Contractor was requested to untie the anchor rope from the tree trunk and use other means to anchor the ropes.
- 3.3.5 It was observed that the barriers used to demarcate the tree protection zone at the Portion 2 area was either fallen over or dismantled. The Contractor was requested to properly re-instate the tree protection zone in order to prevent workers from trespassing and causing damage to the trees.
- 3.3.6 The Contractor had carried out tree protection works for all existing trees at the excavated material stockpile area and the existing trees had been transplanted to holding nursery. However, the Contractor was reminded to remove all the dead trees as soon as possible to prevent accidents that may be caused by dead trees fallen over.

3.4 Environmental Site Inspection

- 3.4.1 There were thirteen (13) site inspections conducted in the reporting quarter to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. The major concerns for the Project are air quality, noise, water quality and chemical and waste management. Observations recorded are described below.
- 3.4.2 The Contractor has rectified most of the observations as identified during environmental site inspections in the reporting quarter within agreed time frame. Rectifications of remaining identified items are undergoing by the Contractor. Follow-up inspections on the status on provision of mitigation measures will be conducted to ensure all identified items are mitigated properly.

3.4.3 <u>Air Quality</u>

- No water spraying or coverage is observed at excavation works area and exposed soil stockpiles at Utility diversion works area. The Contractor should provide proper dust mitigation measures (e.g. regular water spraying and tarpaulin sheet coverage to exposed soil stockpile) to suppress the fugitive dust emission from excavation works and exposed soil stockpiles.
- Access road at main pumping station is found to be dusty. The Contractor is advised to provide regular watering to the access road, pave the access road with blacktop or compact the road surface to minimize the dust impact.
- 3.4.4 <u>Noise</u>
 - Nil.

3.4.5 <u>Water Quality</u>

- Accumulation of slurry, oily liquid and stagnant water on the ground was observed at works area at main pumping station, although pumping systems were provided on site and clearance by machineries and workers were observed. The Contractor was recommended to provide effective measures on avoidance of slurry and oily liquid spreading and clearance of accumulated slurry, stagnant water and oily liquid on site, in order to avoid generation of silty and oily surface run-off during rainstorm. Oily mixture and slurry accumulated inside the drip trays for oil drums should be treated properly and disposed of as chemical wastes. Moreover, the Contractor should ensure that proper bunds/channels had been provided at the site boundaries to confine/collect the surface run-off from work site.
- The Contractor should ensure that the rainwater pumped out from the works area at cable trenches should be properly discharged into silt removal facilities before discharge into storm drains.
- No bund/channel was provided at site boundaries of excavated material stockpile area. Proper sand bags/bunds/channels should be provided at the concerned area to collect/direct the surface run-off to sedimentation facilities provided within the works area.

- Exposed soil stockpiles were observed at Utility diversion works area and Launching Shaft (Portion 2). The Contractor should cover them up with tarpaulin sheet to avoid generation of silty run-off during rainstorm.
- Stagnant water accumulation was observed in an abandoned sedimentation tank placed at utility diversion works area. The Contractor should clear the accumulated stagnant water to avoid mosquito breeding.

3.4.6 Chemical and Waste Management

- Site tidiness within the Project site area should be improved. General refuse and C&D wastes scattered and/or accumulated at designated collection receptacles/ storage areas within the site area at main pumping station and Utility diversion works area (especially works area near seawall) should be removed off-site regularly and disposed of properly. The Contractor should ensure the wastes were sorted properly before disposal.
- The setting of chemical waste storage area provided at main pumping station was found improper. The designated chemical waste storage area should be kept locked at all times. Proper panels with correct Chinese characters of "Chemical Waste" should be provided at the designated chemical waste storage area. The designated chemical waste storage area should be relocated to a place where it is accessible by the workers.
- Improper stored oil drum and chemical containers are found within the works area at main pumping station, Launching Shaft (Portion 2), excavated material stockpile area and cable trough works area. The Contractor should ensure that all oil drums and chemical containers placed within the works area should be properly stored with provision of drip trays and were covered up properly to avoid any leakage of oil and chemicals. Empty chemical containers placed at main pumping station should be properly labelled. Moreover, drip trays should be provided for works with potential oil leakage as oil stains were observed on the bare ground near site office area. Oil stains should be cleared and treated as chemical wastes.
- Oil leakage was observed from an excavator worked at Utility diversion works area. The Contractor should repair the concerned excavator and provide proper measures to avoid any oil leakage onto the ground. Oil stains found on the ground should be cleared and dispose of as chemical waste.
- Oily slurry accumulations on ground and inside the drip tray placed within works area at main pumping station were observed. The Contractor should clear the mixture and dispose of it as chemical waste.
- Oil stains were observed on the bare ground near the chemical waste storage area at main pumping station. The Contractor should clear the oil stains and dispose of them as chemical waste.

3.4.7 <u>Others</u>

- Environmental Permit posted at all vehicle site entrances/exits was found to be not up-to-date. The Contractor should post the relevant Environmental Permit at all vehicle site entrances/exits.
- Newly obtained Construction Noise Permit (CNP) was not found posted at all vehicle site entrances/exits. The Contractor should post the newly obtained CNP at all vehicle site entrances/exits.

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• Construction materials and machinery parts were found placed near the existing trees at excavated material stockpile area and no protective measures were provided to the existing trees at the concerned area. Proper tree protective measures (e.g. protective net) should be provided to the existing trees at concerned works area. Construction materials and machinery parts should be removed and kept away from the existing trees to avoid accidental damage to the trees.

4 ADVICE ON SOLID AND LIQUID WASTE MANAGEMENT STATUS

4.1 Solid and Liquid Waste Management Status and Recommendations

- 4.1.1 The Contractor is registered as a chemical waste producer for this Project. C & D material and waste sorting was carried out on site. Receptacles were available for general refuse and C&D wastes collection.
- 4.1.2 As advised by the Contractor, quantity of waste for disposal in the reporting quarter is summarized in the Table 4-1.

Type of waste		Month		Total
	Jun 10	Jul 10	Aug 10	
		C&D materials	generated	
Total C&D material generated	7,786.81 tonnes	6,169.93 tonnes	5,317.84 tonnes	19,274.58tonnes
Hard Rock and Large Broken Concrete	0 tonnes	71.51 tonnes	10.17 tonnes	81.68tonnes
Soil, slurry and building debris	5,422.83 tonnes	5,365.55 tonnes	4,115.80 tonnes	14,904.18tonnes
Mixed rock, concrete and soil	141.42 tonnes	154.88 tonnes	41.73 tonnes	338.03tonnes
Used bentonite slurry	2,222.56 tonnes	577.99 tonnes	1,150.14 tonnes	3,950.69tonnes
Reuse in other projects	0 tonnes	0 tonnes	0 tonnes	0 tonnes
Disposed to barging point	0 tonnes	0 tonnes	0 tonnes	0 tonnes
	C&D) wastes genera	ated/collected	
Metals	7,000 kg	8,890 kg	17,410 kg	33,300kg
Paper cardboard packing	0 kg	0 kg	0 kg	0 kg
Plastics	0 kg	0 kg	0 kg	0 kg
Chemical waste	2,400 L	1,400 L	1,000 L	4,800L
General refuse	14,14 tonnes	9.48 tonnes	16.34 tonnes	39.96tonnes

Table 4-1Summary of Quantity of Waste for Disposal

- 4.1.3 The Contractor is advised to properly maintain on site C&D material and waste sorting, collection and recording system and maximize reuse / recycle of C&D material and waste. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.
- 4.1.4 The Contractor should ensure that the setting of the chemical waste storage area on site should comply with Code of Practice on the Packing, Labelling and Storage of Chemical Wastes.

5 SUMMARY OF NON-COMPLIANCE (EXCEEDANCES) OF ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

- 5.1 Summary of Exceedances and Review of the Reasons for and the Implications of Non-compliance
- 5.1.1 There was no Action and Limit Level exceedance recorded for 1-hr TSP and 24-hr TSP in the reporting quarter.
- 5.1.2 According to the Contractor's information, no noise complaint was received in the reporting quarter; hence, no Action Level exceedance was recorded.
- 5.1.3 No Limit Level exceedance of noise was recorded at monitoring station NM6 in the reporting quarter, except the measured noise levels recorded on 10 July 2010 during evening time period.

Based on on-site observations during the course of noise measurements, diaphragm wall construction was the major work process undertaking within the Project site.

Other external noise sources, including construction noise from excavation work undergoing at other construction site nearby, engine noise from barge anchored at nearby piers and traffic noise from aircrafts passing by and from nearby piers, were also noted during the monitoring period, which may have attributed to the measured noise levels.

According to the information provided by the Contractor, two concrete lorry mixers, a hydromill, a bentonite filtering plant, a generator and a crane were operating within the Project site during the course of noise measurement. Type and number of PMEs operated comply with the requirements in the CNP (Ref: GW-RW0154-10).

Therefore, it is believed that the Limit Level exceedances are not project-related and not solely caused by the Contractor's construction activities.

Meanwhile, the Contractor is reminded to strictly implement all noise mitigation measures as stated in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid any further noise Limit Level exceedance and any public complaints.

Moreover, the Contractor was reminded to ensure that the types and number of PME deployed on site during the restricted hours should strictly comply with the granted CNPs.

According to the EIA report, no noise sensitive receiver was identified near the site area except the FSD Diving Rescue and Diving Training Centre. It is believed that the noise exceedance recorded would have unlikely caused any impact at NSRs farther away. No public complaints have been received in relation to the construction noise from the site during the restricted hours on 10 July 2010.

Please refer to the monthly EM&A report (July 2010) accordingly for the details of the captioned exceedances.

5.1.4 Cumulative statistics of exceedances is provided in Appendix G.

6 COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

6.1 Summary of Complaints, Notification of Summons and Successful Prosecutions

- 6.1.1 Referring to the information provided by the Contractor, there was no complaint, notification of summons and successful prosecution received in the reporting quarter.
- 6.1.2 Table 6-1 summarized the complaint, summons and successful prosecution received in the reporting period.

Table 6-1 Summary of Environmental Complaints and Prosecutions

	Jun 10	Jul 10	Aug 10	Total
Complaint Logged	0	0	0	0
Summons Served	0	0	0	0
Successful Prosecution	0	0	0	0

6.1.3 Cumulative Statistics of Exceedance, Complaints, Notification of Summons and Successful Prosecutions recorded in the reporting quarter and since the commencement of the Project are given in Appendix G.

7 COMMENTS, RECOMMENDATIONS AND CONCLUSIONS

7.1 Comments on Mitigation Measures

7.1.1 According to the environmental site inspections performed in the reporting quarter, the following comments are provided:

7.1.2 Air Quality Impact

- Dust mitigation measures should be provided (e.g. regular water spraying and tarpaulin sheet coverage to exposed soil stockpile) to suppress the fugitive dust emission from excavation works and exposed soil stockpiles.
- Dust suppressive measures should be provided to the access roads within site area, like regular watering to access road, pave the access road with blacktop or compact the road surface.

7.1.3 Noise

• Nil.

7.1.4 Water Quality

- The Contractor should inspect the site condition regularly and provide proper and effective measures on clearance and avoidance of slurry, stagnant water and oily liquid accumulation within the works area and their spreading, especially during rainstorm. Oily mixture found within the works area should be collected properly and treated as chemical wastes.
- Rainwater pumped out from the works area should be properly discharged into silt removal facilities before discharge into storm drains.
- Proper sand bags/bunds/channels should be provided at the site boundaries of the works area to collect/direct the surface run-off to sedimentation facilities provided within the works area.
- Exposed soil stockpile should be covered up with tarpaulin sheet properly to avoid generation of silty run-off during rainstorm.

7.1.5 Chemical and Waste Management

- Site tidiness within the Project site area should be improved. General refuse and C&D wastes scattered and/or accumulated at designated collection receptacles/ storage areas within the site area should be removed off-site regularly and disposed of properly. The Contractor should ensure the wastes were sorted properly before disposal.
- Setting of the chemical waste storage area on site should comply with Code of Practice on the Packing, Labelling and Storage of Chemical Wastes. The designated chemical waste storage area should be kept locked at all times. Proper panels with correct Chinese characters of "chemical waste" should be provided at the designated chemical

China State - Shanghai Tunnel Joint Venture

wastes storage area. The designated chemical wastes storage area should be relocated to a place where it is accessible by the workers.

- All oil drums and chemical containers placed within the works area should be properly stored with provision of drip trays and were covered up properly to avoid any leakage of oil and chemicals. Empty chemical containers placed at main pumping station should be properly labelled.
- Drip trays should be provided for works with potential oil leakage to avoid any oil spillage.
- Regular inspections of machineries worked on site should be conducted to avoid any oil leakage from them. Any malfunction machineries should be repaired properly.
- Any oil mixed material, like oily liquid/slurry in drip trays and oil stains, found within the works area should be cleared and disposed of properly as chemical wastes. Regular inspection on the site condition should be conducted to avoid any accumulation of oil mixture within works area, especially after rainstorm.

7.1.6 Landscape and Visual Impact

- Proper tree protective measures (e.g. protective net) should be provided to the existing trees within the works area. Construction materials and machinery parts should be kept away from the existing trees to avoid accidental damage to the trees.
- The Contractor was requested to untie the anchor rope from the existing tree trunk at Portion 2 area as soon as possible.
- The Contractor was reminded to remove dead trees at the excavated material stockpile area as soon as possible.
- The Contractor was requested to re-instate the barriers for the tree protection zone of the existing trees at Portion 2 area as soon as possible.

7.1.7 Others

• Relevant Environmental Permit and Construction Noise Permit should be posted at all vehicle site entrances/exits.

7.2 Recommendations on EM&A Programme

- 7.2.1 The impact air quality and noise monitoring programme ensured that any environmental impact to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental acceptability of the Project. The monthly landscape and visual audit and weekly site inspection ensured that all the environmental mitigation measures recommended in the EIA final report were effectively implemented.
- 7.2.2 The EM&A programme, which include environmental monitoring of air quality, noise and landscape and visual impacts and environmental site inspections, effectively monitored the environmental impacts from the construction activities and no particular recommendation was advised for the improvement of the programme.

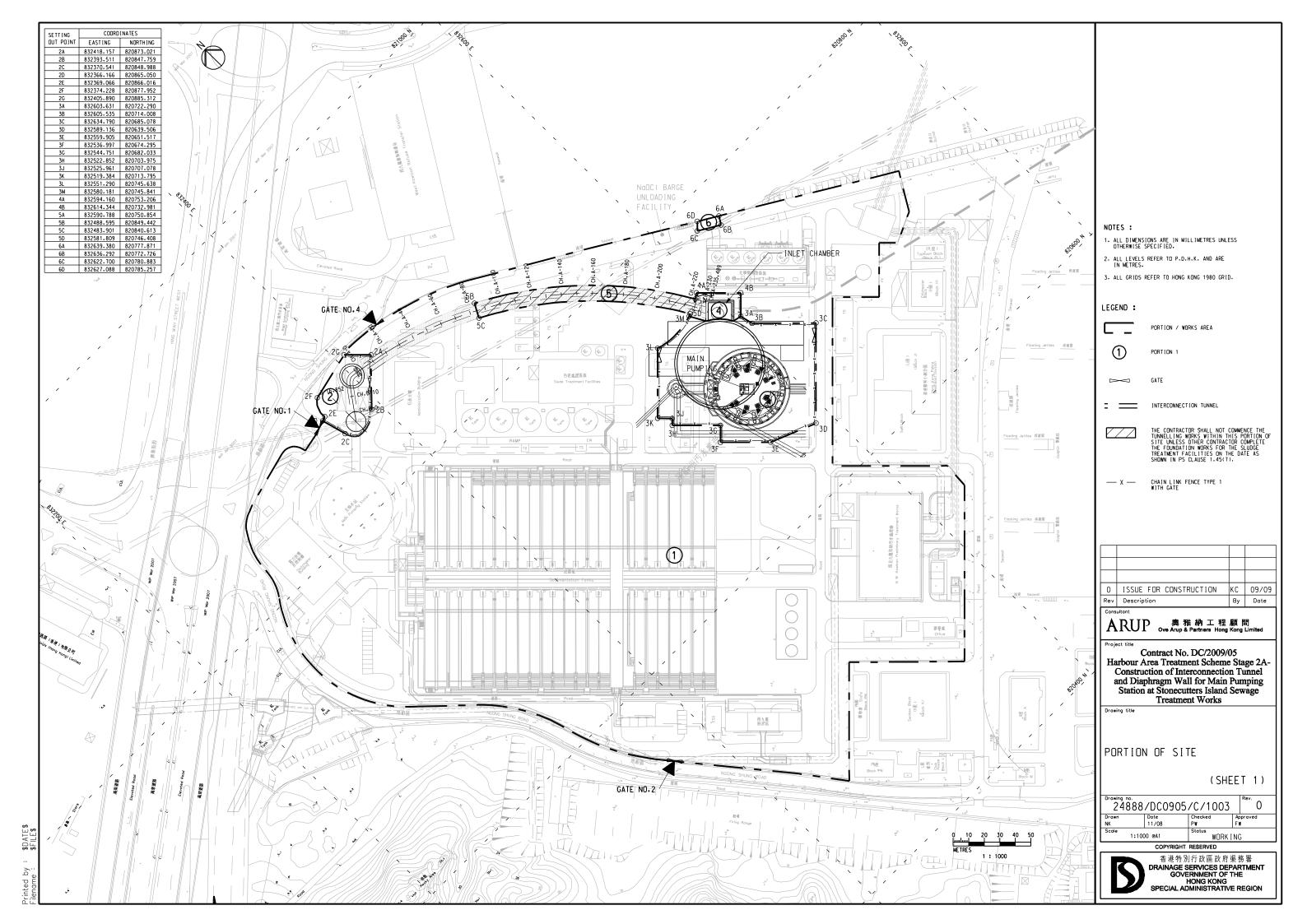
7.3 Conclusions

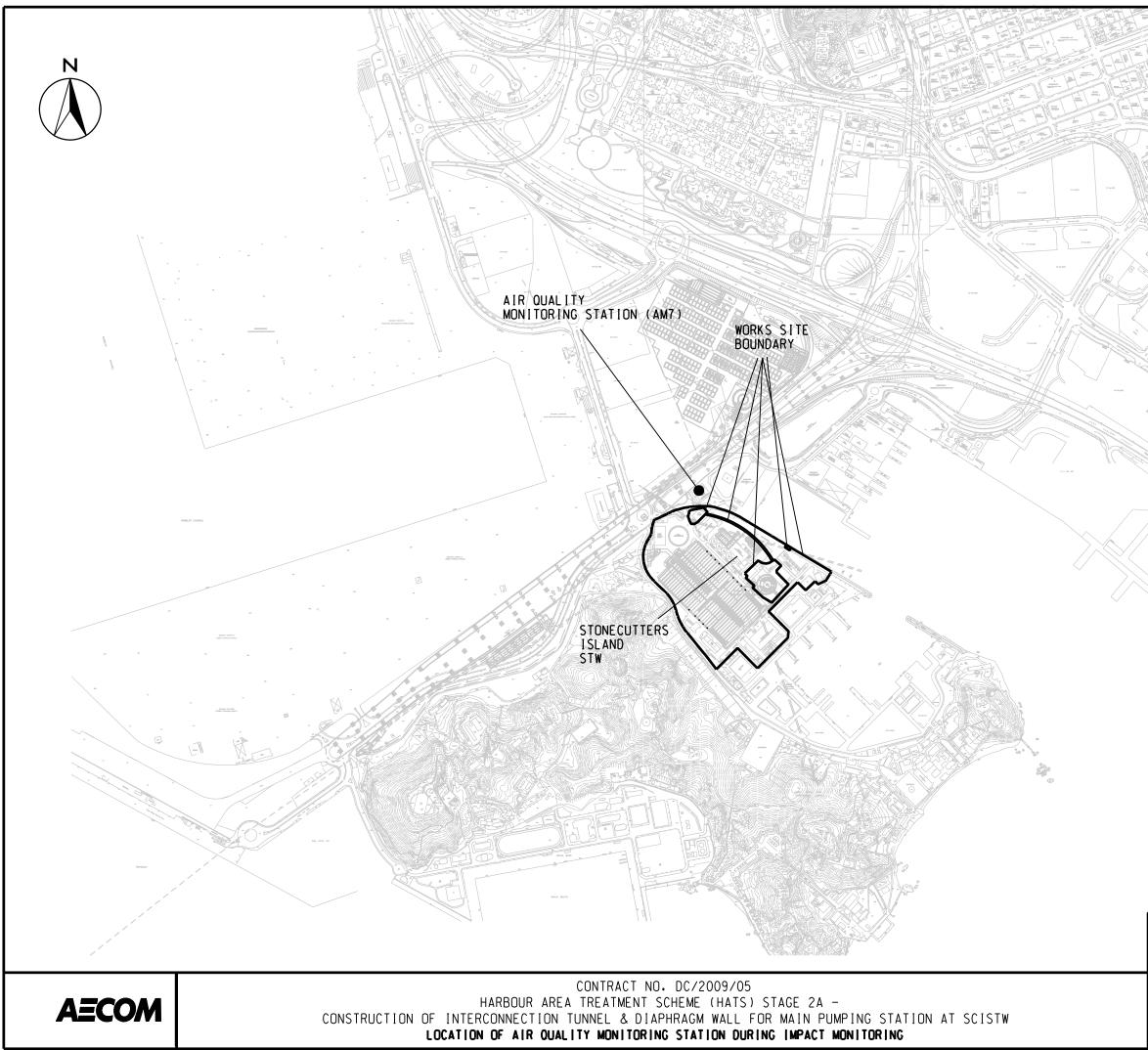
- 7.3.1 Air quality and noise monitoring and weekly site inspection were carried out from June 2010 to August 2010, in accordance with the EM&A Manual.
- 7.3.2 All 1-hour and 24-hour TSP monitoring results complied with the Action/Limit Level in the reporting quarter.
- 7.3.3 As per Contractor's information, no Action Level exceedance of noise was recorded as complaints was recorded in the reporting quarter.
- 7.3.4 No Limit Level exceedance of noise was recorded at all monitoring station in the reporting quarter, except the measured noise levels recorded on 10 July 2010 during evening time period. The Limit Level exceedances are not considered as project-related and not solely caused by the Contractor's construction activities.
- 7.3.5 Three landscape and visual audit was carried out in the reporting quarter. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the landscape and visual audit.
- 7.3.6 Referring to the information given by the Contractor, no environmental complaint, summons or prosecution was made against the Project in the reporting quarter.
- 7.3.7 Environmental site inspections were carried out 13 times in the reporting period. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

FIGURES

FIGURE 1.1

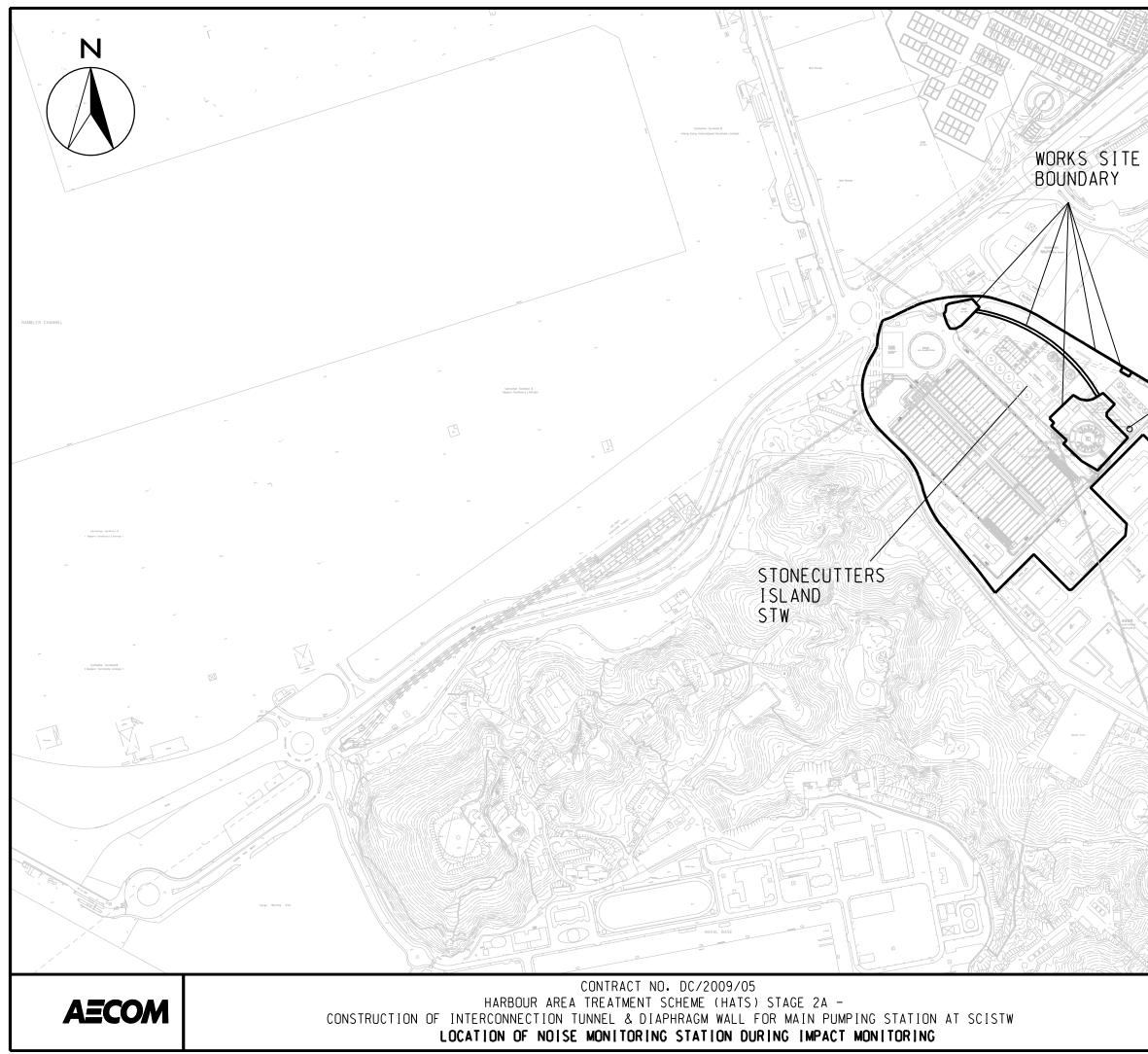
General Layout Plan of the Project Site



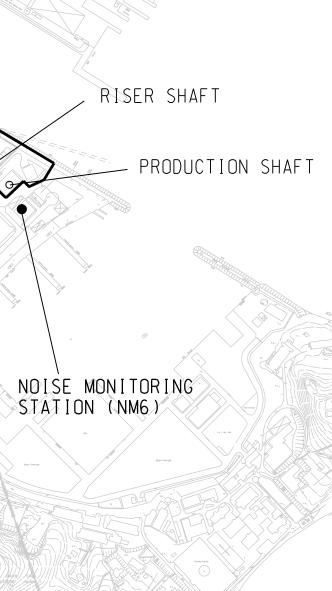


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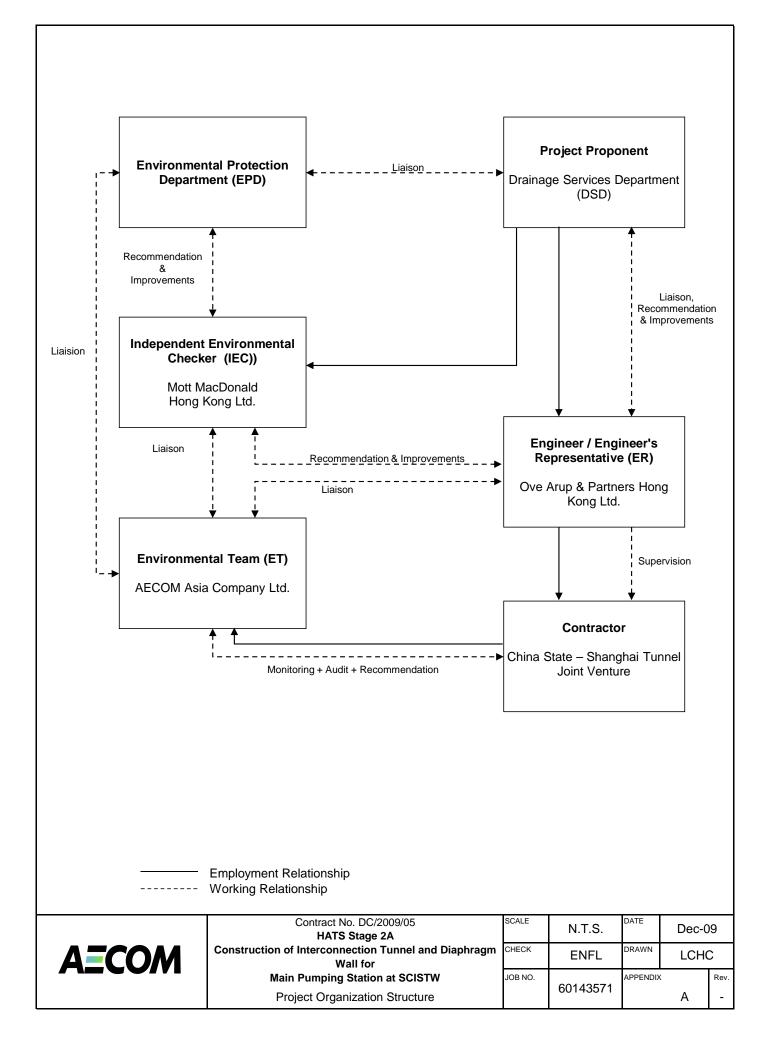
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APPENDIX A

