PROJECT NO.: TCS/00477/09

VERSION: 2

CEDD CONTRACT NO. ST/2008/02
ROADS, DRAINAGE AND SEWEAGE WORKS AT WHITEHEAD AND LOK WO SHA, PHASE 1

23RD MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT – AUGUST 2011

PREPARED FOR
CHINA ROAD & BRIDGE CORPORATION

Quality Index Date	Reference No.	Prepared By	Certified By
12 September 2011	TCS00477/09/600/R0296v2	Ben Tam Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	8 September 2011	First Submission
2	12 September 2011	Amended against IEC's comments on 8 September 2011

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Your reference:

Our reference: HKCEDD01/50/100855

Date: 14 September 2011

Attn.: Mr Kevin C W Lam and Mr Tom W K Lee

BY FAX ONLY
(Fax no.: 2739 0076)

Dear Sirs

Agreement No. NTE 01/2009
Ma On Shan Development Roads, Drainage and Sewerage Works
at Whitehead and Lok Wo Sha Phase 1
Monthly EM&A Report No. 23

Reference is made to the Environmental Team's submission of the Monthly EM&A Report No. 23 for the captioned project by emails on 9 and 12 September 2011 for our review and comment.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned Monthly EM&A Report in accordance with Condition 5.3 of the Environmental Permit no. EP-332/2009.

Should you have any queries, please do not hesitate to contact the undersigned on 2869 6018.

Yours faithfully
EDMS CONSULTING LTD

James Choi
Independent Environmental Checker

CPSJ/LYMA/lyl

cc RE – Mr Nelson Chin (Fax: 2687 2322)
RE – Mr Angus Law (Fax: 2687 2322)

EXECUTIVE SUMMARY

ES.01 The China Road & Bridge Corporation (CRBC) have been awarded the *Contract ST/2008/02 Ma On Shan Development – Roads, Drainage and Sewerage Works at Whitehead and Lok Wo Sha Phase 1* (the Project) by the Civil Engineering & Development Department (CEDD) on 18 June 2009. The Project is part of an overall plan approved under a statutory EIA (Register No. AEIAR-068/2002) for a *Feasibility Study for Housing Development at Whitehead & Lee on in Man On Shan* commissioned by the Territory Development Department.

ES.02 An Environmental Permit (No. EP-332/2009) for Road D1(N), Road D1(W) and Box Culvert of Whitehead & Lok Wo Sha Phase One Project (EP) has been obtained by the CEDD on 24 March 2009 under the Project. According to the Environmental Permit No. EP-332/2009 and Section 25 of the Particular Specification (PS), the overall scope of environmental monitoring including the aspect of air quality, construction noise, water quality, landscaping and visual and site environmental audit should be undertaken in accordance with the Final Report Environmental Monitoring and Audit Manual [2095/13.3] by an independent Environmental Team (ET).

ES.03 Action-United Environmental Services and Consulting (AUES) have been commissioned by CRBC as the ET to implement the relevant EM&A program except the monitoring and audit works of landscaping and visual, which is undertaken by other.

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.04 This is the **23rd** Monthly EM&A Report which presents the monitoring results and inspection findings for the period from **26 July 2011** to **25 August 2011** (the Reporting Period).

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

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	**18**
	24-hour TSP	**5**
Construction Noise	Leq (30min) Daytime	**6**
Water Quality	Marine Water Sampling	**14**
Inspection / Audit	ER and Contractor regular Environmental Site Inspection	**5**
	IEC and ET Monthly Environmental Site Audit	**1**

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.06 No construction noise complaint (an Action Level exceedance) was received and no exceedance was recorded in construction noise monitoring in this Reporting Period.

ES.07 No 1-hour and 24-hour TSP monitoring results that triggered the Action or Limit Level in this Reporting Period. Therefore, no associated corrective actions were required.

ES.08 No marine water monitoring results that triggered the Action or Limit Level in this Reporting Period. Therefore, no associated corrective actions were then required.

ES.09 Exceedances registered during the Reporting Period were summarized below:

Exceedance	Construction Noise	Air Quality		Marine Water Quality			Total
		24-hour TSP	1-hour TSP	DO	Turbidity	Suspended Solids	
Action Level	0	0	0	0	0	0	0
Limit Level	0	0	0	0	0	0	0

ENVIRONMENTAL COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.10 No environmental complaint, summons and successful prosecutions was recorded or received.

SITE INSPECTION BY EXTERNAL PARTIES

ES.11 In this Reporting Period, no site visit by EPD/ AFCD was recorded.

REPORTING CHANGE

ES.12 There are no reporting changes in this reporting period.

FUTURE KEY ISSUES

ES.13 As rainy season, muddy water or other water pollutants from site surface runoff into the sea body will be key environmental issue. Mitigation measures for water quality control should be paid attention as necessary.

ES.14 For the dust control and construction noise aspects, mitigation measures described in Mitigation Measure Implementation Schedule, should also be properly followed to avoid generating any potential adverse impacts from the construction activities.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

The China Road & Bridge Corporation (CRBC) has been awarded the *Contract ST/2008/02 Ma On Shan Development – Roads, Drainage and Sewerage Works at Whitehead and Lok Wo Sha Phase* 1 (the Project) by the Civil Engineering & Development Department (CEDD) on 18 June 2009. Total project time is expected to be 23 months.

The Project includes civil engineering infrastructure works for the construction of District Distributors: Road D1(N) & Road D1(W) and Local Road L3 with the associated footpath, cycle tracks, planting areas, drains, sewers, water-mains and landscaping works. There are also one box culvert, one sewage pumping station with pressurized sewers and two site formation works for G/IC and LWS-B areas at Lok Wo Sha to be constructed under the Project. The site layout plan is shown in ***Annex A***.

The Project is part of an overall plan approved under a statutory EIA (Register No. AEIAR-068/2002) for a Feasibility Study for Housing Development at Whitehead & Lee On in Man On Shan commissioned by the then Territory Development Department. An Environmental Permit (EP-332/2009) for Road D1(N), Road D1(W) and Box Culvert of Whitehead & Lok Wo Sha Phase One Project (EP) has been obtained by the CEDD on 24 March 2009 for the relevant works.

According to the Particular Specification (PS) Section 25 and the Environmental Permit No. EP-332/2009, overall scope of environmental monitoring including air quality, construction noise, water quality, and site environmental audit should be undertaken in accordance with the Final Report Environmental Monitoring and Audit Manual [2095/13.3] by an independent Environmental Team (ET). Also, monitoring and audit works for landscaping and visual will be undertaken as part of the EM&A programme.

Action-United Environmental Services and Consulting (AUES) has been commissioned by CRBC as the ET to implement the relevant EM&A program. As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions.

This is the **23rd** monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from **26 July 2011** to **25 August 2011**.

1.2 REPORT STRUCTURE

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

SECTION 1 **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 **ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE**
SECTION 8 **IMPLEMENTATION STATUES OF MITIGATION MEASURES**
SECTION 9 **IMPACT FORECAST**
SECTION 10 **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 and three month rolling construction programs are enclosed in ***Annex C*** and the major construction activities undertaken in this Reporting Period are listed in ***Table 2-1*** as below.

Table 2-1 Construction Activities undertake in the Reporting Period

Location	Activities	Nuisances	Mitigation Measures
Portion 1	Erection of fencing	Noise generated from erection work	Carry out work within 07:00-19:00, except public holiday/Sunday
	Pipe installation & manholes construction	Noise generated from excavation work, erection of formwork, fixing steel reinforcement bars and concreting work	Carry out work within 07:00-19:00, except public holiday/Sunday
Portion 1,2A,2B,3	Site formation & road works	Noise generated from excavation work	Carry out work within 07:00-19:00, except public holiday/Sunday
Box Culvert	Metal works	Noise generated from metal works	Carry out work within 07:00-19:00, except public holiday/Sunday
Retaining Wall at Sewage Pumping Station	General excavation Erect formwork Fix steel reinforcement bars Concreting	Noise generated from excavation work, erection of formwork, fixing steel reinforcement bars and concreting work	Carry out work within 07:00-19:00, except public holiday/Sunday
Sewage Pumping Station	Metal works E&M works	Noise generated from metal works and E&M works	Carry out work within 07:00-19:00, except public holiday/Sunday

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

Table 2-2 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Environmental Permit EP-332/2009 - Road D1(N), Road D1(W) and Box Culvert of Whitehead & Lok Wo Sha Phase One Project	Permit Issued on 24 March 2009
2	Air pollution Control (Construction Dust)	Notified EPD on 12 June 09
3	Chemical waste Producer Registration (WPN: 5123-757-C3124-31)	Application date: 16/07/2009 Date approved: 20/8/2009
4	Water Pollution Control Ordinance (Discharge License) (License no.: WT00005406-2009)	Application date: 06/07/2010 Date approved: 22/07/2010
5	Billing Account for Disposal of Construction Waste (Account Number: 700892117)	Application no. :RN/00606 Valid to: 28/2/2015

Item	Description	License/Permit Status
6	Landscape Master Plan for Roads D1(N) and D1(W)	Application date: 02/10/2009 Status : Approved on 28/5/2010

The "Baseline/Impact Monitoring Methodology (R0009 Version 6)" was set out in accordance with the Final Report Environmental Monitoring and Audit Manual [2095/13.3]. It was approved by the ER and agreed with the Independent Environmental Checker (IEC) and submitted to the EPD for endorsement.

Baseline Monitoring Report (TCS00477/09/600/R0023Ver.3) for the Project was issued by the ETL and verified by the IEC on 5 October 2009. The report was also submitted 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. Air quality, construction noise and water quality have been identified to be the key issues during the construction phase of the Project. Also, monitoring and audit works for landscaping and visual will be undertaken as part of the EM&A programme by others during construction period.

A summary of the Impact EM&A requirements for air, noise and marine water monitoring are presented in the sub-sections below.

3.1 MONITORING PARAMETERS

The EM&A Impact monitoring program covers the following environmental issues:

- Air quality;
- Construction noise;
- Water quality; and
- Landscape and visual resources (to be provided by others separately)

A summary of the monitoring parameters is presented in ***Table 3-1*** as below.

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 1-hour TSP Monitoring by Real-Time Portable Dust Meter; and • 24-hour TSP Monitoring by High Volume Air Sampler.
Noise	• $Leq_{(30min)}$ during normal working hours.; and • $Leq_{(15min)}$ during the construction works is undertaken in Restricted Hours.
Marine Water Quality*	**In-situ Measurements** • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Salinity (ppt); • Water depth (m); and • Temperature (℃).
	Laboratory Analysis • Suspended Solids (mg/L)
Landscape and Visual Resources	• Vegetation survey undertaken on an "area" basis to identify representative types and species composition; • Assessment of landscape character; and • Tree survey report.

* ***Notes****: Since there will be no workshop, vehicle repair area, canteens, workers' facilities or chemical storage facilities with water discharge points within the site boundaries, no measurements for oil and grease, BOD_5 or COD will be necessary based on Section 4.2.2 of the EM&A Manual.*

3.2 MONITORING LOCATIONS

Some monitoring locations have been recommended in the *EM&A Manual* and shown in ***Annex D***. However, as the *EM&A Manual* was originally approved for a much greater area, some of the monitoring locations have been refined in order to monitor the specific impacts of this Project only. Before the commencement of this EM&A progamme, the proposed monitoring locations had been verified by the IEC and endorsed by the EPD.

Air Quality

Two designated monitoring stations: A1 and A2 were recommended in the *EM&A Manual*. Location A1 is situated at a village house in To Tau near a new pumping station to be constructed under the Project, and Location A2 is at the existing Li Po Chung United World College.

However, owing to the much reduced scale of the Project compare to the original scope envisaged in the 2002 EIA Study, it is considered, from experience, that it would be sufficient for both the baseline and impact monitoring programmes to be carried out at A1 only. The recommendation and proposal was issued by ET and verified by the IEC and endorsed by the EPD. The final Air Sensitive Receiver where monitoring shall be performed is listed in ***Table 3-2*** and shown in ***Annex E*****.**

Table 3-2 Location of Air Quality Monitoring Station

Sensitive Receiver	Location
A1	Village house in To Tau near the proposed pumping station

Construction Noise

Two designated monitoring stations: CN1 and CN2 were recommended by the *EM&A Manual*. They are identical to Locations A1 and A2 respectively for air monitoring.

Similarly, it is necessary to carry out baseline and impact monitoring at CN1 only. The noise sensitive receiver was performed in baseline monitoring period under the Project is renamed as N1 for brevity and shown in ***Table 3-3*** and ***Annex E***.

Table 3-3 Location of Noise Monitoring Station

Sensitive Receiver	Location
N1	Village house in To Tau near the proposed pumping station

Marine Water Quality

Totally ten designated water monitoring stations are identified in the *EM&A Manual* including two control stations (C1-C2) and eight impact stations (W1-W8). Impact stations W1-W4 were identified near the discharge outfalls of the stormwater drainage systems at the north and west shore of Whitehead development; W5 & W6 were identified at the box culver outfall and natural stream outfall of Starfish Bay respectively; and W7 & W8 were located offshore near the Tolo Channel. Two control stations: C1 & C2 were recommended at the sea body of the Whitehead development and within Starfish Bay respectively.

Review of Monitoring Locations

According to *Section 4.5.1* of the *EM&A Manual*, the monitoring locations designated in the manual are subject to change to cater for possible updates in the scale of development, design of works packages and surrounding sensitive receivers. A review in relation to the latest monitoring locations is given below.

A Due to the relocation of the box culvert which is now diverted to discharge into the north of Whitehead development instead of Starfish Bay, one location, the old W6 location in the *EM&A Manual*, which was located at the immediate exit of the culvert may be deleted in the future.

B As the new discharge point at the north of Whitehead development is very close to one old station (W3 of the *EM&A Manual*), there is no need to provide an additional station for the new culvert exit.

For ease of administration, the new impact station's ID are renumbered as M1-M8 (meaning Marine Stations 1-8) to replace the old impact stations ID: W1-W8. The location of sampling points ID are listed in ***Table 3-4*** and a map showing these monitoring stations is presented in ***Annex E*****.**

Table 3-4 Location of Marine Water Quality Monitoring Stations

Sensitive Receiver	Monitoring Station	Status	Co-ordnance		Location/Remarks
			East	North	
The Sea Zone of the Project West and North (Tolo Harbour)	C1	Control Station	833014	0842187	Upstream of sea body located at north-west of Whitehead development
	M1 (old W1)	Impact Station	832561	842518	Near the shore of Cheung Kang Village
	M2 (old W2)	Impact Station	832795	842535	The shore of To Tau near the proposed sewage pumping station
	M3 (old W3)	Impact Station	833094	842649	Close to the new box culvert outfall of the Project.
	M4 (old W4)	Impact Station	833110	843038	The shore of Wo Kwai Sha Tsoi
The Sea Zone of Starfish Bay	C2	Control Station	832995	843819	Upstream of sea body located at Starfish Bay
	M5 (old W7)	Impact Station	832784	843484	Located offshore near the Tolo Channel in Starfish Bay
	M6 (old W5)	Impact Station	832713	843393	Located at the natural stream outfall in Starfish Bay
	M7 (old W8)	Impact Station	832649	843643	Located offshore near the Tolo Channel in Starfish Bay
	M8 (old W6)	Impact Station	832584	843470	Located at the natural stream outfall in Starfish Bay

3.3 MONITORING FREQUENCY AND PERIOD

The requirements of impact monitoring are stipulated in ***Sections 2.7***, ***3.6***, and ***4.7*** of the EM&A Manual and listed as follows.

1-hour TSP Monitoring

Parameters : 1-hour TSP monitoring
Frequency : 3 times every six days for 1-hour TSP
Duration : Throughout out the construction period

24-hour TSP Monitoring

Parameters : 24-hour TSP monitoring
Frequency : once every 6 days for 24-hour TSP
Duration : Throughout out the construction period

Noise Monitoring

Parameters : One set of Leq(30min) as 6 consecutive Leq(5min) between 0700-1900 hours on normal weekdays
Frequency : Once every week
Duration : Throughout out the construction period

Marine Water Quality Monitoring

Parameters : In-situ measurements including water depth, temperature, DO, pH, turbidity and salinity; and Suspended Solids is analyzed by HOKLAS-accredited laboratory.

Frequency : Three days a week, at mid ebb and mid flood tides. The interval between 2 sets of monitoring will be more than 36 hours.

Sampling Depth : (a) Three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m.

(b) If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above sea bottom.

(c) If the water depth is less than 3m, 1 sample at mid-depth is taken

Duration: (a) Stations C1, M1, M2, M3 and M4 will be carried out during the construction works is still on-going after stormwater drainage systems are built and operated or marine works undertaken (in accordance with the Section 4.5.4 EM&A Manual).

(b) Station C2, M5, M6, M7 and M8 will be carried out throughout construction period (in accordance with the Section 4.5.3 EM&A Manual).

3.4 MONITORING EQUIPMENT

Air Quality Monitoring

The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.* If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve. The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

Noise Monitoring

Sound level meter in compliance with the *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m s^{-1}.

Water Quality Monitoring

i. **Dissolved Oxygen and Temperature Measuring Equipment** – The instrument should be a portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring as included a DO level in the range of 0 – 20mg L-1 and 0 – 200% saturation; and a temperature of 0 – 45 degree Celsius.

ii. **pH Meter** – The instrument shall consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It shall be readable to 0.1 pH in arrange of 0 to 14.

iii. **Turbidity (NTU) Measuring Equipment** – The instrument should be a portable and weatherproof turbidity measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU.

iv. **Water Sampling Equipment** – A water sampler should comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

v. **Water Depth Detector** – A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. This unit can either be hand held or affixed to the bottom of the work boat.

vi. **Salinity Measuring Equipment** – A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) should be provided for measuring salinity of the water at each monitoring location.

vii. **Sample Containers and Storage** – Water samples for SS should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4℃ without being frozen).

viii. **Monitoring Position Equipment** - A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message 'screen pop-up' facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instrument of similar accuracy, should be provided and used during marine water monitoring to ensure the monitoring vessel is at the

correct location before taking measurements.

ix. **Suspended Solids Analysis** – Analysis of suspended solids shall be carried out in a HOKLAS or other international accredited laboratory.

The monitoring equipments using for the EM&A program were proposed by the ET and verified by the IEC prior to the commencement of the monitoring. Details of the equipments used for impact monitoring are listed in ***Table 3-5*** below.

Table 3-5 Monitoring Equipments Used in EM&A Program

Equipment	Model
Air Quality Monitoring	
High Volume Sampler – 24 hour TSP	TE-5170 TSP MFC Sampler System
Calibration Kit – 24-hour TSP	TISCH Model TE-5025A
Portable dust meter – 1-hour TSP	TSI DustTrak Model 8520
Construction Noise	
Integrating Sound Level Meter	B&K Type 2238
Calibrator	B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer
Water quality	
A Digital Global Positioning System	GPS12 Garmin
Water Depth Detector	Eagle Sonar
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends
Thermometer & DO meter	YSI Professional Plus Multimeter and Hach 2100Q Turbidimeter
pH meter	
Turbidimeter	
Salinometer	
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-litter plastic cool box with Ice pad
Suspended Solids	HOKLAS-accredited laboratory (ALS Technichem (HK) Pty Ltd)

3.5 MONITORING METHODOLOGY

1-hour TSP Monitoring

The 1-hour TSP monitor was either a TSI Dust Track Aerosol Monitor Model 8520 which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90^{o} light scattering. The 1-hour TSP monitor consists 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 is used within the valid period as follow manufacturer's Operation and Service Manual.

24-hour TSP Monitoring

The equipment used for 24-hour TSP measurement is T TE-5170 TSP MFC Sampler System, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The High Volume Air Sampler (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 is 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). One point checking would carry out in two month interval while full point checking in every 6 month.

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

Noise Monitoring

Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (L_{eq}) measured in decibels (dB). Supplementary statistical results (L_{10} and L_{90}) were also obtained for reference.

Sound level meters listed in ***Table 3-5*** are complied with the *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications, as recommended in Technical Memorandum (TM) issued under the *Noise Control Ordinance (NCO)*.

During the monitoring, all noise measurements were performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $Leq_{(30min)}$ in six consecutive $Leq_{(5min)}$ measurements were used as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $Leq_{(15min)}$ in three consecutive $Leq_{(5min)}$ measurements is used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary.

During the measurement, the sound level meter is mounted on a tripod with a height of 1.2m above ground and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield is fitted for all measurements. The assessment point is normally set as free-field situation for the measurement.

Prior of noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The checking was performed before and after the noise measurement.

Water Quality

Water quality monitoring is conducted at the designated locations. The sampling produce with the in-situ monitoring are presented as below:

Sampling Procedure

A Digital Global Positioning System (GPS) is used to identify the designated monitoring stations prior to water sampling. A portable, battery-operated echo sounder is used for the determination of water depth at each station. At each station, marine water samples is collected at three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m. Samples at 1m below water surface and 1m above sea bottom are collected when the water depth is between 3m and 6m. Only 1 sample at mid-depth is taken when the water depth is below 3m.

The marine water sampler is lowered into the water body at the predetermined depth. The trigger system of the sampler should been activated with a messenger. The opening ends of the sampler then is closed accordingly and water sample is collected.

The sample container is rinsed with a portion of the water sample. The water sample then is transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.

Before commencement of the sampling, general information such as the date and time of sampling, weather condition and tidal condition as well as the personnel responsible for the monitoring are to be recorded on the monitoring field data sheet.

A 'Willow' 33-litter plastic cool box packed with ice is used to preserve the collected water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box is maintained at a temperature as close to 4^0C as possible without being frozen. Samples collected are delivered to the laboratory upon collection

In-situ Measurement

Positioning of Monitoring Locations

A digital Global Positioning System (GPS) is used during marine water monitoring to ensure the monitoring vessel is at the correct location when taking measurement and samples.

Depth, Dissolved Oxygen (DO), Temperature, Turbidity, Salinity and pH value

The *YSI Model 6820 Multi-parameter Water Quality Monitoring System* is used for marine water in-situ measures, which automates the measurements and data logging of depth, temperature, dissolved oxygen, dissolved oxygen saturation, turbidity, pH and salinity simultaneously. Before each round of monitoring, the dissolved oxygen probe is calibrated by the wet bulb method and the turbidity and salinity probes checked with distilled water.

Laboratory Analysis

All water samples are analyzed with Suspended Solids (SS) as specified in the *EM&A Manual* by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). SS analysis is determined by the laboratory upon receipt of the water samples using HOKLAS accredited analytical methods namely ALS Method EA-025. The HOKLAS accredited certificate of laboratory is provided in ***Annex F***.

3.6 EQUIPMENT CALIBRATION

Calibration of the HVS is performed upon installation in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A). The calibration data are properly documented and the records are maintained by ET for future reference.

The 1-hour TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment was checked before and after each monitoring event. In-house calibration with the High Volume Sampler (HVS) in same condition was undertaken in yearly basis.

The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.

The Multi-parameter Water Quality Monitoring System is calibrated by HOKLAS accredited laboratory of three month intervals.

All updated calibration certificates of the monitoring equipment used for the impact monitoring program in this Reporting Period are attached in ***Annex F***.

3.7 METEOROLOGICAL INFORMATION

The meteorological information during the construction phase is obtained from Tai Po and Shatin Stations of the Hong Kong Observatory (HKO).

3.8 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, noise meter and Multi-parameter Water Quality Monitoring System are 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.

3.9 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

According to the Final Report Environmental Monitoring and Audit Manual [2095/13.3], the air quality, construction noise and water quality criteria with Landscape and Visual Impact were set up, namely Action and Limit levels are listed in ***Tables 3-6, 3-7, 3-8*** and ***3-9*** as below.

Table 3-6 Action and Limit Levels for Air Quality Monitoring

Monitoring Stations	Action Level ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	1-hour	24-hour	1-hour	24-hour
A1	302	172	500	260

Table 3-7 Action and Limit Levels for Construction Noise

Time Period	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hours on normal weekdays	When one documented complaint is received	> 75* dB(A)

*Note: * Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.*

Table 3-8 Action and Limit Levels for Water Quality

Monitoring Location	DO (mg/L) (Surface & Mid)		DO (mg/L) (Bottom)		Turbidity (NTU) (Depth Averaged)		SS (mg/L) (Depth Averaged)	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
M1	2.73	1.61	NA	NA	5.73	6.44	8.00	8.77
M2	2.85	1.98	NA	NA	6.26	6.45	10.40	14.08
M3	2.51	1.62	NA	NA	5.10	5.64	4.00	4.00
M4	2.60	1.74	2.57	1.65	5.32	5.83	5.50	6.27
M5	1.94	1.45	NA	NA	8.01	8.7	31.55	48.09
M6	2.36	1.38	NA	NA	8.47	9.36	12.00	18.93
M7	1.98	1.57	NA	NA	7.11	7.24	7.85	10.31
M8	2.67	1.08	NA	NA	6.27	7.19	7.00	11.62

Notes:

- *"Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths;*
- *For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.*
- *For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.*

Table 3-9 Action Level for Landscape and Visual Impact in Construction Phase

Parameter	Action Level	Limit Level
Any trespass by the contractor outside the limit of the works, including any damage to existing trees, woodland and vegetation	• Non-conformity on one occasion • Repeated non-conformity	NA

Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan enclosed in ***Annex G***.

4 IMPACT MONITORING RESULTS

Further to the instruction by CRBC, the EM&A program was commenced on 20 October 2009 and the monitoring schedule of this reporting period and the forthcoming month are presented in ***Annex H***. The monitoring results are presented in the following sub-sections.

4.1 RESULTS OF AIR QUALITY MONITORING

In this reporting period, a total of **5** events of 24-hour TSP monitoring and **18** events of 1-hour TSP monitoring were undertaken. The results for air quality monitoring are summarized in ***Tables 4-1***. The 24-hour TSP data are shown in ***Annex I*** and the graphical plots of 24-hour and 1-hour TSP are shown in ***Annex J***.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
29-Jul-11	58	26-Jul-11	9:20	78	89	64
4-Aug-11	86	1-Aug-11	13:12	32	30	36
10-Aug-11	18	6-Aug-11	13:15	66	71	70
16-Aug-11	47	12-Aug-11	13:07	53	49	46
22-Aug-11	39	18-Aug-11	9:09	64	71	68
-	-	24-Aug-11	9:06	92	87	88
Average (Range)	**50 (18-86)**	Average (Range)		**64 (30– 92)**		

As shown in ***Tables 4-1***, all the monitoring results for 1-hour and 24-hour TSP were well below the Action/ Limit Level. No associated corrective actions were therefore required.

The meteorological data during the impact monitoring days are summarized in ***Annex K***.

4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

6 events of construction noise monitoring were undertaken in this Reporting Period. The noise monitoring results at the designated location (N1) are summarized in ***Table 4-2***. The sound level were measured as a free field situation, therefore, a façade correction of +3 dB(A) has been added accordance to acoustical principles of the EPD guidelines.

Table 4-2 Summary of Construction Noise Monitoring Results

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}	Corrected* Leq_{30min}
26-Jul-11	9:28	64.6	65.1	63.8	60.2	62.4	61.9	63.3	66.3
1-Aug-11	13:07	51.4	50.1	53.2	52.0	50.7	53.1	51.9	54.9
6-Aug-11	13:19	57.3	56.2	55.4	61.7	53.5	56.3	57.6	60.6
12-Aug-11	13:05	60.6	64.7	61.6	61.4	66.6	60.1	63.2	66.2
18-Aug-11	9:05	53.6	54.1	59.2	58.3	56.6	51.0	56.3	59.3
24-Aug-11	9:04	53.2	54.1	50.6	49.7	52.1	54.4	52.7	55.7

(*) A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines.

It was noted that no noise complaint (which is an Action Level exceedance) and exceedances were received in this reporting month. The monitoring result is shown in ***Tables 4-2*** and the graphical plot is shown in ***Annex J***.

4.3 RESULTS OF MARINE WATER QUALITY OF MONITORING

According to the information provided by the Contractor, the box culver was commenced on 8 June 2011. The concern monitoring at C1 and other four designed monitoring stations was commenced accordingly. After the stormwater drainage system was built, Starfish Bay and the sea zone of the project west and north (Tolo Harbour) are the potential impact area during construction phase as it would receive all the site runoff of the project. Therefore the control

stations C1 & C2 and eight designated monitoring stations M1-M8 were ongoing adopted to carry out impact monitoring in this Reporting Period in accordance with Section 4.5 of the Final EM&A Manual.

The monitoring results including in-situ measurements and laboratory testing results are provided in ***Annex I***. The graphical plots are shown in ***Annex J***.

During the Reporting Period, field measurements showed that marine water of the depth average of temperature was within **25.00 to 30.90**℃, the salinity concentration was within **28.41-32.99** ppt, and pH value was within **7.95 to 8.60.**

Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids in this Reporting Period, are summarized in ***Tables 4-3*** and ***4-6***.