Project Organization Structure



**APPENDIX B** 

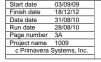
**Construction Programme** 

						Construction of	of Interconnection Tunnel & D.Wall - Main Pumping Station at Stonecutters
Act Description	Original Duration		arly Actu inish Sta		Remaining Pe Duration Co		
y Dates							SET OUT NOV DEC SAN TED MIAK AFK MIRT SUN SUE AUG SET OUT NOV DEC SAN TED MIAK AFK MIRT SUN SUE AUG SET OUT NOV DEC SAN TED MIAK AFK
For All Works Under the Contract )							
General KD-1000 Letter of Acceptance	0	03/09/09 A	03/09	/09	0	100	Letter of Acceptance
KD-2000 Contract Commencement		17/09/09 A	17/09		0	100	- Protract Commencement
KD-2500 Contract Completion	0	18/1	2/11 *		0	0 0	
KD-2600 End of Maintenance Period	0	18/1	2/12 *		0	0 0	
Section I of the Works (387 days)		00/1	0/40 t				
KD-3000 Section I of the Works Section II of the Works (730 days)	0	08/1	0/10 *		0	0 0	i - → Section I of the Works
KD-4000 Section II of the Works	0	16/0	9/11 *		0	0 0	+ <b>→</b> Section II of the Works
Section III of the Works (823 days)	-					-	
KD-5000 Section III of the Works	0	18/1	2/11 *		0	0 0	
Portion Handover KD-6000 Portion 2 (1 day)	0	17/09/09 A	17/09	/00	0	100	♦ Portion 2 (1 day)
KD-6100 Portion 3 (1 day)		17/09/09 A	17/09		0	100	◆ Portion 3 (1 day)
KD-6200 Portion 4 (1 day)		17/09/09 A	17/09		0	100	◆ Portion 4 (1 day)
KD-6300 Portion 5 (Latest Possession 549 days)	0	19/03/11 *			0	0 0	♦ Portion 5 (Latest Possession 549 days)
KD-6400 Portion 6 (1 day)	0	17/09/09 A	17/09	/09	0	100	♦ Portion 6 (1 day)
KD-6500 Portion A (1 day)	-	17/09/09 A	17/09		0	100	Portion A (1 day)
KD-6600 Portion B (1 day)		17/09/09 A	17/09		0	100	♦ Portion B (1 day)
KD-6700 Portion C (1 day) eliminaries and General Requirement	0	17/09/09 A	17/09	09	0	100	Portion C (1 day)
General Requirement							
General							
PG/00010 General Preliminaries Requirement		17/09/09 A 11/0				100	General Preliminaries Requirement
PG/00020 General Site Clearance		17/09/09 A 30/0				100	
PG/00030 Establish Cont & Eng's Temp Site Office		17/09/09 A 30/0 17/09/09 A 07/1				100	Establish Cont & Eng's Temp Site Office
PG/00040 Initial Survey of Site PG/00050 Construction of Steel Fencing & Gates			0/09 A 17/09 0/09 A 17/09			100	Construction of Steel Fencing & Gates
PG/00060 Construction of Contractor Accommodation		17/09/09 A 26/1		09 26/11/09		100	->-Construction of Contractor Accommodation
PG/00070 Provision of Interim Engineer Office			9/09 A 17/09			100	->- Provision of Interim Engineer Office
PG/00080 Submit Engineer Accommodation Proposal	32	17/09/09 A 18/1	0/09 A 17/09	/09 18/10/09	0	100	Submit Engineer Accommodation Proposal
PG/00090 Approval for Engineer's Accommodation Proposal		19/10/09 A 31/1				100	Approval for Engineer's Accommodation Proposal
PG/00100 Construction of Engineer Accommodation			2/10 A 22/10			100	→ + → → → → → → → → → → → → → → → → → →
PG/00110 Take Over Control Gate No.2 from ADF Contractor PG/00120 Handover Portion 3 to MPS Contractor		15/10/09 A 15/1 30/10/11 30/1	0/09 A 15/10	09 15/10/09	0	100 0 -44d	
PG/00120 Handover Control Gate No2 to 4 to MPS Contractor		31/01/12 31/0			1	0 -440 0 322d	- →IHandover Control
PG/00140 Handover Portions 2 & 4 to MPS Contractor		31/01/12 31/0			1	0 -44d	
PG/00150 Handover Portions A & D to MPS Contractor	1	31/01/12 31/0	1/12		1	0 322d	
PG/00160 Handover Eng Accommodation to MPS Contractor		31/01/12 31/0			1	0 322d	
PG/00170 Handover Switchboard to MPS Contractor(deleted)	0	31/01/12 30/0	1/12		0	0 323d	
Submission, Approvals and Permits General							
PG/00210 Submission and Permits	199 *	03/09/09 A 24/0	3/10 A 03/09	/09 24/03/10	0 *	100	Submission and Permits
PG/00220 Submission of Initial Works Programme	19	03/09/09 A 21/0	9/09 A 03/09	/09 21/09/09	0	100	Submission of Initial Works Programme
PG/00230 Engineer's Approval of Works Programme		22/09/09 A 22/1				100	Engineer's Approval of Works Programme
PG/00240 Submission of Detailed Works Programme		23/10/09 A 24/0				100	Submission of Detailed Works Programme
PG/00250 Submission of 1st 3Mths Rolling Programme			9/09 A 17/09			100	- Submission of 1st 3Mths Rolling Programme
PG/00260 Submission of Draft Safety Plan			9/09 A 03/09		-	100	Submission of Draft Safety Plan
PG/00270 Submission of Final Safety Plan PG/00280 Submission of Staff/ Organisation Chart			0/09 A 03/09 9/09 A 17/09		-	100	-> Submission of Staff/ Organisation Chart
PG/00290 Submission of Subcontractor Management Plan			0/09 A 03/09			100	Submission of Subcontractor Management Plan
PG/00300 Submit Draft Environmental Management Plan		03/09/09 A 23/0				100	Submit Draft Environmental Management Plan
PG/00310 Submit Final Environmental Management Plan	45	03/09/09 A 17/1	0/09 A 03/09	/09 17/10/09	0	100	Submit Final Environmental Management Plan
PG/00320 Submission of Initial Survey Records			0/09 A 01/10			100	Submission of Initial Survey Records
PG/00330 Submission of WaterProofing Concrete		17/09/09 A 30/0				100	Submission of WaterProofing Concrete
PG/00340 Engineer's Approval of W.P Concrete PG/00350 Establish Site Liaison Group SLG		01/10/09 A 04/0 17/09/09 A 16/1				100	- Establish Site Liaison Group SLG
PG/00350 Establish Site Liaison Group SEG	30	1/01/3 A 1/0/1	0.03 A 11/09	10/10/09	0		
For All Works Under the Contract )							
Key Dates		1		1		1	
KD3000 Achievement of Section I	0	30/1	0/10		0	0 -22d	Achievement of Section I
Portion Handover KD6200 Portion 4 (1 day)		17/09/09 A	17/09	/09	0	100	♦ Portion 4 (1 day)
KD6200 Portion 4 (1 day) Jtilities and Services	0	17/09/09 A	17/09	03		100	
General							
S1/01000 Underground Utilities Detection & Trial Holes	14	17/09/09 A 13/1	0/09 A 17/09	/09 13/10/09	0	100	Underground Utilities Detection & Trial Holes
nlet Chamber							
t date 03/09/09 sh date 18/12/12 udate 21/09/10							Date     Revision     Checked     Approved       Early bar
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Act	Original Early Early Actual Actual	Remaining Percent Total	Interconnection Tunnel & D.Wall - Main Pumping Station at Stonecutters
ID Description	Duration Start Finish Start Finish	Duration Complete Float	2009 2011 2012 SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
itial Works / Associated Submission			
S1/01010 Initial Works for Inlet Chamber	279 *         17/09/09 A         02/09/10         17/09/09           21         17/09/09 A         13/10/09 A         17/09/09         13/10/09	3* 99 -1d 0 100	→ Initial Works for Inlet Chamber
S1/01020         Site Clearance (Portion 4)           S1/01030         Precondition Survey of Existing Structures	21         17/09/09 A         13/10/09 A         17/09/09         13/10/09           21         17/09/09 A         13/10/09 A         17/09/09         13/10/09	0 100	
S1/01040 Erection of Steel Fencing & Entrance Gate	21 17/09/09 A 13/10/09 A 17/09/09 13/10/09	0 100	Erection of Steel Fencing & Entrance Gate
S1/01050 Pre-drilling Works of Diaphragm Wall	28 14/10/09 A 16/11/09 A 14/10/09 16/11/09	0 100	Pre-drilling Works of Diaphragm Wall
S1/01060 Confirm Founding Level of Diaphragm Wall	135 17/11/09 A 02/09/10 17/11/09	3 98 -1d	Confirm Founding Level of Diaphragm Wall
S1/01070 Submission of Diaphragm Wall M.S.	14 17/09/09 A 05/10/09 A 17/09/09 05/10/09	0 100	- Submission of Diaphragm Wall M.S.
S1/01080 Engineer's Review of Diaphragm Wall M.S.	14 06/10/09 A 21/10/09 A 06/10/09 21/10/09	0 100	Engineers Review of Diaphragm Wall M.S.
S1/01090 Submission of Ground Treatment M.S.	14 17/09/09 A 05/10/09 A 17/09/09 05/10/09	0 100	Submission of Ground Treatment M.S.
S1/01100         Engineer's Approval of Ground Treatment M.S.           S1/01110         Construction of Guide Wall	14         06/10/09 A         21/10/09 A         06/10/09         21/10/09           28         22/10/09 A         02/11/09 A         22/10/09         02/11/09	0 100	► Construction of Guide Wall
S1/01120 Installation of Geotechnical Instruments	40 14/10/09 A 30/11/09 A 14/10/09 30/11/09	0 100	► Installation of Geotechnical Instruments
Diaphragm Wall			
S1/02010 Diaphragm Wall for Inlet Chamber	207 * 23/03/10 A 15/10/10 23/03/10	46 * 78 -44d	Diaphraam Wall for Inlet Chamber
S1/02030 Dummy for Toe Grouting	0 31/10/10 30/10/10	0 0 -22d	Dummy for Toe Grouting
S1/02040 Mobilization of Plant and Labours	130 06/10/09 A 22/03/10 A 06/10/09 22/03/10	0 100	Establishment of Slurry Treatment Plant
S1/02050 Establishment of Slurry Treatment Plant	60 06/10/09 A 14/12/09 A 06/10/09 14/12/09	0 100	
S1/02060         C1-C13,P1-P3&P41-P42 (18 nos. Panels)           S1/02070         Inlet Chamber: Propagation for DW construction	129         23/03/10 A         17/10/10         23/03/10           1         22/03/10 A         22/03/10 A         22/03/10         22/03/10	48 63 -22d	
S1/02070         Inlet Chamber: Preparation for DW construction           S1/02080         Inlet Chamber: DW Panel P42	1         22/03/10 A         22/03/10 A         22/03/10         22/03/10           13         23/03/10 A         03/05/10 A         23/03/10         03/05/10	0 100	Inlet Chamber: DW Panel P42
S1/02090 Inlet Chamber: DW Panel P42 S1/02090 Inlet Chamber: DW Panel P2	14 04/05/10 A 17/05/10 A 04/05/10 17/05/10	0 100	→ Inlet Chamber: DW Panel P2
S1/02100 Inlet Chamber: DW Panel C3	10 18/05/10 A 29/05/10 A 18/05/10 29/05/10	0 100	► Inlet Chamber: DW Panel C3
S1/02110 Inlet Chamber: DW Panel C11	10 19/05/10 A 04/06/10 A 19/05/10 04/06/10	0 100	Inlet Chamber: DW Panel C11
S1/02120 Inlet Chamber: DW Panel C7	10 04/06/10 A 10/07/10 A 04/06/10 10/07/10	0 100	Inlet Chamber: DW Panel C7
S1/02130 Inlet Chamber: DW Panel P1	4 07/06/10 A 19/06/10 A 07/06/10 19/06/10	0 100	Inlet Chamber: DW Panel P1
S1/02140 Inlet Chamber: DW Panel P41+C1	13 11/07/10 A 02/08/10 A 11/07/10 02/08/10	0 100	Inlet Chamber: DW Panel P41+C1
S1/02150 Inlet Chamber: DW Panel C9	13 23/07/10 A 08/09/10 23/07/10	9 31 -44d	Inlet Chamber: DW Panel C9
S1/02160 Inlet Chamber: DW Panel C5 S1/02170 Inlet Chamber: DW Panel P3+C13	13         06/08/10         20/09/10         06/08/10           13         05/08/10         31/08/10         05/08/10	6 54 -44d 1 92 -24d	Inlet Chamber: DW Panel C5
S1/02170         Inlet Chamber: DW Panel P3+C13           S1/02180         Inlet Chamber: DW Panel C2	4 21/09/10 24/09/10	1 92 -24d 4 0 -44d	inlet Chamber: DW Panel C2
S1/02190 Inlet Chamber: DW Panel C10	4 25/09/10 28/09/10	4 0 -44d	Inlet Chamber: DW Panel C10
S1/02200     Inlet Chamber: DW Panel C6	4 29/09/10 02/10/10	4 0 -44d	Inlet Chamber: DW Panel C6
S1/02210 Inlet Chamber: DW Panel C12	4 03/10/10 06/10/10	4 0 -44d	□ Inlet Chamber: DW Panel C12
S1/02220 Inlet Chamber: DW Panel C4	4 07/10/10 10/10/10	4 0 -44d	Inlet Chamber: DW Panel C4
S1/02230 Inlet Chamber: DW Panel C8	4 12/10/10 15/10/10	4 0 -44d	►∎Inlet Chamber: DW Panel C8
S1/02250 Toe Grouting for Inlet Chamber	48 * 13/09/10 30/10/10	48 * 0 -22d	Toe Grouting for Inlet Chamber Carry Out Toe Grouting
S1/02260 Carry Out Toe Grouting	48 13/09/10 30/10/10	48 0 -22d	Carry Out Toe Grouting
S1/02270         Submission of As-built Record of Diaphragm Wall           S1/02280         Access Date to penetrate Dwall by SCS Contractor	28         18/10/10         14/11/10           1         31/10/10         31/10/10	28 0 395d 1 0 409d	→ Submission of As-built Record of Diaphragin wait
tion 2	1 31/10/10 31/10/10	1 0 4090	
or All Works Under the Contract)			
iey Dates			
(D4000 Achievement of Section II ortion Handover	0 29/10/11	0 0 -44d	► Achievement of Section II
KD6100 Portion 3 (1 day)	0 17/09/09 A 17/09/09	0 100	♦ Portion 3 (1 day)
ilities and Services			
General			
S2/03010 MPS: Underground Utilities Detection & Trial Holes	21 17/09/09 A 13/10/09 A 17/09/09 13/10/09	0 100	MPS: Underground Utilities Detection & Trial Holes
S2/03020         MPS: Diversion of Existing CLP Cables(By Others)           S2/03040         MPS: Demolish Existing Abandoned Sewerage	36         17/09/09 A         31/10/09 A         17/09/09         31/10/09           18         30/11/10         20/12/10	0 100 18 0 2d	MPS: Diversion of Existing CLP Cables(By Others)
in Pumping Station			
itial Works / Associated Submission			
62/03110 Initial Work/Submission for Main Pumping Station	368 * 17/09/09 A 18/12/10 17/09/09	92 * 75 46d	Initial Work/Submission for Main Pumping Station
S2/03120 Site Clearance (Portion 3)	21 17/09/09 A 13/10/09 A 17/09/09 13/10/09	0 100	Site Clearance (Portion 3)
S2/03130 Tree Survey	21 17/09/09 A 13/10/09 A 17/09/09 13/10/09	0 100	Tree Survey
S2/03140 Assign a Location for Trees Transplant	14 14/10/09 A 30/10/09 A 14/10/09 30/10/09	0 100	
S2/03150         Demolition of Existing Storage Shed           S2/03160         Precondition Survey of Existing Structures	30         02/10/09 A         03/11/09 A         02/10/09         03/11/09           30         17/09/09 A         23/10/09 A         17/09/09         23/10/09	0 100	Precondition Survey of Existing Structures
S2/03160         Precondition Survey of Existing Structures           S2/03170         Erection of Steel Fencing & Entrance Gates	30         17/09/09 A         23/10/09 A         17/09/09         23/10/09           21         17/09/09 A         13/10/09 A         17/09/09         13/10/09	0 100	Fection of Steel Fencing & Entrance Gates
S2/03170         Election of Steel Fercing & Entrance Gates           S2/03180         Predrilling Works of Diaphragm Wall	30 14/10/09 A 16/11/09 A 14/10/09 16/11/09	0 100	Predrilling Works of Diaphragm Wall
S2/03190         Confirm Founding level of Diaphragm Wall	14 19/11/09 A 20/11/09 A 19/11/09 20/11/09	0 100	► Confirm Founding level of Diaphraam Wall
S2/03200 Construction of Guild Wall	52 14/10/09 A 14/12/09 A 14/10/09 14/12/09	0 100	Construction of Guild Wall
S2/03210 Installation of Geotechnical Instruments	45 14/10/09 A 30/11/09 A 14/10/09 30/11/09	0 100	► Installation of Geotechnical Instruments
S2/03220 Relocation of Materials Possessed by ST2/DSD	8 17/11/09 A 24/11/09 A 17/11/09 24/11/09	0 100	Relocation of Materials Possessed by ST2/DSD
S2/03230 Reprovision of Store Shed	28 05/10/09 A 16/11/09 A 05/10/09 16/11/09	0 100	Reprovision of Store Shed
S2/03240 Transplant of Existing Trees	7 05/02/10 A 27/02/10 A 05/02/10 27/02/10	0 100	Transplant of Existing Trees
52(03250) Predrilling for Mini-piles (at Ground Loval)	200 19/11/09 A 04/12/10 19/11/09	80 60 46d	Predrilling for Mini-piles (at Ground Level)
S2/03250 Predrilling for Mini-piles (at Ground Level)			
ate 03/09/09 Jate 18/12/12			
ite 03/09/09 iate 18/12/12 ite 31/08/10 te 28/08/10	Revised Works Pro	gramme (Version (	12) Undated on 31 August 2010
te 03/09/09 late 18/12/12 te 31/08/10	Revised Works Pro	gramme (Version (	Date Revision Checked Approved Date Revision Checked Approved Date Revision Checked Approved Checked Approve

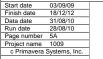


					Construction o	Harbour Area Treatment Scheme Stage 2A terconnection Tunnel & D.Wall - Main Pumping Station at Stonecutters
Act ID	Description	Original Early Early Duration Start Finish	Actual Start		Percent Total Complete Float	2009 2010 2011 2012 2012 2012 2012 2012
S2/03260	Predrilling for Mini-piles (9 nos)	51 19/11/09 A 20/01/10 A		20/01/10 0	100	SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY
S2/03270	Predrilling for Mini-piles (24 nos)	60 02/07/10 A 05/11/10	02/07/10	55	8 71d	Predrilling for Mini-piles (24 nos)
S2/03280	Confirm Founding level of Mini-piles	12 06/12/10 18/12/10		12	0 46d	Confirm Founding level of Mini-piles
Diaphragm S2/03510	Diaphragm Wall /Testing for Main Pumping Station	313 * 15/12/09 A 27/10/10	15/12/09	58 *	82 -44d	Diaphragm Wall /Testing for Main Pumping Station
S2/03550	P4 to P40 (37 nos. Panels)	234 15/12/09 A 06/10/10	15/12/09	37	84 -21d	
S2/03560	Main Pumping Station: DW Panel P24	21 15/12/09 A 04/01/10 A	15/12/09	04/01/10 0	100	Main Pumping Station: DW Panel P24
S2/03570	Main Pumping Station: DW Panel P36	21 23/12/09 A 12/01/10 A		12/01/10 0	100	Ain Pumping Station: DW Panel P36
S2/03580	Main Pumping Station: DW Panel P26		05/01/10		100	Main Pumping Station: DW Panel P26
S2/03590	Main Pumping Station: DW Panel P16 Main Pumping Station: DW Panel P30	14 14/01/10 A 27/01/10 A 16 20/01/10 A 04/02/10 A	14/01/10 20/01/10		100	Main Pumping Station: DW Panel P16 Main Pumping Station: DW Panel P30
S2/03600 S2/03610	Main Pumping Station: DW Panel P30 Main Pumping Station: DW Panel P40		28/01/10		100	Main Pumping Station: DW Panel P40
S2/03620	Main Pumping Station: DW Panel P22	18 02/02/10 A 23/02/10 A		23/02/10 0	100	Main Pumping Station: DW Panel P22
S2/03630	Main Pumping Station: DW Panel P14	22 04/02/10 A 01/03/10 A	04/02/10	01/03/10 0	100	Ain Pumping Station: DW Panel P14
S2/03640	Main Pumping Station: DW Panel P28	15 19/02/10 A 05/03/10 A	19/02/10	05/03/10 0	100	Main Pumping Station: DW Panel P28
S2/03650	Main Pumping Station: DW Panel P34	10 02/03/10 A 11/03/10 A	02/03/10	11/03/10 0	100	→ Main Pumping Station: DW Panel P34
S2/03660	Main Pumping Station: DW Panel P18 Main Pumping Station: DW Panel P38	15 03/03/10 A 17/03/10 A 14 09/03/10 A 22/03/10 A		17/03/10 0 22/03/10 0	100	Main Pumping Station: DW Panel P18
S2/03670 S2/03680	Main Pumping Station: DW Panel P35		23/03/10		100	► Main Pumping Station: DW Panel P25
S2/03690	Main Pumping Station: DW Panel P17	8 23/03/10 A 02/04/10 A		02/04/10 0	100	■ Main Pumping Station: DW Panel P17
S2/03700	Main Pumping Station: DW Panel P29	10 26/03/10 A 09/04/10 A		09/04/10 0	100	Main Pumping Station: DW Panel P29
S2/03710	Main Pumping Station: DW Panel P23	10 08/04/10 A 13/04/10 A	08/04/10	13/04/10 0	100	Hain Pumping Station: DW Panel P23
S2/03720	Main Pumping Station: DW Panel P6	16 02/04/10 A 16/04/10 A		16/04/10 0	100	Main Pumping Station: DW Panel P6
S2/03730	Main Pumping Station: DW Panel P15	10 07/04/10 A 19/04/10 A		19/04/10 0	100	Main Pumping Station: DW Panel P15
S2/03740 S2/03750	Main Pumping Station: DW Panel P27 Main Pumping Station: DW Panel P35	15 15/04/10 A 26/04/10 A 10 18/04/10 A 06/05/10 A		26/04/10 0 06/05/10 0	100	Main Pumping Station: DW Panel P27 Main Pumping Station: DW Panel P35
S2/03750	Main Pumping Station: DW Panel P20	10 23/04/10 A 08/05/10 A		08/05/10 0	100	Main Pumping Station: DW Panel P20
S2/03770	Main Pumping Station: DW Panel P39	10 27/04/10 A 25/05/10 A		25/05/10 0	100	Main Pumping Station: DW Panel P39
S2/03780	Main Pumping Station: DW Panel P10	116 05/03/10 A 06/06/10 A		06/06/10 0	100	Main Pumping Station: DW Panel P10
S2/03782	Main Pumping Station: P10 Panel Excavation 1	15 05/03/10 A 19/03/10 A	05/03/10	19/03/10 0	100	Lem Main Pumping Station: P10 Panel Excavation 1
S2/03784	Main Pumping Station: P10 Panel Excavation 2	20 30/04/10 A 05/06/10 A	30/04/10	05/06/10 0	100	Ain Pumping Station: P10 Panel Excavation 2
S2/03786	Main Pumping Station: P10 Concrete	4 10/06/10 A 10/06/10 A		10/06/10 0	100	Main Pumping Station: P10 Concrete
S2/03790	Main Pumping Station: DW Panel P32	15 04/05/10 A 24/06/10 A 15 16/08/10 A 13/09/10	04/05/10 16/08/10	24/06/10 0	100 7 -24d	Main Pumping Station: DW Panel P32
S2/03800 S2/03810	Main Pumping Station: DW Panel P8 Main Pumping Station: DW Panel P4	15 16/08/10 A 13/09/10 141 23/02/10 A 17/07/10 A		17/07/10 0	100	Main Pumping Station: DW Panel P4
S2/03820	Main Pumping Station: P4 Excavation	25 23/02/10 A 19/03/10 A		19/03/10 0	100	Main Pumping Station: P4 Excavation
S2/03830	Main Pumping Station: P4 Backfill with Agg /Conc		27/03/10		100	Main Pumping Station: P4 Backfill with Agg /Conc
S2/03840	Main Pumping Station: P4 Submit Method Statement	21 10/05/10 A 09/07/10 A	10/05/10	09/07/10 0	100	Main Pumping Station: P4 Submit Method Statement
S2/03850	Main Pumping Station: P4 Engineer Approval on MS	6 10/07/10 A 13/07/10 A		13/07/10 0	100	Main Pumping Station: P4 Engineer Approval on MS
S2/03860	Main Pumping Station: P4 Reconstruction	18 04/06/10 A 17/07/10 A		17/07/10 0	100	Main Pumping Station: P4 Reconstruction
S2/03870 S2/03880	Main Pumping Station: DW Panel P12 Main Pumping Station: DW Panel P33	15 12/06/10 A 19/08/10 A 8 16/07/10 A 28/07/10 A		19/08/10 0 28/07/10 0	100	Main Pumping Station: DW Panel P12
S2/03880	Main Pumping Station: DW Panel P37	8 02/05/10 A 09/06/10 A		09/06/10 0	100	A main Pumping Station: DW Panel P37
S2/03900	Main Pumping Station: DW Panel P31	8 02/07/10 A 14/07/10 A		14/07/10 0	100	Main Pumping Station: DW Panel P31
S2/03910	Main Pumping Station: DW Panel P21	8 12/05/10 A 30/06/10 A	12/05/10		100	Main Pumping Station: DW Panel P21
S2/03920	Main Pumping Station: DW Panel P19	8 26/09/10 03/10/10		8	0 -44d	Main Pumping Station: DW Panel P19
S2/03930	Main Pumping Station: DW Panel P5	8 29/07/10 A 09/08/10 A	29/07/10	09/08/10 0	100	Main Pumping Station: DW Panel P5
S2/03940	Main Pumping Station: DW Panel P7	8 04/10/10 11/10/10		8	0 -44d	Main Pumping Station: DW Panel P7
S2/03950 S2/03960	Main Pumping Station: DW Panel P9 Main Pumping Station: DW Panel P11	8 09/10/10 16/10/10 8 14/10/10 21/10/10		8 و	0 -44d 0 -44d	→■ Main Pumping Station: DW Panel P9 →■ Main Pumping Station: DW Panel P11
S2/03900	Main Pumping Station: DW Panel P13	8 19/10/10 26/10/10		8	0 -44d 0 -44d	Main Pumping Station: DW Panel P13
S2/03980	Main Pumping Station: Demobilization of Plant	5 23/10/10 27/10/10		5	0 -44d	Main Pumping Station: Demobilization of Plant
S2/04020	Sonic Test to P14 and P30	1 17/03/10 A 17/03/10 A	17/03/10	17/03/10 0	100	Sonic Test to P14 and P30
S2/04030	All Test including Sonic Test to completed Dwall	75 01/02/10 A 01/11/10	01/02/10	15	80 -44d	All Test including Sonic Test to completed Dwall
S2/04040	Toe Grouting and Pumping Test	103 * 19/08/10 A 29/11/10	19/08/10	91 *	12 -44d	Toe Grouting and Pumping Test
S2/04050 S2/04070	Carry out Toe Grouting Capping Beam (Inlet Chamber Inclusive)	75 19/08/10 A 08/11/10 21 09/11/10 29/11/10	19/08/10	21	7 -44d 0 -44d	Carry out Toe Grouting
S2/04070 S2/04080	Install PumpWells,Recharge&Observation Wells	21 09/11/10 29/11/10		21	0 -44d 0 -44d	Install PumpWells, Recharge&Observation Wells
S2/04080	Pumping Test (Inlet Chamber Inclusive)	21 09/11/10 29/11/10		21	0 -44d 0 -44d	Pumping Test (Inlet Chamber Inclusive)
S2/04100	Submission of As-built Record of Diaphragm Wall	21 09/11/10 29/11/10		21	0 75d	Submission of As-built Record of Diaphragm Wall
Other Work						
S2/05010	Excavation, Minipile and Pilecap for MPS	330 * 30/11/10 29/10/11		330 *	0 -44d	Excavation, Minipile and Pilecap for MPS
S2/05020 S2/05030	Excavation +5.5mPD to -16mPD Construction of 1st Layer Ringbeam at -14.5mPD	15         30/11/10         14/12/10           17         15/12/10         31/12/10		15	0 -44d 0 -44d	► ► Construction of 1st Layer Ringbeam at -14.5mPD
S2/05030 S2/05040	Excavation down to -24mPD	17 15/12/10 31/12/10 18 01/01/11 18/01/11		17	0 -44d 0 -44d	Excavation down to -24mPD
S2/05040	Construction of 2nd Layer Ringbeam at -23.5mPD	17 19/01/11 08/02/11		17	0 -44d 0 -44d	Construction of 2nd Layer Ringbeam at -23.5mPD
S2/05060	Excavation Down to -30mPD	14 09/02/11 22/02/11		14	0 -44d	Excavation Down to -30mPD'
art date 02/00	00	. I	I	I		
art date 03/09 hish date 18/12 ata date 31/08	12					Date     Revision     Checked     Approved
ata date 31/08 un date 28/08 age number 3A	10	Revise	d Work	s Programme	(Version	2) Updated on 31 August 2010
oject name 1009 c Primavera System	s, Inc.			-		Start milestone point     Finish milestone point
						Finish milestone point



			Con	ISTRUCTION	of Interconnection Tunnel & D.Wall - Main Pumping Station at Stonecutters
Act Description	Original Early Duration Start	Early Actua Finish Start			
2/05070 Construction of 3rd Layer Ringbeam, at -28.5mPD	22 23/02/11	16/03/11	22	0 -44d	d Construction of 3rd Layer Ringbeam, at -28.5mPD
2/05080 Excavation to Final Formation Level -35mPD	14 17/03/11	30/03/11	14	0 -44d	
2/05090     Mini-piles Installation (453 nos.)       2/05100     Mobilization of Piling Rig	169 27/03/11 6 27/03/11	01/09/11	169	0 -38d 0 -44d	
2/05100 Mini-Pile Rig 1: 39 Piles	70 29/03/11	06/06/11	70	0 -44d 0 -41d	
2/05120 Mini-Pile Rig 1: 39 Piles	70 07/06/11	15/08/11	70	0 -41d	
2/05130 Mini-Pile Rig 2: 39 Piles	70 29/03/11	06/06/11	70	0 -41d	d
2/05140 Mini-Pile Rig 2: 39 Piles	70 07/06/11	15/08/11	70	0 -41d	
2/05150 Mini-Pile Rig 3: 39 Piles	70 29/03/11	06/06/11	70	0 -41d	
Image: 2/05160         Mini-Pile Rig 3: 39 Piles           2/05170         Mini-Pile Rig 4: 37 Piles	70 07/06/11 68 02/04/11	15/08/11 08/06/11	70 68	0 -41d 0 -44d	
2/05170 Mini-Pile Rig 4: 37 Piles 2/05180 Mini-Pile Rig 4: 36 Piles	65 09/06/11	12/08/11	65	0 -44d 0 -44d	in initia in initia in initia in anti-an-ana a' maati ta tii initia tai
2/05190 Mini-Pile Rig 5: 36 Piles	65 02/04/11	05/06/11	65	0 -44d	d Mini-Pile Rig 5: 36 Piles
2/05200 Mini-Pile Rig 5: 37 Piles	68 06/06/11	12/08/11	68	0 -44d	d Mini-Pile Rig 5: 37 Piles
2/05210 Mini-Pile Rig 6: 39 Piles	70 02/04/11	10/06/11	70	0 -41d	d Mini-Pile Rig 6: 39 Piles
2/05220 Mini-Pile Rig 6: 34 Piles	60 11/06/11	09/08/11	60	0 -41d	d
2/05230 Demobilization of Rig 4 to 6	2 13/08/11	14/08/11	2	0 -44d	
Icoading Test(10nos.) & Proof Drilling(5 nos.)           2/05250         Proof Drilling 6 nos	80 24/06/11 60 04/07/11	01/09/11	80	0 -38d 0 -38d	
Proof Drilling 6 nos           2/05250         Loading Test 1 to 3	10 15/08/11	24/08/11	10	0 -38d 0 -44d	
2/05270 Loading Test 4 to 6	10 25/08/11	03/09/11	10	0 -44d	
2/05280 Loading Test 7 and 8	10 04/09/11	13/09/11	10	0 -44d	
2/05290 Loading Test 9 and 10	10 04/09/11	13/09/11	10	0 -44d	
2/05300 Demobilization of Loading Equipment	2 14/09/11	15/09/11	2	0 -44d	
2/05310 Construction of Pile Cap	45 04/09/11	18/10/11	45	0 -40d	
2/05320         Formation and Blinding           2/05330         Main Pumping Station Pilecap Bay 1	20 04/09/11 7 11/09/11	23/09/11 17/09/11	20	0 -40d 0 -44d	
2/05350 Main Pumping Station Pilecap Bay 1 2/05340 Main Pumping Station Pilecap Bay 2	7 18/09/11	24/09/11	7	0 -44d 0 -44d	
2/05350 Main Pumping Station Pilecap Bay 3	7 25/09/11	01/10/11	7	0 -44d	
2/05360 Main Pumping Station Pilecap Bay 4	7 02/10/11	08/10/11	7	0 -44d	━┛┫╴╴╴┟╴╴╴┤╴╴╴╴╎╴╴╴╴┟╴╴╴╴╎╴╴╴╴╎╴╴╴╴╎╴╴╴╴┫╴╟╴╴╵╢╢╴┝┧╴╴╴╴╎╴╴╴╴╎╸╴╴╴╎╸╴╴╴╎╴╴╴╴╎╴╴╴╴╎╴╴╴╴╎╴╴
2/05370 Main Pumping Station Pilecap Bay 5	7 09/10/11	15/10/11	7	0 -44d	d Main Pumping Station P
2/05380 Main Pumping Station Pilecap Bay 6	7 16/10/11	22/10/11	7	0 -44d	
S2/05390         Reinstatement of Wall Openings of Base Slab           S2/05400         Handover Section II Works to MPS Contractor	14 16/10/11	29/10/11 30/10/11	14	0 -44d 0 -44d	
D5000 Achievement of Section III rtion Handover D6000 Portion 2 (1 day)	0	30/01/12		0 -44d 00	♦ Portion 2 (1 day)
	0 17/09/09 A	17/09/09	9 0 1		
D6300 Portion 5 (Latest Possession 549 days)	0 17/09/09 A 0 19/03/11 *		0 1	0 0	◆ Portion 5 (Latest Possession 549 days)
eral Requirement	0 19/03/11 *		0	0 0	
eral Requirement eneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber	0 19/03/11 *	13/03/11		0 0 -18d	d
eral Requirement Ineral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor	0 19/03/11 *		0	0 0	d
eral Requirement Ineral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber	0 19/03/11 *	13/03/11	0	0 0 -18d	d
eral Requirement eneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber eneral 3//06110 Construction of Inlet Chamber	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11	13/03/11 31/01/12 31/10/11	0 100 1 215 *	0 0 -18d 0 -18d 0 -44d 	d d d d Construction of Inlet
eral Requirement neral %/06010 IC: Ground Stabilization Works at Inlet Chamber %/06020 Handover Section III Works to MPS Contractor Chamber neral %/06110 Construction of Inlet Chamber %/06120 Excavation down to Formation -30mPD	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11	13/03/11 31/01/12 31/10/11 25/06/11	0 100 1	0 0 -18d 0 -18d 0 -44d 	A d d d d d d d d d d d d d d d d d d d
eral Requirement Ineral IC: Ground Stabilization Works at Inlet Chamber IAndover Section III Works to MPS Contractor Chamber INFORMET INFO	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11	13/03/11 31/01/12 31/10/11 25/06/11 03/04/11	0 100 100 215 * 87 4	0 0 -18d 0 -18d 0 -44d 	Portion 5 (Latest Possession 549 days) d d d d d d d d d d d d d d d d inlet Chamber: Excavation down to Formation -30mPD d d d d Inlet Chamber: Excavate Down to +2.5mpd
eral Requirement aneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber aneral 3//06110 Construction of Inlet Chamber 3/06120 Excavation down to Formation -30mPD 3/06130 Inlet Chamber: Excavate Down to +2.5mpd 3/06140 Inlet Chamber: Install Temp Strut at +3 mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11	13/03/11           31/01/12           31/10/11           25/06/11           03/04/11           05/04/11	0 0 100 1 215 * 87 4 2 2	0 0 -18d 0 -18d 0 -44d -44d 	Portion 5 (Latest Possession 549 days)       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d       d
eral Requirement aneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber aneral 3//06110 Construction of Inlet Chamber 3/06120 Excavation down to Formation -30mPD 3/06130 Inlet Chamber: Excavate Down to +2.5mpd 3/06140 Inlet Chamber: Install Temp Strut at +3 mpd 3/06150 Inlet Chamber: Excavate Down to -4 mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11	13/03/11 31/01/12 31/10/11 25/06/11 03/04/11	0 100 100 215 * 87 4	0 0 -18d 0 -18d 0 -44d 	Portion 5 (Latest Possession 549 days) IC: Ground Stabilization Works at Inlet Chamber IC: Ground Stabilization Works at Inlet Chamber Inlet Chamber: Excavation down to Formation -30mPD Inlet Chamber: Install Temp Strut at +3 mpd Inlet Chamber: Excavate Down to -4 mpd
eral Requirement eneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber eneral 3/06110 Construction of Inlet Chamber 3/06120 Excavation down to Formation -30mPD 3/06130 Inlet Chamber: Excavate Down to +2.5mpd 3/06140 Inlet Chamber: Install Temp Strut at +3 mpd 3/06150 Inlet Chamber: Excavate Down to -4 mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11	13/03/11           31/01/12           31/10/11           25/06/11           03/04/11           05/04/11           15/04/11	0 100 100 215 * 87 4 22 10	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days)
eral Requirement eneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber eneral 3//06110 Construction of Inlet Chamber 3/06120 Excavation down to Formation -30mPD 3/06130 Inlet Chamber: Excavate Down to +2.5mpd 3/06140 Inlet Chamber: Install Temp Strut at +3 mpd 3/06150 Inlet Chamber: Excavate Down to -4 mpd 3/06160 Inlet Chamber: Install Temp Strut at -3.5mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 2 16/04/11	13/03/11           31/01/12           31/10/11           25/06/11           03/04/11           05/04/11           15/04/11           17/04/11	0 100 100 215 * 87 4 2215 10 10 2 10 2 10 2 10 10 2 10 10 10 10 10 10 10 10 10 10	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      IC: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      d      Inlet Chamber: Excavate Down to +2.5mpd      Inlet Chamber: Install Temp Strut at +3 mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4 mpd      Inlet Chamber: Install Temp Strut at -9.5mpd
eral Requirement eneral 3/06010 IC: Ground Stabilization Works at Inlet Chamber 3/06020 Handover Section III Works to MPS Contractor Chamber eneral 3/06110 Construction of Inlet Chamber 3/06120 Excavation down to Formation -30mPD 3/06130 Inlet Chamber: Excavate Down to +2.5mpd 3/06140 Inlet Chamber: Install Temp Strut at +3 mpd 3/06150 Inlet Chamber: Install Temp Strut at -3.5mpd 3/06170 Inlet Chamber: Excavate Down to -10 mpd 3/06180 Inlet Chamber: Install Temp Strut at -9.5mpd 3/06190 Inlet Chamber: Excavate Down to -14.5 mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 30/04/11 10 02/05/11	13/03/11           31/01/12           31/10/11           25/06/11           03/04/11           05/04/11           15/04/11           17/04/11           29/04/11           01/05/11           11/05/11	0 100 100 215 * 87 4 2215 10 10 2 10 2 10 2 10 10 2 10 10 10 10 10 10 10 10 10 10	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days)      IC: Ground Stabilization Works at Inlet Chamber      Construction of Inlet     Construction of Inlet     Inlet Chamber: Excavation down to Formation -30mPD     Inlet Chamber: Install Temp Strut at +3 smpd     Inlet Chamber: Install Temp Strut at -3.5mpd     Inlet Chamber: Install Temp Strut at -3.5mpd     Inlet Chamber: Install Temp Strut at -3.5mpd     Inlet Chamber: Excavate Down to -10 mpd     Inlet Chamber: Excavate Down to -14.5 mpd
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aral Requirement         neral         3/06010       IC: Ground Stabilization Works at Inlet Chamber         3/06020       Handover Section III Works to MPS Contractor         Chamber       Inlet Chamber         3/06110       Construction of Inlet Chamber         3/06120       Excavation down to Formation -30mPD         3/06130       Inlet Chamber: Excavate Down to +2.5mpd         3/06140       Inlet Chamber: Install Temp Strut at +3 mpd         3/06150       Inlet Chamber: Excavate Down to -4 mpd         3/06160       Inlet Chamber: Excavate Down to -10 mpd         3/06170       Inlet Chamber: Install Temp Strut at -3.5mpd         3/06180       Inlet Chamber: Install Temp Strut at -9.5mpd         3/06190       Inlet Chamber: Install Temp Strut at -9.5mpd         3/06190       Inlet Chamber: Excavate Down to -14.5 mpd         3/06200       Inlet Chamber: Install Temp Strut at -14mpd         3/06210       Inlet Chamber: Excavate Down to -19mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 30/04/11 10 02/05/11 2 12/05/11 9 14/05/11	13/03/11         31/01/12         31/10/11         25/06/11         03/04/11         05/04/11         15/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11	0 100 100 1 215* 87 4 2215* 10 215* 10 10 2 10 12 12 2 12 2	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days) Inlet Chamber: Install Temp Strut at -3.Smpd Inlet Chamber: Excavate Down to -4 mpd Inlet Chamber: Excavate Down to -4 mpd Inlet Chamber: Install Temp Strut at -3.Smpd Inlet Chamber: Install Temp Strut at -14.Smpd Inlet Chamber: I
aral Requirement         neral         3/06010       IC: Ground Stabilization Works at Inlet Chamber         3/06020       Handover Section III Works to MPS Contractor         Chamber       Inlet Chamber         3/06110       Construction of Inlet Chamber         3/06120       Excavation down to Formation -30mPD         3/06130       Inlet Chamber: Excavate Down to +2.5mpd         3/06140       Inlet Chamber: Install Temp Strut at +3 mpd         3/06150       Inlet Chamber: Excavate Down to -4 mpd         3/06160       Inlet Chamber: Excavate Down to -10 mpd         3/06170       Inlet Chamber: Install Temp Strut at -3.5mpd         3/06180       Inlet Chamber: Install Temp Strut at -9.5mpd         3/06190       Inlet Chamber: Install Temp Strut at -14.5mpd         3/06200       Inlet Chamber: Install Temp Strut at -14.5mpd         3/06210       Inlet Chamber: Install Temp Strut at -14.5mpd         3/06220       Inlet Chamber: Install Temp Strut at -14.5mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 30/04/11 10 02/05/11 2 12/05/11 9 14/05/11 2 23/05/11	13/03/11           31/01/12           31/10/11           25/06/11           03/04/11           05/04/11           15/04/11           17/04/11           29/04/11           01/05/11           13/05/11           22/05/11           24/05/11	0 100 100 1 215* 87 4 2215* 10 215* 10 10 2 10 12 12 2 12 2	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days)      C: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Inlet Chamber: Excavate Down to -2.5mpd     Inlet Chamber: Install Temp Strut at -3.5mpd     Inlet Chamber: Install Temp Strut at -4.5mpd
ral Requirement         neral         0/06010       IC: Ground Stabilization Works at Inlet Chamber         0/06020       Handover Section III Works to MPS Contractor         Chamber       Peral         0/06110       Construction of Inlet Chamber         0/06120       Excavation down to Formation -30mPD         0/06130       Inlet Chamber: Excavate Down to +2.5mpd         0/06140       Inlet Chamber: Install Temp Strut at +3 mpd         0/06150       Inlet Chamber: Install Temp Strut at -3.5mpd         0/06160       Inlet Chamber: Excavate Down to -10 mpd         0/06170       Inlet Chamber: Excavate Down to -14.5mpd         0/06190       Inlet Chamber: Install Temp Strut at -9.5mpd         0/06190       Inlet Chamber: Install Temp Strut at -14mpd         0/06200       Inlet Chamber: Install Temp Strut at -14mpd         0/06210       Inlet Chamber: Install Temp Strut at -14mpd         0/06220       Inlet Chamber: Install Temp Strut at -18.5mpd         0/06230       Inlet Chamber: Install Temp Strut at -18.5mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 30/04/11 10 02/05/11 2 12/05/11 9 14/05/11	13/03/11         31/01/12         31/10/11         25/06/11         03/04/11         05/04/11         15/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11	100           100           1           215*           87           4           2           10           215*           100           215*           100           100           2           100           2           100           2           100           2           100           2           100           2           100           2           100           2           100           2           2           100           2           2           300           200           200           200           200	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days)      IC: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Inlet      Chamber: Install Temp Strut at -9.5mpd      Inlet      Chamber: Install Temp Strut at -18.5mpd      Inlet      Cha
aral Requirement         heral         /06010       IC: Ground Stabilization Works at Inlet Chamber         /06020       Handover Section III Works to MPS Contractor         Chamber	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 30/04/11 10 02/05/11 2 12/05/11 9 14/05/11 2 23/05/11 12 25/05/11	13/03/11           31/01/12           31/10/11           25/06/11           03/04/11           05/04/11           15/04/11           17/04/11           29/04/11           01/05/11           13/05/11           22/05/11           24/05/11           05/06/11	100           100           1           215*           87           4           2           10           215*           100           215*           100           100           2           100           2           100           2           100           2           100           2           100           2           100           2           100           2           100           2           2           100           2           2           300           200           200           200           200	0         0           0         -18d           0         -44d           0         -35d	Portion 5 (Latest Possession 549 days) IC: Ground Stabilization Works at Inlet Chamber Construction of Inlet Camber: Instail Temp Strut at -3.5mpd Inlet Chamber: Instail Temp Strut at -14.5mpd Inlet Chamber: Instail Temp Strut at -24mpd
Brail Requirement         Ineral         //06010       IC: Ground Stabilization Works at Inlet Chamber         //06020       Handover Section III Works to MPS Contractor         Chamber       Inlet Chamber         //06110       Construction of Inlet Chamber         //06120       Excavation down to Formation -30mPD         //06130       Inlet Chamber: Excavate Down to +2.5mpd         //06140       Inlet Chamber: Excavate Down to -4 mpd         //06150       Inlet Chamber: Install Temp Strut at +3 mpd         //06160       Inlet Chamber: Install Temp Strut at -3.5mpd         //06170       Inlet Chamber: Install Temp Strut at -9.5mpd         //06180       Inlet Chamber: Install Temp Strut at -9.5mpd         //06190       Inlet Chamber: Install Temp Strut at -14.5mpd         //06200       Inlet Chamber: Install Temp Strut at -14.5mpd         //06210       Inlet Chamber: Install Temp Strut at -14.5mpd         //06220       Inlet Chamber: Install Temp Strut at -18.5mpd         //06230       Inlet Chamber: Install Temp Strut at -24.5mpd         //06240       Inlet Chamber: Install Temp Strut at -24.5mpd         //06240       Inlet Chamber: Install Temp Strut at -24.5mpd         //06250       Inlet Chamber: Install Temp Strut at -24.5mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 30/04/11 12 30/04/11 12 12/05/11 2 12/05/11 12 23/05/11 12 25/05/11 12 25/05/11 2 06/06/11	13/03/11         31/01/12         31/10/11         25/06/11         03/04/11         05/04/11         15/04/11         17/04/11         29/04/11         01/05/11         11/05/11         13/05/11         22/05/11         24/05/11         05/06/11         05/06/11         07/06/11	100           100           1           215*           87           4           2           10           215*           100           215*           100           100           2           100           2           100           2           100           2           100           2           100           2           100           2           100           2           100           2           2           100           2           2           300           200           200           200           200	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Possession 549 days)      C: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Construction of Inlet      Construction of Inlet      Linet Chamber: Excavate Down to +2.5mpd      Inlet Chamber: Excavate Down to +4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber:</td></tr<>	Portion 5 (Latest Possession 549 days)      C: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Construction of Inlet      Construction of Inlet      Linet Chamber: Excavate Down to +2.5mpd      Inlet Chamber: Excavate Down to +4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber: Excavate Down to -4.5mpd      Inlet Chamber: Install Temp Strut at -3.5mpd      Inlet Chamber:
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  Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         c       Inlet Chamber: Install Temp Strut at -2.5mpd         a<!--</td--></td></tr<></td>	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>a       Portion 5 (Latest Possession 549 days)         a       IC: Ground Stabilization Works at Inlet Chamber         a       Construction of Inlet         a       Construction of Inlet         a       Construction of Inlet         a       Construction of Inlet         a       Inlet Chamber: Excavate Down to +2.5mpd         a       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         a       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         a       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         c       Inlet Chamber: Install Temp Strut at -2.5mpd         a<!--</td--></td></tr<>	a       Portion 5 (Latest Possession 549 days)         a       IC: Ground Stabilization Works at Inlet Chamber         a       Construction of Inlet         a       Construction of Inlet         a       Construction of Inlet         a       Construction of Inlet         a       Inlet Chamber: Excavate Down to +2.5mpd         a       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         a       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         a       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         b       Inlet Chamber: Install Temp Strut at -3.5mpd         c       Inlet Chamber: Install Temp Strut at -2.5mpd         a </td
eral Requirement aneral a) (06010 IC: Ground Stabilization Works at Inlet Chamber b) (06020 Handover Section III Works to MPS Contractor Chamber aneral a) (06110 Construction of Inlet Chamber a) (06120 Excavation down to Formation -30mPD a) (06130 Inlet Chamber: Excavate Down to +2.5mpd a) (06130 Inlet Chamber: Install Temp Strut at +3 mpd a) (06150 Inlet Chamber: Install Temp Strut at -3.5mpd a) (06150 Inlet Chamber: Excavate Down to -10 mpd a) (06160 Inlet Chamber: Install Temp Strut at -9.5mpd a) (06170 Inlet Chamber: Install Temp Strut at -9.5mpd a) (06180 Inlet Chamber: Install Temp Strut at -9.5mpd a) (06200 Inlet Chamber: Install Temp Strut at -14mpd a) (06210 Inlet Chamber: Install Temp Strut at -14mpd a) (06220 Inlet Chamber: Install Temp Strut at -14.5mpd a) (06230 Inlet Chamber: Install Temp Strut at -24mpd a) (06250 Inlet Chamber: Install Temp Strut at -27mpd a) (06260 Inlet Chamber: Install Temp Strut at -27mpd a) (06270 Inlet Chamber: Install Temp Strut at -27mpd a) (06280 Construction of Base Slab	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 18/04/11 12 23/05/11 2 12/05/11 12 25/05/11 12 25/05/11 12 25/05/11 12 15/06/11 2 15/06/11 9 17/06/11 2 26/06/11 12 26/06/11	13/03/11         31/10/11         25/06/11         03/04/11         15/04/11         15/04/11         15/04/11         15/04/11         15/04/11         15/04/11         15/04/11         15/04/11         15/04/11         15/04/11         29/04/11         01/05/11         13/05/11         22/05/11         24/05/11         05/06/11         07/06/11         14/06/11         16/06/11         25/06/11         21/07/11	100           100           1           215*           87           4           2           100           11           215*           87           10           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           11           110           110	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Construction of Inlet     Construction     Construction of Inlet     Construction     Const</td></tr<>	Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Construction of Inlet     Construction     Construction of Inlet     Construction     Const
areal Requirement         neral         8/06010       IC: Ground Stabilization Works at Inlet Chamber         8/06020       Handover Section III Works to MPS Contractor         Chamber       Inlet Chamber         8/06110       Construction of Inlet Chamber         8/06120       Excavation down to Formation -30mPD         8/06130       Inlet Chamber: Excavate Down to +2.5mpd         8/06140       Inlet Chamber: Excavate Down to +2.5mpd         8/06150       Inlet Chamber: Install Temp Strut at +3 mpd         8/06160       Inlet Chamber: Install Temp Strut at -3.5mpd         8/06170       Inlet Chamber: Install Temp Strut at -3.5mpd         8/06180       Inlet Chamber: Install Temp Strut at -9.5mpd         8/06190       Inlet Chamber: Install Temp Strut at -9.5mpd         8/06100       Inlet Chamber: Install Temp Strut at -14.5mpd         8/06200       Inlet Chamber: Install Temp Strut at -14.5mpd         8/06200       Inlet Chamber: Install Temp Strut at -14.5mpd         8/06200       Inlet Chamber: Install Temp Strut at -24.5mpd         8/06230       Inlet Chamber: Install Temp Strut at -24.5mpd         8/06240       Inlet Chamber: Install Temp Strut at -24.5mpd         8/06250       Inlet Chamber: Install Temp Strut at -27.5mpd         8/06260       Inlet Chamber: Ins	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 18/04/11 10 02/05/11 2 3/05/11 12 25/05/11 12 25/05/11 12 25/05/11 12 15/06/11 12 15/06/11 12 15/06/11 2 15/06/11 3 26/06/11 3 26/06/11	13/03/11         31/10/11         25/06/11         03/04/11         15/04/11         15/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11         22/05/11         05/06/11         07/06/11         14/06/11         16/06/11         25/06/11         25/06/11         25/06/11         21/07/11         28/06/11	100           100           1           215*           87           4           2           100           11           215*           87           10           2           10           2           10           2           10           2           10           2           10           2           10           2           10           2           110           2           110           2           110           2           110           2           110           2           110           2           110           2           110           2           12           2           12           2           12           2           12           2           12           2 </td <td>0         0           0         -18d           0         -44d           0         -35d           0         -35d      <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Construction of Inlet     Construction     Constructin     Construction     Construction     Construction     Constructi</td></tr<></td>	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Construction of Inlet     Construction     Constructin     Construction     Construction     Construction     Constructi</td></tr<>	Portion 5 (Latest Possession 549 days)      Construction of Inlet     Construction     Constructin     Construction     Construction     Construction     Constructi
aral Requirement         neral         W06010       IC: Ground Stabilization Works at Inlet Chamber         W06020       Handover Section III Works to MPS Contractor         Chamber       Inlet Chamber         N06110       Construction of Inlet Chamber         W06120       Excavation down to Formation -30mPD         W06130       Inlet Chamber: Excavate Down to +2.5mpd         W06140       Inlet Chamber: Install Temp Strut at +3 mpd         W06150       Inlet Chamber: Install Temp Strut at -3.5mpd         W06160       Inlet Chamber: Install Temp Strut at -3.5mpd         W06170       Inlet Chamber: Install Temp Strut at -9.5mpd         W06180       Inlet Chamber: Install Temp Strut at -9.5mpd         W06190       Inlet Chamber: Install Temp Strut at -9.5mpd         W06200       Inlet Chamber: Install Temp Strut at -14.5mpd         W06200       Inlet Chamber: Install Temp Strut at -14.5mpd         W06200       Inlet Chamber: Install Temp Strut at -14.5mpd         W06200       Inlet Chamber: Install Temp Strut at -24.5mpd         W06200       Inlet Chamber: Install Temp Strut at -24.5mpd         W06200       Inlet Chamber: Install Temp Strut at -24.5mpd         W062500       Inlet Chamber: Install Temp Strut at -27.5mpd         W062600       Inlet Chamber: Install Temp Str	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 10 06/04/11 12 16/04/11 12 16/04/11 12 18/04/11 12 23/05/11 2 3/05/11 2 23/05/11 2 25/05/11 12 25/05/11 2 26/06/11 7 08/06/11 2 15/06/11 12 25/05/11 2 15/06/11 3 26/06/11 3 26/06/11 7 29/06/11	13/03/11         31/10/11         25/06/11         03/04/11         15/04/11         15/04/11         17/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11         24/05/11         07/06/11         14/06/11         16/06/11         25/06/11         21/07/11         28/06/11         05/07/11	100           100           1           215*           87           4           2           100           11           215*           87           10           2           10           2           10           2           10           2           10           2           10           2           10           2           10           2           110           2           110           2           110           2           110           2           110           2           110           2           110           2           110           2           12           2           12           2           12           2           12           2           12           2 </td <td>0         0           0         -18d           0         -44d           0         -35d           0         -35d      <tr< td=""><td>Portion 5 (Latest Pessession 549 days)      IC: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Construction      Construct</td></tr<></td>	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Pessession 549 days)      IC: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Construction      Construct</td></tr<>	Portion 5 (Latest Pessession 549 days)      IC: Ground Stabilization Works at Inlet Chamber      Construction of Inlet      Construction      Construct
areal Requirement         neral         8/06010       IC: Ground Stabilization Works at Inlet Chamber         8/06020       Handover Section III Works to MPS Contractor         Chamber	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 10 06/04/11 12 18/04/11 12 18/04/11 12 18/04/11 10 02/05/11 2 3/05/11 12 25/05/11 12 25/05/11 12 25/05/11 12 15/06/11 12 15/06/11 12 15/06/11 2 15/06/11 3 26/06/11 3 26/06/11	13/03/11         31/10/11         25/06/11         03/04/11         15/04/11         15/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11         22/05/11         05/06/11         07/06/11         14/06/11         16/06/11         25/06/11         25/06/11         25/06/11         21/07/11         28/06/11	100           100           1           215*           87           4           2           100           11           215*           87           10           2           10           2           10           2           10           2           10           2           10           2           10           2           10           2           110           2           110           2           110           2           110           2           110           2           110           2           110           2           110           2           12           2           12           2           12           2           12           2           12           2 </td <td>0         0           0         -18d           0         -44d           0         -35d           0         -35d      <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Inter Chamber      Construction of Inter      Construction      Construction      Construction      Construction      Construction      Construction      Construction</td></tr<></td>	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Inter Chamber      Construction of Inter      Construction      Construction      Construction      Construction      Construction      Construction      Construction</td></tr<>	Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Inter Chamber      Construction of Inter      Construction      Construction      Construction      Construction      Construction      Construction      Construction
areal Requirement         neral         8/06010       IC: Ground Stabilization Works at Inlet Chamber         8/06020       Handover Section III Works to MPS Contractor         Chamber       Inlet Chamber         8/06110       Construction of Inlet Chamber         8/06120       Excavation down to Formation -30mPD         8/06130       Inlet Chamber: Excavate Down to +2.5mpd         8/06140       Inlet Chamber: Install Temp Strut at +3 mpd         8/06150       Inlet Chamber: Excavate Down to -4 mpd         8/06160       Inlet Chamber: Install Temp Strut at -3.5mpd         8/06170       Inlet Chamber: Install Temp Strut at -3.5mpd         8/06180       Inlet Chamber: Install Temp Strut at -9.5mpd         8/06190       Inlet Chamber: Install Temp Strut at -9.5mpd         8/06200       Inlet Chamber: Install Temp Strut at -14mpd         8/06201       Inlet Chamber: Install Temp Strut at -14mpd         8/06202       Inlet Chamber: Install Temp Strut at -14mpd         8/06203       Inlet Chamber: Install Temp Strut at -24mpd         8/06204       Inlet Chamber: Install Temp Strut at -24mpd         8/06205       Inlet Chamber: Install Temp Strut at -27mpd         8/06206       Inlet Chamber: Excavate Down to -30mpd         8/06206       Inlet Chamber: Excavate Down to -30mpd	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 10 06/04/11 12 16/04/11 12 16/04/11 12 18/04/11 12 23/05/11 2 3/05/11 2 23/05/11 2 25/05/11 12 25/05/11 2 26/06/11 7 08/06/11 2 15/06/11 12 25/05/11 2 15/06/11 3 26/06/11 3 26/06/11 7 29/06/11	13/03/11         31/10/11         25/06/11         03/04/11         05/04/11         15/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11         24/05/11         05/06/11         05/06/11         22/05/11         24/05/11         05/06/11         05/06/11         14/06/11         16/06/11         25/06/11         21/07/11         28/06/11         05/07/11         09/07/11	100       100       11       215*       87       4       2       10       2       10       2       10       2       10       2       10       2       10       2       112       2       10       2       10       2       112       2       12       2       12       2       12       2       12       2       13       2       14	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Construction of inter      Construction of the Chamber: Excavate Down to -24.5mpd      Construction of Base Slab      Later      Date      Revision      Construction of Base Slab      Later      Construction of</td></tr<>	Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Construction of inter      Construction of the Chamber: Excavate Down to -24.5mpd      Construction of Base Slab      Later      Date      Revision      Construction of Base Slab      Later      Construction of
areal Requirement         aneral         3/06010       IC: Ground Stabilization Works at Inlet Chamber         3/06020       Handover Section III Works to MPS Contractor         Chamber	0 19/03/11 * 100 30/11/10 1 31/01/12 215 * 31/03/11 87 31/03/11 4 31/03/11 2 04/04/11 10 06/04/11 10 06/04/11 12 16/04/11 12 16/04/11 12 18/04/11 12 23/05/11 2 3/05/11 2 23/05/11 2 25/05/11 12 25/05/11 2 26/06/11 7 08/06/11 2 15/06/11 12 25/05/11 2 15/06/11 3 26/06/11 3 26/06/11 7 29/06/11	13/03/11         31/10/11         25/06/11         03/04/11         05/04/11         15/04/11         17/04/11         29/04/11         01/05/11         13/05/11         22/05/11         24/05/11         05/06/11         05/06/11         22/05/11         24/05/11         05/06/11         05/06/11         14/06/11         16/06/11         25/06/11         21/07/11         28/06/11         05/07/11         09/07/11	100       100       11       215*       87       4       2       10       2       10       2       10       2       10       2       10       2       10       2       112       2       10       2       10       2       112       2       12       2       12       2       12       2       12       2       13       2       14	0         0           0         -18d           0         -44d           0         -35d           0         -35d <tr< td=""><td>Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Construction of Inter     Con</td></tr<>	Portion 5 (Latest Possession 549 days)      Portion 5 (Latest Possession 549 days)      Construction of Inter     Con