Table 4-3 Summary of Water Quality Results – Ebb Tides (The Sea Zone of the Project West and North)

Sampling date	DO conc. of Depth Ave. of Surf. and Mid Layer (mg/L)				DO Conc. Bottom layer (mg/L)	Turbidity Depth Ave. (NTU)				SS Depth Ave. (mg/L)			
	M1	M2	M3	M4	M4	M1	M2	M3	M4	M1	M2	M3	M4
26-Jul-11	6.72	6.86	6.67	6.76	5.81	1.82	1.71	1.65	1.63	4.00	2.00	3.00	4.00
28-Jul-11	7.12	6.93	7.08	7.19	5.88	1.73	1.81	1.62	1.91	3.00	5.00	2.00	3.00
30-Jul-11	8.21	8.01	7.68	7.90	5.80	2.08	1.90	1.83	2.48	3.00	4.00	3.00	4.00
2-Aug-11	8.37	8.92	8.09	7.89	6.23	2.11	2.34	2.34	2.68	5.00	2.00	4.00	2.50
4-Aug-11	7.51	7.51	7.21	7.74	6.97	2.45	2.32	2.98	2.70	3.00	2.00	2.00	2.50
6-Aug-11	7.39	7.19	7.09	7.46	6.58	1.96	2.10	1.91	2.20	2.00	9.00	4.00	3.50
8-Aug-11	7.20	7.01	7.18	7.41	6.29	3.05	3.10	3.17	2.86	2.00	4.00	3.00	3.50
10-Aug-11	7.10	7.41	7.32	7.67	6.53	3.54	3.63	3.78	3.71	8.00	9.00	2.00	2.50
12-Aug-11	6.83	7.35	7.54	7.79	5.95	1.85	2.14	2.54	1.92	3.00	4.00	2.00	3.50
16-Aug-11	5.83	6.24	5.67	6.36	5.46	3.39	3.24	3.92	3.54	2.00	3.00	3.00	3.00
18-Aug-11	6.27	6.66	6.46	6.91	5.48	2.39	2.53	2.92	2.63	4.00	4.00	4.00	4.00
20-Aug-11	6.89	7.20	7.03	7.51	6.67	2.18	2.08	2.73	2.38	6.00	4.00	3.00	3.50
22-Aug-11	6.86	7.28	7.33	7.68	6.24	2.24	2.33	3.14	2.73	4.00	4.00	4.00	4.50
24-Aug-11	7.67	7.72	7.55	7.82	5.98	1.96	2.32	2.70	2.20	8.00	10.00	4.00	4.00

Table 4-4 Summary of Water Quality Results – Flood Tides (The Sea Zone of the Project West and North)

Sampling date	DO conc. of Depth Ave. of Surf. and Mid Layer (mg/L)				DO Conc. Bottom layer (mg/L)	Turbidity Depth Ave. (NTU)				SS Depth Ave. (mg/L)			
	M1	M2	M3	M4	M4	M1	M2	M3	M4	M1	M2	M3	M4
26-Jul-11	6.97	6.58	6.78	6.89	5.63	1.52	1.60	1.58	1.53	4.00	5.00	4.00	5.00
28-Jul-11	7.27	6.52	6.76	6.94	4.56	1.48	1.53	1.34	1.49	5.00	3.00	4.00	3.00
30-Jul-11	7.91	6.86	7.67	7.53	4.60	1.66	1.53	1.52	1.79	3.00	8.00	4.00	2.50
2-Aug-11	7.95	8.00	7.83	8.24	7.57	2.40	2.73	2.45	2.16	2.00	3.00	3.00	3.00
4-Aug-11	7.76	8.14	7.46	7.44	6.11	2.26	2.55	3.21	2.47	4.00	5.00	3.00	2.00
6-Aug-11	7.34	7.33	7.32	7.38	5.81	2.13	2.05	2.49	2.35	2.00	2.00	2.00	4.00
8-Aug-11	7.17	7.05	7.12	7.24	5.85	2.86	2.93	3.28	3.12	3.00	4.00	3.00	3.50
10-Aug-11	7.22	7.54	7.48	7.67	6.00	3.89	3.86	3.79	3.89	2.00	2.00	2.00	3.00
12-Aug-11	7.03	7.66	7.49	7.82	5.71	1.70	1.93	2.23	1.93	5.00	3.00	4.00	4.50
16-Aug-11	6.19	6.25	5.66	6.45	5.07	2.88	3.26	3.35	3.04	3.00	3.00	3.00	2.00

18-Aug-11	6.23	6.67	6.38	6.74	5.35	2.89	2.74	3.09	2.87	5.00	4.00	4.00	5.50
20-Aug-11	7.17	7.98	7.15	7.28	6.03	2.08	2.19	2.51	2.19	5.00	2.00	4.00	4.00
22-Aug-11	7.09	7.79	7.35	7.60	5.84	2.39	2.57	2.90	2.46	8.00	8.00	3.00	4.00
24-Aug-11	7.58	7.23	7.54	7.56	5.10	2.20	2.31	2.90	2.59	3.00	3.00	4.00	3.50

Table 4-5 Summary of Water Quality Results – Ebb Tides (The Sea Zone of the Starfish Bay)

Sampling date	DO conc. of Depth Ave. of Surf. and Mid Layer (mg/L)				Turbidity Depth Ave. (NTU)				SS Depth Ave. (mg/L)			
	M5	M6	M7	M8	M5	M6	M7	M8	M5	M6	M7	M8
26-Jul-11	6.97	6.84	6.97	6.51	1.58	1.66	1.54	1.55	3.00	5.00	2.00	4.00
28-Jul-11	7.23	7.09	7.22	6.91	1.62	1.52	1.72	1.67	4.00	3.00	2.00	3.00
30-Jul-11	8.08	7.97	7.97	7.64	1.46	1.77	1.52	1.54	6.00	6.00	4.00	4.00
2-Aug-11	7.89	8.47	7.85	7.89	2.82	2.94	2.43	2.64	2.00	2.00	2.00	2.00
4-Aug-11	7.75	7.78	7.55	7.54	2.58	2.41	2.24	2.81	4.00	2.00	2.00	2.00
6-Aug-11	7.50	7.51	7.29	7.26	2.07	1.86	1.99	1.92	2.00	2.00	5.00	4.00
8-Aug-11	7.61	7.55	7.02	7.32	3.09	2.88	3.22	3.23	2.00	3.00	2.00	4.00
10-Aug-11	7.51	7.44	7.30	7.33	3.73	3.54	3.83	3.89	2.00	3.00	3.00	2.00
12-Aug-11	7.40	7.22	7.19	7.22	1.68	1.76	1.62	1.66	2.00	4.00	5.00	4.00
16-Aug-11	6.47	6.49	6.30	6.21	3.54	3.40	3.65	3.54	3.00	3.00	2.00	3.00
18-Aug-11	6.68	6.85	6.59	6.76	2.36	2.50	2.57	2.65	5.00	5.00	4.00	3.00
20-Aug-11	7.46	7.50	7.22	7.35	2.19	2.09	2.03	2.42	2.00	4.00	4.00	4.00
22-Aug-11	7.43	7.33	7.20	7.27	2.53	2.36	2.40	2.68	6.00	4.00	4.00	3.00
24-Aug-11	7.83	7.72	7.67	7.50	1.93	1.82	1.93	2.01	4.00	5.00	4.00	4.00

Table 4-6 Summary of Water Quality Results – Flood Tides (The Sea Zone of the Starfish Bay)

Sampling date	DO conc. of Depth Ave. of Surf. and Mid Layer (mg/L)				Turbidity Depth Ave. (NTU)				SS Depth Ave. (mg/L)			
	M5	M6	M7	M8	M5	M6	M7	M8	M5	M6	M7	M8
26-Jul-11	6.35	6.62	6.64	6.76	1.45	1.56	1.47	1.48	5.00	5.00	7.00	3.00
28-Jul-11	6.55	7.35	6.71	7.25	1.52	1.37	1.46	1.43	3.00	4.00	4.00	3.00
30-Jul-11	7.71	8.24	7.63	8.10	1.77	1.56	1.76	1.63	3.00	5.00	2.00	3.00
2-Aug-11	8.44	8.31	8.10	8.04	2.36	1.92	2.63	2.94	2.00	2.00	2.00	2.00
4-Aug-11	7.39	7.74	7.45	7.31	2.97	2.67	2.62	2.95	2.00	2.00	2.00	2.00
6-Aug-11	7.25	7.46	7.28	7.25	2.26	2.37	2.15	2.18	2.00	4.00	3.00	2.00
8-Aug-11	7.42	7.50	7.46	7.23	3.35	3.16	3.27	3.40	5.00	3.00	4.00	2.00
10-Aug-11	7.34	7.66	7.37	7.61	3.83	3.83	3.95	3.42	2.00	2.00	2.00	2.00
12-Aug-11	7.30	7.48	7.36	7.89	2.03	1.97	1.88	2.08	3.00	3.00	4.00	3.00
16-Aug-11	6.47	6.49	6.41	5.92	2.84	3.06	2.93	2.97	3.00	2.00	6.00	5.00
18-Aug-11	6.65	6.53	6.56	6.46	2.84	2.72	2.89	3.07	5.00	6.00	3.00	4.00
20-Aug-11	7.18	7.35	7.12	6.99	2.46	2.28	2.36	2.48	3.00	4.00	2.00	4.00
22-Aug-11	7.25	7.43	7.26	7.53	2.23	2.18	2.23	2.58	9.00	5.00	3.00	4.00
24-Aug-11	7.53	7.92	7.49	7.88	2.21	2.10	2.33	2.43	3.00	3.00	2.00	4.00

A summary of exceedances for the three parameters: dissolved oxygen (DO), turbidity and suspended solids are shown in ***Table 4-7***.

Table 4-7 Summarized Exceedances of Marine Water Quality

Station	DO (Ave of Top & mid-depth)		Turbidity (Depth Ave.)		SS (Depth Ave)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
Mid-Ebb								
M1	0	0	0	0	0	0	0	0
M2	0	0	0	0	0	0	0	0
M3	0	0	0	0	0	0	0	0
M4	0	0	0	0	0	0	0	0
M5	0	0	0	0	0	0	0	0
M6	0	0	0	0	0	0	0	0
M7	0	0	0	0	0	0	0	0
M8	0	0	0	0	0	0	0	0
Mid-Flood								
M1	0	0	0	0	0	0	0	0
M2	0	0	0	0	0	0	0	0
M3	0	0	0	0	0	0	0	0
M4	0	0	0	0	0	0	0	0
M5	0	0	0	0	0	0	0	0
M6	0	0	0	0	0	0	0	0
M7	0	0	0	0	0	0	0	0
M8	0	0	0	0	0	0	0	0
No of Exceedance	0	0	0	0	0	0	0	0

For marine water monitoring, no exceedance of Action/Limit level was recorded in this reporting month. Based on temporary discharge drainage system and air quality mitigation measures, all waste water or runoff as come from the work site should not be discharged into natural streams and flow to the Starfish Bay, due to its was collected and reused for dust mitigation measures at the site. It is therefore no corrective action required.

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 are classified into the following:

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

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

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

Type of Waste	Quantity	Disposal Location
Reused in this Contract (Inert) (m^3)	3,534	Reuse in the contract
Reused in other Projects (Inert) (m^3)	0	-
Disposal as Public Fill (Inert) (m^3)	0	-

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	-
Recycled Paper / Cardboard Packing (kg)	0	-
Recycled Plastic (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (m^3)	30	NENT Landfill

There was no site effluent or surface runoff discharged in this monthly period.

6 SITE INSPECTION

According to the Final Report Environmental Monitoring and Audit Manual [2095/13.3], the environmental site inspection should be formulated by ET Leader. Regular environmental site inspections had been carried out by the Contractor and ER to confirm the environmental performance. During this Reporting Period, RE, IEC, the Contractor with ET carried out the joint site inspection on **19 August 2011** to evaluate the site environmental performance. No non-compliance was noted.

Observations for the site inspections and monthly audit within this Reporting Period are summarized in ***Table 6-1*** and inspection checklist is attached in ***Annex M***.

Table 6-1 Site Observations

Findings / Deficiencies	Follow-Up Status
Exposed slope without cover was observed, the contractor was reminded to provide tarpaulin sheet covering the exposed slope to prevent dust generation.	Action: A cover was provided Completed on 20-8-2011
Muddy water ponding was observed after heavy rainfall. The contractor was reminded to provide necessary pumping and desilting measures to treat the water before discharging.	Action: Stagnant water was drained Completed on 20-8-2011
Some waste materials were observed scattered at the site areas. Designated storage and sorting area should be assigned.	Action: The housekeeping has been improved Completed on 20-8-2011

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 table of environmental complaint is presented in ***Tables 7-1, 7-2*** and ***7-3***.

Table 7-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
26 November 2009 – 25 July 2011	0	0	NA
26 July 2011 – 25 August 2011	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
26 November 2009 – 25 July 2011	0	0	NA
26 July 2011 – 25 August 2011	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
26 November 2009 – 25 July 2011	0	0	NA
26 July 2011 – 25 August 2011	0	0	NA

8 IMPLEMENTATION STATUS OF MITIGATION MEASURES

The environmental mitigation measures that recommended in the Final Report Environmental Monitoring and Audit Manual [2095/13.3] covered the issues of dust, noise and waste and they are summarized as following:

Dust Mitigation Measure

(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 Measure

(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 minimise 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 minimize 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 minimized.

(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 utilized. 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 utilized, 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 in such manner as to minimize 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 minimize the generation of waste from his work. Avoidance and minimization 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 practiced 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.

CRBC had been implementing the required environmental mitigation measures according to the Final Report Environmental Monitoring and Audit Manual [2095/13.3] subject to the site condition. Environmental mitigation measures generally implemented by CRBC in this Reporting Period are summarized in ***Table 8-1***.

Table 8-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Wastewater were appropriately treated by treatment facilities; • Drainage channels were provided to convey run-off into the treatment facilities; and • Drainage systems were regularly and adequately maintained. • De-silting facility was provided to treat the discharged water; also the treated water is reused for spraying the road surface.
Air Quality	• Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; and • Tarpaulin covering of any dusty materials on a vehicle leaving the site. • Sprinkler of water spray system is provided at haul road to reduce dust emissions during the vehicles passing through the haul road • Wheel washing facility is provided at the site exit.
Noise	• Good site practices to limit noise emissions at the sources; • Use of quiet plant and working methods; • Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs; • Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs; • Scheduling of construction works outside school examination period in critical area; and • Alternative use of plant items within one worksite, where practicable.
Waste and Chemical Management	• Excavated material should be reused on site as far as possible to minimize 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; • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and • 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.

9 IMPLEMENTATION STATUS OF MITIGATION MEASURES

9.1 MAJOR FORTHCOMING ACTIVITIES

- Construction of retaining walls, Road D1(N), Road D1(W), drainage pipe, sewerage pipe, water main, rising main, box culvert and sewage pumping station
- Environmental monitoring
- Site formation

9.2 KEY ISSUES FOR THE COMING MONTH

Key issues to be considered in the coming month include:

- Implementation of dust suppression measures at all times;
- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Disposal of empty engine oil containers within site area;
- Ensure dust suppression measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Discharge of site effluent to the nearby wetland, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures

10 CONCLUSIONS AND RECOMMENTATIONS

10.1 CONCLUSIONS

This is the **23rd** monthly EM&A report, covering the construction period from **26 July 2011** to **25 August 2011** (the Reporting Period).

No construction noise complaint (an Action Level exceedance) was received and no exceedance was recorded in construction noise monitoring in this Reporting Period.

No 1-hour and 24-hour TSP monitoring results that triggered the Action or Limit Level were recorded in this Reporting Period.

No marine water monitoring results that triggered the Action or Limit Level in this Reporting Period. Therefore, no associated corrective actions were then required.

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

A site inspection was carried out jointly by ER, IEC, Contractor and ET on **19 August 2011**. No non-compliance was observed during the inspection. In general, it was reminded that housekeeping shall be improved such as proper dispose of the C&D waste and general refuse within the construction site; stagnant water cumulated on site should be drained off; exposed slope should be provide mitigation measure to prevent dust generation. The environmental performance of the Project was therefore considered satisfactory.

In this Reporting Period, no site visit by EPD/ AFCD was recorded.

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.

10.2 RECOMMENDATIONS

As rainy season, muddy water or other water pollutants from site surface runoff into the sea body will be key environment issue. Mitigation measures for water quality control should be paid attention as necessary.

For the dust control and construction noise aspects, mitigation measures described in Mitigation Measure Implementation Schedule, should also be properly followed to avoid generating any potential adverse impacts from the construction activities.

To control the site performance on waste management, CRBC 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 license and the chemical waste producer registration. CRBC is also reminded to implement the recommended environmental mitigation measures according to the Final Report Environmental Monitoring and Audit Manual [2095/13.3].