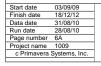
No         Object (M)								Constr	uction of	Harbour Area Treatment Scheme Stage 2A f Interconnection Tunnel & D.Wall - Main Pumping Station at Stonecutters
		Description								
Normal         Molecular (primaling)         Normal	S3/06320	Inlet Chamber: Steel Fixing	7 10/07/11	16/07/11			7			SEF UCI NUV DEC JAN FEB MAR AFR MAI JUN JUL AUG SEF UCI NUV DEC JAN FEB MAR AF
Distory         of Distory	S3/06330	Inlet Chamber: Cleaning	1 17/07/11	17/07/11			1	0	-35d	
Bible         Bunce functional of Same         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B<         B<         B< <t< td=""><td></td><td></td><td>+ +</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>			+ +							
Nume         Num         Nume         Num         Num </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td> <td></td>							-	-		
Latted         Common ong age and the set         Set of a se			+ +							
State C         C. Grage Warg-Speen 17-96         Si USN         Version				-						
Distance         C. Remon Them Parity of Application         J. B. Kell         Kell         J. B. Kell         Kell         J. B. Kell										
0.50000         C. Control Wardy Booms - 12:0ec         4. 80001         4. 80001         4. 80001         3. 800           0.50000         C. Remon Taroy Run - 14:0ec         2. 10001         3. 80001         3. 80001           0.50000         C. Remon Taroy Run - 14:0ec         2. 10001         3. 80001         3. 80001           0.50000         C. Remon Taroy Run - 14:0ec         2. 10001         3. 80001         3. 80001           0.50000         C. Remon Taroy Run - 14:0ec         2. 200011         3. 80001         3. 80001           0.50000         C. Remon Taroy Run - 14:0ec         2. 200011         3. 80001         3. 80001           0.50000         C. Remon Taroy Run - 14:0ec         3. 80001         3. 80001         3. 80001           0.50000         C. Remon Tarow Run - 14:0ec         3. 80001         3. 80001         3. 80001           0.50000         Remon Tarow Run - 14:0ec         3. 80001         3. 80001         3. 80001           0.50000         Remon Tarow Run - 14:0ec         3. 80001         3. 80001         3. 80001           0.500000         Remon Tarow Run - 14:0ec         3. 80001         3. 80001         3. 80001           0.500000         Remon Tarow Run - 14:0ec         3. 80001         3. 80001         3. 80001         3. 80001				-						
LAMARD         C. Criget Invices General 12 Singer         3         3         4         55           LAMARD         C. Criget Invices General 12 Singer         0         20011         0         55           LAMARD         C. Criget Invices General 12 Singer         0         20011         0         55           LAMARD         C. Criget Invices General 12 Singer         0         20011         0         55           LAMARD         C. Criget Invices General 12 Singer         0         20011         0         55           LAMARD         C. Criget Invices General 12 Singer         0         20011         0         200           LAMARD         C. Criget Invices General 12 Singer         0         1         1         1         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2         2	S3/06450	IC: Cast the 1m Thick Wall Below Bottom Waling	9 17/08/11	25/08/11			9	0	-35d	
Excerce         Excerce         Section         1         2         5400         Control         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	S3/06460	IC: Construct Waling Beam at -12.5mpd	14 26/08/11	08/09/11			14	0	-35d	
Biology         Constant Value (frame 4 days)         Biology         B							-	-		
Experts         C. Drag for ying particular description of ying         32 (2004)         1 (2004)         3 (2004)           Control         C. Drag for ying particular description         1 (2004)         3 (2004)         1 (2004)         3 (2004)           Control         C. Drag for ying particular description         1 (2004)         3 (2004)         3 (2004)           Control         C. Drag for ying particular description         1 (2004)         3 (2004)         3 (2004)           Control         C. Drag for ying particular description         1 (2004)         1 (2004)         3 (2004)           Control         C. Drag for ying particular description         1 (2004)         1 (2004)         1 (2004)           Control         Control         1 (2004)         1 (2004)         1 (2004)         1 (2004)           Control         Control         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)           Control         Control         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004)         1 (2004) <t< td=""><td></td><td>· · ·</td><td></td><td>_</td><td></td><td></td><td></td><td>-</td><td></td><td></td></t<>		· · ·		_				-		
Bitterio         C. Barlowski Tarlowski Tarl										
Space Constructions provides and source of				-			-			
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Human and Human         Human And								-		
Instruction         Length of Leng		· ·		31/10/11			14	0		
B30700         Number of Second Trans.         Secon			· · ·	<u> </u>						
Backbarree Jerson J.         14         Week J.										
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Sectory         Unsurgeout Littles Instantions frame Halls         2         109/100         109/100         0         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         10							-			
35/0700         Tencion d'Estimitar         21         01/000 L'estimation d'Astributer         11         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12         12							-			
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SS20700       Councel Investigation Works       30       1911 504       2911/20       0       000         SS20700       Solution Of Lancetty PM List Provided Solution Of Lancetty PM List PM							-			
Submission of Landring Shall Design         146         (72000)         Activation of Calabora         No. 120000         Journal of Landring Shall Design         Construction of Calabora         Statution										Ground Investigation Works
Statution         Construction         Construction <td></td> <td>, , , , , , , , , , , , , , , , , , ,</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>—i</td>		, , , , , , , , , , , , , , , , , , ,					-			—i
Statution         Construction of Cales No.4         Statution         Construction of Cales No.4         Construction of Cale No.4           Statution         Construction of Cales No.4         21         22/10/20         0         0.00           Statution         Construction of Cales No.4         21         22/10/20         22/10/20         0         0.00           Statution         Construction of Cales No.4         21         22/10/20         0         0.00           Statution         Construction of Cales No.4         21         22/10/20         0         0.00           Statution         Construction of Cales No.4         20         22/10/20         0         0.00           Statution         Construction of Cales No.4         20         20/20/20         0         0.00           Statution         Construction of Cales No.4         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0         0.00         0 <td></td> <td></td> <td></td> <td></td> <td>16/03/10</td> <td>26/05/10</td> <td>0</td> <td>100</td> <td></td> <td>Approval of Launching Shaft Design</td>					16/03/10	26/05/10	0	100		Approval of Launching Shaft Design
Stor/102         Appioud Proposal for Gas No.4         20         24/100 A         24/100 A         1902/10         2         100         Appioud Proposal for Gas No.4         2         2         0.69           Stor/103         Commic And Gas No.4         2         2         0.69         64           Stor/104         Chain As-built Turcel Algorest         6         2500/10         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         6         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	S3/07100	Construction of Guide Wall	21 26/03/10 A	03/05/10 A	26/03/10	03/05/10	0	100		
S307120         Construction of Gate No.4         21         00/11/0         22/11/0         2         0         6d/d           S307120         TRM hoskulf Pite Second Mound Econd No.4         2         6d/d         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6         6	S3/07110	Proposed TTM for Gate No.4	30 17/09/09 A	23/10/09 A	17/09/09	23/10/09	0	100		Proposed TTM for Gate No.4
S02/140         Dream As-build Divergence Pling Record Against Turnal Alignment         6         0         84           S02/150         Prevent Against Turnal Alignment         6         0         84           S02/150         Prevent Against Turnal Alignment         6         0         84           S02/150         Prevent Against Alignment         6         0         84           S02/150         PleM Samitals Group A Preliminary Design         11         190/170         220/170         1         190/170         220/170         0         100           S02/150         PleM Samitals Group A Preliminary Design         47         190/170         220/170         0         100         100           S02/150         PleM Samitals Group A Expinet's Review         36         0000000         0         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         <	S3/07120	Approval of Proposal for Gate No.4	90 24/10/09 A	19/02/10 A	24/10/09	19/02/10	0	100		P Approval of Proposal for Gate No.4
Stort/so         Review Plang Record Against Turnel Alignment         6         0         0           Stort/so         TBA Design, Mandfactus and Delvey         461         199/104         2241*         48         48         44           Stort/so         TBA Design, Mandfactus and Delvey         461         199/104         2201/10         100         2201/10         100         200/10         100         200/10         100         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10 <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				-						
Detail Desage         Desage         Desage         Desage           S00720         TBM Submittals Group, A Perlimenary Design         111         100/10         200/10         100/10         200/10         100/10         200/10         100/10         200/10         100/10         200/10         100/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10         200/10										
SN210         TM Design. Moundature and Delvey         441         190710         241         44         444           SN2122         Re-submit Group A Preliminary Design         111         190710         2004710         0         000           SN27223         Re-submit Group A Engliments Nerview         38         0306710         0.006710         0.006710         0         000           SN27320         TBM Submittal Group A Engliments Nerview         38         0306710         0.006710         0.006710         0         0.00         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0<			6 26/03/11	01/04/11			6	0	8d	
SN7202       TM Submittals Group A Preliminary Design       111       900/10       200/10       000/10         SN7232       TAM Submittals Group A Engineer's Review       30       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       0300/10       1400/10       000/10       0300/10       1400/10       000/10       0300/10       1400/10       000/10       000/10       0300/10       1400/10       000/10       0300/10       1400/10       000/10       000/10       0300/10       1400/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10       000/10			461 * 19/01/10 A	02/05/11	19/01/10		241 *	48	-44d	
SX0722         Re-submit Group A Pulliminary Design         47         SX04/10         2004/10         2006/10         000           SX0730         TBM Submittals Group A Resubmission         19         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         0406/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/10         040/1				_		29/04/10				TBM Submittals Group A Preliminary Design
Stor240         TEM Submittals Group A Resubmission         19         0908/10         0         100           Stor2300         TEM Submittals Group A Resubmission         19         0908/10         0         100           Stor2300         TEM Submittals Group A Preliminary Design         111         100/10         2004/10         100           Stor2300         TEM Submittals Group B Preliminary Design         111         100/10         2004/10         1000           Stor2300         TEM Submittals Group B Engineer's Review         47         300/10         1405/10         0         1000           Stor2300         TEM Submittals Group B Engineer's Review         47         300/10         1405/10         2004/10         1000           Stor2300         TEM Submittals Group B Engineer's Review         40         300/10         1405/10         2006/10         1000           Stor2300         TEM Submittals Group D Engineer Approval         16         300/10         1004/10         1000         1000           Stor2400         TEM Submittals Group D Engineer Approval         16         2006/10         1000         1000         1000         1000         1000         1000         1000         1000         1000         1000         1000         1000         1000/10										
S30730         TBM Submittals Group A Engineer Approval         16         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0806/10         0         100           S307300         TBM Submittals Group B Engineer Review         38         3004/10         1406/10         0         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100 <td< td=""><td>S3/07330</td><td>TBM Submittals Group A Engineer's Review</td><td>36 03/06/10 A</td><td>09/06/10 A</td><td>03/06/10</td><td>09/06/10</td><td>0</td><td>100</td><td></td><td>TBM Submittals Group A Engineer's Review</td></td<>	S3/07330	TBM Submittals Group A Engineer's Review	36 03/06/10 A	09/06/10 A	03/06/10	09/06/10	0	100		TBM Submittals Group A Engineer's Review
S30780         TBM Submittals Group B Preliminary Design         111         1901/10         280/410         1 406/10         0 400/10           S30786         TBM Submittals Group B Engineer's Review         47         300/410         1 406/10         0 400/10         1 406/10         0 100           S307786         TBM Submittals Group B Engineer's Review         43         300/410         1 406/10         0 300/410         1 406/10         0 100           S307780         TBM Submittals Group B Engineer Review         43         300/410         1 406/10         0 300/410         1 406/10         0 100           S307780         TBM Submittals Group B Engineer Review         36         300/410         1 406/10         0 200/10         0 100           S307740         TBM - Preliminary Design for Choice of TBM         119         27.08/10         0 100         100         100         100           S30740         TBM Submittals Group C Engineer's Review         36         27.08/10         27.08/10         0 100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         100         1	S3/07340	TBM Submittals Group A Resubmission	19 09/06/10 A	09/06/10 A	09/06/10	09/06/10	0	100		➡ TBM Submittals Group A Resubmission
S307265         TBM Submittals Group B Engineer's Review         47         3004/10         4405/10         3004/10         1405/10         0         100           S307270         TBM Submittals Group B Engineer's Review         36         3004/10A         1405/10         0         100           S307380         TBM Submittals Group B Engineer's Review         36         3004/10A         1405/10         0         100           S307380         TBM Submittals Group B Engineer Approval         16         0306/10         2806/10         0         100           S307340         TBM - Design of Proposed TBM         19         100/10         2708/10         0         100           S307420         TBM Submittals Group C Engineer's Review         36         2708/10         2708/10         0         100           S307420         TBM Submittals Group C Engineer's Review         36         2708/10         2708/10         2708/10         0         100           S307430         TBM Submittals Group C Engineer's Review         38         2708/10         101/10         2708/10         0         100           S307440         TBM Submittals Group C Engineer's Review         38         2708/10         0         1404         3444         3307460         TBM Submittals Group C	S3/07350	TBM Submittals Group A Engineer Approval	16 09/06/10 A	09/06/10 A	09/06/10	09/06/10	0	100		
S307370         TBM Submittals Group B Engineer's Review         38         3004/10 A         14/05/10 A         3004/10 A         14/05/10 A         0         100           S307380         TBM Submittals Group B Engineer's Review         38         3004/10 A         02/06/10 A         02/06/10 A         02/06/10 A         00/06/10 A         02/06/10 A         <				-						
S307380         TBM Submittals Group B Resubmission         19         15/05/10         02/06/10         16/02/06/10         0         100           S307380         TBM Submittals Group B Engineer Approval         16         03/06/10         28/06/10         0         100           S307390         TBM Submittals Group B Engineer Approval         16         03/06/10         28/06/10         0         100           S307400         TBM - Peelinnary Design of Choice of TBM         111         27/08/10         27/08/10         0         100           S307420         TBM Submittals Group C Preliminary Design         111         190/1/10         27/08/10         0         100           S307420         TBM Submittals Group C C Preliminary Design         111         190/1/10         27/08/10         0         100           S307420         TBM Submittals Group C C Resubmission         19         02/10/10         27/08/10         10         0         44d           S307430         TBM Submittals Group C Engineer Approval         16         21/07/10         27/08/10         12/07         22/07/10         14/4d           S307470         Submit Tunnel Layout/Procedure/Equipment to FSD         60         07/09/10         05/11/10         28         3d           S307500 <td></td> <td>1 0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		1 0								
S307390       TBM Submittals Group B Engineer Approval       16       0306/10 A       2806/10 A       0306/10 A       2806/10 A       0306/10 A       0100         S307400       TBM - Perliminary Design for Choice of TBM       63       190/11/0 A       1000/10 A       000/10 A       0100         S307410       TBM - Design of Proposed TBM       119       27/08/10 A       27/08/10 A       0100       010         S307420       TBM Submittals Group C Engineer's Review       36       27/08/10 A       010/10       27/08/10 A       010/10       010         S307420       TBM Submittals Group C Engineer's Review       36       27/08/10 A       010/10       27/08/10 A       010/10       010         S307420       TBM Submittals Group C Engineer's Review       36       27/08/10 A       01/0/10       27/08/10 A       010/10       010         S307420       TBM Submittals Group C Engineer's Approval       16       044d       044d       044d       04/12/10       02/11/10       02/10/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10       04/12/10 <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				-						
S307400       TBM - Preliminary Design for Choice of TBM       63       19/01/10       10/04/10       0       100         S3/07400       TBM - Design of Proposed TBM       119       27/08/10       27/08/10       0       100         S3/07420       TBM Submittals Group C Preliminary Design       111       19/01/10       27/08/10       0       100         S3/07420       TBM Submittals Group C Regimeer's Review       36       27/08/10       27/08/10       32       11         S3/07430       TBM Submittals Group C Regimeer Aproval       19       0/10/10       27/08/10       32       11         S3/07430       TBM Aubritutals Group C C Engineer Aproval       16       0/10/10       27/08/10       32       11         S3/07430       TBM Aubritutals Group C Engineer Aproval       16       0/10/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       20/01/10       2		· · ·								······································
S307410       TBM - Design of Proposed TBM       119       27/03/10       27/08/10       0       100         S307420       TBM Submittals Group C Preliminary Design       111       1901/10       27/08/10       1901/10       27/08/10       100         S307430       TBM Submittals Group C Resubmission       19       227/07/01       0       100       100         S307430       TBM Submittals Group C Resubmission       19       027/07/10       27/08/10       32       1       44d         S307450       TBM Submittals Group C Resubmission       19       027/07/10       0/11/10       16       0       44d         S307460       TBM Submittals Group C Resubmission       19       027/07/10       0/11/10       16       0       44d         S3074760       TBM Submittals Group C Regineer Approval       16       0/11/10       1225       0       44d         S307470       Submit Turnel Layout/Procedure/Equipment       28       0/11/10       0/12/10       28       0       3d         S307480       Re-submit Turnel Layout/Procedure/Equipment       28       0/11/10       0/12/10       3d       3d       3d         S307500       FSD Review on Terno Ventilation System       28       0/11/10       0/12/10				_						/ _ / _ / _ / _ / _ / _ / _ / _
S3/07420       TBM Submittals Group C Preliminary Design       111       19/01/10       27/08/10       0       100         S3/07420       TBM Submittals Group C Engineers Review       36       27/08/10       32       11       44d         S3/07400       TBM Submittals Group C Resubmission       19       0       44d         S3/07400       TBM Submittals Group C Resubmission       19       0       44d         S3/07400       TBM Submittals Group C Resubmission       16       21/0/10       20/10/10       20/0/11/10       16       44d         S3/07400       TBM Submittals Group C Resubmission       16       21/0/10       0/11/10       16       44d         S3/07400       TBM Submittals Group C Resubmission       19       0       44d       3/07400       TBM Submittals Group C Resubmission       19       0       44d         S3/07400       TBM Submittals Group C Resubmission       16       0/0/0/10       2/0/0/10       2/11/10       2/10       2/10       2/10       2/10/0/0       2/10/0/0/0/0/0/0/0/0/0/0/0/0/0/0/0/0/0/0				_			-			
S3/07430       TBM Submittals Group C Engineer's Review       36       27/08/10       0/1/0/10       27/08/10       32       11       -44d         S3/07440       TBM Submittals Group C Resubmission       19       0/2/0/10       20/10/10       19       0       -44d         S3/07450       TBM Submittals Group C Engineer Approval       16       21/10/10       0/5/11/10       16       0       -44d         S3/07450       TBM Submittals Group C Engineer Approval       16       0/5/11/10       16       0       -44d         S3/07450       TBM Annufacturing of TBM & Delivery       235       06/09/10       0/2/01/10       235       0       -44d         S3/07460       TBM - Manufacturing of TBM & Delivery       235       0/6/09/10       0/5/11/10       0       60       0       -19d         S3/07480       FSD Review ofTunnel Layout/Procedure/Equipment       28       0       -3d       -3d       -3d       -3d         S3/07500       FSD Approval Tunnel Layout/Procedure/Equipment       28       0/1/10       0       -28       0       -3d         S3/07510       Submit Temp Ventilation System       21       0/4/2/10       241/2/10       -1d       -1d       -2d       -1d         S3/07520				_			0			⊢- →
S3/07450         TBM Submittals Group C Engineer Approval         16         0         -44d           S3/07450         TBM - Manufacturing of TBM & Delivery         235         06/09/10         02/05/11         235         0         -44d           S3/07470         Submit Tunnel Layout/Procedure/Equipment to FSD         60         07/09/10         05/11/10         60         0         -19d           S3/07470         Submit Tunnel Layout/Procedure/Equipment to FSD         60         07/09/10         05/11/10         28         0         -3d           S3/07490         Re-submit Tunnel Layout/Procedure/Equipment         28         0         -3d         -3d           S3/07490         FSD Review ofTunnel Layout/Procedure/Equipment         28         0/11/10         0/12         0         -3d           S3/07500         FSD Approval Tunnel Layout/Procedure/Equipment         28         0/11/10         0/12         -1d           S3/07520         Engineer Review on Temp Ventilation System         28         0/11/10         0/12         -1d           S3/07530         Resubmit Temp Ventilation System         21         0/12         -1d         -1d           S3/07530         Resubmit Temp Ventilation System         21         0/14         -1d         -1d	S3/07430	TBM Submittals Group C Engineer's Review	36 27/08/10 A	01/10/10	27/08/10		32	11	-44d	TBM Submittals Group C Engineer's Review
S307460         TBM - Manufacturing of TBM & Delivery         235         06/09/10         02/05/11         235         0         -44d           S307460         TBM - Manufacturing of TBM & Delivery         235         06/09/10         02/05/11         235         0         -44d           S307470         Submit Tunnel Layout/Procedure/Equipment to FSD         60         07/09/10         05/11/10         06/0         -19d           S307480         FSD Review ofTunnel Layout/Procedure/Equipment         28         0         -3d           S307500         FSD Approval Tunnel Layout/Procedure/Equipment         28         0         -3d           S307510         Submit Temp Ventilation System for Tunnel         60         0         -19d           S307520         Engineer Review on Temp Ventilation System         28         0         -3d           S307520         Engineer Review on Temp Ventilation System         21         0         1d           S307530         Resubmit Temp Ventilation System         21         0         1d           S307540         Engineer Review on Temp Ventilation System         21         0         1d           S307540         Engineer Approval on Temp Ventilation System         12         0/1/11         1d           S307610	S3/07440	TBM Submittals Group C Resubmission	19 02/10/10	20/10/10			19	0	-44d	
S3/07470       Submit Tunnel Layout/Procedure/Equipment to FSD       60       07/09/10       05/11/10       060       0       -19d         S3/07480       FSD Review of Tunnel Layout/Procedure/Equipment       28       0.3d       -3d         S3/07490       Re-submit Tunnel Layout/Procedure/Equipment       21       0.3d         S3/07490       Re-submit Tunnel Layout/Procedure/Equipment       21       0.3d         S3/07500       FSD Approval Tunnel Layout/Procedure/Equipment       28       25/12/10       21/01/11       28       0       -3d         S3/07510       Submit Temp Ventilation System for Tunnel       60       07/09/10       05/11/10       60       0       -19d         S3/07520       Engineer Review on Temp Ventilation System       28       0.1d       -11d       -11d         S3/07530       Resubmit Temp Ventilation System       21       0.1d       -1d       -1d         S3/07540       Engineer Approval on Temp Ventilation System       14       25/12/10       07/01/11       14       0       -1d         S3/07610       TBM Submittals Group D Work Plan / Training Prog       60       27/09/10       25/11/10       28       0       -3d         S3/07620       TBM Submittals Group D Engineer Review       28       0				-						TBM Submittals Group C Engineer A
S3/07480       FSD Review ofTunnel Layout/Procedure/Equipment       28       0       -3d         S3/07490       Re-submit Tunnel Layout/Procedure/Equipment       21       0       -3d         S3/07490       FSD Approval Tunnel Layout/Procedure/Equipment       21       0       -3d         S3/07500       FSD Approval Tunnel Layout/Procedure/Equipment       28       25/12/10       21/01/11       28       0       -3d         S3/07500       FSD Approval Tunnel Layout/Procedure/Equipment       28       25/12/10       21/01/11       28       0       -3d         S3/07500       FSD Approval Tunnel Layout/Procedure/Equipment       28       0/11/10       0       -0       -3d         S3/07500       Engineer Review on Temp Ventilation System for Tunnel       60       07/09/10       05/11/10       0       -0       -1d         S3/07500       Resubmit Temp Ventilation System       21       0       -1d       -1d       -1d         S3/07500       Resubmit Temp Ventilation System       14       25/12/10       0/70/1/11       14       0       -1d         S3/07500       TBM Submittals Group D Work Plan / Training Prog       60       27/09/10       25/11/10       60       0       -19d         S3/07620       TBM Submitta				-						
S3/07490Re-submit Tunnel Layout/Procedure/Equipment2104/12/1024/12/10210-3dS3/07500FSD Approval Tunnel Layout/Procedure/Equipment2825/12/1021/01/11280-3dS3/07510Submit Temp Ventilation System for Tunnel6007/09/1005/11/10600-19dS3/07520Engineer Review on Temp Ventilation System2806/11/1003/12/10280-1dS3/07530Resubmit Temp Ventilation System2104/12/1024/12/10210-1dS3/07540Engineer Approval on Temp Ventilation System1425/12/1007/01/11140-1dS3/07610TBM Submittals Group D Work Plan / Training Prog6027/09/1025/11/1026/11/1023/12/10-3dS3/07620TBM Submittals Group D Engineer Review2826/11/1023/12/10280-3dS3/07620TBM Submittals Group D Engineer Review2826/11/1023/12/10280-3d			+							
S3/07500FSD Approval Tunnel Layout/Procedure/Equipment2825/12/1021/01/11280-3dS3/07510Submit Temp Ventilation System for Tunnel6007/09/1005/11/10600-19dS3/07520Engineer Review on Temp Ventilation System2806/11/1003/12/10280-1dS3/07530Resubmit Temp Ventilation System2104/12/10210-1dS3/07540Engineer Approval on Temp Ventilation System1425/12/1007/01/11140-1dS3/07610TBM Submittals Group D Work Plan / Training Prog6027/09/1025/11/10600-19dS3/07620TBM Submittals Group D Engineer Review2826/11/1023/12/10280-3dBay Definition System2826/11/1023/12/10280-3d										━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
S3/07510Submit Temp Ventilation System for Tunnel6007/09/1005/11/10600-19dS3/07520Engineer Review on Temp Ventilation System2806/11/1003/12/10280-1dS3/07530Resubmit Temp Ventilation System2104/12/1024/12/10210-1dS3/07540Engineer Approval on Temp Ventilation System1425/12/1007/01/11140-1dS3/07610TBM Submittals Group D Work Plan / Training Prog6027/09/1025/11/10600-19dS3/07620TBM Submittals Group D Engineer Review2826/11/1023/12/10280-3d										
S3/07520         Engineer Review on Temp Ventilation System         28         06/11/10         03/12/10         28         0         -1d           S3/07530         Resubmit Temp Ventilation System         21         04/12/10         24/12/10         21         0         -1d           S3/07540         Engineer Approval on Temp Ventilation System         14         25/12/10         07/01/11         14         0         -1d           S3/07610         TBM Submittals Group D Work Plan / Training Prog         60         27/09/10         25/11/10         60         0         -19d           S3/07620         TBM Submittals Group D Engineer Review         28         26/11/10         28         0         -3d				-						
S3/07530       Resubmit Temp Ventilation System       21       04/12/10       24/12/10       21       0       -1d         S3/07530       Engineer Approval on Temp Ventilation System       14       25/12/10       07/01/11       14       0       -1d         S3/07610       TBM Submittals Group D Work Plan / Training Prog       60       27/09/10       25/11/10       60       0       -19d         S3/07620       TBM Submittals Group D Engineer Review       28       26/11/10       28       0       -3d										
S3/07540         Engineer Approval on Temp Ventilation System         14         25/12/10         07/01/11         14         0         -1d           S3/07610         TBM Submittals Group D Work Plan / Training Prog         60         27/09/10         25/11/10         60         0         -19d           S3/07620         TBM Submittals Group D Engineer Review         28         26/11/10         23/12/10         28         0         -3d				_						
S3/07610         TBM Submittals Group D Work Plan / Training Prog         60         27/09/10         25/11/10         60         0         -19d           S3/07620         TBM Submittals Group D Engineer Review         28         26/11/10         28         0         -3d							14	0		
	S3/07610	TBM Submittals Group D Work Plan / Training Prog	60 27/09/10	25/11/10			60	0	-19d	IBM Submittals Group D Work I
S3/07630         TBM Submittals Group D Re-submission         14         24/12/10         06/01/11         14         0         -3d				-						I I I I I I I I I I I I I I <b>          </b>
	S3/07630	TBM Submittals Group D Re-submission	14 24/12/10	06/01/11			14	0	-3d	TBM Submittals Group



Revised Works Programme (Version 02) Updated on 31 August 2010

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					Construction of Intere	Harbour Area Treatment Scheme Stage 2A connection Tunnel & D.Wall - Main Pumping Station at Stonecutters
Act ID	Description	Original Early Duration Start			Remaining Percent Total Duration Complete Float	2009 2010 2011 2012
S3/07640	TBM Submittals Group D Approval	14 07/01/11	20/01/11		14 0 -3d	P OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY
S3/07650	TBM Submittals Group E Tunnel Safety Programme	60 27/09/10	25/11/10		60 0 -19d	TBM Submittals Group E Tunnel Safety Programme
S3/07660	TBM Submittals Group E Engineer Review	28 26/11/10	23/12/10		28 0 -3d	TBM Submittals Group E Engineer Review
S3/07670	TBM Submittals Group E Re-submission	14 24/12/10	06/01/11		14 0 -3d	TBM Submittals Group E Re-submission
S3/07680 S3/07690	TBM Submittals Group E Approval Submit Segment Annulus Grouting Design	14 07/01/11 60 22/10/10	20/01/11 20/12/10		14 0 -3d 60 0 -19d	TBM Submittals Group E Approval
S3/07690	Engineer Review on Segment Annulus Grouting	28 21/12/10	17/01/11		28 0 -19d	Engineer Review on Segment Annulus Grouting
S3/07710	Resubmit Segment Annulus Grouting	14 18/01/11	31/01/11		14 0 -19d	Resubmit Segment Annulus Grouting
S3/07720	Engineer Approval on Segment Annulus Grouting	14 01/02/11	18/02/11		14 0 -19d	Engineer Approval on Segment Annulus Grouting
S3/07730	Submit Temp Work Design for Tunnel	60 22/10/10	20/12/10		60 0 -19d	Submit Temp Work Design for Tunnel
S3/07740	Engineer Review on Temp Work Design for Tunnel	28 21/12/10	17/01/11		28 0 -19d	Engineer Review on Temp Work Design for Tunnel
S3/07750	Resubmit Temp Work Design for Tunnel	14 18/01/11	31/01/11 18/02/11		14 0 -19d 14 0 -19d	Resubmit Temp Work Design for Tunnel
S3/07760 S3/07770	Engineer Approval on Temp Work Design for Tunnel Submit Method for Tunnel Movement Monitoring	14 01/02/11 60 22/10/10	20/12/10		14 0 -19d 60 0 -19d	Submit Method for Tunnel Movement Monitoring
S3/07780	Eng Review Method for Tunnel Movement Monitoring	28 21/12/10	17/01/11		28 0 -19d	Eng Review Method for Tunnel Movement Monitoring
S3/07790	Re-submit Method for Tunnel Movement Monitoring	14 18/01/11	31/01/11		14 0 -19d	Re-submit Method for Tunnel Movement Monitoring
S3/07800	Approval Method for Tunnel Movement Monitoring	14 01/02/11	18/02/11		14 0 -19d	Approval Method for Tunnel Movement Monitoring
S3/07810	Submit Method to Control Infiltration	60 22/10/10	20/12/10		60 0 -19d	Submit Method to Control Infiltration
S3/07820	Eng Review on Method to Control Infiltration	28 21/12/10	17/01/11		28 0 -19d	Eng Review on Method to Control Infiltration
S3/07830 S3/07840	Re-submit Method to Control Infiltration Eng Approval on Method to Control Infiltration	14 18/01/11 14 01/02/11	31/01/11 18/02/11		14 0 -19d 14 0 -19d	Re-submit Method to Control Infiltration
S3/07840 S3/07850	Tunnel Lining Detail Design	90 28/01/10 A		1/10	30 67 -44d	
S3/07860	Engineer's Approval on Lining Design	18 30/09/10	17/10/10	-	18 0 -44d	Engineer's Approval on Lining Design
	Address Engineer's Comments	20 18/10/10	06/11/10		20 0 -44d	Address Engineer's Comments
U U U U U U U U U U U U U U U U U U U	haft Construction					
	Diaphragm Wall and Testing for Launching Shaft	145 * 16/08/10 A			130 * 10 -44d	Diaphragm Wall and Testing for Launching Shaft
S3/08020 S3/08030	Mobilisation of Plant & Equipments Erection of Silo System	24 25/03/10 A	05/05/10 A 01/0	3/10 24/04/10 4/10 05/05/10		Mobilisation of Plant & Equipments
S3/08030 S3/08035	Ground Improvement	40 14/06/10 A		6/10 31/07/10		Ground Improvement
S3/08038	Preparation work to commence D-wall	14 03/05/10 A		5/10 16/08/10		► ■ Preparation work to commence D-wall
S3/08040	Diaphragm Wall Installation	120 16/08/10 A	20/12/10 16/0	8/10	112 7 -44d	Diaphragm Wall Installation
S3/08050	Launching Shaft: DW Panel L1	12 31/08/10	11/09/10		12 0 -44d	+> Launching Shaft: DW Panel L1
S3/08060	Launching Shaft: DW Panel L5	5 12/09/10	16/09/10		5 0 -44d	► Launching Shaft: DW Panel L5
S3/08070	Launching Shaft: DW Panel L9	5 17/09/10	21/09/10		5 0 -44d	Launching Shaft: DW Panel Launching Shaft Sh
S3/08080 S3/08090	Launching Shaft: DW Panel L3 Launching Shaft: DW Panel L7	5 22/09/10 5 27/09/10	26/09/10 01/10/10		5 0 -44d 5 0 -44d	Launching Shaft: DW Panel L7
S3/08100	Launching Shaft: DW Panel L11	5 02/10/10	06/10/10		5 0 -44d	Launching Shaft: DW Panel L11
S3/08110	Launching Shaft: DW Panel L2	5 07/10/10	11/10/10		5 0 -44d	Launching Shaft: DW Panel L2
S3/08120	Launching Shaft: DW Panel L13	5 12/10/10	16/10/10		5 0 -44d	Launching Shaft: DW Panel L13
S3/08130	Launching Shaft: DW Panel L4	5 17/10/10	21/10/10		5 0 -44d	Launching Shaft: DW Panel L4
S3/08140	Launching Shaft: DW Panel L15	5 22/10/10	26/10/10		5 0 -44d	Launching Shaft: DW Panel L15
S3/08150 S3/08160	Launching Shaft: DW Panel L6 Launching Shaft: DW Panel L17	5 27/10/10 5 16/08/10 A	31/10/10 31/08/10 16/0	8/10	5 0 -44d 1 80 17d	Launching Shaft: DW Panel L17
S3/08170	Launching Shaft: DW Panel L8	5 01/11/10	05/11/10	0,10	5 0 -44d	Launching Shaft: DW Panel L8
S3/08180	Launching Shaft: DW Panel L19	5 06/11/10	10/11/10		5 0 -44d	Launching Shaft: DW Panel L19
S3/08190	Launching Shaft: DW Panel L10	5 11/11/10	15/11/10		5 0 -44d	Launching Shaft: DW Panel L10
S3/08200	Launching Shaft: DW Panel L21	5 16/11/10	20/11/10		5 0 -44d	►a Launching Shaft: DW Panel L21
S3/08210	Launching Shaft: DW Panel L12	5 21/11/10	25/11/10		5 0 -44d	Launching Shaft: DW Panel L18
S3/08220 S3/08230	Launching Shaft: DW Panel L18 Launching Shaft: DW Panel L14	5 26/11/10 5 01/12/10	30/11/10 05/12/10		5 0 -44d 5 0 -44d	Launching Shaft: DW Panel L18
S3/08240	Launching Shaft: DW Panel L20	5 06/12/10	10/12/10		5 0 -44d	Launching Shaft: DW Panel L20
S3/08250	Launching Shaft: DW Panel L16	5 11/12/10	15/12/10		5 0 -44d	Launching Shaft: DW Panel L16
S3/08260	Launching Shaft: DW Panel L22	5 16/12/10	20/12/10		5 0 -44d	Launching Shaft: DW Panel L22
S3/08270	Launching Shaft: Demobilization of Plant	3 21/12/10	23/12/10		3 0 -44d	Launching Shaft: Demobilization of Plant
S3/08280	All Test including Sonic Test to completed Dwall	24 15/12/10	07/01/11		24 0 -44d	All Test including Sonic Test to completed Dwall
S3/08310 S3/08320	Excavation & Base Slab for Launching Shaft Excavation & Construction of Temp Base Slab	95 * 15/12/10 95 15/12/10	23/03/11 23/03/11		95 * 0 -44d 95 0 -44d	Excavation & Base Slab for Launching Shaft
S3/08320 S3/08330	LS: Excavation to 500mm Below Top Ring Beam	2 15/12/10	16/12/10		2 0 -44d	LLS: Excavation to 500mm Below Top Ring Beam
S3/08340	LS: Construct Top Ring Beam at +5.5mpd	10 17/12/10	26/12/10		10 0 -44d	► LS: Construct Top Ring Beam at +5.5mpd
S3/08350	LS: Excavation to 500mm Below Top Ring Beam	20 27/12/10	15/01/11		20 0 -44d	LS: Excavation to 500mm Below Top Ring Beam
S3/08360	LS: Construct Middle Ring Beam at -16.45mpd	15 16/01/11	30/01/11		15 0 -44d	LS: Construct Middle Ring Beam at -16.45mpd
S3/08370	LS: Excavation to 500mm Below Middle Ring Beam	10 31/01/11	13/02/11		10 0 -44d	LS: Excavation to 500mm Below Middle Ring Beam
S3/08380	LS: Construct Middle Ring Beam at -23.05mpd	15 14/02/11	28/02/11		15 0 -44d	LS: Construct Middle Ring Beam at -23.05mpd
S3/08390 S3/08400	LS: Excavation Below Bottom Ring Beam LS: Formation and Blinding	5 01/03/11 6 06/03/11	05/03/11		5 0 -44d 6 0 -44d	S: Formation and Blinding
S3/08400 S3/08410	LS: Construct Base Slab	12 12/03/11	23/03/11		12 0 -44d	LS: Construct Base Slab
	Dummy	0 24/03/11	23/03/11		0 0 -44d	
Start date 03/09/0	)9	· 1	· ·	1	· · · · · ·	Date Revision Checked Approved Farly bar
Finish date 03/09/0 Data date 31/08/1	12					Progress bar
Run date 28/08/1 Page number 6A			Revised W	/orks Pro	ogramme (Version 02)	Updated on 31 August 2010
Project name 1009 c Primavera Systems,	s, Inc.				· · · ·	Start milestone point



						Construe	ction of	Harbour Area Treatment Scheme Interconnection Tunnel & D.Wall - Main		
Act ID	Description	Original Early Duration Start	Early Actual Finish Start	Actual Finish	Remaining Duration		Total Float	2009 SEP OCT NOV DEC JAN FEE	2010 3 MAR APR MAY JUN JUL AUG	SEP OCT NOV DEC JAN FEB MAR AP
Bored Tunne S3/08510	Preparation Work for Bored Tunnel	171 * 24/12/10	16/06/11		171 *	0	-44d			
S3/08520	Production of Lining Form	60 07/11/10	05/01/11		60	0	-44d			Production of Lining Fo
S3/08530	Inspection and modification of Lining Form	14 06/01/11	19/01/11		14	0	-44d			Inspection and mod
S3/08540	Initial Casting for Precast Segment Lining	40 20/01/11	04/03/11		40	0	-44d			Initial Cas
S3/08550	Casting for Pre-cast Segment Lining	226 05/03/11	16/10/11		226	0	-44d			
S3/08560	Precast Segment Lining for ch0 to ch90	76 05/03/11	19/05/11		76	0	-44d			
S3/08570 S3/08580	Precast Segment Lining for ch90 to ch170 Precast Segment Lining for ch170 to ch236	80 20/05/11 70 08/08/11	07/08/11 16/10/11		80	0	-44d -44d			
S3/08600	Soil Improvement for TBM Retrieving	60 24/12/10	09/03/11		60	0	-20d			Soil Imp
S3/08610	Surface Preparation (Muck Pit&Crawler Crane)	56 07/03/11	01/05/11		56	0	-44d			
S3/08620	Dome,Ringbeam&Backthrust Wall Construction	40 24/03/11	02/05/11		40	0	-44d			
S3/08630	Preparation inside Launching Shaft	75 16/03/11	29/05/11		75	0	-44d			
S3/08640 S3/08645	Soil Improvement for TBM Launching Establish Plant for TBM Excavation	78 31/03/11 45 03/05/11	16/06/11 16/06/11		78 45	0	-44d -44d			
S3/08650	TBM Assembly	45 03/05/11	16/06/11		45	0	-44d			
S3/08700	Construction of Bored Tunnel	228 * 17/06/11	30/01/12		228 *	0	-44d			
S3/08710	Initial Drive (50m)	34 17/06/11	20/07/11		34	0	-44d			
S3/08720	Convert to Main Drive	21 21/07/11	10/08/11		21	0	-44d			
S3/08730	Main Drive (34m)	20 11/08/11	30/08/11		20	0	-44d			
S3/08740 S3/08750	Main Drive (102m) Main Drive (50m)	51 31/08/11 24 21/10/11	20/10/11 13/11/11		51 24	0	-44d -44d	$\cdots \cdots $	$ \stackrel{1}{\underset{1}{\overset{1}{\overset{1}{\overset{1}{\overset{1}{\overset{1}{\overset{1}{\overset$	
S3/08750	Preparation Works for TBM Breakthrough	19 21/10/11	08/11/11		19	-	-41d			
S3/08770	Post Condition Survey for Bored Tunnel	21 14/11/11	04/12/11		21	0	13d			
S3/08780	Dismantle TBM	45 14/11/11	28/12/11		45	0	-44d			
S3/08790	Removing Sleeper&Rail,Cleaning Works	21 22/11/11	12/12/11		21	0	-33d			
S3/08800	Connection Joints with Inlet Chamber	21 24/12/11	13/01/12		21	0	-44d	1 1 1 1 1 1 1 1 1 1 1 1 1		
S3/08810 S3/08820	Final Touching Up&Cleaning of Inlet Chamber Submission of As-built Record for Bored Tunnel	21 10/01/12 30 29/12/11	30/01/12 27/01/12		21	0	-44d 326d			
Mined Tunne		00 20/12/11			00	U U	020d			
S3/09010	Preparation Works for Mined Tunnel	192 * 24/03/11	20/11/11		192 *	0	-37d			
S3/09020	Vertical Jet Grout for Mined Tunnel Construction	80 24/03/11	05/07/11		80		-38d	1 1 1 1 1 1 1 1 1 1 1 1 1		
S3/09030	Drill Horizontal Freezing \ Jet Grout	30 03/05/11	01/06/11		30	0	-44d			
S3/09040 S3/09050	Set Up Station for Freezing Stabilization Ground Freezing Stabilization	60 24/07/11 60 22/09/11	21/09/11 20/11/11		60 60	0	-44d -44d			
S3/09060	Vertical Drill at D-Wall	30 27/03/11	25/04/11		30	0	-44d	· · · · · · · · · · · · · · · · · · ·		
S3/09070	Set Up Station for Freezing\ Jet Grout at D-Wall	56 26/04/11	20/06/11		56	0	-44d	1 1 1 1 1 1 1 1 1 1 1 1 1		
S3/09080	Ground Freezing \ Jet Grout at D-Wall	60 21/06/11	19/08/11		60	0	-44d			
S3/09090	Stabilize Ground at Existing Riser Shaft Wall	60 22/09/11	20/11/11		60	0	-44d			
S3/09100 S3/09110	Construction of Mined Tunnel Construct Mined Tunnel	71 * 21/11/11 53 21/11/11	30/01/12 12/01/12		71 * 53	0	-44d -44d			
S3/09110 S3/09120	Make Good & Final Cleaning Works	18 13/01/12	30/01/12		18	-	-44d			
S3/09130	Submission of As-built Record for Mined Tunnel	15 13/01/12	27/01/12		15		326d			
S3/09140	Post Condition Survey for Mined Tunnel	21 13/01/12	02/02/12		21	0	320d			
Supplementary /								I I I I I I I I I I I I I		
Key Dates										
KD7000	Commencement for Section IV (Variation Order)	0 16/04/10 A	16/04/10		0	100			Commencement for Section IN	(Variation Order)
KD7100	Completion of Section IV (1) : 120 days	0	30/08/10 *		0		-17d			Completion of Section IV (1) : 120 days
KD7200	Completion of Section IV (2) : 150 days	0	12/09/10 *		0	0	0			➡ Completion of Section IV (2) : 150 days ➡ Completion of Section IV (3) : 150 days
KD7300 Pipe Works	Completion of Section IV (3) : 150 days	0	12/09/10 *		0	0	0			
V1/01110	Pipe Drain & Sludge Feed Pipe for Section IV (1)	130 * 16/04/10 A	23/08/10 A 16/04/10	23/08/10	0 *	100				Pipe Drain & Sludge Feed Pipe for Section IV (1)
V1/01120	Pipe Drain / Sludge Feed Pipe for Section IV (1)	120 16/04/10 A	07/08/10 A 16/04/10	07/08/10	0	100			Pipe	Drain / Sludge Feed Pipe for Section IV (1)
V1/01125	Detect Existing Utilities	6 16/04/10 A		21/04/10	0	100			Detect Existing Utilities	
V1/01130	Sewer bet F10 to F9 and Manhole (Part 1)	46 16/04/10 A		26/06/10	0	100			iiitt⊤i i diataraara	0 to F9 and Manhole (Part 1)
V1/01140 V1/01150	Sewer bet F9 to F7 Storm Drain bet S1B to S1C	35 05/05/10 A 14 05/06/10 A		03/07/10	0	100 100		$\cdots \cdots $	Sewer bet F	het S1B to S1C
V1/01150	DN600 Sludge Feed Pipe (SF2) - 70m	8 14/07/10 A		07/08/10	0	100				00 Sludge Feed Pipe (SE2) - 70m
V1/01170	DN400 Sludge Feed Pipe (SF1) - 70m	8 05/07/10 A		17/07/10	0	100			DN400 S	ludge Feed Pipe (SF1) - 70m
V1/01180	Storm Drain bet S1B to S13	32 13/07/10 A		18/08/10	0	100			┉┤┤┦┽┍┍╤╶╶╷ ┉┝┝	torm Drain bet S1B to S13 Reinstatement of Area / Access
V1/01190	Reinstatement of Area / Access	7 09/08/10 A		23/08/10	0	100				Reinstatement of Area / Access
V1/01200	TTA for F10 to F9 (Part 2)	1 16/04/10 A		16/04/10	0	100			TTA for F10 to F9 (Part 2)	0 to EQ (Part 2)
V1/01210 V1/01220	Sewer bet F10 to F9 (Part 2) Storm Drain bet S1A to S1B and Manholes	31 16/04/10 A 31 20/07/10 A		28/06/10 19/08/10	0	100 100			Sewer Det F1	0 to F9 (Part 2) form Drain bet S1A to S1B and Manholes
V1/01220	Pipe Drain & Sludge Feed Pipe for Section IV (2)	179 * 16/04/10 A	11/10/10 16/04/10	,	42 *	77	-29d			Pipe Drain & Sludge Feed Pipe for Section
V1/01235	Pipe Drain / Sludge Feed Pipe for Section IV (2)	150 16/04/10 A		07/08/10	0	100			Pipe	Drain / Sludge Feed Pipe for Section IV (2)
V1/01240	Sewer bet F7 to F4 & Manhole	52 20/04/10 A	16/07/10 A 20/04/10	16/07/10	0	100			Sewer be	t F7 to F4 & Manhole
Start date 03/09/0	9									

tart date 03/09/09 inish date 18/12/12 ata date 31/08/10 un date 28/08/10 age number 7A roject name 1009

Revised Works Programme (Version 02) Updated on 31 August 2010

2011				2012
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Form Prepa	aration Work for Bored	Tunnel		
odification of Lining Fo	orm			
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	Precast Segme			I I I I
nprovement for TBM F		Precast Se	gment Lining	for ch170 to ch236
	ation (Muck Pit&Crawle			
Preparati	m&Backthrust Wall Co on inside Launching S			
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	Main Drive	1.1.1		
	+	Main Drive	e (102m)     Drive (50m)	
			a de la companya de l	for TBM Breakthrough
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				nection Joints with Inlet
				Submission of As-built F
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		11.	rout at D-Wal	
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				Make Good & Final Cle Submission of As-built R
				Post Condition Survey
on IV (2)				
		·		
Date	Revision	Checked	Approved	Early bar Progress bar
				Progress bar Critical bar Summary bar
				<ul> <li>Start milestone point</li> </ul>

Act ID							Construction of Inte	Harbour Area Treatment Scheme Stage 2A erconnection Tunnel & D.Wall - Main Pumping Station at Stonecutters
	Description	Original Early Duration Start	Early Finish	Actual Start			Percent Total Complete Float	2009 EP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR AP
1/01250	Sewer bet F4 to F3 & Manholes	50 30/06/10 A	19/09/10	30/06/10		20	60 817d	L► Sewer bet F4 to F3 & Manholes
	12DN600 Sludge Feed Pipe (SF2) - 10m	22 23/07/10 A			07/08/10	0	100	r + <b>→ Term</b> (12DN600 Sludge Feed Pipe (SF2) - 10m
	Sewer bet F3 to F2 Storm Drain bet S1C to S1D & Manholes S1C/S1C2	24 23/08/10 A 56 20/08/10 A		23/08/10 20/08/10		14 20	42 -15d 64 -13d	Sewer bet F3 to F2
	Storm Drain bet S1D to S1E & Manhole (Part 1)	90 16/04/10 A			31/07/10	0	100	Storm Drain bet S1D to S1E & Manhole (Part 1)
01305	Storm Drain bet S1D to S1E (Part 2)	56 31/08/10	25/10/10			56	0 -43d	Storm Drain bet S1D to S1E (Part 2)
	Storm Drain bet S1E to S6 & Manholes S1E / S6		21/10/10			52	0 785d	Storm Drain bet S1E to S6 & Manholes S1E / S6
	Storm Drain bet S6 to S7A & Manhole S7A Storm Drain bet S7 to S7A & Manhole S7 (Part 1)	45 26/08/10 A 50 23/08/10 A		26/08/10 23/08/10		42 20	7 -29d 60 -39d	Storm Drain bet S6 to S7A & Manhole S7A
	Storm Drain bet S7 to S7A & Manhole S7 (Part 1) Storm Drain bet S7 to S7A & Manhole S7 (Part 2)	48 04/09/10	21/10/10	23/06/10		48	0 -39d	Storm Drain bet S7 to S7A & Manhole S7 (Part 2)
	Sewer bet F2 to F1	24 18/09/10	11/10/10			24	0 -29d	Sewer bet F2 to F1
le Works								
	Cable Trough for Section IV(3) Cable Trough	171 * 16/04/10 A 150 16/04/10 A	-	16/04/10 16/04/10		34 * 92	80 803d 39 -79d	Cable Trough
	Mobilization	6 16/04/10 A	-		21/04/10	92	100	- → Mobilization
	Detect Existing Utilities	6 16/04/10 A			21/04/10	0	100	► Detect Existing Utilities
/02040	Phase A: TTA for Cable Trough ch0 to 20	1 22/04/10 A	22/04/10 A		22/04/10	0	100	► Phase A: TTA for Cable Trough ch0 to 20
	Phase A: Excavation and Blinding ch0 to 15	5 23/04/10 A			05/05/10	0	100	Phase A: Excavation and Blinding ch0 to 15
	Phase A: Sheet Piling / Exc ch15 to 80 Phase A: Base Slab ch0 to 20	30 06/05/10 A 6 13/05/10 A			18/06/10 05/06/10	0	100	Phase A: Sheet Piling / Exc ch15 to 80
	Phase A: Wall Stem ch0 to 20	5 13/05/10 A			05/06/10	0	100	H → → → → → → → → → → → → → → → → → → →
	Phase A: Base Slab ch20 to 40	4 04/06/10 A			14/06/10	0	100	Phase A: Base Slab ch20 to 40
	Phase A: Wall Stem ch20 to 40	4 04/06/10 A			14/06/10	0	100	Phase A: Wall Stem ch20 to 40
	Phase A: Backfill and Reinstatement ch0 to 40 Phase A: Single Call Cable Trough ab40 to 80	6 10/06/10 A	03/07/10 A 06/09/10		03/07/10	0	100 50 -36d	Phase A: Backfill and Reinstatement ch0 to 40
	Phase A: Single Cell Cable Trough ch40 to 80 Phase D: Single Cell Cable Trough ch80 to 120	14 07/06/10 A 14 07/09/10	20/09/10	07/06/10		14	0 -36d	Phase A: Single Cell Cable Trough ch80 to 120
	Phase D: Single Cell Cable Trough ch120 to 160	14 21/09/10	04/10/10			14	0 -36d	Phase D: Single Cell Cable Trough ch120 to 160
/02140	Phase D: Single Cell Cable Trough ch160 to 200	14 05/10/10	18/10/10			14	0 -36d	Phase D: Single Cell Cable Trough ch160 to 200
	Phase B: TTA for Cable Trough ch220 to 260	1 18/05/10 A	18/05/10 A		18/05/10	0	100	→ Phase B: TTA for Cable Trough ch220 to 260
	Phase B: Sheet Piling / Exc ch220 to 260 Phase B: Single Cell Cable Trough ch220 to 260	14 31/05/10 A 14 01/06/10 A		A 31/05/10 01/06/10	15/06/10	0	100 71 -37d	L► ■■ Phase B: Sheet Piling / Exc ch220 to 260
	Phase B: Single Cell Cable Trough ch260 to 300	14 01/06/10 A		01/06/10		4	71 -37d 71 -37d	► The second se
	Phase E: Single Cell Cable Trough ch300 to 340	14 12/06/10 A		12/06/10		4	71 -37d	Phase E: Single Cell Cable Trough ch300 to 340
/02230	Phase E: Single Cell Cable Trough ch340 to 380	14 19/07/10 A	03/09/10	19/07/10		4	71 -37d	► Phase E: Single Cell Cable Trough ch340 to 380
	Phase E: Single Cell Cable Trough ch380 to 420	21 04/09/10	24/09/10		00/00/40	21	0 -37d	Phase E: Single Cell Cable Trough ch380 to 420
	Phase C: TTA for Cable Trough ch420 to 460 Phase C: Single Cell Cable Trough ch420 to 460	1 28/06/10 A 25 29/06/10 A	28/06/10 A 09/09/10	A 28/06/10 29/06/10	28/06/10	10	100 60 827d	Phase C: TTA for Cable Trough ch420 to 460
	Phase C: Single Cell Cable Trough ch460 to 510	25 18/08/10 A		18/08/10		20	20 817d	Phase C: Single Cell Cable Trough ch460 to 510
/02280	Phase F: TTA for Cable Trough ch280 to 300	1 13/08/10 A	13/08/10 A	A 13/08/10	13/08/10	0	100	IPhase F: TTA for Cable Trough ch280 to 300
	Phase F: Single Cell Cable Trough ch280 to 300	30 16/08/10 A		16/08/10		20	33 817d	Phase F: Single Cell Cable Trough ch280 to 300
	Phase F: Twin Cell Cable Trough ch200 to 280 Phase G: TTA for Cable Trough ch220 to 180	47 16/08/10 A 1 31/08/10 *	19/09/10 31/08/10	16/08/10		20	57 -7d 0 -21d	Phase F: Twin Cell Cable Trough ch200 to 280 Phase G: TTA for Cable Trough ch220 to 180
	Phase G: Sheet Piling / Exc ch220 to 180	14 01/09/10	14/09/10			14	0 -21d	Phase G: Sheet Piling / Exc ch220 to 180
	Phase G: Single Cell Cable Trough ch220 to 180	14 11/09/10	24/09/10			14	0 -21d	Phase G: Single Cell Cable Trough ch220 to 180
	Phase G: Single Cell Cable Trough ch180 to 140	14 20/09/10	03/10/10			14	0 -21d	Phase G: Single Cell Cable Trough ch180 to 140
	Phase G: Single Cell Cable Trough ch140 to 135	0 04/10/10	03/10/10			0	0 -21d	Phase G: Single Cell Cable Trough ch140 to 135 → Phase G: Single Cell Cable Trough ch135 to 95
	Phase G: Single Cell Cable Trough ch135 to 95 Phase G: Single Cell Cable Trough ch95 to 80	0 04/10/10 0 04/10/10	03/10/10			0	0 -21d 0 -21d	Phase G: Single Cell Cable Trough ch155 to 85
onal Item		0 0 11 101 10	00,10,10			3	0 210	
Pumping S								
	Associated Submission Instruction for New Storage Shed	0 04/10/10 *				0	0 77d	♦ Instruction for New Storage Shed
00010	Design of New Storage Shed	60 04/10/10	13/12/10			60	0 77d 0 77d	Design of New Storage Shed
00020						120	0 77d	



APPENDIX C

Implementation Schedule of Environmental Mitigation Measures (EMIS)

# APPENDIX C IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status			
			Jun 10	Jul 10	Aug 10	
A	Air Quality					
3.74	Skip hoist for material transport should be totally enclosed by impervious sheeting.	All construction sites	V	V	V	
	Vehicle washing facilities should be provided at every vehicle exit point.	-	V	V	V	
	The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore.	-	V	V	V	
	Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit.	-	N/A	N/A	N/A	
	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	-	V	@	V	
	Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.	-	@	@	V	
	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs		@	@	V	
	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.		V	V	V	
	Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.		V	V	V	
	Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides.		N/A	N/A	N/A	

June 2010 to August 2010

. Recommended Mitigation Measures	Location of the measure	Implementation Status			
		Jun 10	Jul 10	Aug 10	
Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	All construction sites	V	V	V	
Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.		V	V	V	
Airborne Noise					
Use of quiet PME, movable barriers and acoustic mats.	All construction sites	V	V	V	
Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.	-	V	V	V	
Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.		V	V	V	
Mobile plant, if any, shall be sited as far away from NSRs as possible.		V	V	V	
Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.		V	V	V	
Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.		V	V	V	
Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.		V	V	V	
	Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites. Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. <b>Airborne Noise</b> Use of quiet PME, movable barriers and acoustic mats. Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program. Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program. Mobile plant, if any, shall be sited as far away from NSRs as possible. Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.       All construction sites         Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.       All construction         Airborne Noise       Use of quiet PME, movable barriers and acoustic mats.       All construction sites         Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.       All construction sites         Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.       Mobile plant, if any, shall be sited as far away from NSRs as possible.         Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.       Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.         Material stockpiles and other structures shall be effectively utilized, wherever       Merever	Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.       All construction sites       V         Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if       All construction sites       V         Airborne Noise       V       V       V         Use of quiet PME, movable barriers and acoustic mats.       All construction sites       V         Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.       V       V         Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.       V       V         Mobile plant, if any, shall be sited as far away from NSRs as possible.       V       V         Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.       V         Material stockpiles and other structures shall be effectively utilized, wherever       V	measure       measure         Jun 10       Jul 10         Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.       All construction sites         Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.       All construction sites       V       V         Airborne Noise       V       V       V       V       V       V         Use of quiet PME, movable barriers and acoustic mats.       All construction sites       V       V       V       V         Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.       V       V       V       V       V         Silencers or mufflers on construction program.       Silencers or mufflers on construction program.       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V       V	

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status			
		-	Jun 10	Jul 10	Aug 10	
С	Water Quality					
6.349 to 6.375	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All construction sites	@	@	@	
6.376	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.		V	V	V	
6.377	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.		@	@	V	
6.378	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.		N/A	N/A	N/A	

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status			
			Jun 10	Jul 10	Aug 10	
6.379	<ul> <li>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</li> <li>Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.</li> <li>Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.</li> <li>Storage area should be selected at a safe location on site and adequate space</li> </ul>	All construction sites	@	@	V	
	should be allocated to the storage area.					
6.380	<ul> <li>Construction Works in Close Proximity of Storm Drains or Seafront</li> <li>To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable.</li> <li>The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment.</li> <li>Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well</li> </ul>	All construction sites	@	Q		
	<ul> <li>Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.</li> </ul>					

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Imp	Implementation Status		
			Jun 10	Jul 10	Aug 10	
	<ul> <li>Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.</li> </ul>					
	<ul> <li>Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.</li> </ul>					
	<ul> <li>Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea.</li> </ul>					
D	Waste Management					
9.107	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	All construction sites	V	V	V	
9.109	<ul> <li>All waste materials should be segregated into categories covering:</li> <li>excavated materials suitable for reuse on-site;</li> <li>excavated materials suitable for public filling facilities;</li> <li>remaining C&amp;D waste for landfill;</li> <li>chemical waste; and</li> <li>general refuse for landfill.</li> </ul>		V	V	V	
9.113	Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals;		N/A	N/A	N/A	
	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.		V	@	@	

Harbour Area Treatment Scheme (HATS) Stage 2A Construction of Interconnection Tunnel and Diaphragm of Main Pumping Station at SCISTW

Appendix C - EMIS

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status			
			Jun 10	Jul 10	Aug 10	
9.113	Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.	All construction sites	V	V	V	
9.115	Any unused chemicals or those with remaining functional capacity shall be recycled.		V	V	V	
	Proper storage and site practices to minimise the potential for damage or contamination of construction materials.		@	@	@	
9.115	Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	-	V	V	V	
	Training of site personnel in proper waste management and chemical waste handling procedures.	-	V	V	V	
9.115	Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials.	-	V	V	V	
	Provision of sufficient waste disposal points and regular collection of waste.		@	@	@	
	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.		V	V	V	
9.125	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage"		V	V	V	
9.131	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	-	V	V	V	

Harbour Area Treatment Scheme (HATS) Stage 2A Construction of Interconnection Tunnel and Diaphragm of Main Pumping Station at SCISTW

Appendix C - EMIS

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status			
			Jun 10	Jul 10	Aug 10	
9.133	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All construction sites	V	V	V	
9.135	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.		V	V	V	
9.137	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.		@	@	V	
9.142	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.		N/A	N/A	N/A	

Harbour Area Treatment Scheme (HATS) Stage 2A Construction of Interconnection Tunnel and Diaphragm of Main Pumping Station at SCISTW

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status			
		-	Jun 10	Jul 10	Aug 10	
E	Terrestrial Ecology	I				
10.93	To implement effective noise mitigation measures as recommended in Section 4 of EIA.	All construction sites	V	V	V	
10.94	Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3 of EIA, should be implemented.	-	@	@	V	
10.95	Fences/hoardings should be erected and installed along the boundary of the works areas.		V	V	V	
10.96	Standard good site practices as suggested in Section 10 of EIA should be implemented.	-	@	@	@	
10.97	Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc.	-	@	@	@	
F	Landscape and Visual	I			Ι	
Table 13.7	Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.	All construction sites	N/A	N/A	N/A	
	Existing trees to be retained on site should be carefully protected during construction.		@	@	@	
	Trees unavoidably affected by the works should be transplanted where practical.		V	V	V	
	Compensatory tree planting should be provided to compensate for felled trees.	-	N/A	N/A	N/A	
	Control of night-time lighting.	-	V	V	V	

June 2010 to August 2010

Harbour Area Treatment Scheme (HATS) Stage 2A Construction of Interconnection Tunnel and Diaphragm of Main Pumping Station at SCISTW

EIA Ref.	. Recommended Mitigation Measures	Location of the measure	Implementation Status			
			Jun 10	Jul 10	Aug 10	
Table 13.7	Erection of decorative screen hoarding compatible with the surrounding setting.	All construction sites	N/A	N/A	N/A	
G	Marine Ecology			L		
11.135	To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	All construction sites	@	@	@	
н	Hazard to Life					
14A.201	Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone.	Exact location will be determined on construction site by the engineer	V	V	V	

Legend: V = implemented;

x = not implemented; @ = partially implemented; N/A = not applicable APPENDIX D

Summary of Action and Limit Levels

#### Appendix D - Summary of Action and Limit Levels

Table 1 – Action and Limit Lev	els for 1-hour TSP			
		_		

Monitoring Station	Action Level (µg/m ³ )	Limit Level (µg/m³)
AM7	322	500

Table 2 – Action and Limit Levels for 24-hour TSP

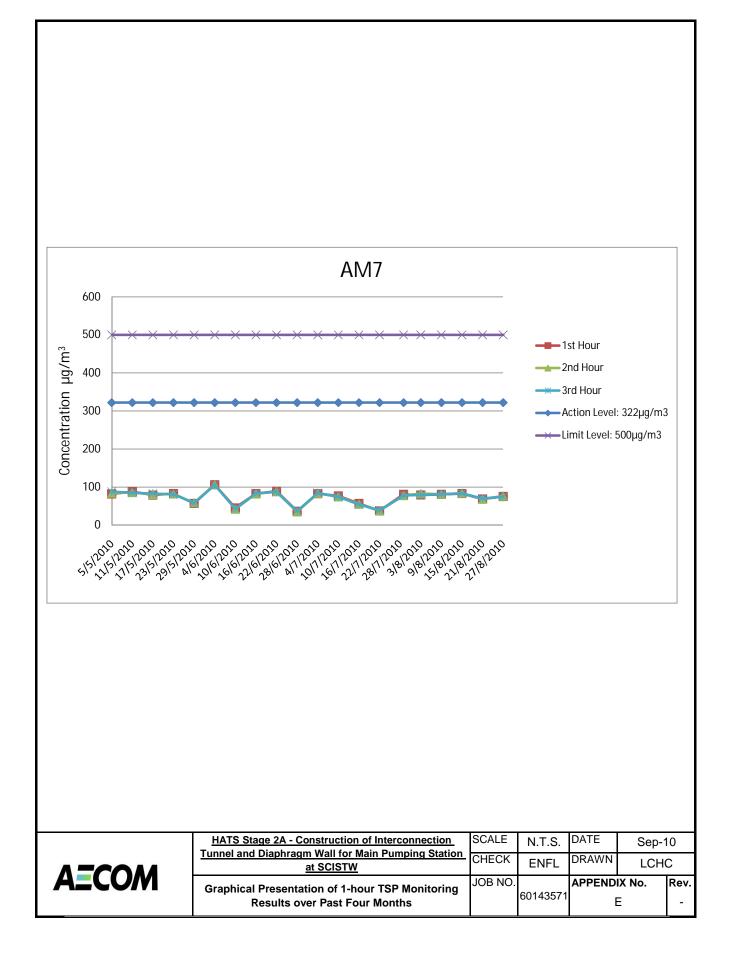
Monitoring Station	Action Level (µg/m³)	Limit Level (µg/m³)
AM7	207	260

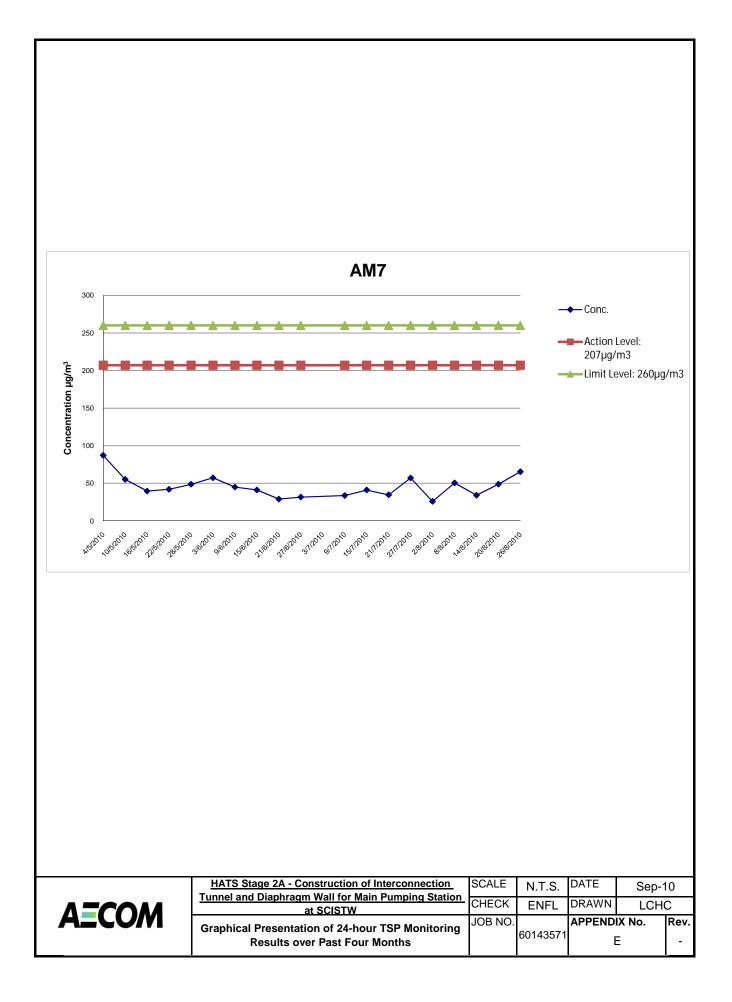
#### Table 3 – Action and Limit Levels for Construction Noise

Time Period	Monitoring	Action Level	Limit Level
	Station		
0700-1900 hrs on normal weekdays	NM6		75 dB(A)
1900-2300 hrs on normal weekdays, 0700-2300 hrs on General Holidays and		When one documented complaint is received from any one of the sensitive receivers	70 dB(A)
2300-0700 hrs of next day on all days			55 dB(A)

#### APPENDIX E

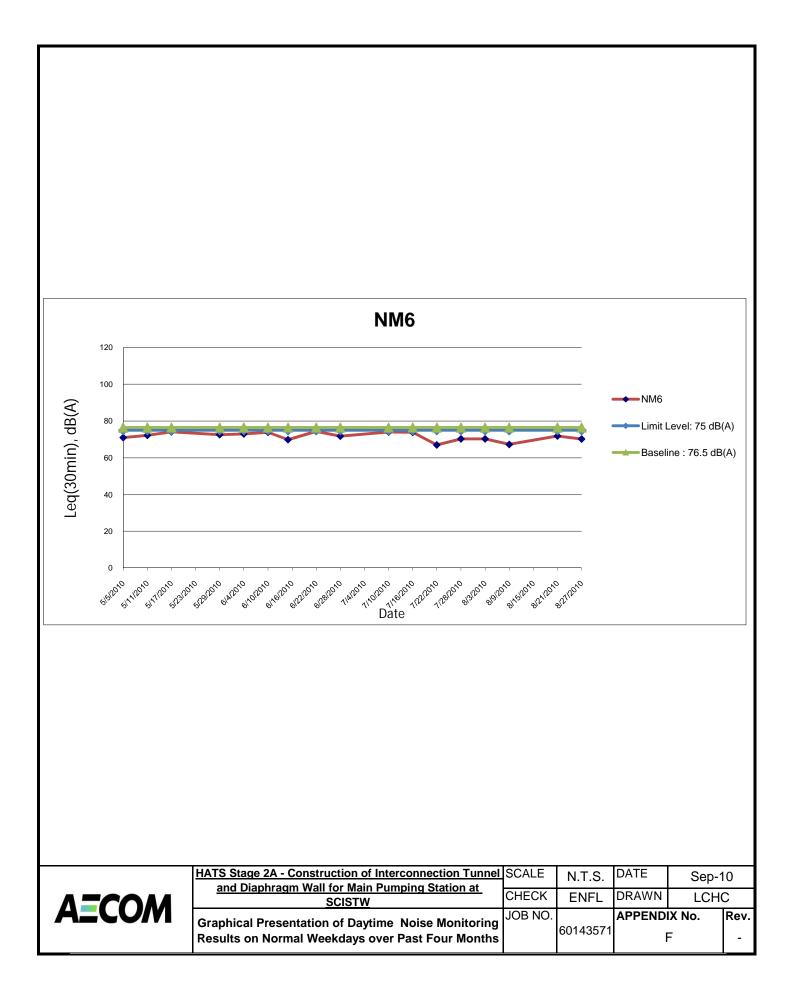
Graphical Presentation of Air Quality Monitoring Results over Past Four Months