Annex A

Project Site Layout Plan

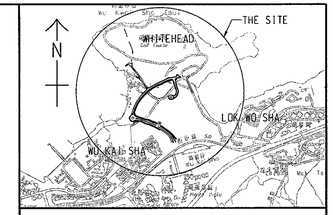
842 500 E
843000 E
843500 E
833 000 N
832 500 N
832 000 N

N

SHEET 5 OF 5
SHEET 3 OF 5
SHEET 4 OF 5
SHEET 1 OF 5
SHEET 2 OF 5

PROPOSED BOX CULVERT
PROPOSED SEWAGE PUMPING STATION
PROPOSED ROAD D1(N)
REALIGNMENT OF EXISTING ROAD
PROPOSED LOCAL ROAD L3
PROPOSED ROAD-D1(W)
MTR RAILWAY PROTECTION BOUNDARY
INSET A
INSET B

WHITEHEAD
TOLO HARBOUR
STARFISH BAY
G/IC SITE
SITE LWS-B
RESIDENTIAL DEVELOPMENT AT VARIOUS LOTS IN DD202, LOK WO SHA, MA ON SHAN
CHEUNG KANG VILLAGE
WU KAI SHA VILLAGE
KAM SHAN VILLAGE
WU KAI SHA KCRC STATION
MA ON SHAN STREET
SHUN WAN ROAD
LOK WO SHA LANE
CHEUNG MUK TAU



LOCATION PLAN
SCALE 1 : 20000

REV 修訂	DESCRIPTION 內容修訂	CHECKED 檢核	DATE 日期
-	TENDER DRAWING	SSKK PLCK	MAR.09

Civil Engineering and Development Department
土木工程拓展署
NT EAST DEVELOPMENT OFFICE
新界東拓展處

CEDD

MA ON SHAN DEVELOPMENT

ROADS, DRAINAGE AND SEWERAGE WORKS AT WHITEHEAD AND LOK WO SHA PHASE 1

KEY AND LOCATION PLAN

MAUNSELL | AECOM
Maunsell Consultants Asia Ltd.
茂盛(亞洲)工程顧問有限公司

DRG.NO. 圖紙編號	60022908/1001
DESIGNED BY 設計 SS	CONTRACT NO. 合約編號 ST/2008/02
P. Dir. APPROVED 核准人	
DRAWN BY 繪圖 WQ	STATUS 階段
SCALE 比例 A1 1 : 2500	
DIMENSIONS ARE IN 尺寸單位 METER	© COPYRIGHT RESERVED 版權所有

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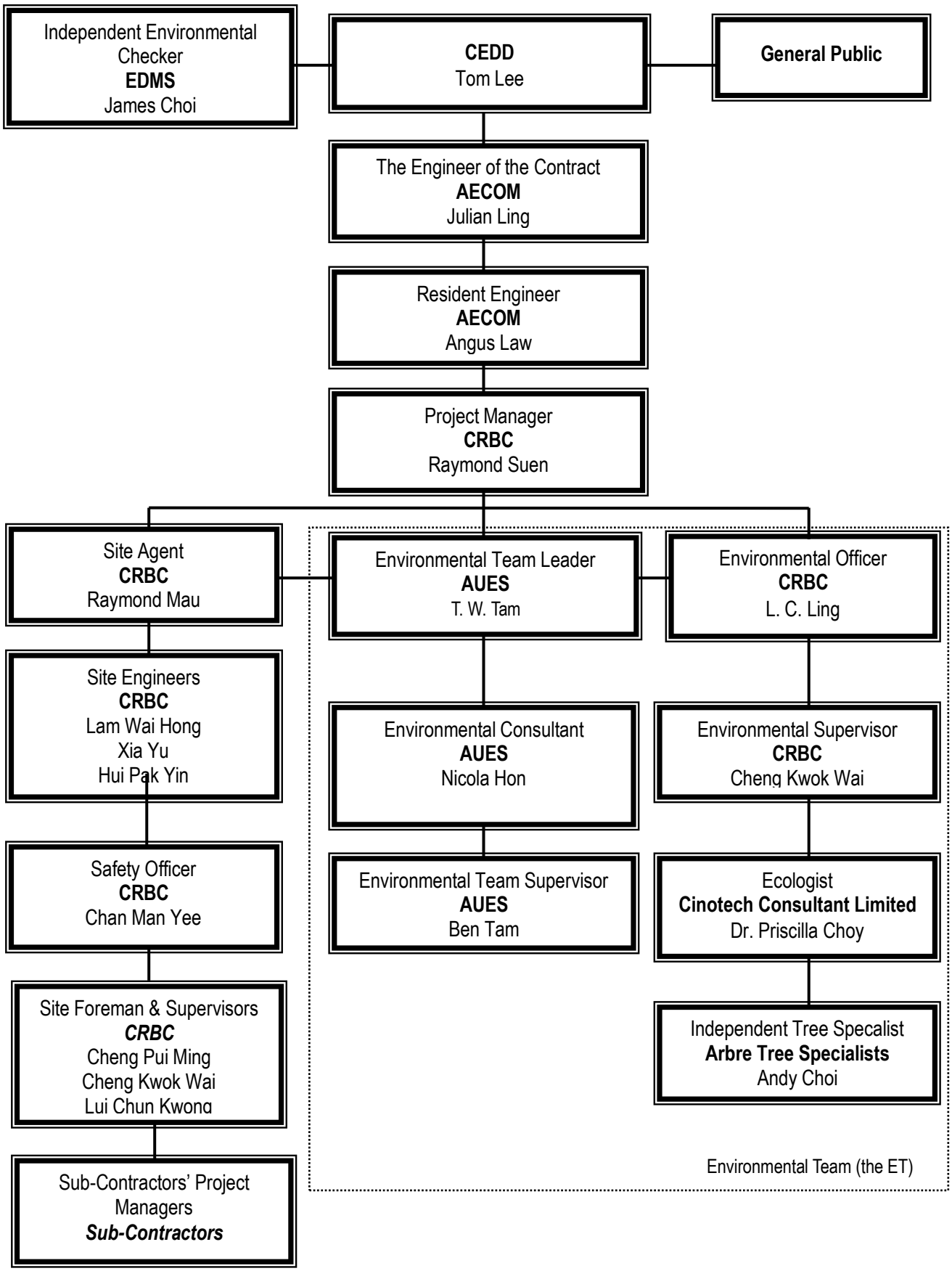
Annex B

Organization Structure
and
Contact Details of the CRBC & Relevant Parties


Independent Environmental Checker
EDMS
James Choi
CEDD
Tom Lee
General Public
The Engineer of the Contract
AECOM
Julian Ling
Resident Engineer
AECOM
Angus Law
Project Manager
CRBC
Raymond Suen
Site Agent
CRBC
Raymond Mau
Environmental Team Leader
AUES
T. W. Tam
Environmental Officer
CRBC
L. C. Ling
Site Engineers
CRBC
Lam Wai Hong
Xia Yu
Hui Pak Yin
Environmental Consultant
AUES
Nicola Hon
Environmental Supervisor
CRBC
Cheng Kwok Wai
Safety Officer
CRBC
Chan Man Yee
Environmental Team Supervisor
AUES
Ben Tam
Ecologist
Cinotech Consultant Limited
Dr. Priscilla Choy
Site Foreman & Supervisors
CRBC
Cheng Pui Ming
Cheng Kwok Wai
Lui Chun Kwong
Independent Tree Specalist
Arbre Tree Specialists
Andy Choi
Sub-Contractors' Project Managers
Sub-Contractors
Environmental Team (the ET)

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Employer	Mr. Tom Lee	2301-1317	2739-0076
AECOM	The Engineer of the Contract	Julian Ling	2631-7796	2631-7226
AECOM	Engineer's Representative	Mr. Angus Law	2631-7796	2631-7226
EDMS	Independent Environmental Checker	Mr. James Choi	2869-6018	3007-8556
CRBC	Project Director	Mr. Wang Yanhua	2283-1688	2283-1689
CRBC	Project Manager	Mr. Raymond Suen	9779-8871	2631-8993
CRBC	Site Agent	Mr. Raymond Mau	9048-3669	2631-8993
CRBC	Site Engineer	Mr. Lam Wai Hong	2631-8823	2631-8993
CRBC	Site Engineer	Mr. Xia Yu	2631-8823	2631-8993
CRBC	Site Engineer	Mr. Hui Pak Yin	2631-8823	2631-8993
CRBC	Environmental Officer	Mr. L.C. Ling	9858-1378	2631-8993
CRBC	Environmental Supervisor	Mr. Cheng Kwok Wai	2631-8823	2631-8993
CRBC	Safety Officer	Ms. Chan Man Yee	2631-8823	2631-8993
CRBC	Assistant Safety Officer	Ms. Wong Yih Tin	2631-8823	2631-8993
AUES	Environmental Team Leader	Mr. T. W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959-6059	2959-6079
AUES	Team Supervisor	Mr. Ben Tam	2959-6059	2959-6079
ATS	Independent Tree Specialist	Andy Choi	9461-7173	-
CCL	Ecologist	Dr. Priscilla Choy	2151-2083	3107-1388

Legend:

CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM

CRBC (Main Contractor) – China Road and Bridge Corporation

EDMS (IEC) – EDMS Consulting Limited

AUES (ET) – Action-United Environmental Services & Consulting

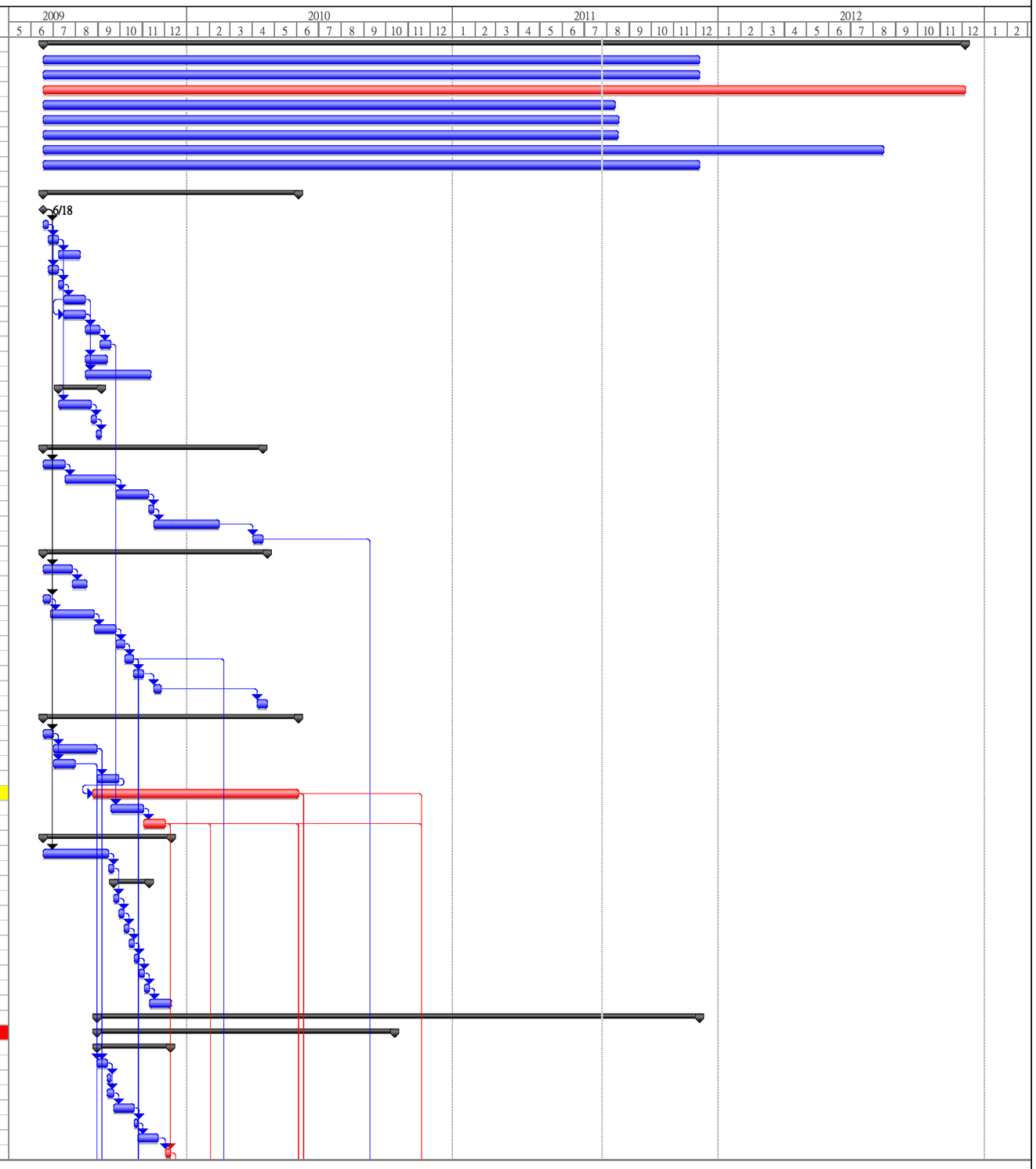
Annex C

Master and Three-Month Rolling Construction Programs

Contract No. ST/2008//02
Ma On Shan Development - Road, Drainage and Sewerage Works at Whitehead and Lok Wo Sha Phase 1

Master Programme Rev.9.0

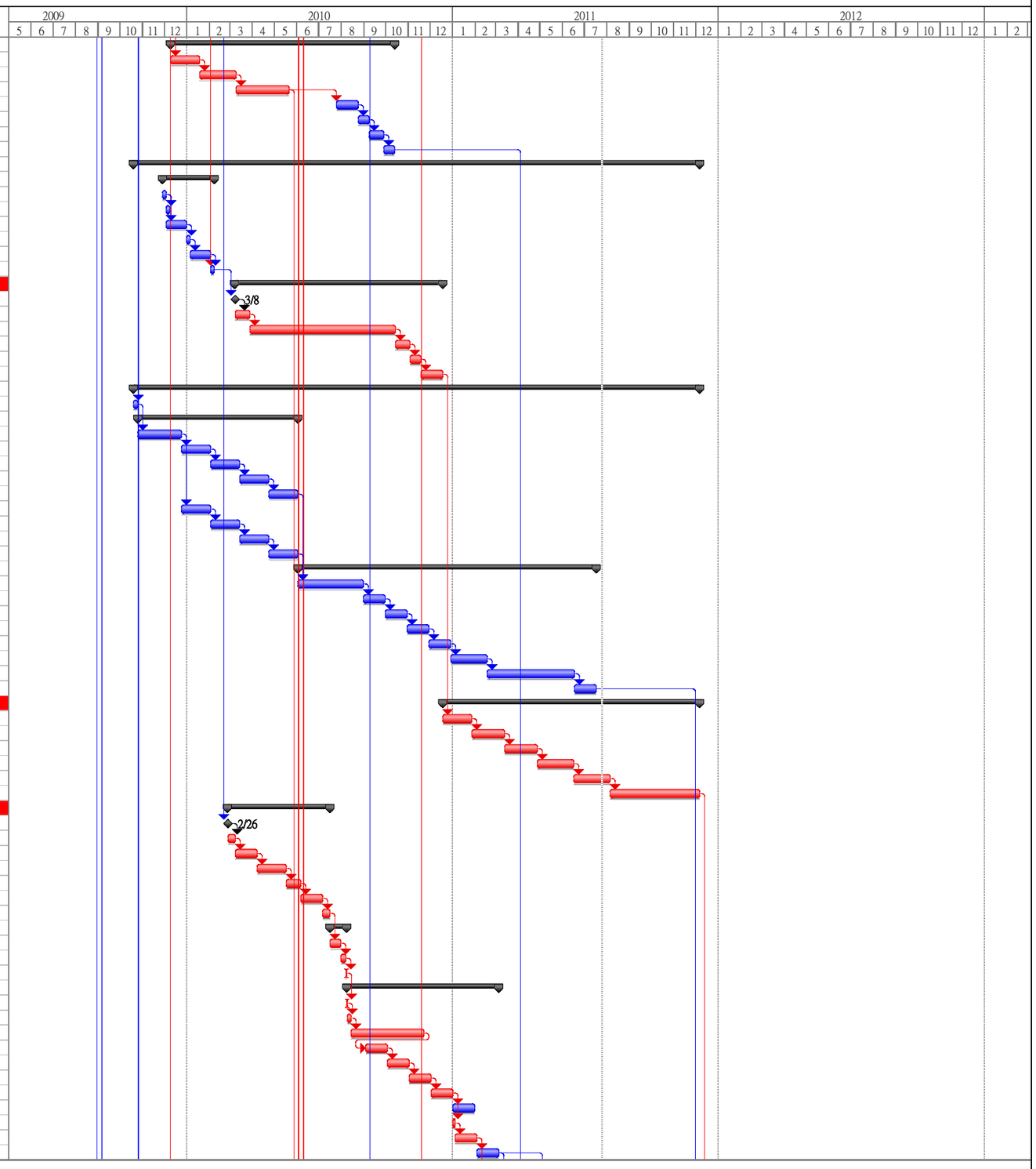
ID	Task Name	Duration	Start	Finish	Predecessors
1	**Project key date**	**1267 days**	**Thu 09/6/18**	**Wed 12/12/5**	
2	Section I	902 days	Thu 09/6/18	Tue 11/12/6	
3	Section IA	902 days	Thu 09/6/18	Tue 11/12/6	
4	Section IB	1267 days	Thu 09/6/18	Wed 12/12/5	
5	Section II (Subject to Excision No:01)	786 days	Thu 09/6/18	Fri 11/8/12	
6	Section III (Subject to Excision No: 02)	791 days	Thu 09/6/18	Wed 11/8/17	
7	Section IV (Subject to Excision No: 03)	790 days	Thu 09/6/18	Tue 11/8/16	
8	Section IVA (Subject to Excision No: 04)	1155 days	Thu 09/6/18	Wed 12/8/15	
9	Section V	902 days	Thu 09/6/18	Tue 11/12/6	
10					
11	**Preliminary Works**	**351 days**	**Thu 09/6/18**	**Thu 10/6/3**	
12	Commencement Date	0 days	Thu 09/6/18	Thu 09/6/18	
13	Mobilization works	7 days	Thu 09/6/18	Wed 09/6/24	12
14	General site clearance	14 days	Thu 09/6/25	Wed 09/7/8	13
15	Hoarding erection at Office Area	30 days	Thu 09/7/9	Fri 09/8/7	14
16	Submission and approval of RE's office	14 days	Thu 09/6/25	Wed 09/7/8	13
17	Delivery of material for RE's office	7 days	Thu 09/7/9	Wed 09/7/15	16
18	Establishment of RE office	30 days	Thu 09/7/16	Fri 09/8/14	17
19	Establishment of contractor office	30 days	Thu 09/7/16	Fri 09/8/14	18SS
20	Establishment of TMLG	20 days	Sat 09/8/15	Thu 09/9/3	19,18
21	Submission of TTA and approval	15 days	Fri 09/9/4	Fri 09/9/18	20
22	Establishment of SLG	30 days	Sat 09/8/15	Sun 09/9/13	19
23	Material submission, approval and delivery	90 days	Sat 09/8/15	Thu 09/11/12	19
24	**Survey of the site**	**59 days**	**Thu 09/7/9**	**Sat 09/9/5**	
25	Carrying out initial surveys and setting out Site boundaries	45 days	Thu 09/7/9	Sat 09/8/22	14
26	Structural survey record	7 days	Sun 09/8/23	Sat 09/8/29	25
27	Recording existing condition in the vicinity of the Site	7 days	Sun 09/8/30	Sat 09/9/5	26
28	**Archaeological survey at D1(W)**	**302 days**	**Thu 09/6/18**	**Thu 10/4/15**	
29	Submit specialist for archaeological survey and approval	30 days	Thu 09/6/18	Fri 09/7/17	12
30	Apply License to Excavate and Search for Antiquities	70 days	Sat 09/7/18	Fri 09/9/25	29
31	Carry out archaeological survey	45 days	Sat 09/9/26	Mon 09/11/9	30
32	Backfill the confirmatory trial pit	7 days	Tue 09/11/10	Mon 09/11/16	31
33	Submission of Draft Archaeological survey report for AMO's comment	90 days	Tue 09/11/17	Sun 10/2/14	32
34	Submission of Final Archaeological survey report	14 days	Fri 10/4/2	Thu 10/4/15	33
35	**Environmental works**	**308 days**	**Thu 09/6/18**	**Wed 10/4/21**	
36	Submit EMP and WMP for approval	40 days	Thu 09/6/18	Mon 09/7/27	12
37	Propose website layout for reporting of EM&A information for approval	20 days	Tue 09/7/28	Sun 09/8/16	36
38	Propose specialist for baseline monitoring and approval	10 days	Thu 09/6/18	Sat 09/6/27	12
39	Propose Methodology of baseline and approval	60 days	Sun 09/6/28	Wed 09/8/26	38
40	Carry out baseline monitoring	30 days	Thu 09/8/27	Fri 09/9/25	39
41	Submission of Baseline report for ICE's endorsement	12 days	Sat 09/9/26	Wed 09/10/7	40
42	Obtain consent from EPD for designated Non Woodland Area	12 days	Thu 09/10/8	Mon 09/10/19	41
43	Erect hoarding around the fung shui woodland at D1	14 days	Tue 09/10/20	Mon 09/11/2	42
44	Erection of protective measures around existing grave at D1(W)	10 days	Tue 09/11/17	Thu 09/11/26	43
45	Erection of protective hoarding around Wu Kai Sha Village Well at D1(W)	14 days	Thu 10/4/8	Wed 10/4/21	44
46	**Landscape works**	**351 days**	**Thu 09/6/18**	**Thu 10/6/3**	
47	Propose specialist for tree survey and approval	14 days	Thu 09/6/18	Wed 09/7/1	12
48	Carry out tree survey	60 days	Thu 09/7/2	Sun 09/8/30	47
49	Propose methodology for tree transplanting works for approval	30 days	Thu 09/7/2	Fri 09/7/31	47
50	Submission of tree survey report and LMP for IEC's endorsement	30 days	Mon 09/8/31	Tue 09/9/29	48
51	Obtain consent from EPD for designated Woodland Project Area	282 days	Tue 09/8/25	Thu 10/6/3	50
52	XP application at Sha On Street	45 days	Sat 09/9/19	Mon 09/11/2	21
53	Preparation of planting area for transplanted trees	30 days	Tue 09/11/3	Wed 09/12/2	52
54	**Ground Investigation Works**	**176 days**	**Thu 09/6/18**	**Thu 09/12/10**	
55	Propose specialist and methodology for SI works	90 days	Thu 09/6/18	Tue 09/9/15	12
56	Mobilization of plants and set up	7 days	Wed 09/9/16	Tue 09/9/22	55
57	**Carry out SI works**	**49 days**	**Wed 09/9/23**	**Tue 09/11/10**	
58	ADH4	7 days	Wed 09/9/23	Tue 09/9/29	56
59	ADH5	7 days	Wed 09/9/30	Tue 09/10/6	58
60	ADH6	7 days	Wed 09/10/7	Tue 09/10/13	59
61	ADH7	7 days	Wed 09/10/14	Tue 09/10/20	60
62	ADH2	7 days	Wed 09/10/21	Tue 09/10/27	61
63	ADH3	7 days	Wed 09/10/28	Tue 09/11/3	62
64	ADH1	7 days	Wed 09/11/4	Tue 09/11/10	63
65	Submission of draft and final report	30 days	Wed 09/11/11	Thu 09/12/10	64
66	**Section I Works (Works at Portion 1)**	**828 days**	**Mon 09/8/31**	**Tue 11/12/6**	
67	**V.O. 007 - Works at Retaining Wall no. 6**	**409 days**	**Mon 09/8/31**	**Wed 10/10/13**	
68	**Tree Transplant**	**101 days**	**Mon 09/8/31**	**Wed 09/12/9**	
69	Mobilization of plants	14 days	Mon 09/8/31	Sun 09/9/13	49,48
70	Tree - Crown pruning	5 days	Mon 09/9/14	Fri 09/9/18	69
71	Tree - Root pruning 1st stage - Pruning	9 days	Mon 09/9/14	Tue 09/9/22	69
72	Tree - Root pruning 1st stage - Wait	28 days	Wed 09/9/23	Tue 09/10/20	71
73	Tree - Root pruning 2nd stage - Pruning	5 days	Wed 09/10/21	Sun 09/10/25	72
74	Tree - Root pruning 2nd stage - Wait	28 days	Mon 09/10/26	Sun 09/11/22	73
75	Tree - Transplant	7 days	Thu 09/12/3	Wed 09/12/9	74,53



ST/2008/02
Date:Mon 11/7/25

Task Critical Task Milestone Summary

ID	Task Name	Duration	Start	Finish	Predecessors
76	**RW6 (CH0.00 - CH104.40)**	**308 days**	**Thu 09/12/10**	**Wed 10/10/13**	
77	Temporary Works	40 days	Thu 09/12/10	Mon 10/1/18	75
78	Bay RW6-5 (CH29.6 - CH48.3)	50 days	Tue 10/1/19	Tue 10/3/9	77
79	Bay RW6-6 (CH48.3 - CH75.7)	73 days	Wed 10/3/10	Fri 10/5/21	78
80	Bay RW6-7 (CH75.7 - CH83.7)	30 days	Mon 10/7/26	Tue 10/8/24	79
81	Bay RW6-4 (CH21.15 - CH29.6)	15 days	Wed 10/8/25	Wed 10/9/8	80
82	Bay RW6-8 (CH83.7 - CH89.0)	20 days	Thu 10/9/9	Tue 10/9/28	81
83	Bay RW6-3 (CH6.4 - CH11.7)	15 days	Wed 10/9/29	Wed 10/10/13	82
84	**Works at Box Culvert**	**778 days**	**Tue 09/10/20**	**Tue 11/12/6**	
85	**Tree Transplant**	**71 days**	**Sun 09/11/29**	**Sun 10/2/7**	
86	Tree - Crown pruning	5 days	Sun 09/11/29	Thu 09/12/3	
87	Tree - Root pruning 1st stage - Pruning	5 days	Fri 09/12/4	Tue 09/12/8	86
88	Tree - Root pruning 1st stage - Wait	28 days	Fri 09/12/4	Thu 09/12/31	86
89	Tree - Root pruning 2nd stage - Pruning	5 days	Fri 10/1/1	Tue 10/1/5	88
90	Tree - Root pruning 2nd stage - Wait	28 days	Wed 10/1/6	Tue 10/2/2	89
91	Tree - Transplant	5 days	Wed 10/2/3	Sun 10/2/7	90,53
92	**Temporary Slope Works for V.O.5**	**286 days**	**Mon 10/3/8**	**Sat 10/12/18**	
93	V.O 5 issued by ER	1 day	Mon 10/3/8	Mon 10/3/8	91
94	Temp Work design and submission for approval	20 days	Tue 10/3/9	Sun 10/3/28	93
95	Excavation work for Box Culvert for CH195 to CH270	200 days	Mon 10/3/29	Thu 10/10/14	94
96	Erect scafford for rock map analysis	20 days	Fri 10/10/15	Wed 10/11/3	95
97	Slope inspection and verification works	15 days	Thu 10/11/4	Thu 10/11/18	96
98	Map rock analysis	30 days	Fri 10/11/19	Sat 10/12/18	97
99	**Construction of Box Culvert**	**778 days**	**Tue 09/10/20**	**Tue 11/12/6**	
100	Mobilization of plant	6 days	Tue 09/10/20	Sun 09/10/25	42
101	**Stage 1 (Bay 23 to Bay 30)**	**220 days**	**Mon 09/10/26**	**Wed 10/6/2**	
102	Excavation Works	60 days	Mon 09/10/26	Thu 09/12/24	100
103	Bay 30 (CH435.00 - CH450.00)	40 days	Fri 09/12/25	Tue 10/2/2	102
104	Bay 29 (CH420.00 - CH435.00)	40 days	Wed 10/2/3	Sun 10/3/14	103
105	Bay 28 (CH405.00 - CH420.00)	40 days	Mon 10/3/15	Fri 10/4/23	104
106	Bay 27 (CH390.00 - CH405.00)	40 days	Sat 10/4/24	Wed 10/6/2	105
107	Bay 26 (CH375.00 - CH390.00)	40 days	Fri 09/12/25	Tue 10/2/2	102
108	Bay 25 (CH360.00 - CH375.00)	40 days	Wed 10/2/3	Sun 10/3/14	107
109	Bay 24 (CH345.00 - CH360.00)	40 days	Mon 10/3/15	Fri 10/4/23	108
110	Bay 23 (CH330.00 - CH345.00)	40 days	Sat 10/4/24	Wed 10/6/2	109
111	**Stage 2 (Bay 19 to Bay 22, Bay 31, 32 & Outfall)**	**410 days**	**Thu 10/6/3**	**Sun 11/7/17**	
112	Excavation Works	90 days	Thu 10/6/3	Tue 10/8/31	110,106
113	Bay 21 (CH300.00 - CH315.00)	30 days	Wed 10/9/1	Thu 10/9/30	112
114	Bay 20 (CH285.00 - CH300.00) s	30 days	Fri 10/10/1	Sat 10/10/30	113
115	Bay 19 (CH270.00 - CH285.00) s	30 days	Sun 10/10/31	Mon 10/11/29	114
116	Bay 22 (CH315.00 - CH330.00)	30 days	Tue 10/11/30	Wed 10/12/29	115
117	Bay 31 (CH450.00 - CH465.00)	50 days	Thu 10/12/30	Thu 11/2/17	116
118	Bay 32 (CH465.00 - CH480.00)	120 days	Fri 11/2/18	Fri 11/6/17	117
119	Outfall (CH480.00 - CH493.285)	30 days	Sat 11/6/18	Sun 11/7/17	118
120	**V.O.5 - Stage 3 (Bay 14 to Bay 18)**	**353 days**	**Sun 10/12/19**	**Tue 11/12/6**	
121	Bay 18 (CH255.00 - CH270.00) s	40 days	Sun 10/12/19	Thu 11/1/27	98
122	Bay 17 (CH240.00 - CH255.00) s	45 days	Fri 11/1/28	Sun 11/3/13	121
123	Bay 16 (CH225.00 - CH240.00) s	45 days	Mon 11/3/14	Wed 11/4/27	122
124	Bay 15 (CH210.00 - CH225.00) s	50 days	Thu 11/4/28	Thu 11/6/16	123
125	Bay 14 (CH195.00 - CH210.00) s	50 days	Fri 11/6/17	Fri 11/8/5	124
126	Backfill to reinstate	123 days	Sat 11/8/6	Tue 11/12/6	125
127	**V.O.17 - End Detail**	**141 days**	**Fri 10/2/26**	**Fri 10/7/16**	
128	Advance information of End Box Details	1 day	Fri 10/2/26	Fri 10/2/26	42
129	Temp work design and submission for approval	10 days	Sat 10/2/27	Mon 10/3/8	128
130	Temp. Work Construction	30 days	Tue 10/3/9	Wed 10/4/7	129
131	Construction of Revised Box End	40 days	Thu 10/4/8	Mon 10/5/17	130
132	Laying of Proposed Drainage Pipe to Box End	20 days	Tue 10/5/18	Sun 10/6/6	131
133	Backfilling and compaction	30 days	Mon 10/6/7	Tue 10/7/6	132
134	Removal of temp support for Box End	10 days	Wed 10/7/7	Fri 10/7/16	133
135	**Construction of Temporary road to To Tau Village**	**23 days**	**Sat 10/7/17**	**Sun 10/8/8**	
136	Construction of Temp. Access Road to To Tau Village	15 days	Sat 10/7/17	Sat 10/7/31	134
137	Temp. Lighting Installtion	7 days	Sun 10/8/1	Sat 10/8/7	136
138	Implement of TTA to To Tau Village	1 day	Sun 10/8/8	Sun 10/8/8	137
139	**Stage 4 (Bay 1 to Bay 7)**	**209 days**	**Mon 10/8/9**	**Sat 11/3/5**	
140	UU Detection	1 day	Mon 10/8/9	Mon 10/8/9	138
141	Breaking up and Excavation of A.H.M	5 days	Tue 10/8/10	Sat 10/8/14	140
142	Temp. Supporting System for Box Culvert	100 days	Sun 10/8/15	Mon 10/11/22	141
143	Bay 2 (CH15.00 - CH30.00)	30 days	Sat 10/9/4	Sun 10/10/3	142FS-80 days
144	Bay 3 (CH30.00 - CH45.00)	30 days	Mon 10/10/4	Tue 10/11/2	143
145	Bay 4 (CH45.00 - CH60.00)	30 days	Wed 10/11/3	Thu 10/12/2	144
146	Bay 1 (CH0.00 - CH15.00)	30 days	Fri 10/12/3	Sat 11/1/1	145
147	Bay 5 (CH60.00 - CH75.00)	30 days	Sun 11/1/2	Mon 11/1/31	146
148	Access Road Diversion to To Tau Village	3 days	Sun 11/1/2	Tue 11/1/4	146
149	Bay 6 (CH75.00 - CH90.00)	30 days	Wed 11/1/5	Thu 11/2/3	148
150	Bay 7 (CH90.00 - CH105.00)	30 days	Fri 11/2/4	Sat 11/3/5	149