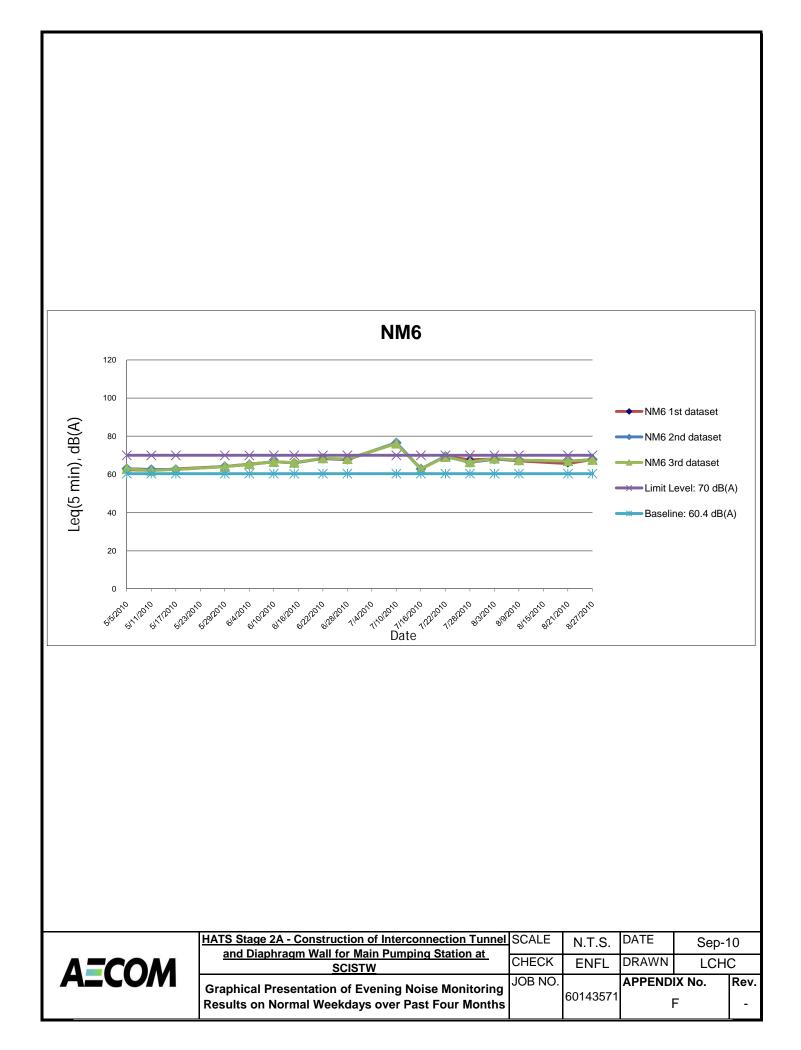




### APPENDIX F

Graphical Presentation of Noise Monitoring Results over Past Four Months





#### APPENDIX G

Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

#### **Cumulative statistics on Exceedances**

		Total no. recorded in this reporting quarter	Total no. recorded since project commencement
1-Hour TSP	Action	-	-
	Limit	-	-
24-Hour TSP	Action	-	-
	Limit	-	-
Noise	Action	-	-
	Limit	-	-

**Remarks:** Exceedances which are not project-related are not presented in this table.

# Cumulative statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. recorded in this reporting quarter	Total no. recorded since project commencement
Environmental complaints	-	-	-	0	0
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

### APPENDIX D

# EM&A Quarterly Report Submitted under DE/2009/02



PROJECT NO.: TCS/00502/09

#### DSD CONTRACT NO. DE/2009/02 Harbour Area Treatment Scheme Stage 2A

**PROVISION OF COVERS AND DEODOURISATION FACILITIES TO THE EXISTING SEDIMENTATION TANKS AT STONECUTTERS ISLAND SEWAGE TREATMENT WORKS** 

QUARTERLY SUMMARY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT (NO.3) – JUNE - AUGUST 2010

PREPARED FOR ATAL ENGINEERING LTD

Quality Index Date	<b>Reference No.</b>	<b>Prepared By</b>	<b>Certified By</b>
15 September 2010	TCS00502/09/600/R0068v2	Anh	Amn

Nicola HonT.W. TamEnvironmental ConsultantEnvironmental Team Leader

Version	Date	Description
1	13 Sep 2010	First Submission
2	15 Sep 2010	Amended against IEC's comments on 15 Sep 2010



**EXECUTIVE SUMMARY** 

- ES.01 ATAL Engineering Limited (hereinafter 'ATAL') was awarded the *Contract DE/2009/02 Harbour Area Treatment Scheme Stage 2A Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works* (the Project) by the Drainage Services Department (DSD) on 30 October 2009. The duration of the project is about 972 days from 30 October 2009 to 27 June 2012. Action-United Environmental Services and Consulting (AUES) have been commissioned by ATAL as the Environmental Team (ET) to implement the relevant EM&A program.
- ES.02 The Project covers preliminary treatment and civil engineering infrastructure works to be undertaken at the existing Stonecutters Island Sewage Treatment Plant under Environmental Permit No. EP-322/2008/D. The Permit also covers works undertaken by others such as DSD Contracts DC/2007/23 by Gammon Construction Ltd. & DC/2009/05 by China State Construction Engineering (HK).
- ES.03 According to the Project EM&A Manual, baseline monitoring was carried out to determine the ambient environmental conditions i.e. air quality and noise before commencement of the Projects. The Baseline Report summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data. It has been verified by the Independent Environmental Checker (IEC) and submitted to EPD for endorsement before commencement of impact monitoring.
- ES.04 According to the EM&A Manual requirements, quarterly summary EM&A report should be prepared every three months. This is the **3rd** Quarterly Summary EM&A Report to present the monitoring results and inspection findings for the period from **1 June** to **31 August 2010**.

#### **ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES**

ES.05 Environmental monitoring activities under the EM&A program in this Reporting Quarter are summarized in the following table.

Issues	Environmental Monitoring Parameters / Inspection	Occasions undertaken by the Contract DE/2009/02
Air Quality	1-hour TSP	48
	24-hour TSP	16
Inspection	ET Regular Environmental Site Inspection	13
Audit	IEC Monthly Environmental Site Audit	3

#### BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.06 No exceedance of air quality or construction noise monitoring was recorded in this Reporting Quarter. No Notification of Exceedance (NOE) was, therefore, issued. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental	Monitoring	Action	Limit	Event & Action		
Issues	Parameters	Level			Investigation	Corrective Action
Air Quality	1-hour TSP	0	0	0	0	0
	24-hour TSP	0	0	0	0	0

Note: NOE – Notification of Exceedance

#### **ENVIRONMENTAL COMPLAINT**

ES.07 No environmental complaint was recorded or received in this Reporting Quarter. The statistics of environmental complaint are summarized in the following table.



Reporting Period	Environmental Complaint Statistics		tatistics
Reporting 1 eriou	Frequency	Cumulative	Complaint Nature
1–30 June 2010	0	0	N/A
1-31 July 2010	0	0	N/A
1-31 August 2010	0	0	N/A

#### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.08 No environmental summons or successful prosecutions were recorded in this Reporting Quarter. The statistics of environmental complaint are summarized in the following tables.

Reporting Period	Environmental Summons Statistics		
Reporting 1 eriou	Frequency	Cumulative	<b>Complaint Nature</b>
1–30 June 2010	0	0	N/A
1-31 July 2010	0	0	N/A
1-31 August 2010	0	0	N/A

Reporting Period	Environmental Prosecution Statistics			
Keporting Terrou	Frequency	Cumulative	<b>Complaint Nature</b>	
1–30 June 2010	0	0	N/A	
1-31 July 2010	0	0	N/A	
1-31 August 2010	0	0	N/A	

#### **REPORTING CHANGE**

ES.09 There are no reporting changes in this Reporting Quarter.

#### SITE INSPECTION BY EXTERNAL PARTIES

ES.10 No site inspection was undertaken by external parties i.e. EPD or AFCD during this Reporting Quarter.

#### **FUTURE KEY ISSUES**

ES.11 During wet season, special attention should be paid on the potential water quality impact and the quality of discharge water. As informed by the Contractor, a sedimentation tank was installed at DOU 1 portion 6 on 31 July 2010. On the other hand, water quality mitigation measures to avoid ingress of surface runoff into nearby water bodies from the construction site during occasional rains should be properly maintained.



#### TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	PROJECT BACKGROUND OF DE/2009/02	1
1.2	REPORT STRUCTURE	1
2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS	3
2.1	PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE	3 3
2.2 2.3	Construction Progress Summary of Environmental Submissions	3 3
<b>3</b> 3.1	SUMMARY OF MONITORING REQUIREMENTS	4
3.1 3.2	Monitoring Parameters Monitoring Locations	4 4
3.3	MONITORING ECCATIONS MONITORING FREQUENCY AND PERIOD	5
3.4	MONITORING EQUIPMENT	5
3.5	MONITORING PROCEDURES	5
3.6	METEOROLOGICAL INFORMATION	6
3.7	DATA MANAGEMENT AND DATA QA/QC CONTROL	6
3.8	DETERMINATION OF ACTION/LIMIT (A/L) LEVELS	6
4	IMPACT MONITORING RESULTS	7
4.1	RESULTS OF AIR QUALITY MONITORING	7
4.2	RESULTS OF CONSTRUCTION NOISE MONITORING	7
5	WASTE MANAGEMENT	8
5.1	RECORDS OF WASTE QUANTITIES	8
6	SITE INSPECTION	9
7	ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE	11
7.1	ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION	11
8	IMPLEMENTATION STATUS OF MITIGATION MEASURES	12
9	CONCLUSIONS AND RECOMMENTATIONS	15
9.1	Conclusions	15
9.2	RECOMMENDATIONS	15



#### LIST OF ANNEXES

- Annex A Project Site Layout Plan
- Annex B Organization Structure and Contact Details of the ATAL and Relevant Parties
- Annex C Master Construction Programs
- Annex D Monitoring Locations Designated in the EM&A Manual
- Annex E Currently Impact Monitoring Stations
- Annex F Meteorological Data of Reporting Quarter
- Annex G Graphical Plots of Impact Monitoring Air Quality
- Annex H Monthly Summary Waste Flow Table

#### LIST OF TABLES

- Table 2-1
   Status of Environmental Licenses and Permits
- Table 3-1
   Summary of Environmental Issue Monitoring Requirements under the Project
- Table 3-2
   Recommended Air Monitoring Station within the Stonecutter Island Sewage Treatment Works (SCISTW)
- Table 3-3Air Quality Monitoring Equipments Used in EM&A Program
- Table 3-4
   Action and Limit Levels for Air Quality Monitoring
- Table 3-5
   Action and Limit Levels for Construction Noise at Monitoring
- Table 4-1
   Environmental Monitoring Activities in the Quarter Month
- Table 4-2Summary of 24-hour and 1-hour TSP Monitoring Results AM8 as Monitored by<br/>DE/2009/02
- Table 5-1Summary of Quantities of Inert C&D Materials
- Table 5-2Summary of Quantities of C&D Wastes
- Table 6-1
   Observations for weekly site inspection in the Reporting Quarter
- Table 7-1
   Statistical Summary of Environmental Complaints
- Table 7-2
   Statistical Summary of Environmental Summons
- Table 7-3
   Statistical Summary of Environmental Prosecution
- Table 8-1Environmental Mitigation Measures

**1 INTRODUCTION** 

#### 1.1 **PROJECT BACKGROUND OF DE/2009/02**

ATAL Engineering Limited (hereinafter 'ATAL') was awarded the *Contract DE/2009/02 – Harbour Area Treatment Scheme Stage 2A - Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works* (the Project) by the Drainage Services Department (DSD) on 30 October 2009. The duration of the project is about 972 days from 30 October 2009 to 27 June 2012. Action-United Environmental Services and Consulting (AUES) have been commissioned by ATAL as the ET to implement the relevant EM&A program.

The Project covers preliminary treatment and civil engineering infrastructure works to be undertaken at the existing Stonecutters Island Sewage Treatment Plant under Environmental Permit No. EP-322/2008/D. The major construction activities include the following:

- (a) Construction of covers for flocculation tanks, prototype tanks, main distribution channels, sedimentation tanks, scum chambers and effluent drop structures
- (b) Two deodourisation facilities;
- (c) Piling Works of Foundation;
- (d) Construction of Foundation for Deodourisation facilities;
- (e) Erection of Structure of Control Room at DOU Foundation;
- (f) Construction of public access road with footpath;
- (g) Water main laying works;
- (h) Associated ancillary works;
- (i) Tree transplanting, landscaping works; and all other works as required under the Contract

The site layout plan of the Project is shown in Annex A.

According to Section 25 of the Particular Specification (PS) and the Environmental Permit No. EP-322/2008/B, the overall scope of environmental monitoring includes air quality and construction noise; and site environmental audit should be undertaken in accordance with the Project Environmental Monitoring and Audit Manual by an independent Environmental Team (ET). Although landscaping and visual monitoring is requested as part of the EM&A programme, it has been covered by others such as DC/2007/23 and DC2009/03 and therefore results from these contracts are incorporated for this project use as agreed by all parties.

As baseline conditions had already been monitored by other current contracts, AUES was required to present the Project Baseline Report only by drawing relevant findings from other approved baseline reports without undertaking the relevant monitoring. The Baseline Report summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data as provided by other current contracts. It has been submitted and verified by Independent Environmental Checker (IEC) and endorsed by EPD before impact monitoring commencement.

This is the  $3^{rd}$  quarterly summary EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 June to 31 August 2010 under the Project.

#### **1.2 REPORT STRUCTURE**

The Quarterly Summary Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

SECTION I	INTRODUCTION
SECTION 2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS
SECTION 3	SUMMARY OF MONITORING REQUIREMENTS
SECTION 4	IMPACT MONITORING RESULTS
SECTION 5	WASTE MANAGEMENT



SECTION 6	SITE INSPECTIONS
SECTION 7	<b>ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE</b>
SECTION 8	IMPLEMENTATION STATUES OF MITIGATION MEASURES
SECTION 9	CONCLUSIONS AND RECOMMENDATION



#### 2 **PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS**

#### 2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in Annex B.

#### 2.2 CONSTRUCTION PROGRESS

The master construction programs are enclosed in Annex C and the major construction activities undertaken in this Reporting Quarter are listed below:-

- Piling works at DOU1 & 2;
- T&C for Prototype cover for tank 43; and
- Cover installation for tank 33, 35 & 37

#### 2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this Reporting Quarter is presented in *Table 2-1*.

#### Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air pollution Control (Construction Dust)	Notified EPD on 9 March 2010
2	Chemical waste Producer Registration	Waste producer number: 5213-269-A2605-01
3	Water Pollution Control Ordinance (Discharge License)	Ref: WT00006432-2010 Expiry on 30 April 2015
4	Billing Account for Disposal of Construction Waste (account number: 7009673)	Approved by EPD on 9 November 2009
5	Construction Noise Permit for steel pile during 07:00-19:00 (ref.: GW-RW001-10)	Issued on 23 April 2010 Valid on 1 May 2010 Expiry on 31 October 2010
6	Construction Noise Permit (ref.: GW-RW0194-10)	Issued on 23 April 2010 Valid on 1 May 2010 Expiry on 31 October 2010

The Project Specific Environmental Management Plan (EMP) with the Waste Management Plan was set out in accordance with the tender requirements and ATAL internal policy. It has been submitted to the ER for endorsement.

Baseline Monitoring Report for the Project was issued by the ETL and verified by the IEC. The report was also submitted to the RE and sent to the EPD for endorsement.

#### **3** SUMMARY OF MONITORING REQUIREMENTS

The Environmental Monitoring and Audit requirements are set out in the project EM&A manual. The ET implements the EM&A program in accordance with the aforementioned requirements. Details of the EM&A program are presented in the following sub-sections.

#### 3.1 MONITORING PARAMETERS

According to the *PS Appendix 22*-EM&A Manual stipulation, the EM&A impact monitoring program covers the following environmental issues:

- Air quality;
- Construction noise;
- Water quality;
- Marine ecology;
- Landscape and visual impact assessment; and
- Cultural heritage

As instructed by the Engineer's Representative (ER), AUES is only requested to carry out air quality impact monitoring at the designated monitoring station AM8 (Block A of Government Dockyard) under the project. Other environmental monitoring including construction noise, water quality, marine ecology, landscape & visual impact assessment, and cultural heritage will be performed by the other two Contracts: DC2007/23 and DC/2009/05. The monitoring parameters undertaken by the Project are presented in *Table 3-1*:

# Table 3-1Summary of Environmental Issue Monitoring Requirements under the<br/>Project

Environmental Issue	Parameters	
Air Quality	• 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and	
	<ul> <li>24-hour TSP Monitoring by High Volume Air Sampler.</li> </ul>	

#### 3.2 MONITORING LOCATIONS

According to *Section 2.19* and *3.8* of the PS Appendix 22 *EM&A Manual*, air and noise monitoring locations have been designated as shown in *Annex D*.

#### <u>Air Quality</u>

For Stonecutter Island Sewage Treatment Works (SCISTW), there are other two concurrent projects undertaking in the same study area and they are encountered the same air sensitive receivers SCI1, SCI3, SCI6 and SCI7 as recommended in the *EM&A Manual*. Owing to the experiences from the concurrent projects that the identified ASRs in the *EM&A Manual* are not accessible to conduct monitoring, the identified ASR has to be relocated. As agreed with the RE, a total of three (3) existing air monitoring stations as used in the concurrent project would be adopted for this Project. The identified monitoring stations are named AM6, AM7 and AM8 which are listed in *Table 3-2* and illustrated in *Annex E*.

#### Table 3-2 Recommended Air Monitoring Station within the Stonecutter Island Sewage Treatment Works (SCISTW)

Monitoring Station	Location	Monitored by the Contract
AM6	Works site boundary of DC/2007/23	DC/2007/23
AM7	North West Kowloon pumping station	DC/2009/05
AM8	Block A of Government Dockyard	DE/2009/02



#### 3.3 MONITORING FREQUENCY AND PERIOD

The requirements of baseline and impact monitoring are stipulated in *Sections 2.22 to 2.29* of the *EM&A Manual* and listed as follows.

#### Air Quality Monitoring

Parameters:	1-hour TSP and 24-hour TSP.
Frequency:	Once every six days for 24-hour TSP and three times every six days for 1-hour
	TSP.
Duration:	Throughout the construction period.

#### 3.4 MONITORING EQUIPMENT

Due to the Construction Noise monitoring result is shared with two concurrent projects, so only air monitoring equipments are proposed by the ET for the impact EM&A program are listed below:

 Table 3-3
 Air Quality Monitoring Equipments Used in EM&A Program

Equipment	Model
Air Quality Monitoring	
High Volume Sampler – <u>24 hour TSP</u>	Grasby Anderson GMWS 2310 HVS
Calibration Kit – <u>24-hour TSP</u>	TISCH Model TE-5025A
Portable dust meter – <u>1-hour TSP</u>	TSI DustTrak Model 8520 / Sibata LD-3 Laser
	Dust Meter

The valid calibration certificates in this period are shown in relevant monthly EM&A report.

#### 3.5 MONITORING PROCEDURES

#### Air Quality

#### 24-hour TSP

The equipment used for 24-hour TSP measurement will be a Thermo Andersen. Model GS2310 TSP high volume air sampling system, which complied with "*EPA Code of Federal Regulation, Appendix B to Part 50*". The HVS consists of the following:

- a. An anodized aluminum shelter;
- b. A 8"x10" stainless steel filter holder;
- c. A blower motor assembly;
- d. A continuous flow/pressure recorder;
- e. A motor speed-voltage control/elapsed time indicator;
- f. A 7-day mechanical timer, and
- g. A power supply of 220v/50 hz

The HVS will be operated and calibrated on a regular basis in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A).

24-hour TSP will be collected by the ET on filters of High Volume Sampler (HVS) and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET will keep all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.

#### <u>1-hour TSP</u>

The 1-hour TSP monitor, a TSI Dust Track Aerosol Monitor Model 8520, or Sibata LD-3 Laser Dust Meter is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on  $90^{0}$  light scattering. The 1-hour TSP monitor consisted of the following:

- a. A pump to draw sample aerosol through the optic chamber where TSP is measured;
- b. A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
- c. A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

The 1-hour TSP meter to be used will be within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument will be checked before and after each monitoring event. Operation of the 1-hour TSP meter will follow manufacturer's Operation and Service Manual.

#### 3.6 METEOROLOGICAL INFORMATION

The meteorological information will down loaded from the Hong Kong Observatory (Tsing Yi station). The data will include wind direction, wind speed, humidity, rainfall, air pressure and temperature etc that in general is required for evaluating the air quality impact arising from the construction activities. The meteorological data during the reporting quarter are summarized in *Annex F*.

#### 3.7 DATA MANAGEMENT AND DATA QA/QC CONTROL

The impact monitoring data are handled by the ET's systematic data recording and management, which complies with in-house Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.

The monitoring data recorded in the equipment e.g. 1-hour TSP meter and noise meter is downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data. For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

#### 3.8 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

According to the Project Environmental Monitoring and Audit Manual, the air quality and construction noise criteria were set up, namely Action and Limit levels are listed in *Tables 3-4* and *3-5* as below.

Table 3-4Action and Limit Levels for Air Quality Monitoring

Monitoring Stations	Action Level (µg/m ³ )		Limit Level (µg/m ³ )	
Monitoring Stations	1-hour	24-hour	1-hour	24-hour
AM6	346	196	500	260
AM7	322	207	500	260
AM8	307	158	500	260

Table 3-5	Action and Limit Levels for Construction Noise at Monitoring
-----------	--------------------------------------------------------------

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
	0700-1900 hours on normal weekdays	When one	75
NM5	0700-2300 hours on holidays; and	documented - complaint is received -	70
NM6	1900-2300 hours on all other days		
	2300-0700 hours of next day		55

#### 4 IMPACT MONITORING RESULTS

The impact EM&A program was carried out by the ET in compliance with the project EM&A Manual in the Reporting Quarter. The impact monitoring schedules and the detail monitoring results are presented in respective Monthly EM&A Reports.

During this Reporting Quarter, there were a total of 16 and 48 events of 24-hour TSP and 1-hour TSP monitoring respectively for air quality undertaken at the designated monitoring station AM8. Environmental monitoring activities under the EM&A program in this Reporting Quarter are summarized in *Table 4-1*.

Table 4-1	<b>Environmental Monitoring Activities in the Quarter Month</b>

Location	Aspects	<b>Environmental Monitoring Parameters</b>	Occasions
AM8	Air Quality	1-hour TSP	48
		24-hour TSP	16

#### 4.1 **RESULTS OF AIR QUALITY MONITORING**

The graphical plot of the 1-hour TSP and 24-hour TSP monitoring results are shown in *Annex G*.

In this Reporting Quarter, no exceedance was found both in 24-hour TSP and 1-hour TSP monitoring at AM8, all the results were well below the A/L levels. No NOEs were issued to notify IEC, Contractor and RE in this Reporting Quarter. The results for 24-hour and 1-hour TSP are summarized in *Tables 4-2*.

# Table 4-2Summary of 24-hour and 1-hour TSP Monitoring Results – AM8 as<br/>Monitored by DE/2009/02

	24-hour TSP		1	l-hour TSP (µg	$/\mathrm{m}^3$ )	
Date	$(\mu g/m^3)$	Date	Start Time	1 st hour measured	2 nd hour measured	3 rd hour measured
1-Jun-10	56	2-Jun-10	13:15	63	55	68
7-Jun-10	54	8-Jun-10	13:30	52	60	65
12-Jun-10	95	14-Jun-10	13:17	49	78	62
18-Jun-10	34	19-Jun-10	13:07	39	63	55
23-Jun-10	30	24-Jun-10	09:07	38	57	42
29-Jun-10	32	30-Jun-10	09:02	51	70	62
5-Jul-10	42	6-Jul-10	13:04	48	65	57
10-Jul-10	28	12-Jul-10	13:24	59	82	73
16-Jul-10	32	17-Jul-10	14:00	48	68	59
22-Jul-10	13	23-Jul-10	09:07	24	37	33
28-Jul-10	18	29-Jul-10	09:07	15	31	27
3-Aug-10	49	4-Aug-10	13:17	42	59	53
9-Aug-10	39	10-Aug-10	13:12	23	39	32
14-Aug-10	47	16-Aug-10	13:07	43	52	46
20-Aug-10	43	21-Aug-10	13:00	59	51	55
26-Aug-10	10	27-Aug-10	13:07	63	85	71
Average	39	Average 53				
Min	10	Min 15				
Max	95	Max			85	

#### 4.2 **RESULTS OF CONSTRUCTION NOISE MONITORING**

The construction noise monitoring at the identified monitoring locations NM5 and NM6 were undertaken by concurrent Project DC/2007/23 and DC/2009/05. The results of construction noise monitoring at Locations NM5 and NM6 could be referred to Monthly EM&A Report (March, April and May 2010) of DSD Project DC/2007/23 and DC/2009/05.



5 WASTE MANAGEMENT

Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

#### 5.1 **RECORDS OF WASTE QUANTITIES**

All types of waste arising from the construction work under the Project are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

The quantities of waste under the Project for off site disposal in this Reporting Quarter are summarized in *Table 5-1* and *5-2* and the Monthly Summary Waste Flow Table is shown in *Annex H*. Whenever possible, materials were reused on-site as far as practicable.

#### Table 5-1 Summary of Quantities of Inert C&D Materials

Type of Weste	Quantity			Disposal
Type of Waste	Jun 10	Jul 10	Aug 10	Location
C&D Materials (Inert) (m ³ )	0	0	0	NA
Reused in this Contract (Inert) (m ³ )	0	0	0	NA
Reused in other Projects (Inert) (m ³ )	0	0	0	NA
Disposal as Public Fill (Inert) (m ³ )	0	500	80	Tuen Mun Area 38

#### Table 5-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity			Disposal
Type of waste	Jun 10	Jul 10	Aug 10	Location
Recycled Metal (kg)	0	0	0	NA
Recycled Paper / Cardboard Packing (kg)	0	0	0	NA
Recycled Plastic (kg)	0	0	0	NA
Chemical Wastes (kg)	0	0	0	NA
General Refuses (m ³ )	20	20	20	NENT

5.01 There was no site effluent discharged but the estimated monthly volume of surface runoff was less than 50m³ during wet season.

**6** SITE INSPECTION

According to the Project Environmental Monitoring and Audit Manual, the environmental site inspection should be formulated by the ET Leader. Regular environmental site inspections had been carried out by the ET to confirm the environmental performance. In this Reporting Quarter, a total of 13 site inspections were carried out with the Representatives of the Engineer and the Contractor to evaluate the site environmental performance. No non-compliance was noted in this Reporting Quarter.

Observations for the site inspections and monthly audits within this Reporting Quarter are summarized in *Table 6-1*.

Date	Findings / Deficiencies	Follow-Up Status
2 June 2010	• Chemical containers were observed at the edge of the plant; the contractor was reminded to provide proper location for chemical storage.	Chemical container was found to be removed during site inspection on 9 June 2010.
9 June 2010	• Housekeeping should be improved, C&D material scattered at Portion 2 was observed, the contractor was reminded to maintain the site clean and tidy.	C&D material at Portion 2 was found to be removed during site inspection on 17 June 2010.
17 June 2010	<ul> <li>Stagnant water cumulated inside the drip tray was observed, the contractor was reminded to clean to prevent mosquito breeding and prevent overflow from the drip tray.</li> <li>Free standing chemical containers without drip tray was observed, the contractor was reminded to provide drip tray for all chemical containers.</li> </ul>	Stagnant water cumulated inside the drip tray and free standing chemical containers without drip tray was found to be removed during site inspection on 24 June 2010
24 June 2010	• No environmental issue was observed during the site inspection.	N/A
30 June 2010	• As a reminder, the place for cement mixing should be covered 3- sided and the top with tarpaulin sheet when the process takes place.	N/A
7 July 2010	• Free standing chemical container without drip tray was observed at DOU 1, the contractor was reminded to provide drip tray for all chemical containers.	Chemical container was found to be removed during site inspection on 14 July 2010.
14 July 2010	<ul> <li>The soil stockpiled on the site should be sprayed with water or covered with tarpaulin sheets in order to minimize the dust nuisance and surface runoff.</li> <li>As a general reminder, the contractor was reminded to set up the sediment tank as soon as possible for the water discharge in the future.</li> </ul>	The stockpile was found to be removed during site inspection on 21 July 2010.
21 July 2010	No environmental issue was observed during the site inspection.	N/A
28 July 2010	<ul> <li>Free standing chemical containers without drip tray were observed, the Contractor was reminded to provide drip tray for all chemical containers or placed them in proper storage area.</li> <li>As a general reminder, the contractor was reminded to set up the sediment tank as soon as possible for the water discharge in the future.</li> </ul>	The chemical waste practice shall be improved as observed during the site inspection on 2 August 2010.

 Table 6-1
 Observations for weekly site inspection in the Reporting Quarter



Π		· · · · · · · · · · · · · · · · · · ·
2 August 2010	<ul> <li>Free standing chemical containers without drip tray and label was observed, the Contractor was reminded to provide drip tray and proper label for all chemical containers.</li> <li>Stagnant water cumulated in the site area was observed, the contractor was reminded to clean to prevent mosquito breeding.</li> </ul>	The deficiencies shall be improved as observed during the site inspection on 11 August 2010.
11 August 2010	<ul> <li>Free standing chemical containers without drip tray was observed, the Contractor was reminded to provide drip tray for all chemical containers.</li> <li>C&amp;D waste scattered at the site area was observed, housekeeping should be improve to maintain the site area clean and tidy.</li> </ul>	The deficiencies shall be further improved as observed during the site inspection on 18 August 2010.
18 August 2010	<ul> <li>Free standing chemical containers without drip tray and label was observed, the Contractor was reminded to provide drip tray and proper label for all chemical containers.</li> <li>C&amp;D waste scattered at the site area was observed, housekeeping should be improve to maintain the site area clean and tidy</li> </ul>	Housekeeping on site was improved, however, the chemical waste practice shall be improved as observed during the site inspection on 25 August 2010.
25 August 2010	<ul> <li>Stagnant water cumulated in the site area, the contractor was reminded to clean and provide the sand bags to prevent surface runoff discharged without treatment.</li> <li>Free standing chemical containers without drip tray and label was observed, the Contractor was reminded to provide drip tray and proper label for all chemical containers.</li> <li>As a reminder, C&amp;D waste should be sorted before disposal.</li> </ul>	To be followed.

#### 7 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

#### 7.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

No environmental complaint, summons and prosecution was received in this reporting period. The statistical summary tables of environmental complaint are presented in *Tables 7-1*, *7-2* and *7-3*.

#### Table 7-1Statistical Summary of Environmental Complaints

Poporting Poriod	Environmental Complaint Statistics			
Reporting Period	Frequency	Cumulative	<b>Complaint Nature</b>	
1–30 June 2010	0	0	N/A	
1-31 July 2010	0	0	N/A	
1-31 August 2010	0	0	N/A	

#### Table 7-2 Statistical Summary of Environmental Summons

Dononting Donied	Environmental Summons Statistics			
Reporting Period	Frequency	Cumulative	<b>Complaint Nature</b>	
1–30 June 2010	0	0	N/A	
1-31 July 2010	0	0	N/A	
1-31 August 2010	0	0	N/A	

#### Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics			
Reporting I eriou	Frequency	Cumulative	<b>Complaint Nature</b>	
1–30 June 2010	0	0	N/A	
1-31 July 2010	0	0	N/A	
1-31 August 2010	0	0	N/A	

#### 8 IMPLEMENTATION STATUS OF MITIGATION MEASURES

The environmental mitigation measures that recommended in the Project Environmental Monitoring and Audit Manual covered the issues of dust, noise and waste and they are summarized as following:

#### **Dust Mitigation Measures**

- (a) The contractor shall frequently clean and water the site to minimize fugitive dust emissions.
- (b) Effective water sprays shall be used during the delivery ad handling of aggregate, and other similar materials, when dust is likely to be created and to dampen all sited material during dry and windy weather.
- (c) Watering of exposed surfaces shall be exercised as often as possible depending on the circumstance.
- (d) Areas within the site where there is regular movement of vehicles must be regularly watered as often as necessary for effective suppression of dust or as often as directed by the Engineer.
- (e) Where dusty materials are being discharged to vehicle from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhausted fans shall be provided for this enclosure and vented to a suitable fabric filer system.
- (f) The Contractor shall restrict all motorized vehicles within the site, excluding those on public roads, to a maximum speed of 15km per hour and confine haulage and delivery vehicles to designated roadways inside the site.
- (g) Wheel washing facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads, water in wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit detailed proposals for the wheel cleaning facilities to the Engineer prior to construction of the facility. Such wheel washing facilities shall be usable prior to any earthworks excavating activity in the site.
- (h) Any material dropped in the roads will need to be cleaned up immediately to prevent dust nuisance.

#### **Noise Mitigation Measures**

- (a) Noisy equipment and activities should be sited by the Contractor as far from close-proximity sensitive receivers as practical. Prolonged operation of noisy equipment close to dwellings and schools should be avoided.
- (b) The Contractor should minimize construction noise exposure to the schools (especially during examination periods) as much as possible. The Contractor should liaise with the school and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract and to avoid noisy activities during these periods.
- (c) Noisy plant or processes should be replaced by quieter alternatives where possible. Silenced diesel and gasoline generators and power units, as well as silenced and super-silenced air compressors should be used.
- (d) Noisy activities should be scheduled to minimizes exposure of nearby sensitive receivers to high levels of construction noise. For example, noisy activities can be scheduled for midday, or at times coinciding with periods of high background noise (such as during peak traffic hours).
- (e) Idle equipment should be turned off or throttled down. Noisy equipment should be properly maintained and used no more often than is necessary.
- (f) The power units of non-electric stationary plant and earth-moving plant should be quietened by vibration isolation and partial or full acoustic enclosures for individual noise-generating components.

(g) Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided, thus reducing the cumulative impacts between operations. The numbers of operating items of powered mechanical equipment should be minimised.

- (h) Construction plant should be properly maintained (well-greased, damage and worn parts promptly replaced) and operated. Construction equipment often has silencing measures built in or added on, e.g. bulldozer silencers, compressor panels, and mufflers. Silencing measures should be properly maintained and utilised. Where possible, rubber or damping materials should be introduced between metal panels to avoid rattle and reverberation of noise.
- (i) Equipment known to emit sound strongly in one direction, should where possible, be oriented so that the noise is directed away from nearby NSRs.
- (j) Material stockpiles and other structures (such as site offices) should be effectively utilised, where practicable, to screen noise from on-site construction activities. Alternatively, noise barriers having a surface density of 10 kg/m2 should be used to\ protect nearby NSRs if necessary.
- (k) The Contractor should devise, arrange methods of working and carry out the works insuch manner as to minimise noise impacts on the surrounding environment, and should provide experienced personnel with suitable training to ensure that these measures are implemented properly.

#### Waste Mitigation Measures

- (a) The Contractor shall observe and comply with the Waste Disposal Ordinance (WDO) and its subsidiary regulations.
- (b) The Contractor shall submit to the Engineer for approval a Waste Management Plan with appropriate mitigation measures including the allocation of an area for waste segregation and shall ensure that the day-to-day site operations comply with the approved waste management plan.
- (c) The Contractor shall minimise the generation of waste from his work. Avoidance and minimisation of waste generation can be achieved through changing or improving design and practices, careful planning and good site management.
- (d) The reuse and recycling of waste shall be practised as far as possible. The recycled materials shall include paper/cardboard, timber and metal etc.
- (e) The Contractor shall ensure that Construction and Demolition (C&D) materials are sorted into public fill (inert portion) and C&D waste (non-inert portion). The public fill which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused in earth filling, reclamation or site formation works. The C&D waste which comprises metal, timber, paper, glass, junk and general garbage shall be reused or recycled where possible and, as the last resort, disposal of at landfills.
- (f) The Contractor shall record the amount of wastes generated, recycled and disposed of (including the disposal sites). The Contractor shall use a trip ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill.
- (g) In order to avoid dust or odour impacts, any vehicles leaving a works area carrying construction waste or public fill shall have their load covered.
- (h) To avoid the excessive use of wood, reusable steel shutters shall be used as a preferred alternative to formwork and falsework where possible.
- (i) The Contractor shall observe and comply with the Waste Disposal (Chemical Waste) (General) Regulation. The Contractor shall apply for registration as chemical waste producer under the Waste Disposal (Chemical Waste) (General) Regulation when chemical waste is produced. All chemical waste shall be properly stored, labeled, packaged and collected in accordance with the Regulation.

ATAL had been implementing the required environmental mitigation measures according to the Project Environmental Monitoring and Audit Manual subject to the site condition.



Environmental mitigation measures generally implemented by ATAL in this Reporting Quater are summarized in *Table 8-1*.

Issues	Environmental Mitigation Measures
Water	Wastewater were appropriately treated by treatment facilities;
Quality	<ul> <li>Drainage channels were provided to convey run-off into the treatment facilities; and</li> </ul>
	<ul> <li>Drainage systems were regularly and adequately maintained.</li> </ul>
Air Quality	• Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather;
	<ul> <li>Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers;</li> </ul>
	<ul> <li>Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet;</li> </ul>
	<ul> <li>Public roads around the site entrance/exit had been kept clean and free from dust; and</li> </ul>
	• Tarpaulin covering of any dusty materials on a vehicle leaving the site.
Noise	<ul> <li>Good site practices to limit noise emissions at the sources;</li> </ul>
	<ul> <li>Use of quite plant and working methods;</li> </ul>
	• Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs;
	<ul> <li>Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs;</li> </ul>
	• Scheduling of construction works outside school examination period in critical area; and
	• Alternative use of plant items within one worksite, where practicable.
Waste and	• Excavated material should be reused on site as far as possible to minimize
Chemical Management	off-site disposal. Scrap metals or abandoned equipment should be recycled if possible;
	• Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner;
	<ul> <li>The Contractor should adopt a trip ticket system for the disposal of C&amp;D materials to any designed public filling facility and/or landfill; and</li> </ul>
	• Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	The site was generally kept tidy and clean.

Table 8-1Environmental Mitigation Measures



#### 9 CONCLUSIONS AND RECOMMENTATIONS

#### 9.1 CONCLUSIONS

This is the 3rd Quarterly Summary EM&A report covers the construction period from 1 June to 31 August 2010.

No 24-hour or 1-hour TSP monitoring results that triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.

No documented complaint, notification of summons or successful prosecution was received.

**13** occasions of weekly site inspection had been carried out by the ET in this Reporting Quarterly. No non-compliance was observed during the inspection. In general, it was reminded that good house keeping practice should be maintained. The environmental performance of the Project was therefore considered satisfactory.

No site inspection was undertaken by any external party in this Reporting Quarter.

The landscape and visual impacts monitoring was undertaken by the landscape sub-contractor. The monitoring results will be submitted separately as a stand-alone document.

#### 9.2 **RECOMMENDATIONS**

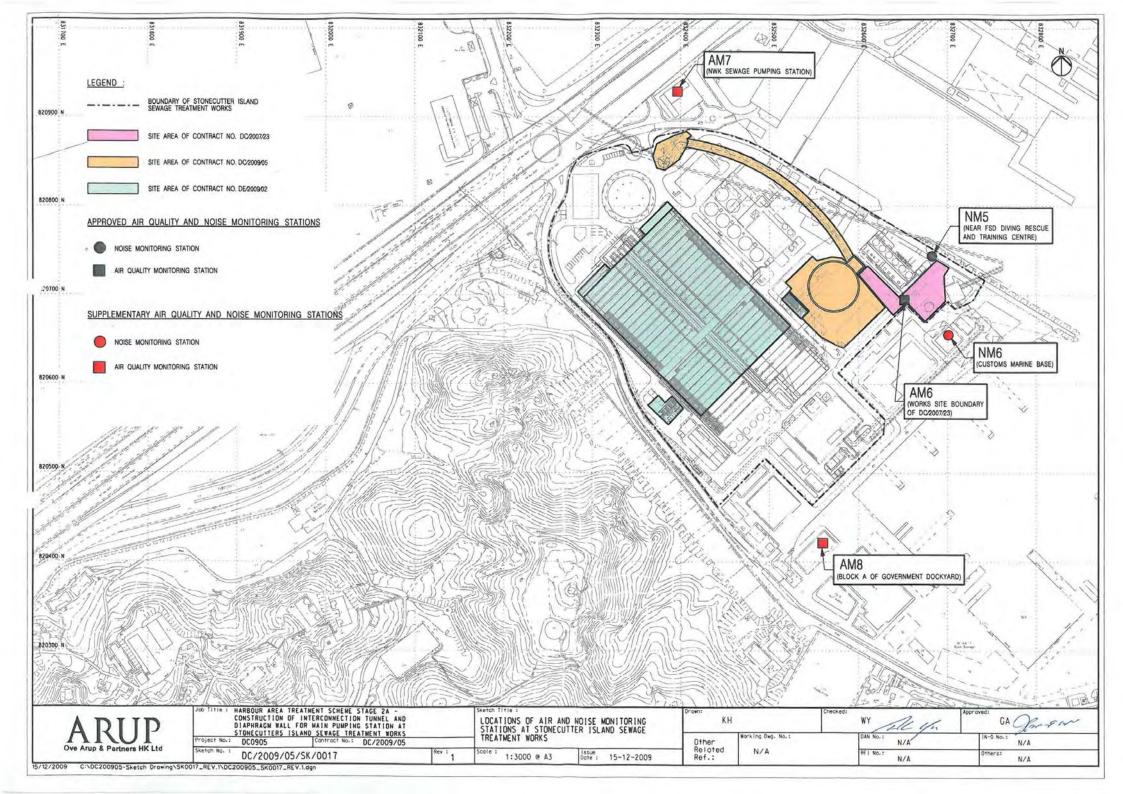
During wet season, special attention should be paid on the potential water quality impact and the quality of discharge water. As informed by the Contractor, a sedimentation tank was installed at DOU 1 portion 6 on 31 July 2010. On the other hand, water quality mitigation measures to avoid ingress of surface runoff into nearby water bodies from the construction site during occasional rains should be properly maintained.

To control the site performance on waste management, the ATAL shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. ATAL is also reminded to implement the recommended environmental mitigation measures according to the Project Environmental Monitoring and Audit Manual.



Annex A

### **Project Site Layout Plan**

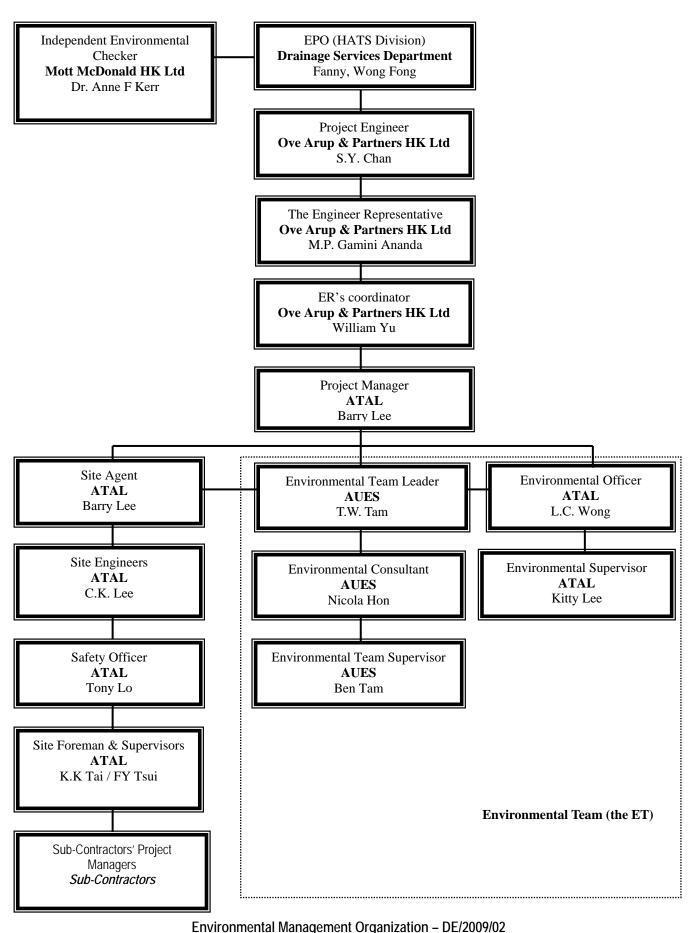




Annex B

Organization Structure and Contact Details of the ATAL & Relevant Parties Contract No. DE/2009/02 – Harbour Area Treatment Scheme Stage 2A - Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works

Quarterly Summary Environmental Monitoring and Audit (EM&A) Report (No.3)



AUES

#### **Contact Details of Key Personnel**

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	EPO (HATS Division)	Ms. Fanny Wong	2159-3596	2833-9162
OAP	The Engineer	Mr. S.Y. Chan	2528-3031	2370-4377
OAP	The Engineer Representative	Mr. M.P. Gamini Ananda	2370-4311	2370-4377
OAP	ER's coordinator	Mr. William Yu	9705-9566	2370-4377
ММ	Independent Environmental Checker	Dr. Anne F Kerr	2828-5757	2827-1823
ATAL	Project Manager	Mr. Barry Lee	2743-1205	2565-7638
ATAL	Site Agent	Mr. Barry Lee	2743-1205	2565-7638
ATAL	Site Engineer	Mr. C.K. Lee	2743-1205	2565-7638
ATAL	Environmental Officer	Mr. L.C. Wong	2743-1205	2565-7638
ATAL	Safety Supervisor	Mr. K.K. Tai/ F.Y Tsui	9367 3186	2565-7638
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959-6059	2959-6079
AUES	Environmental Site Inspector	Mr. Ben Tam	2959-6059	2959-6079

#### Legend:

DSD	(Employer) – Drainage Services Department
OAP	(Engineer) – Ove Arup & Partners HK Ltd.
MM	(IEC) – Mott McDonald Hong Kong Ltd.
ATAL	(Main Contractor) – ATAL Engineering Ltd.
AUES	(ET) – Action-United Environmental Services & Consulting



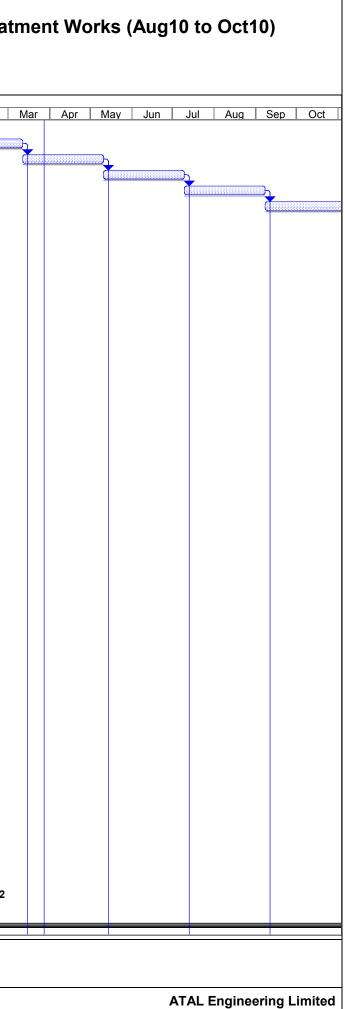
Annex C

### **Master Construction Programs**

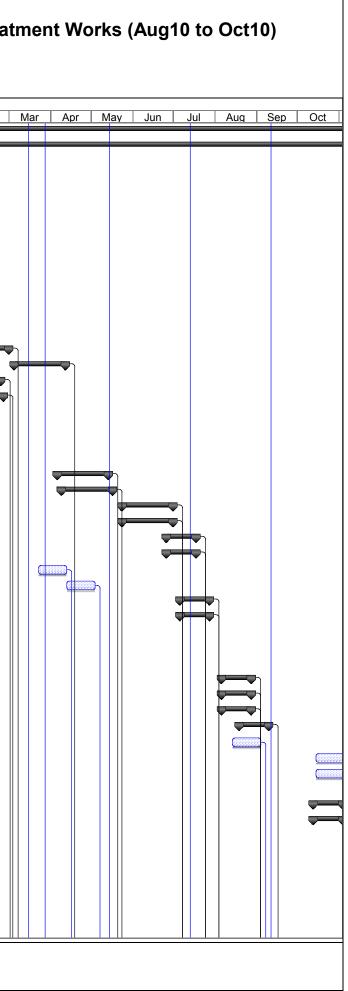
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ID (	Task Name	Duration	Start	Finish	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2011 Jan	Feb
1	Contract Duration	971 days	Fri 30/10/09	Wed 27/6/12			<b>V</b> 411				. 000	1107	. 200		
2	Project Commencement Date	0 days	Fri 30/10/09	Fri 30/10/09											
3		0 days	Wed 27/6/12	Wed 27/6/12											
4	Site Preparation	67 days	Fri 30/10/09	Mon 4/1/10											
15	Preliminary and Detailed Design Submission	626 days	Fri 30/10/09	Sun 17/7/11										:	
16	Preparation of Preliminary Design Submission	30 days	Fri 30/10/09	Sat 28/11/09											
17	First review and comment Preliminary Design by the Engineer	15 days			1										
18	Revise Preliminary Design (PD) Submission	21 days		Sun 3/1/10											
19	Review and Approval of revised PD by the Engineer	7 days				_									
20	Preparation of Detailed Design (DD) Submission	42 days													
21	Obtain of ICE Certificate of DD Submission	3 days													
22		45 days		Fri 23/4/10											
23		21 days		Fri 14/5/10			_								
24		7 days		Sat 12/6/10		. 9									
25	Preparation of Preliminary General Building Plan (GBP) Design Submission	30 days		Fri 12/3/10			<u></u>								
26	First review and comment Preliminary GBP Design by the Engineer	21 days		Fri 2/4/10											
27	Review Preliminary GBP Design Submission	10 days		Mon 12/4/10											
28	Review and Approval of revised GBP Design by the Engineer	21 days		Mon 3/5/10											
29	Preparation of Detailed GBP Design Submission	21 days 21 days													
30	Obtain of ICE Certificate of Detailed GBP Submission	3 days		Thu 27/5/10											
31	Preparation of Preliminary Foundation Design Submission	21 days		Thu 25/2/10		<u> </u>									
32	First review and comment Preliminary Foundation Design Submission	15 days		Fri 12/3/10											
33	Revise Preliminary Foundation Design Submission	13 days 14 days		Fri 26/3/10											
34	Review and Approval of revised Foundation Design by the Engineer	14 days 14 days		Fri 9/4/10	-										
35	Preparation of Commissioning Test Plan	30 days		Fri 19/11/10							4				
36	Review and Approval of Commissioning by the Engineer	90 days		Thu 17/2/11							<u>e</u>	<u>ر</u>			
37	Preparation of Training Plan	30 days		Sat 19/3/11								U		1	
38	Review and Approval of Training Plan by the Engineer	120 days		Sun 17/7/11	-										
39	Equipment Submission and Approval	155 days		Mon 17/5/10											
40	Odour Containment System (FRP Cover) - Prototype	30 days													
41	Odour Containment System (FRP Cover) - Other Covers / walkway	80 days		Thu 15/4/10											
42	Deodourizing System	70 days		Mon 5/4/10											
43	LV Switchboard	80 days		Thu 15/4/10											
44	Modification proposal of SCADA System	90 days		Mon 17/5/10			_								
45	FRP Ductwork and Support	70 days		Tue 27/4/10											
46	CCTV System	90 days		Sun 9/5/10											
47	Electrical Accessories	60 days				-									
48	Statutory Submission and Inspection	268 days													
49	Preparation of revised FS Plan including DG goods store application	28 days		Fri 23/4/10									•		
50	Approval of revised FS Plan including DG goods store application by FSD	45 days		Mon 7/6/10											
51		0 days								11/10	0 🔶		<b>`</b>		
52	First FS Inspection	1 day	Thu 25/11/10	Thu 25/11/10							•		ĥ		
53	Defect rectification following to the first FS Inspection	14 days		Thu 9/12/10											
54	Final FS Inspection and Issue of FS Certificate	10 days													
55	Equipment Manufacturing, Factory Testing, Shipment and Delivery	737 days		Tue 10/4/12					_						
56	FRP Covers	737 days		Tue 10/4/12	1 1									:	
124	Accessories for Containment System	718 days		Tue 27/3/12											
192	Deodourizing System (DOU1 & 2)	165 days	Fri 16/4/10	Mon 27/9/10											
193	LV Switchboard	120 days	Mon 26/4/10	Mon 23/8/10											
194	Modification proposal of SCADA System	120 days		Mon 4/10/10							D				
195	FRP Ductwork and Support (33-45)	60 days	Thu 15/7/10	Sun 12/9/10							_				
196	FRP Ductwork and Support (21-31)	60 days	Mon 13/9/10	Thu 11/11/10								<u> </u>			
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Contract Revision:	No. DE/2009/02 Task Milestone Milestone	•	Sp					oject Sum	mary						
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atment Works (Augʻ	10 to Oct10)
Mar Apr May Jun	Jul Aug Sep Oct
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	ATAL Engineering Limited

ID	T	ask Name	Duration	Start	Finish											2011
197	0	ERP Ductwork and Support (0.10)	60 days	Eri 12/11/10	Mon 10/1/11	Apr I	May	Jun	Jul	Aug	Se	ep	Oct	Nov	Dec	Jan Feb
		FRP Ductwork and Support (9-19)	60 days											<u>u</u>		<b></b>
198		FRP Ductwork and Support (1-7)	60 days		Fri 11/3/11 Tue 10/5/11						-					
199		FRP Ductwork and Support (2-8)	60 days													
200		FRP Ductwork and Support (10-20)	60 days		Sat 9/7/11											
201		FRP Ductwork and Support (22-32)	60 days		Wed 7/9/11						1					
202		FRP Ductwork and Support(34-46)	60 days		Sun 6/11/11						:					
203		CCTV System	210 days		Sat 25/12/10			/			1				Ъ	
204		Electrical Accessories	120 days		Wed 29/9/10											
205		Civil Construction	408 days		Mon 7/2/11											
206	_	Condition Survey	80 days		Wed 17/3/10											1
212	1 <b>11</b>	Construction Video Recording	1 day		Sun 29/8/10						Ļ					
213	_	Piling Works	408 days		Mon 7/2/11											
		Pre-drilling Works at DOU2	10 days		Thu 4/2/10											
215		Approval of Pre-drilling Report at DOU2	15 days		Fri 19/2/10											
216		Pre-drilling Works at DOU1	25 days		Mon 1/3/10						-					
217		Approval of Pre-drilling Report at DOU1	15 days		Tue 16/3/10											
218		Main Piling Work at DOU2	193 days		Thu 11/11/10											
219		Pre-bore Drilling	166 days		Fri 15/10/10								-			
230		Pile Installation & Grouting	168 days		Thu 21/10/10											
241		Load Test (4% of the total) at DOU2	14 days		Thu 11/11/10									₽		
242		Main Piling Work at DOU1	125 days		Tue 14/9/10		<u> </u>									
243		Pre-bore Drilling	99 days		Thu 19/8/10						:					
244		Rebar Installation & Grouting	99 days		Sat 21/8/10					)-						÷
245		Load Test (4% of the total) at DOU1	14 days		Tue 14/9/10											
246		Construction of Concrete Plinth for DOU2	405 days	Wed 30/12/09	Mon 7/2/11											
247		Underground Utility Survey at DOU2	7 days	Wed 30/12/09	Tue 5/1/10									1		
248		Excavation including temporary works and safety measures	5 days		Tue 16/11/10									۵.		
249		Pile Cap	20 days	Wed 17/11/10	Mon 6/12/10									Č.	₽	
250		Backfill to Ground Level	7 days	Tue 7/12/10	Mon 13/12/10										<u>i</u>	
251		Concrete Plinth	21 days	Tue 7/12/10	Mon 27/12/10										Č	L
252	111	Pour 2a - Wall of Control Room	21 days	Tue 28/12/10	Mon 17/1/11						:				Ì	<u> </u>
253		Pour 2b - Roof of Control Room	14 days	Tue 18/1/11	Mon 31/1/11						:					
254		Block work wall of Control Room and Finishing works	7 days	Tue 1/2/11	Mon 7/2/11						:					L 🔄
255		Reinstatement of road and drainage	14 days	Tue 28/12/10	Mon 10/1/11										Ì	
256		Construction of Concrete Plinth for DOU1	350 days	Sun 27/12/09	Sat 11/12/10									_		
257		Underground Utility Survey at DOU1	7 days	Wed 30/12/09	Tue 5/1/10											
258		Tree transplant	50 days	Sun 27/12/09	Sun 14/2/10											
262		Diversion of underground utilities	100 days	Tue 11/5/10	Wed 18/8/10											
263	111	Excavation including temporary works and safety measures	5 days	Wed 15/9/10	Sun 19/9/10							Ь				
264		Pile Cap	20 days	Mon 20/9/10	Sat 9/10/10											
265		Backfill to Ground Level	7 days	Sun 10/10/10	Sat 16/10/10											
266		Concrete Plinth	21 days	Sun 10/10/10	Sat 30/10/10											
267	111	Pour 1a - Wall of Control Room	21 days	Sun 31/10/10	Sat 20/11/10								Ĭ			
268		Pour 2b - Roof of Control Room	14 days	Sun 21/11/10	Sat 4/12/10										ך ר <u>ר</u>	
269		Block work wall of Control Room and Finishing works	7 days	Sun 5/12/10	Sat 11/12/10										Ъ	
270		Reinstatement of road and drainage	21 days	Sun 31/10/10	Sat 20/11/10								ď		_	
271		Erection of Odour Bridge	98 days	Sun 31/10/10	Sat 5/2/11						-		-			
272		Odour Bridge connecting DOU2	40 days	Tue 28/12/10	Sat 5/2/11						:					
273		Odour Bridge connecting DOU1	40 days		Thu 9/12/10						÷		Ť	<b>,</b>		
274		Site Availability of the Plinth and Control Room for DOU2	0 days		Mon 7/2/11								Ť		-	<b>4</b> 7/2
275		Site Availability of the Plinth and Control Room for DOU1	0 days		Sat 11/12/10										a ⁺ 11/	12
276		Site Installation/ Tank Cleaning	715 days		Thu 5/4/12									_	·	
		¥		I I										_		
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ID	•	Task Name				Duration	Start	Finish									201	
277	0	Tank Cleaning / /	Availability of Tank			715 days	Wed 21/4/10	Thu 5/4/12	Apr May	Jun J	ul Aug	1 5	Sep	Oct	Nov	Dec	Ja	in Feb
332	-	Installation of Contain	-			746 days		Tue 15/5/12	-									
		Sedimentation Ta	•			70 days		Fri 9/7/10										
		Sedimentation Ta				46 days		Sat 14/8/10		<u></u>								
335		Sedimentation Ta				40 days		Wed 25/8/10	-	G								
336		Sedimentation Ta				<u>39 days</u>		Thu 16/9/10	-									
348		Sedimentation Ta				22 days		Wed 22/9/10				-						
360						-		Sat 9/10/10										
		Sedimentation Ta				22 days												
372		Sedimentation Ta				22 days									_			
384		Sedimentation Ta				22 days		Fri 29/10/10	-			E						
396		Sedimentation Ta				-	Mon 18/10/10	Mon 8/11/10										
408		Sedimentation Ta				22 days			-							<b>•</b> ]		
420		Flocculation Tan				38 days		Fri 7/1/11	-			Ē						
432		Flocculation Tan				-	Wed 15/12/10	Fri 21/1/11	-									<b>•</b> ]
444		Flocculation Tan	k No.2			38 days		Mon 28/2/11				E						
456		Flocculation Tan	k No.4			38 days		Mon 11/4/11										
468		Sedimentation Ta	ank No.17			22 days	Tue 1/2/11	Tue 22/2/11										
480		Sedimentation Ta	ank No.19			22 days	Thu 3/2/11	Thu 24/2/11										
492		Scum Collector FI	ate Plate tank (33-45)	)		7 days	Fri 24/9/10	Thu 30/9/10										
493	1	Effluent Drop Stru	cture (33-45)			7 days	Fri 24/9/10	Thu 30/9/10				E						
494	1	Scum Collector FI	ate Plate tank (17-31)	)		7 days	Wed 25/8/10	Tue 31/8/10				đ						
495		Effluent Drop Stru	cture (17-31)			7 days	Wed 25/8/10	Tue 31/8/10	-									
496		Flocculation Tan	k No.5			38 days		Fri 13/5/11	-			T						
508		Flocculation Tan	k No.7			38 days		Mon 16/5/11	-					1				
520		Flocculation Tan				38 days		Thu 30/6/11						1				
532	-	Flocculation Tan				38 days		Thu 30/6/11	-									
544		Sedimentation Ta				22 days		Sun 17/7/11										
556	-	Sedimentation Ta				22 days 22 days		Sun 17/7/11				E		1				
568		Main Disribution C				21 days		Tue 12/4/11	-					1				
569		Main Disribution C				21 days 21 days		Tue 3/5/11	-									
570		Sedimentation Ta				21 days 22 days		Wed 27/7/11	-									
582		Sedimentation Ta				22 days 22 days		Wed 27/7/11 Wed 27/7/11	-									
														Ь				
594	_		ate Plate tank (1-15)			7 days		Fri 1/10/10										
595		Effluent Drop Stru				7 days		Fri 1/10/10	-									
596		Effluent Drop Stru				7 days		Sat 8/1/11	-									
597		Sedimentation Ta				22 days		Sat 27/8/11	-									
609		Sedimentation Ta				22 days		Sat 27/8/11						1				
621		Sedimentation Ta				22 days		Sat 27/8/11										
633		Prototype near T				22 days		Fri 9/9/11										
645		Main Disribution C	· · /			21 days		Sat 3/9/11										
646		Main Disribution C	Channel (22-32)			21 days	Sat 15/10/11	Fri 4/11/11										
647		Main Disribution C	Channel (34-46)			21 days	Sat 15/10/11	Fri 4/11/11										
648		Main Disribution C	Channel (2-20)			21 days	Sat 5/11/11	Fri 25/11/11										
649	1	Sedimentation Ta	ank No.36			22 days	Thu 13/10/11	Thu 3/11/11	1			E						
661		Sedimentation Ta	ank No.38			22 days	Thu 13/10/11	Thu 3/11/11	1									
673	1	Sedimentation Ta	ank No.22			22 days	Sat 12/11/11	Sat 3/12/11	-									
685		Sedimentation T	ank No.24			22 days		Sat 3/12/11	-									
697		Sedimentation T	ank No.26			22 days		Sat 3/12/11	-									
709		Sedimentation T				-	Mon 12/12/11	Mon 2/1/12				E						
721		Sedimentation Ta					Tue 13/12/11	Tue 3/1/12				E						
733		Sedimentation Ta				-	Tue 13/12/11	Tue 3/1/12	-			Ē						
745			ate Plate tank (18-32)	)		-	Mon 14/11/11					Ē						
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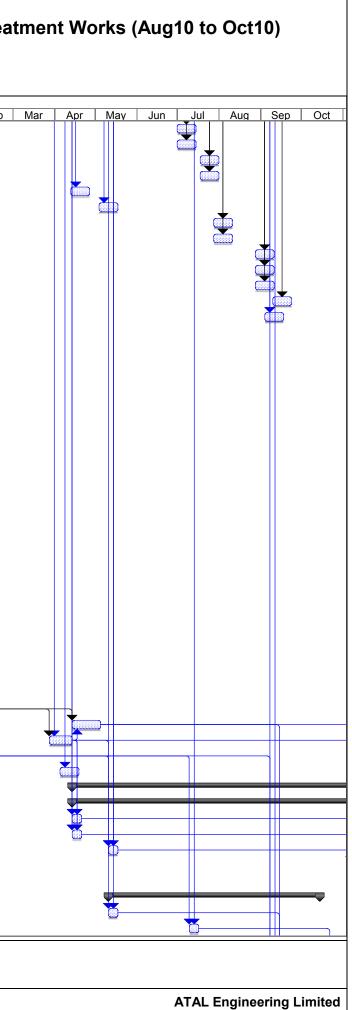
ATAL Engineering Limited