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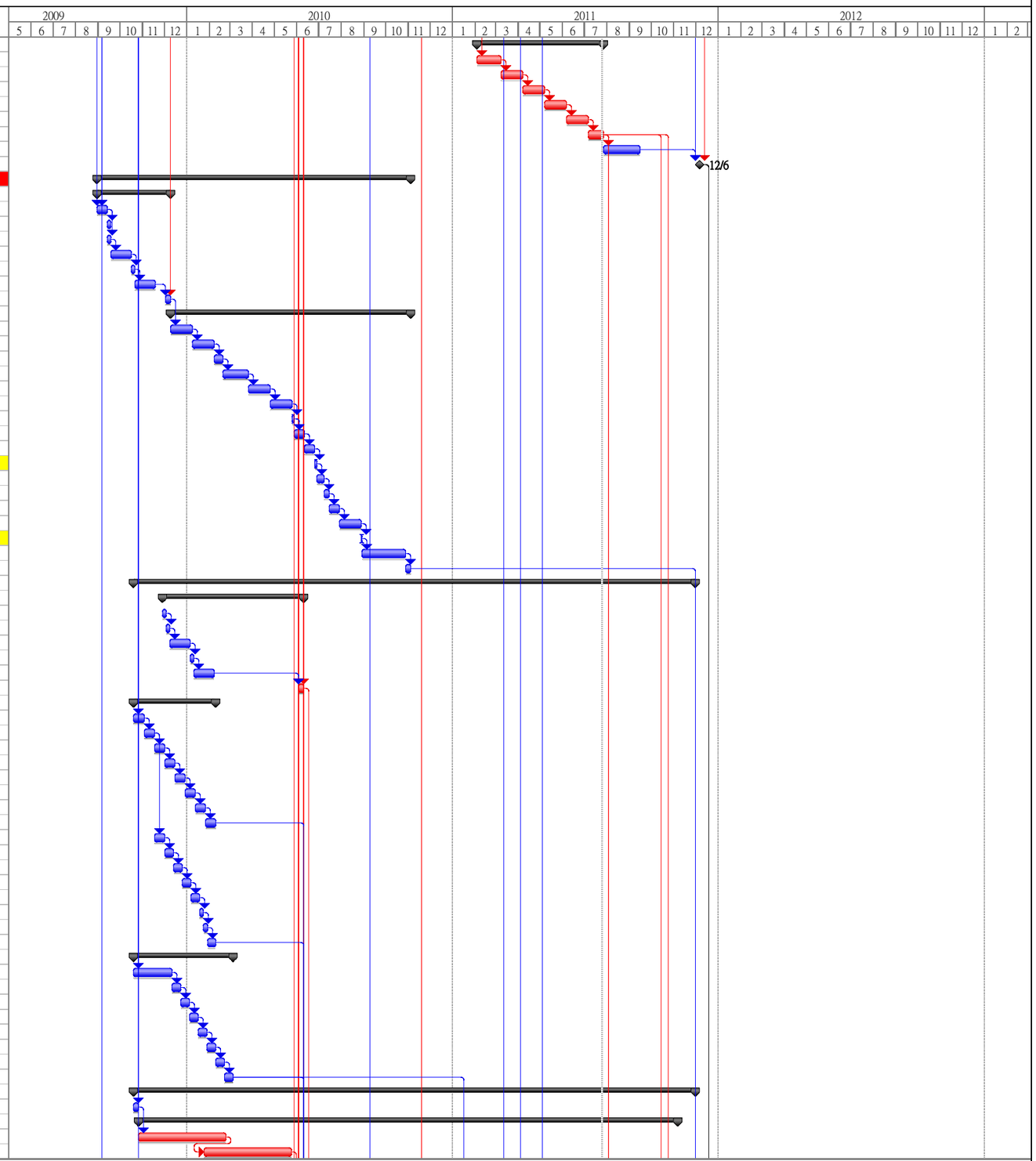
Task Critical Task Milestone Summary

ID	Task Name	Duration	Start	Finish	Predecessors
151	**Stage 5 (Bay 8 to Bay 13)**	**174 days**	**Fri 11/2/4**	**Wed 11/7/27**	
152	Bay 8 (CH105.00 - CH120.00)	33 days	Fri 11/2/4	Tue 11/3/8	149
153	Bay 9 (CH120.00 - CH135.00)	30 days	Wed 11/3/9	Thu 11/4/7	152
154	Bay 10 (CH135.00 - CH150.00)	30 days	Fri 11/4/8	Sat 11/5/7	153
155	Bay 11 (CH150.00 - CH165.00)	30 days	Sun 11/5/8	Mon 11/6/6	154
156	Bay 12 (CH165.00 - CH180.00)	30 days	Tue 11/6/7	Wed 11/7/6	155
157	Bay 13 (CH180.00 - CH195.00)	21 days	Thu 11/7/7	Wed 11/7/27	156
158	Misc Works	50 days	Thu 11/7/28	Thu 11/9/15	157
159	**Completion of Box Culvert**	**0 days**	**Tue 11/12/6**	**Tue 11/12/6**	**126,119,158**
160	**V.O. 003 - Re-alignment of existing road**	**431 days**	**Mon 09/8/31**	**Thu 10/11/4**	
161	**Tree Transplant**	**101 days**	**Mon 09/8/31**	**Wed 09/12/9**	
162	Mobilization of plants	14 days	Mon 09/8/31	Sun 09/9/13	49,48
163	Tree - Crown pruning	5 days	Mon 09/9/14	Fri 09/9/18	162
164	Tree - Root pruning 1st stage - Pruning	5 days	Mon 09/9/14	Fri 09/9/18	162
165	Tree - Root pruning 1st stage - Wait	28 days	Sat 09/9/19	Fri 09/10/16	164
166	Tree - Root pruning 2nd stage - Pruning	5 days	Sat 09/10/17	Wed 09/10/21	165
167	Tree - Root pruning 2nd stage - Wait	28 days	Thu 09/10/22	Wed 09/11/18	166
168	Tree - Transplant	7 days	Thu 09/12/3	Wed 09/12/9	167,53
169	**Road Works**	**330 days**	**Thu 09/12/10**	**Thu 10/11/4**	
170	Utility coordination meeting	30 days	Thu 09/12/10	Fri 10/1/8	168
171	Diversion of existing CLP transformer	30 days	Sat 10/1/9	Sun 10/2/7	170
172	Laying of 1200dia. Concrete pipe	12 days	Mon 10/2/8	Fri 10/2/19	171
173	Minor Earthwork for road formation	35 days	Sat 10/2/20	Fri 10/3/26	172
174	Construction of watermain (beside proposed road)	30 days	Sat 10/3/27	Sun 10/4/25	173
175	Construction of proposed concrete road	30 days	Mon 10/4/26	Tue 10/5/25	174
176	Implement of TTA	3 days	Wed 10/5/26	Fri 10/5/28	175
177	Connection of proposed road to existing	14 days	Sat 10/5/29	Fri 10/6/11	176
178	Curing time for last pour concrete road surface	14 days	Sat 10/6/12	Fri 10/6/25	177
179	Open realignment access road to public (1st stage of access road diversion)	3 days	Sat 10/6/26	Mon 10/6/28	178
180	Construction of watermain (existing road)	10 days	Tue 10/6/29	Thu 10/7/8	179
181	Pressure test and swabbing of watermain	7 days	Fri 10/7/9	Thu 10/7/15	180
182	Sterlization and water sample	14 days	Fri 10/7/16	Thu 10/7/29	181
183	Connection of watermain by WSD	30 days	Fri 10/7/30	Sat 10/8/28	182
184	Re-open existing access road to public (2nd stage of access road diversion)	1 day	Sun 10/8/29	Sun 10/8/29	183
185	Diversion of Existing consumer pipes by WSD	60 days	Mon 10/8/30	Thu 10/10/28	184
186	Misc. works	7 days	Fri 10/10/29	Thu 10/11/4	185
187	**Works at D1(N) Road**	**772 days**	**Tue 09/10/20**	**Wed 11/11/30**	
188	**Tree Transplant**	**194 days**	**Sun 09/11/29**	**Thu 10/6/10**	
189	Tree - Crown pruning	5 days	Sun 09/11/29	Thu 09/12/3	
190	Tree - Root pruning 1st stage - Pruning	5 days	Fri 09/12/4	Tue 09/12/8	189
191	Tree - Root pruning 1st stage - Wait	28 days	Wed 09/12/9	Tue 10/1/5	190
192	Tree - Root pruning 2nd stage - Pruning	5 days	Wed 10/1/6	Sun 10/1/10	191
193	Tree - Root pruning 2nd stage - Wait	28 days	Mon 10/1/11	Sun 10/2/7	192
194	Tree - Transplant	7 days	Fri 10/6/4	Thu 10/6/10	193,53,51
195	**RW4 (CH123.867 - CH290.470)**	**113 days**	**Tue 09/10/20**	**Tue 10/2/9**	
196	Bay RW4-18 (CH159.495 - CH171.621)	15 days	Tue 09/10/20	Tue 09/11/3	42
197	Bay RW4-19 (CH171.621 - CH183.746)	14 days	Wed 09/11/4	Tue 09/11/17	196
198	Bay RW4-22 (CH207.995 - CH220.120)	14 days	Wed 09/11/18	Tue 09/12/1	197
199	Bay RW4-23 (CH220.120 - CH232.245)	14 days	Wed 09/12/2	Tue 09/12/15	198
200	Bay RW4-24 (CH232.245 - CH244.370)	14 days	Wed 09/12/16	Tue 09/12/29	199
201	Bay RW4-25 (CH244.370 - CH256.496)	14 days	Wed 09/12/30	Tue 10/1/12	200
202	Bay RW4-20 (CH183.746 - CH195.870) CLP	14 days	Wed 10/1/13	Tue 10/1/26	201
203	Bay RW4-21 (CH195.870 - CH207.995) CLP	14 days	Wed 10/1/27	Tue 10/2/9	202
204	Bay RW4-17 (CH147.371 - CH159.495)	14 days	Wed 09/11/18	Tue 09/12/1	197
205	Bay RW4-16 (CH139.867 - CH147.371)	12 days	Wed 09/12/2	Sun 09/12/13	204
206	Bay RW4-15 (CH131.867 - CH139.867)	12 days	Mon 09/12/14	Fri 09/12/25	205
207	Bay RW4-14 (CH123.867 - CH131.867)	12 days	Sat 09/12/26	Wed 10/1/6	206
208	Bay RW4-26 (CH256.496 - CH263.733)	12 days	Thu 10/1/7	Mon 10/1/18	207
209	Bay RW4-27 (CH263.733 - CH272.645)	5 days	Tue 10/1/19	Sat 10/1/23	208
210	Bay RW4-27A (CH272.645 - CH281.558)	6 days	Sun 10/1/24	Fri 10/1/29	209
211	Bay RW4-28 (CH281.558 - CH290.470)	11 days	Sat 10/1/30	Tue 10/2/9	210
212	**RW2 (CH0.00-CH59.00)**	**137 days**	**Tue 09/10/20**	**Fri 10/3/5**	
213	Confirmation of RW2	53 days	Tue 09/10/20	Fri 09/12/11	42
214	Bay RW2-2 (CH15.000 - CH24.000)	12 days	Sat 09/12/12	Wed 09/12/23	213
215	Bay RW2-3 (CH24.000 - CH30.500)	12 days	Thu 09/12/24	Mon 10/1/4	214
216	Bay RW2-3A (CH30.500 - CH37.000)	12 days	Tue 10/1/5	Sat 10/1/16	215
217	Bay RW2-4 (CH37.000 - CH46.000)	12 days	Sun 10/1/17	Thu 10/1/28	216
218	Bay RW2-4A (CH46.000 - CH52.500)	12 days	Fri 10/1/29	Tue 10/2/9	217
219	Bay RW2-5 (CH52.500 - CH59.000)	12 days	Wed 10/2/10	Sun 10/2/21	218
220	Bay RW2-1 (CH0.000 - CH15.000)	12 days	Mon 10/2/22	Fri 10/3/5	219
221	**Road Works**	**772 days**	**Tue 09/10/20**	**Wed 11/11/30**	
222	Utility detection and reporting	7 days	Tue 09/10/20	Mon 09/10/26	42
223	**Chainage From CH 350 to CH 564**	**741 days**	**Tue 09/10/27**	**Sun 11/11/6**	
224	Earthworks	120 days	Tue 09/10/27	Tue 10/2/23	222
225	Construction of stormwater drain	120 days	Mon 10/1/25	Mon 10/5/24	224FS-30 days



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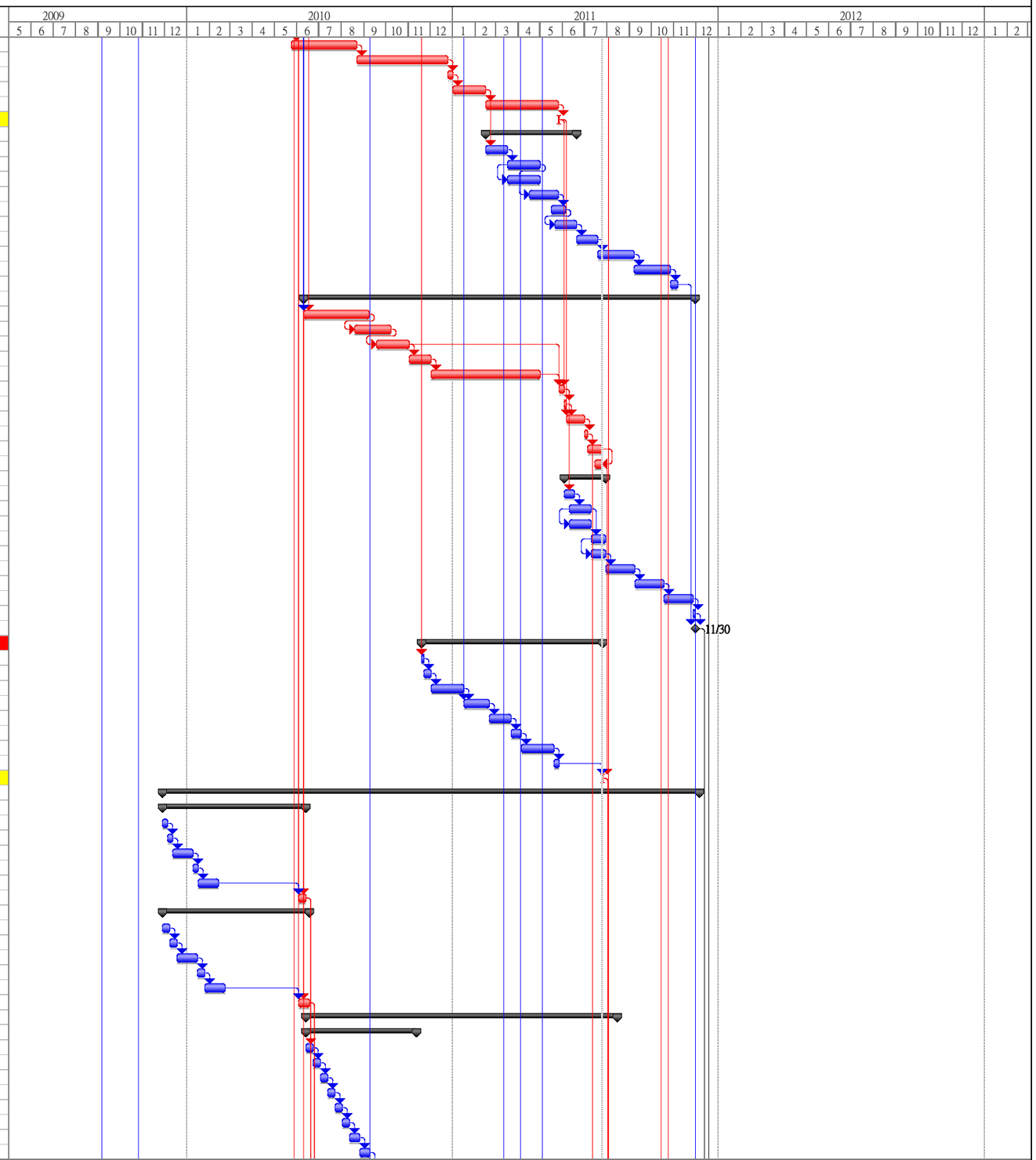
Task Critical Task Milestone Summary

ID	Task Name	Duration	Start	Finish	Predecessors
226	Construction of sewerage	90 days	Tue 10/5/25	Sun 10/8/22	225
227	Proposed water main laying	125 days	Mon 10/8/23	Sat 10/12/25	226
228	Water main pressure test and swabbing	7 days	Sun 10/12/26	Sat 11/1/1	227
229	Public lighting	45 days	Sun 11/1/2	Tue 11/2/15	228
230	Construction of proposed road surface	100 days	Wed 11/2/16	Thu 11/5/26	229
231	Open to Public (3rd stage of access road diversion)	1 day	Fri 11/5/27	Fri 11/5/27	230
232	**Utilities laying**	**125 days**	**Wed 11/2/16**	**Mon 11/6/20**	
233	CLP Cable	30 days	Wed 11/2/16	Thu 11/3/17	229
234	Gas main	45 days	Fri 11/3/18	Sun 11/5/1	233
235	Towngas Telecom	45 days	Fri 11/3/18	Sun 11/5/1	234SS
236	PCCW	40 days	Sun 11/4/17	Thu 11/5/26	234FS-15 days
237	CATV	20 days	Tue 11/5/17	Sun 11/6/5	236FS-10 days
238	HKBN	30 days	Sun 11/5/22	Mon 11/6/20	237FS-15 days
239	Installation of street furniture	29 days	Tue 11/6/21	Tue 11/7/19	238
240	Construction of footpath	50 days	Wed 11/7/20	Wed 11/9/7	239
241	Construction of surface drain and cycle track	50 days	Thu 11/9/8	Thu 11/10/27	240
242	Misc. works	10 days	Fri 11/10/28	Sun 11/11/6	241
243	**Chainage From CH 100 to CH 350**	**538 days**	**Fri 10/6/11**	**Wed 11/11/30**	
244	Earthworks	90 days	Fri 10/6/11	Wed 10/9/8	194,203,211,220
245	Construction of stormwater drain	50 days	Fri 10/8/20	Fri 10/10/8	244FS-20 days
246	Construction of rising main (ch100-ch300)	45 days	Sun 10/9/19	Tue 10/11/2	245FS-20 days
247	Proposed water main laying (ch100-ch300)	30 days	Wed 10/11/3	Thu 10/12/2	246
248	Construction of proposed road surface (ch100-ch300)	150 days	Fri 10/12/3	Sun 11/5/1	247
249	Construction of rising main (ch300-ch350)	7 days	Sat 11/5/28	Fri 11/6/3	231,246,248
250	Rising main pressure test and swabbing	3 days	Sat 11/6/4	Mon 11/6/6	249
251	Proposed water main laying (ch300-ch350)	25 days	Tue 11/6/7	Fri 11/7/1	231,250
252	Water main pressure test and swabbing	4 days	Sat 11/7/2	Tue 11/7/5	251
253	Construction of proposed road surface (ch300-ch350)	20 days	Wed 11/7/6	Mon 11/7/25	252
254	Public lighting	10 days	Sat 11/7/16	Mon 11/7/25	253FF
255	**Utilities laying**	**57 days**	**Sat 11/6/4**	**Sat 11/7/30**	
256	CLP Cable	14 days	Sat 11/6/4	Fri 11/6/17	249
257	Gas main	30 days	Sat 11/6/11	Sun 11/7/10	256FS-7 days
258	Towngas Telecom	30 days	Sat 11/6/11	Sun 11/7/10	257SS
259	PCCW	20 days	Mon 11/7/11	Sat 11/7/30	257
260	HKBN	20 days	Mon 11/7/11	Sat 11/7/30	259SS
261	Installation of street furniture	40 days	Sun 11/7/31	Thu 11/9/8	260
262	Construction of footpath	40 days	Fri 11/9/9	Tue 11/10/18	261
263	Construction of surface drain and cycle track	40 days	Wed 11/10/19	Sun 11/11/27	262
264	Misc. works	3 days	Mon 11/11/28	Wed 11/11/30	263
265	Completion of D1(N) Road	0 days	Wed 11/11/30	Wed 11/11/30	242,264
266	V.O.21 - Access Road to Cheung Kang Village	249 days	Sat 10/11/20	Tue 11/7/26	
267	Tree - Transplant (3nos.)	3 days	Sat 10/11/20	Mon 10/11/22	53,51
268	Site Preparation works and clearance	10 days	Tue 10/11/23	Thu 10/12/2	267
269	Construction of W-Channel and catch pit	45 days	Fri 10/12/3	Sun 11/1/16	268
270	Forming Road embedment for access road	35 days	Mon 11/1/17	Sun 11/2/20	220,269
271	Construction of concrete access road	30 days	Mon 11/2/21	Tue 11/3/22	270
272	Curing time for last pour concrete road surface	14 days	Wed 11/3/23	Tue 11/4/5	271
273	Laying down the public lighting duct and demolish railings	45 days	Wed 11/4/6	Fri 11/5/20	272
274	Misc. works	7 days	Sat 11/5/21	Fri 11/5/27	273
275	Open to public (4th stage of access road diversion)	1 day	Tue 11/7/26	Tue 11/7/26	274,254
276	**Works at D1(W) Road (CHA100-CHA437)**	**738 days**	**Sun 09/11/29**	**Tue 11/12/6**	
277	**Tree Transplant - Mixed Woodland**	**197 days**	**Sun 09/11/29**	**Sun 10/6/13**	
278	Tree - Crown pruning	7 days	Sun 09/11/29	Sat 09/12/5	
279	Tree - Root pruning 1st stage - Pruning	7 days	Sun 09/12/6	Sat 09/12/12	278
280	Tree - Root pruning 1st stage - Wait	28 days	Sun 09/12/13	Sat 10/1/9	279
281	Tree - Root pruning 2nd stage - Pruning	7 days	Sun 10/1/10	Sat 10/1/16	280
282	Tree - Root pruning 2nd stage - Wait	28 days	Sun 10/1/17	Sat 10/2/13	281
283	Tree - Transplant	10 days	Fri 10/6/4	Sun 10/6/13	282,53,51
284	**Tree Transplant - Fung Shui Woodland**	**202 days**	**Sun 09/11/29**	**Fri 10/6/18**	
285	Tree - Crown pruning	10 days	Sun 09/11/29	Tue 09/12/8	
286	Tree - Root pruning 1st stage - Pruning	10 days	Wed 09/12/9	Fri 09/12/18	285
287	Tree - Root pruning 1st stage - Wait	28 days	Sat 09/12/19	Fri 10/1/15	286
288	Tree - Root pruning 2nd stage - Pruning	10 days	Sat 10/1/16	Mon 10/1/25	287
289	Tree - Root pruning 2nd stage - Wait	28 days	Tue 10/1/26	Mon 10/2/22	288
290	Tree - Transplant	15 days	Fri 10/6/4	Fri 10/6/18	289,53,51
291	**Construction of Retaining Wall**	**428 days**	**Mon 10/6/14**	**Mon 11/8/15**	
292	**RW4 (CH0.00 - CH123.00)**	**152 days**	**Mon 10/6/14**	**Fri 10/11/12**	
293	Site Preparation works	10 days	Mon 10/6/14	Wed 10/6/23	283
294	Bay RW4-1 (CH0.000 - CH7.935)	10 days	Thu 10/6/24	Sat 10/7/3	293
295	Bay RW4-2 (CH7.935 - CH15.870)	10 days	Sun 10/7/4	Tue 10/7/13	294
296	Bay RW4-3 (CH15.870 - CH23.337)	10 days	Wed 10/7/14	Fri 10/7/23	295
297	Bay RW4-4 (CH23.337 - CH30.802)	10 days	Sat 10/7/24	Mon 10/8/2	296
298	Bay RW4-5 (CH30.802 - CH40.977)	10 days	Tue 10/8/3	Thu 10/8/12	297
299	Bay RW4-13 (CH115.867 - CH123.867) T	14 days	Fri 10/8/13	Thu 10/8/26	298
300	Bay RW4-12 (CH107.867 - CH115.867) T	14 days	Fri 10/8/27	Thu 10/9/9	299



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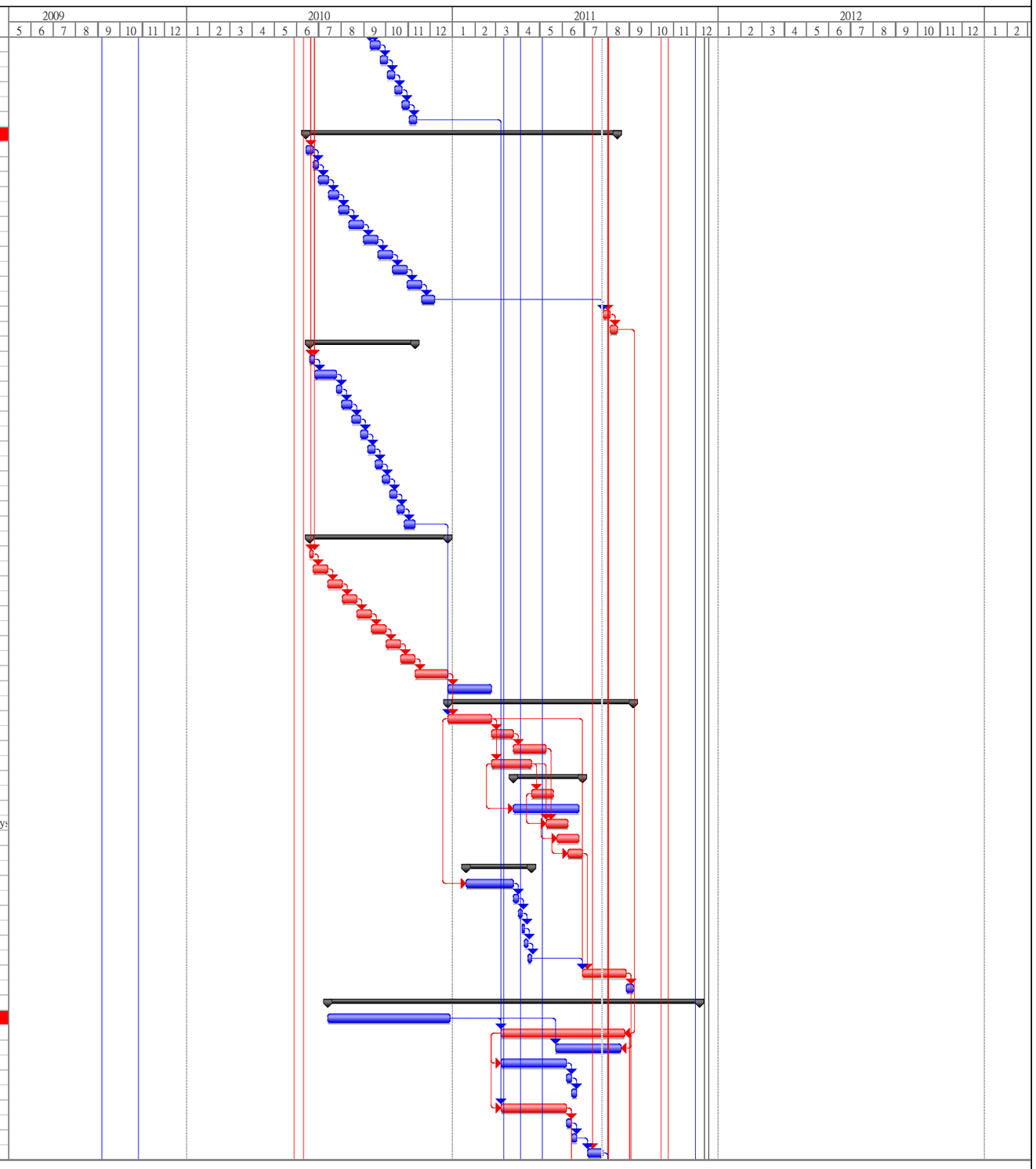
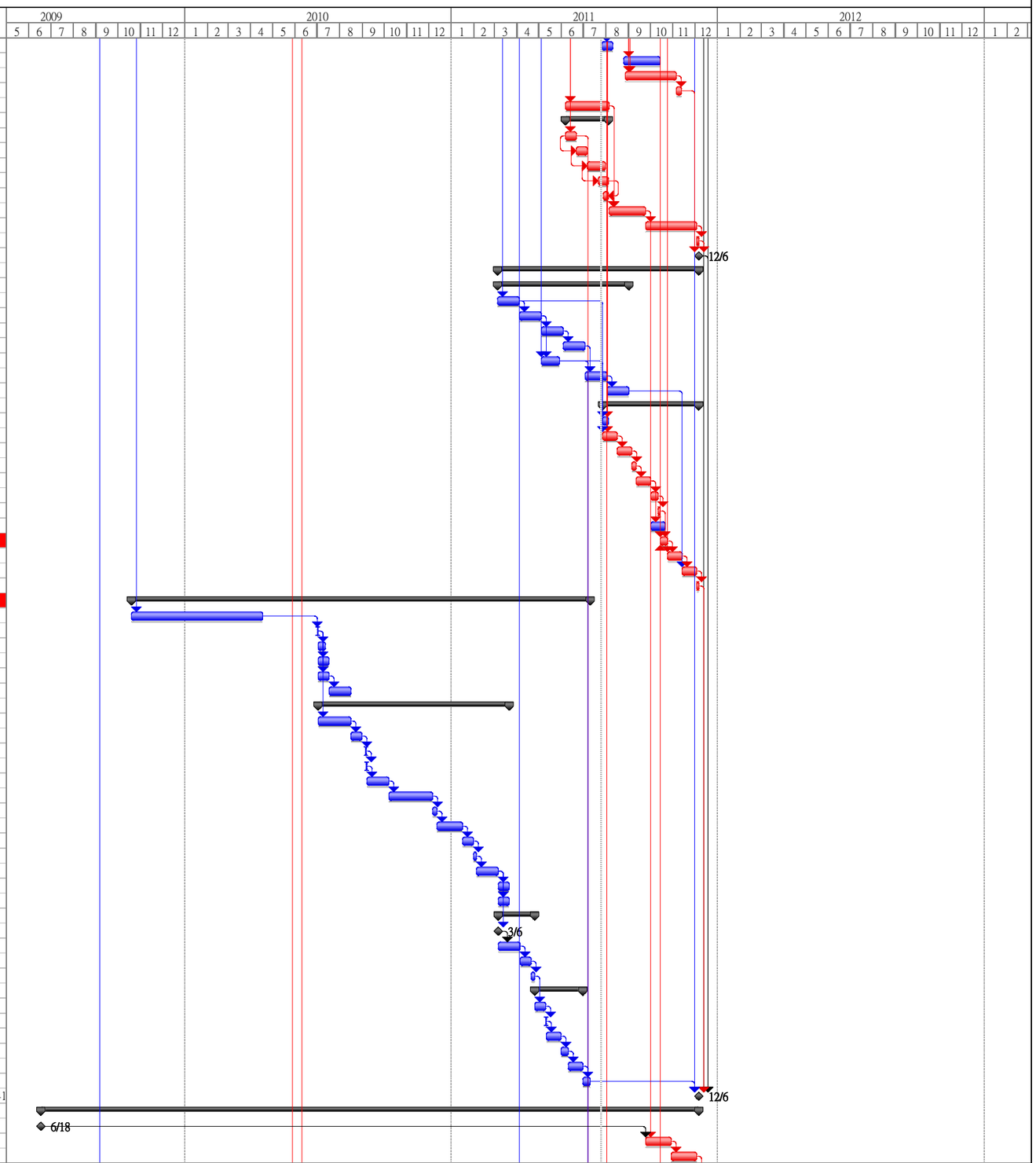
Task Critical Task Milestone Summary