ID 👩	Task Name	Duration	Start	Finish	Apr May	Jun	Jul	Auq	1 5	Бер	Oct	Nov	Dec	2011 Jan	Feb
746	Effluent Drop Structure (18-32)	7 days	Mon 14/11/11	Sun 20/11/11											
747	Sedimentation Tank No.10	22 days	Thu 12/1/12	Thu 2/2/12	2										
759	Sedimentation Tank No.12	22 days	Thu 12/1/12	Thu 2/2/12	2				E						
771	Sedimentation Tank No.14	22 days	Thu 12/1/12	Thu 2/2/12	2										
783	Sedimentation Tank No.16	22 days	Sat 11/2/12	Sat 3/3/12	2										
795	Scum Collector Flate Plate tank (2-16)	7 days	Sun 2/1/11	Sat 8/1/11											
796	Effluent Drop Structure (10-16)	7 days	Sun 15/1/12	Sat 21/1/12	2										
797	Sedimentation Tank No.18	22 days	Sun 29/1/12	Sun 19/2/12	2				Ē						
809	Sedimentation Tank No.20	22 days	Wed 8/2/12	Wed 29/2/12	2				E						
821	Prototype near Tank No.34	22 days	Tue 13/3/12	Tue 3/4/12	2										
833	Sedimentation Tank No.34	22 days	Tue 13/3/12	Tue 3/4/12	2				Ē						
845	Sedimentation Tank No.44	22 days	Tue 13/3/12	Tue 3/4/12	_										
857	Sedimentation Tank No.46	22 days	Tue 10/4/12	Tue 1/5/12					Ē						
869	Sedimentation Tank No.40	22 days	Tue 10/4/12	Tue 1/5/12	_										
881	Sedimentation Tank No.42	22 days	Tue 10/4/12	Tue 1/5/12											
893	Scum Collector Flate Plate tank (34-46)	7 days		Thu 20/10/11											
894	Effluent Drop Structure (34-46)	7 days 7 days		Thu 20/10/11											
895	FRP Ductwork	480 days		Thu 5/1/12					-						
896	FRP Ductwork and Support (33-45)	60 days	Mon 13/9/10	Thu 11/11/10						$\mathbf{T}$					
890															
	FRP Ductwork and Support (21-31)	60 days	Fri 12/11/10	Mon 10/1/11											
898	FRP Ductwork and Support (9-19)	60 days	Tue 11/1/11	Fri 11/3/11					Ē						-
899	FRP Ductwork and Support (1-7)	60 days	Sat 12/3/11	Tue 10/5/11					Ē						
900	FRP Ductwork and Support (2-8)	60 days		Sat 9/7/11											
901	FRP Ductwork and Support (10-20)	60 days	Sun 10/7/11	Wed 7/9/11											
902	FRP Ductwork and Support (22-32)	60 days	Thu 8/9/11	Sun 6/11/11					Ē						
903	FRP Ductwork and Support(34-46)	60 days	Mon 7/11/11	Thu 5/1/12											
904	Deodourization System No. 2	90 days		Sun 27/3/11					E			↓		(İmp	
905	Deodourization System No. 1	90 days	Sun 31/10/10	Fri 28/1/11								Č 📃			<u>a</u> h
906	LV Switchboard	30 days	Tue 24/8/10	Wed 22/9/10					Č,	<u>_</u>	⊥				
907	Cabling Laying and Termination for DOU and SCADA	120 days	Thu 30/9/10	Thu 27/1/11											<u>Dh</u>
908	Modification of SCADA System	30 days	Mon 28/3/11	Tue 26/4/11											
909	CCTV System and associated cabling work	100 days	Sun 26/12/10	Mon 4/4/11											
910	Testing and Commissioning	676 days	Sat 10/7/10	Tue 15/5/12	2	Ç								<u> </u>	-
911	Containment System	676 days	Sat 10/7/10	Tue 15/5/12	2			_	<b></b>		┢━┿╋╸		_	÷	-
912	Sedimentation Tank No.43	14 days	Sat 10/7/10	Fri 23/7/10	)										
913	Sedimentation Tank No.33	14 days	Sun 15/8/10	Sat 28/8/10				<b>`</b>							
914	Sedimentation Tank No.35	14 days	Thu 26/8/10	Wed 8/9/10	)				Č						
915	Sedimentation Tank No.41	14 days	Thu 23/9/10	Wed 6/10/10							<b>5</b>				
916	Sedimentation Tank No.37	14 days	Fri 17/9/10	Thu 30/9/10						Æ					
917	Sedimentation Tank No.39	14 days	Wed 13/10/10	Tue 26/10/10	)						Ċ 📥				
918	Sedimentation Tank No.27	14 days		Fri 12/11/10								ă 🗌			
919	Sedimentation Tank No.25	14 days		Tue 14/12/10											
920	Sedimentation Tank No.21	14 days		Sat 23/10/10							<b>A</b>		<u></u>		
921	Sedimentation Tank No.23	14 days	Tue 9/11/10	Mon 22/11/10							Contract of	*			
922	Flocculation Tank No.1	14 days		Fri 21/1/11	_							<u></u>			
923	Flocculation Tank No.3	14 days	Sat 0/1/11 Sat 22/1/11	Fri 4/2/11					-						╉
923	Flocculation Tank No.2	14 days	Tue 1/3/11	Mon 14/3/11										<u></u>	
924 925	Flocculation Tank No.4	-	Tue 1/3/11 Tue 12/4/11	Mon 25/4/11	-				i						
925 926	Sedimentation Tank No.17	14 days	Wed 23/2/11	Tue 8/3/11					i						
926		14 days							1						
	Sedimentation Tank No.19	14 days	Fri 25/2/11	Thu 10/3/11					-						
928	Flocculation Tank 5	14 days	Sat 14/5/11	Fri 27/5/11					i						
929	Flocculation Tank 7	14 days	Tue 17/5/11	Mon 30/5/11											
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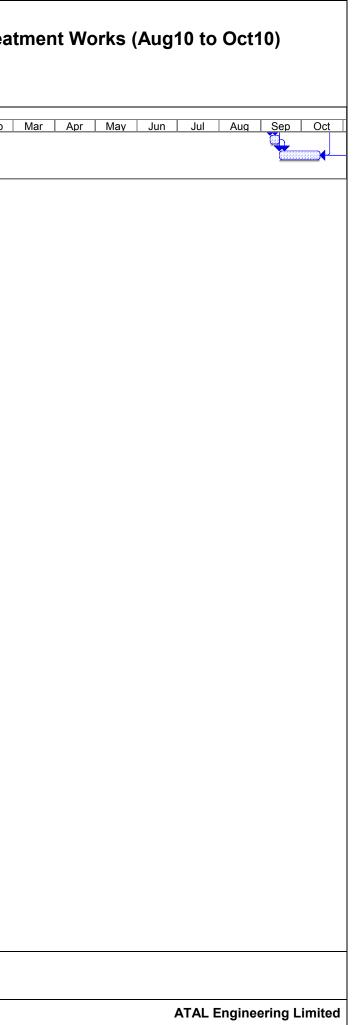
#### ATAL Engineering Limited

ID	0	Task Name	Duration	Start	Finish	A	Maria	l <del></del>	le l	A	<b>S</b>	0-1	Nevi	D	2011	
930	-	Flocculation Tank 6	14 days	Fri 1/7/11	Thu 14/7/11	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
931		Flocculation Tank 8	14 days	Fri 1/7/11	Thu 14/7/11	_										
932		Sedimentation Tank No 11	14 days	Mon 18/7/11	Sun 31/7/11	-										
933		Sedimentation Tank No 9	14 days	Mon 18/7/11	Sun 31/7/11	-										
934		Main Disribution Channel (33-45)	14 days	Wed 13/4/11	Tue 26/4/11	-					-					
935		Main Disribution Channel (21-31)	14 days	Wed 4/5/11	Tue 17/5/11	-										
936	1	Sedimentation Tank No 13	14 days	Thu 28/7/11	Wed 10/8/11	-										
937		Sedimentation Tank No 15	14 days	Thu 28/7/11	Wed 10/8/11						-					
938		Sedimemtation Tank No 29	14 days	Sun 28/8/11	Sat 10/9/11											
939		Sedimentation Tank No 31	14 days	Sun 28/8/11	Sat 10/9/11											
940		Sedimentation Tank No 45	14 days	Sun 28/8/11	Sat 10/9/11											
941		Prototype near Tank No.33	14 days	Sat 10/9/11	Fri 23/9/11											
942	-	Main Disribution Channel (1-19)	14 days	Sun 4/9/11	Sat 17/9/11											
943		Main Disribution Channel (22-32)	14 days		Fri 18/11/11						-					
944		Main Disribution Channel (34-46)	14 days	Sat 5/11/11	Fri 18/11/11											
945		Main Disribution Channel (2-20)	14 days		Fri 9/12/11											
946	-	Sedimentation Tank No.36	14 days	Fri 4/11/11		_					-					
947	-	Sedimentation Tank No.38	14 days	Fri 4/11/11		-										
948	-	Sedimentation Tank No.22	14 days	Sun 4/12/11												
949	-	Sedimentation Tank No.24	14 days	Sun 4/12/11												
950	-	Sedimentation Tank No.26	14 days	Sun 4/12/11												
951	-	Sedimentation Tank No.28	14 days	Tue 3/1/12												
952		Sedimentation Tank No.30	14 days	Wed 4/1/12												
953		Sedimentation Tank No.32	14 days	Wed 4/1/12							-					
954		Sedimentation Tank No.10	14 days	Fri 3/2/12												
955	-	Sedimentation Tank No.12	14 days	Fri 3/2/12												
956		Sedimentation Tank No.12	14 days	Fri 3/2/12												
957		Sedimentation Tank No.16	14 days	Sun 4/3/12												
958		Sedimentation Tank No.18	14 days	Sun 5/2/12												
959	-	Sedimentation Tank No.20	14 days	Thu 1/3/12												
960		Prototype near Tank No.34	14 days	Wed 4/4/12												
961		Sedimentation Tank No.34	14 days	Wed 4/4/12 Wed 4/4/12												
962	-	Sedimentation Tank No.44	14 days	Wed 4/4/12 Wed 4/4/12		-										
963		Sedimentation Tank No.46	14 days	Wed 2/5/12							-					
964		Sedimentation Tank No.40	14 days	Wed 2/5/12 Wed 2/5/12												
965	-	Sedimentation Tank No.42	14 days	Wed 2/5/12 Wed 2/5/12		-										
966		LV Switchboard	14 days	Thu 23/9/10												
967		Power Energization	0 days	Thu 27/1/11							2					27/1
968		SCADA System	21 days	Thu 2/////11	Wed 4/5/11	1					-					
969		Deodourization System No. 2	17 days													
970	-	Deodourization System No. 1	17 days		Mon 14/2/11											
971	_	CCTV System	14 days												ų į	
972		System Performance Test	244 days													
973	-	Deodourization System No. 2	244 days 244 days													
973		Sedimentation Tank (33-45, Odd Number)	-	Thu 14/4/11 Thu 14/4/11												
974		Sedimentation Tank (3-45, Odd Number)	7 days 7 days													
975	-	Flocculation Tank (od number)			Tue 17/5/11											
970	_	Inlet Works	7 days													
			7 days													
978	-	Final DOU2 System Acceptance Test	30 days													
979		Deodourization System No. 1	157 days		Fri 14/10/11	_										
980	-	Sedimentation Tank (34 -46, Even Number)	7 days		Tue 17/5/11											
981		Sedimentation Tank (10 -32, Even Number)	7 days	Sun 10/7/11	Sat 16/7/11	<u> </u>										
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ID	Task Name	Duration	Start	Finish										2011	
	<b>0</b>				Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
982	Flocculation Tank (Even number)	7 days	Thu 8/9/11	Wed 14/9/11											
983	Final DOU1 System Acceptance Test	30 days	Thu 15/9/11	Fri 14/10/11											
984	Substantial Completion of Project	0 days	Wed 27/6/12	Wed 27/6/12											

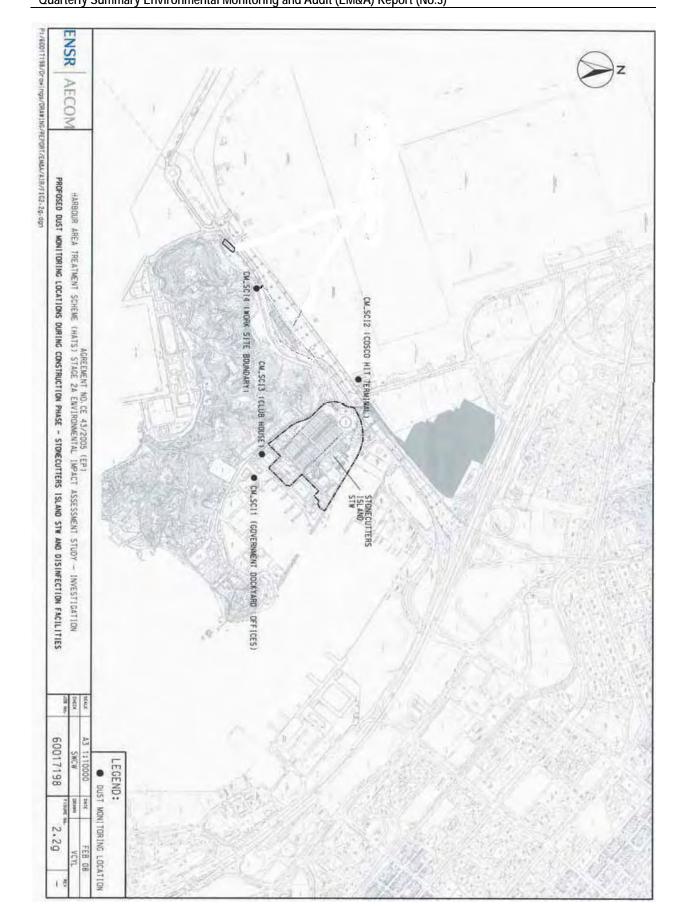
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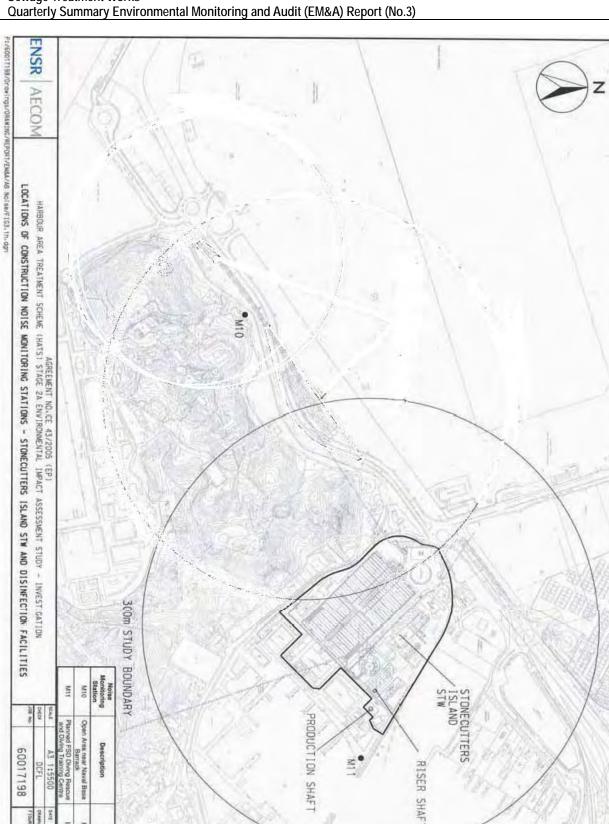
#### Annex D

### Monitoring Locations Designated in the EM&A Manual



Contract No. DE/2009/02 – Harbour Area Treatment Scheme Stage 2A - Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works Quarterly Summary Environmental Monitoring and Audit (EM&A) Report (No.3)

# AUES





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No. of Floors

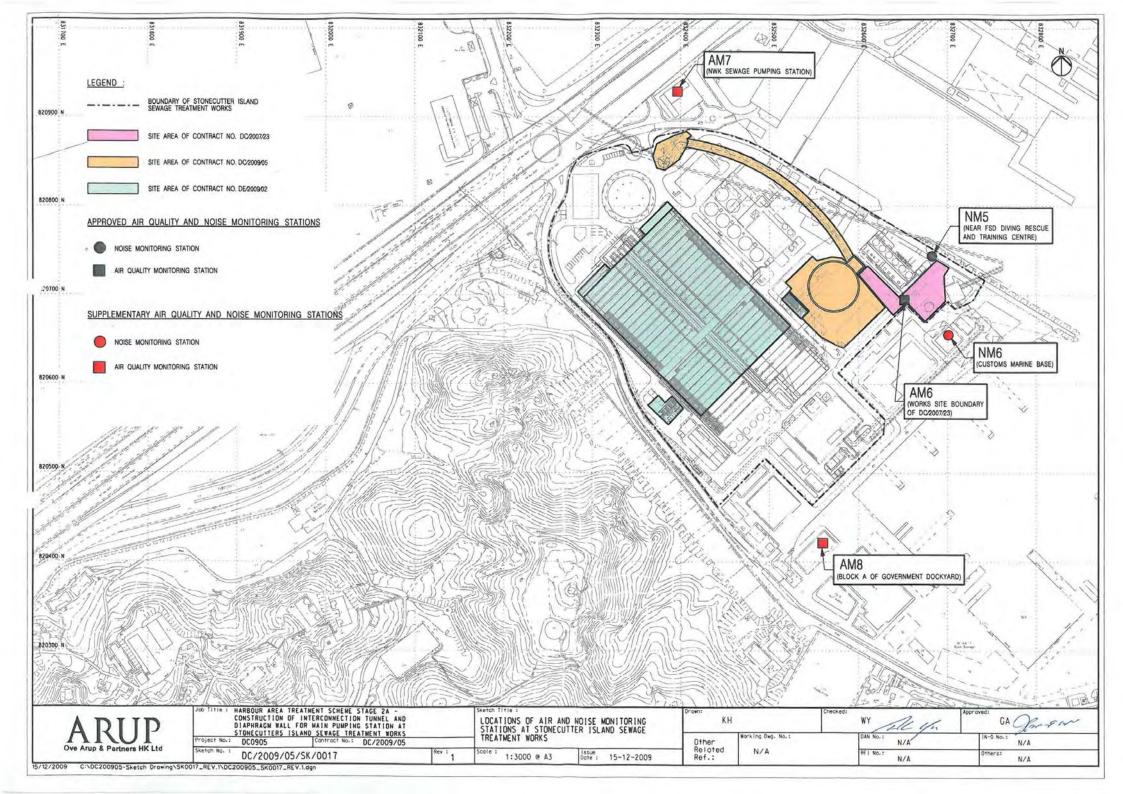
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Annex E

#### **Current Impact Monitoring Stations**





### Annex F

#### **Meteorological Data of Reporting Quarter**

#### <u>Meteorological Data – June 2010</u>

					Tsing Y	Yi Station	
Date		Weather	Total Rainfal l (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidit y (%)	Wind Direction
1-Jun-10	Tue	Mainly cloudy with one or two light rain patches.	16.1	24.5	17	71	E/SE
2-Jun-10	Wed	Light to moderate northerly winds.	29.3	22	13.7	90	Е
3-Jun-10	Thu	There will be swells.	1	23.5	7.7	77.7	N/NW
4-Jun-10	Fri	Mainly cloudy. Sunny periods in the afternoon.	Trace	25.1	5.5	80	S/SE
5-Jun-10	Sat	Sunny periods in the afternoon. Cloudy tonight.	8.2	25.7	10.5	76.5	E/SE
6-Jun-10	Sun	Mainly fine. Hot in the afternoon.	0	26.4	12	70	E/SE
7-Jun-10	Mon	Moderate easterly winds.	0	26.3	12.7	69	E/SE
8-Jun-10	Tue	Moderate southerly winds.	Trace	26.1	13.2	71.5	E/SE
9-Jun-10	Wed	Cloudy with occasional rain.	16.7	25.5	12	87.5	Е
10-Jun-10	Thu	Rain will be heavy at times with a few squally thunderstorms.	58.4	25.7	8.7	92	S/SE
11-Jun-10	Fri	Cloudy with sunny intervals.	Trace	27.7	6.5	83.7	S/SE
12-Jun-10	Sat	Some rain later. Light winds.	Trace	28.3	7	79.5	S/SE
13-Jun-10	Sun	Moderate to fresh southwesterly winds.	29	27.7	11.5	91.2	SE
14-Jun-10	Mon	Mainly cloudy with a few showers.	6.4	28.2	12	88.5	S/SE
15-Jun-10	Tue	Mainly cloudy with a few showers.	0.1	27.9	14.5	90.5	S/SE
16-Jun-10	Wed	Moderate to fresh southwesterly winds.	3.8	28.4	14.7	89.5	S/SE
17-Jun-10	Thu	Cloudy periods overnight.	Trace	28.2	11	91	SE
18-Jun-10	Fri	Mainly fine and hot tomorrow.	0	28.6	12.7	86.5	S/SE
19-Jun-10	Sat	A few showers.	Trace	29.4	10.5	82.5	SE
20-Jun-10	Sun	Hot with sunny periods in the afternoon.	1.9	29.1	10.5	83.5	SE
21-Jun-10	Mon	Moderate southwesterly winds.	1.4	28.9	11.5	82.5	SE
22-Jun-10	Tue	A few showers. Hot with sunny periods.	4.6	29.2	8.5	79.5	S/SE
23-Jun-10	Wed	Cloudy with showers and a few squally thunderstorms.	41	27	12.5	86	SE
24-Jun-10	Thu	Showers will be heavy at times tomorrow.	39	27.7	14	86	S
25-Jun-10	Fri	Cloudy with showers. Showers will be heavy	2.9	28.2	12.5	84.5	Е
26-Jun-10	Sat	Mainly cloudy with showers	127.6	25.9	11	90.7	E/SE
27-Jun-10	Sun	There will also be a few squally thunderstorms	44.2	25.2	11.7	93.5	Е
28-Jun-10	Mon	Showers will be heavy at times at first	43.2	26.2	16	89	Е
29-Jun-10	Tue	Mainly fine. Moderate south to southeasterly winds.	0.1	28.7	8.5	78	Е
30-Jun-10	Wed	Fine and hot apart from one or two isolated showers.	0	29.8	6.1	75	S/SE

#### <u>Meteorological Data – July 2010</u>

					Tsing Y	Yi Station	
Date	9	Weather	Total Rainfal l (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidit y (%)	Wind Direction
1-Jul-10	Thu	Fine and hot. Moderate west to southwesterly winds.	0	30.2	7.5	75	S/SE
2-Jul-10	Fri	Fine and very hot.	0	30	7.5	75	SE
3-Jul-10	Sat	Moderate southwesterly winds	0	30.2	8	76	S/SE
4-Jul-10	Sun	Occasionally fresh over offshore waters.	Trace	30.1	10.5	78.2	SE
5-Jul-10	Mon	Mainly fine and hot.	0	29.9	9	79	SE
6-Jul-10	Tue	Moderate southwesterly winds,	Trace	29.8	14.2	77.2	S
7-Jul-10	Wed	Occasionally fresh over offshore waters.	Trace	29.7	10	79.5	SE
8-Jul-10	Thu	Fine and very hot. Moderate southwesterly winds.	0.4	30	10.5	81.5	SE
9-Jul-10	Fri	It will be hot.	1.7	29.7	10.7	79.5	S/SE
10-Jul-10	Sat	Mainly fine apart from isolated showers at first.	3.9	29.6	9	77.5	SE
11-Jul-10	Sun	Light to moderate southerly winds.	1.8	29.4	9.5	77	SE
12-Jul-10	Mon	Fine and very hot.	Trace	29.9	8.2	77.5	SE
13-Jul-10	Tue	Moderate easterly winds.	Trace	30.7	9.5	69.5	S/SE
14-Jul-10	Wed	Mainly fine and very hot apart from isolated showers.	0	30.9	11.2	68.5	E/SE
15-Jul-10	Thu	Isolated showers and one or two thunderstorms.	8.4	29.5	12.5	75.5	E/SE
16-Jul-10	Fri	Sunny periods and showers. There are swells over the sea.	17.8	27.6	16	78	SE
17-Jul-10	Sat	Fine and very hot apart from a few showers.	40	27.6	12.5	79	E/SE
18-Jul-10	Sun	Moderate east to southeasterly winds.	1.1	28.7	8	69	S/SE
19-Jul-10	Mon	Fine and very hot apart from a few showers.	0	30.8	8.2	70.5	S/SE
20-Jul-10	Tue	Moderate easterly winds.	0	31.1	10.6	66	S/SE
21-Jul-10	Wed	Fresh easterly winds, occasionally strong over offshore waters. Gale on high ground.	29.6	27.8	16	78.5	E/SE
22-Jul-10	Thu	Cloudy with showers and a few squally thunderstorms.	182.4	26.7	15.5	86.5	E/SE
23-Jul-10	Fri	Cloudy with showers and a few squally thunderstorms.	14.6	28.1	13	79	E/SE
24-Jul-10	Sat	Mainly cloudy with a few showers and isolated squally thunderstorms.	1.1	29.2	8.5	74.7	SE
25-Jul-10	Sun	Moderate east to southeasterly winds.	0	30.5	8	64	S/SE
26-Jul-10	Mon	Mainly cloudy with scattered heavy showers	0	29.9	10.5	72	S/SE
27-Jul-10	Tue	Cloudy with showers. Moderate to fresh southwesterly winds.	33.6	28.2	11.5	83.5	SE
28-Jul-10	Wed	Moderate southwesterly winds, occasionally fresh over offshore waters.	122.5	26	13.7	89.7	S
29-Jul-10	Thu	Mainly cloudy with a few showers.	4.6	27.3	22	85	S/SE
30-Jul-10	Fri	Sunny periods and a few showers.	5.1	28.9	7.5	81.7	SE
31-Jul-10	Sat	A few showers. Hot with sunny periods in the afternoon.	0.8	30.4	8	75.5	SE

#### <u>Meteorological Data – August 2010</u>

					Tsing Y	Yi Station	
Date	2	Weather	Total Rainfal l (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidit y (%)	Wind Direction
1-Aug-10	Sun	Fine and very hot. Moderate westerly winds.	Trace	31.2	11	65.7	SE
2-Aug-10	Mon	Showers, heavy with squally thunderstorms tonight.	1.1	29.6	12	74.7	S/SE
3-Aug-10	Tue	Occasionally fresh over offshore waters.	Trace	29.7	7.7	71.7	S
4-Aug-10	Wed	Sunny periods and a few showers.	0	30.9	9	69.5	NW
5-Aug-10	Thu	Moderate east to northeasterly winds.	14.6	29	18.7	73.7	SE
6-Aug-10	Fri	Sunny periods and a few showers.	1.6	29.3	6.5	69.5	E/SE
7-Aug-10	Sat	Isolated squally thunderstorms later.	39.1	29.6	8.5	68.7	E/SE
8-Aug-10	Sun	Very hot with sunny periods in the afternoon.	18	29.5	12.5	75.2	E/SE
9-Aug-10	Mon	Sunny periods and a few showers.	0.2	30.5	9	73.5	E/SE
10-Aug-10	Tue	It will be hot. Light to moderate southeasterly winds.	Trace	30.3	7	74.5	S/SE
11-Aug-10	Wed	Showers and a few isolated squally thunderstorms.	22.2	29	7.5	79.5	S/SE
12-Aug-10	Thu	Mainly fine and very hot during the day.	3	29.6	8.5	74	SE
13-Aug-10	Fri	Mainly fine apart from isolated showers.	3.8	30.2	8	77.5	S/SE
14-Aug-10	Sat	Mainly cloudy with showers and a few squally thunderstorms.	8.7	30.5	8.5	71	S/SE
15-Aug-10	Sun	Light to moderate southwesterly winds.	13.5	28.4	9	82.5	SE
16-Aug-10	Mon	Mainly cloudy with a few showers and isolated squally thunderstorms.	5.1	27.5	15.5	82	E/SE
17-Aug-10	Tue	Mainly cloudy with a few showers.	3.2	29.2	10.5	75	S
18-Aug-10	Wed	Light to moderate easterly winds.	0	30.1	9	71.5	E/SE
19-Aug-10	Thu	A few squally thunderstorms at first.	56.4	28.2	14.7	78	E/SE
20-Aug-10	Fri	Mainly cloudy with showers and squally thunderstorms.	22.1	29	6	68	E/SE
21-Aug-10	Sat	Moderate to fresh east to southeasterly winds	Trace	31.4	7.6	63.7	E/SE
22-Aug-10	Sun	Mainly fine and hot apart from isolated showers.	9.1	29.9	12.5	71	E/SE
23-Aug-10	Mon	Mainly fine and hot apart from isolated showers.	23.7	27.9	11.7	70.5	E/SE
24-Aug-10	Tue	Very hot in the afternoon.	42.6	27.5	14	80.5	E/SE
25-Aug-10	Wed	A few squally showers later.	5.2	28.5	7	75.7	S/SE
26-Aug-10	Thu	Very hot with sunny periods in the afternoon.	Trace	29	7.5	76	S/SE
27-Aug-10	Fri	Light winds.	0	29.4	7.5	71.5	S/SE
28-Aug-10	Sat	A few showers and isolated squally thunderstorms later.	30.1	28.4	6.5	77.5	N/NW
29-Aug-10	Sun	Moderate northerly winds.	29	30.4	9.1	66.5	N/NW
30-Aug-10	Mon	There will also be swells over the sea.	0	30.6	21	64.2	N/NW
31-Aug-10	Tue	Hazy with sunny periods.	0	31.4	8.5	67.2	N/NW



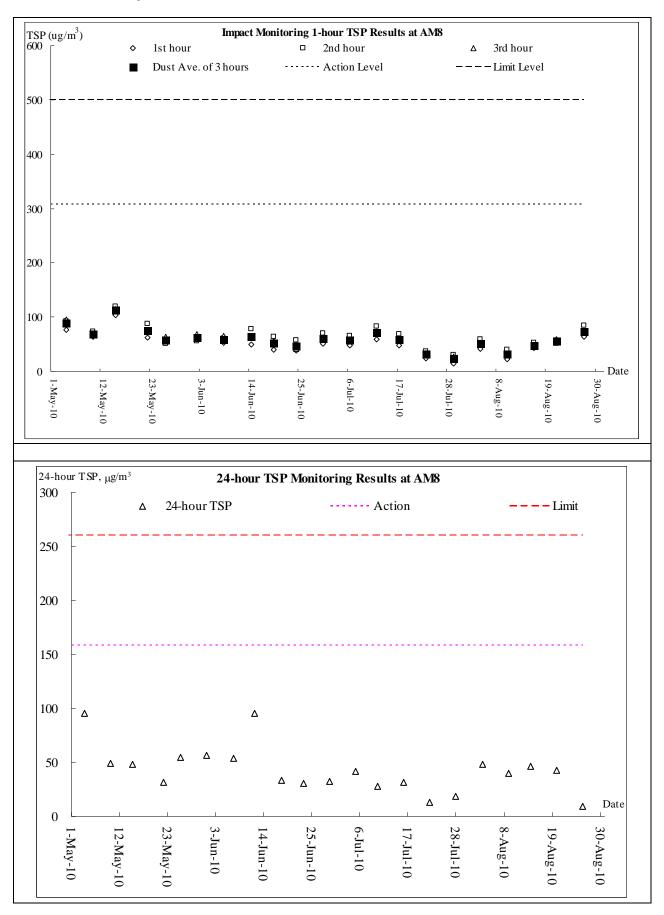
### Annex G

## **Graphical Plots of Impact Monitoring**

### 1. Air Quality



#### 1. Air Quality





#### Annex H

### Monthly Summary Waste Flow Table

#### Contract No. DE/2009/02



Harbour Area Treatment Scheme Stage 2A - Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works

(To be submitted to the C&D MM Coordinator of Respective Division/Region via the Engineer's Representative by not later than 1st of June and December of each year)

Month	Annual Quantities of Inert C&D Materials Generated / Imported(in '000 m ³ )												Annual Quantities of Other C&D Materials / Wastes Generated												
	Total Quantities Generated		Broken Concrete (including rock for recycling into aggregates)		Reused in the Contract		Reused in Other Projects		Disposed as Public Fill		Imported C&D Material		Metal		Paper/ Cardboard Packaging		Plastic (bottles/containers, plastic sheets/ foams from package material)		Chemical Waste		Others (e.g General Refuse)				
	(a)		(b)		(c)		(d)		(a-b-c-d)				(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m ³ )		in '000kg)		
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	
2010																									
January	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	1.00	1.00	
February	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	1.80	1.80	
March	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	11.95	11.95	
April	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.37	0.37	
May	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	4.32	4.32	
June	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	3.16	3.16	
1st half		2.12	1	0.00		0.00	1	0.00		2.12		0.00		0.00	1	0.00	1	0.00	1	0.00	1	0.22		22.60	
July	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.46	0.46	
August	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	1.48	1.48	
September																									
October																									
November																									
December 2nd half		0.59		0.00		0.00		0.00		0.50		0.00		0.00		0.00		0.00		0.00		0.04		1.04	
2nd hair Total		0.58 2.70		0.00 0.00		0.00 0.00		0.00 0.00		0.58		0.00 0.00		0.00		0.00		0.00		0.00 0.00		0.04 0.26		1.94 24.54	
10121		2.70		0.00		0.00		0.00		2.70		0.00		0.00		0.00		0.00		0.00		0.20		24.34	