ID	Task Name	Duration	Start	Finish	Predecessors
301	Bay RW4-11 (CH95.742 - CH107.867) T/arc	14 days	Fri 10/9/10	Thu 10/9/23	300,34
302	Bay RW4-10 (CH83.618 - CH95.742) T/arc	10 days	Fri 10/9/24	Sun 10/10/3	301
303	Bay RW4-9 (CH71.493 - CH83.618) T/arc	10 days	Mon 10/10/4	Wed 10/10/13	302
304	Bay RW4-6 (CH40.977 - CH51.152) A	10 days	Thu 10/10/14	Sat 10/10/23	303
305	Bay RW4-8 (CH59.367 - CH71.493) T	10 days	Sun 10/10/24	Tue 10/11/2	304
306	Bay RW4-7 (CH51.152 - CH59.367) A	10 days	Wed 10/11/3	Fri 10/11/12	305
307	**V.O.22 - RW2 (CH91.00 - CH191.00)**	**428 days**	**Mon 10/6/14**	**Mon 11/8/15**	
308	Site Preparation works and clearance	10 days	Mon 10/6/14	Wed 10/6/23	283
309	Bay RW2-17 (CH179.355 - CH188.878)	7 days	Thu 10/6/24	Wed 10/6/30	308
310	Bay RW2-16 (CH167.230 - CH179.355)	14 days	Thu 10/7/1	Wed 10/7/14	309
311	Bay RW2-15 (CH155.105 - CH167.230)	14 days	Thu 10/7/15	Wed 10/7/28	310
312	Bay RW2-14 (CH142.980 - CH155.105)	14 days	Thu 10/7/29	Wed 10/8/11	311
313	Bay RW2-6 (CH59.000 - CH65.500) T/G	20 days	Thu 10/8/12	Tue 10/8/31	312
314	Bay RW2-7 (CH65.500 - CH71.935) T/G	20 days	Wed 10/9/1	Mon 10/9/20	313
315	Bay RW2-8 (CH71.935 - CH82.355) T/G	20 days	Tue 10/9/21	Sun 10/10/10	314
316	Bay RW2-9 (CH82.355 - CH94.480) T/G	20 days	Mon 10/10/11	Sat 10/10/30	315
317	Bay RW2-13 (CH130.856 - CH142.980) T/G	20 days	Sun 10/10/31	Fri 10/11/19	316
318	Bay RW2-12 (CH118.730 - CH130.856) T/G	18 days	Sat 10/11/20	Tue 10/12/7	317
319	Bay RW2-10 (CH94.480 - CH106.605) T/G	10 days	Wed 11/7/27	Fri 11/8/5	318,275
320	Bay RW2-11 (CH106.605 - CH118.730) T/G	10 days	Sat 11/8/6	Mon 11/8/15	319
321	**RW1 (CH0.00 - CH110.00)**	**145 days**	**Sat 10/6/19**	**Wed 10/11/10**	
322	Site Preparation works	7 days	Sat 10/6/19	Fri 10/6/25	283,290
323	Utility coordination and temp. protection	30 days	Sat 10/6/26	Sun 10/7/25	322
324	Modification of Existing Retaining Wall for connection	7 days	Mon 10/7/26	Sun 10/8/1	323
325	Bay RW1-6 (CH60.625 - CH72.750) T	14 days	Mon 10/8/2	Sun 10/8/15	324
326	Bay RW1-5 (CH48.500 - CH60.625) T	12 days	Mon 10/8/16	Fri 10/8/27	325
327	Bay RW1-4 (CH36.375 - CH48.500) T	10 days	Sat 10/8/28	Mon 10/9/6	326
328	Bay RW1-3 (CH24.250 - CH36.375) T	10 days	Tue 10/9/7	Thu 10/9/16	327
329	Bay RW1-2 (CH12.125 - CH24.250) T	10 days	Fri 10/9/17	Sun 10/9/26	328
330	Bay RW1-1 (CH0.00 - CH12.125) T	10 days	Mon 10/9/27	Wed 10/10/6	329
331	Bay RW1-7 (CH72.750 - CH84.875) T	10 days	Thu 10/10/7	Sat 10/10/16	330
332	Bay RW1-8 (CH84.875 - CH97.000) T	10 days	Sun 10/10/17	Tue 10/10/26	331
333	Bay RW1-9 (CH97.000 - CH109.920) T	15 days	Wed 10/10/27	Wed 10/11/10	332
334	**RW3 (CH0.00 - CH76.00)**	**190 days**	**Sat 10/6/19**	**Sat 10/12/25**	
335	Site Preparation works	5 days	Sat 10/6/19	Wed 10/6/23	283,290
336	Bay RW3-3 (CH24.25 - CH36.375) T	20 days	Thu 10/6/24	Tue 10/7/13	335
337	Bay RW3-4 (CH36.375 - CH48.50) T	20 days	Wed 10/7/14	Mon 10/8/2	336
338	Bay RW3-5 (CH48.50 - CH60.625) T	20 days	Tue 10/8/3	Sun 10/8/22	337
339	Bay RW3-2 (CH12.125 - CH24.25) T	20 days	Mon 10/8/23	Sat 10/9/11	338
340	Bay RW3-1 (CH0.00 - CH12.125) T	20 days	Sun 10/9/12	Fri 10/10/1	339
341	Bay RW3-6 (CH60.625 - CH72.75) T	20 days	Sat 10/10/2	Thu 10/10/21	340
342	Bay RW3-7 (CH72.75 - CH84.75) T	20 days	Fri 10/10/22	Wed 10/11/10	341
343	Bay RW3-8 (CH84.75 - CH96.75) T	45 days	Thu 10/11/11	Sat 10/12/25	342
344	Construction of rising main by others	60 days	Sun 10/12/26	Wed 11/2/23	343
345	**Road Construction (CHA320-CHA437)**	**255 days**	**Sun 10/12/26**	**Tue 11/9/6**	
346	Earthworks	60 days	Sun 10/12/26	Wed 11/2/23	343,333
347	Construction of stormwater drainage works	30 days	Thu 11/2/24	Fri 11/3/25	346
348	Construction of rising main	45 days	Sat 11/3/26	Mon 11/5/9	347
349	Proposed water main laying	55 days	Thu 11/2/24	Tue 11/4/19	346
350	**Utilities laying**	**95 days**	**Sat 11/3/26**	**Tue 11/6/28**	
351	CLP Cable	30 days	Wed 11/4/20	Thu 11/5/19	349
352	Construction of rising main by others	90 days	Sat 11/3/26	Thu 11/6/23	349SS+30 days
353	Gas main and Towngas Telecom	30 days	Tue 11/5/10	Wed 11/6/8	348,349,351SS+10 days
354	PCCW	30 days	Wed 11/5/25	Thu 11/6/23	353SS+15 days
355	HKBN	20 days	Thu 11/6/9	Tue 11/6/28	354SS+15 days
356	**Proposed water main laying at existing C/T and Cross Road D1(W)**	**90 days**	**Thu 11/1/20**	**Tue 11/4/19**	
357	Proposed water main laying	65 days	Thu 11/1/20	Fri 11/3/25	346SS+25 days
358	Pressure test of water main	7 days	Sat 11/3/26	Fri 11/4/1	357
359	Swabbing of water main	5 days	Sat 11/4/2	Wed 11/4/6	358
360	Sterilization of water main	3 days	Thu 11/4/7	Sat 11/4/9	359
361	Water Sample for fresh watermain	5 days	Sun 11/4/10	Thu 11/4/14	360
362	Handover watermain to WSD	5 days	Fri 11/4/15	Tue 11/4/19	361
363	Construction of proposed road D1(W) (CHA320-CHA437)	60 days	Wed 11/6/29	Sat 11/8/27	346,362,355
364	Misc. works	10 days	Sun 11/8/28	Tue 11/9/6	363
365	**Road Construction (CHA100-CHA320)**	**511 days**	**Wed 10/7/14**	**Tue 11/12/6**	
366	V.O. 12 - Replacement of Existing C&D Materials below Formation of Road	168 days	Wed 10/7/14	Tue 10/12/28	
367	Earthworks	170 days	Wed 11/3/9	Thu 11/8/25	366,320FF+10 days
368	Construction of stormwater drainage works	90 days	Mon 11/5/23	Sat 11/8/20	367FF-5 days,366
369	Construction of rising main	90 days	Wed 11/3/9	Mon 11/6/6	367SS
370	Pressure test of Rising main	7 days	Tue 11/6/7	Mon 11/6/13	369
371	Swabbing of Rising Main	7 days	Tue 11/6/14	Mon 11/6/20	370
372	Proposed water main laying	90 days	Wed 11/3/9	Mon 11/6/6	306,367SS
373	Pressure test of water main along road D1(W)	7 days	Tue 11/6/7	Mon 11/6/13	372
374	Swabbing of water main along road D1(W)	7 days	Tue 11/6/14	Mon 11/6/20	373
375	Sterilization of whole water main system	21 days	Wed 11/7/6	Tue 11/7/26	374,252



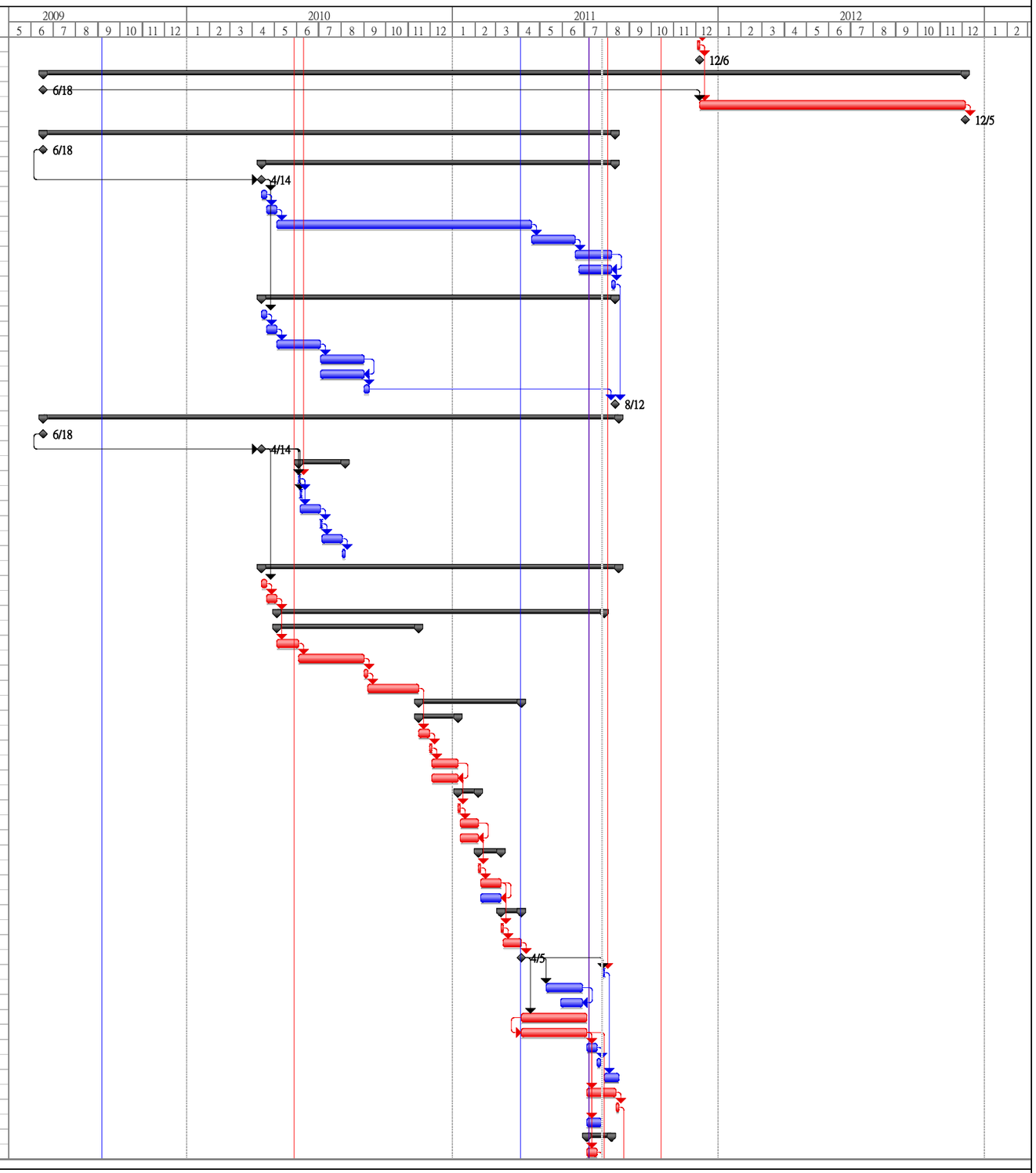
ID	Task Name	Duration	Start	Finish	Predecessors
376	Final connection to existing water main	15 days	Wed 11/7/27	Wed 11/8/10	375
377	Installation of Irrigation system and test	50 days	Fri 11/8/26	Fri 11/10/14	367
378	Construction of proposed road D1(W) (CHA100-CHA320)	70 days	Sun 11/8/28	Sat 11/11/5	367,363
379	Misc. works	7 days	Sun 11/11/6	Sat 11/11/12	378
380	Public lighting and street furniture	60 days	Tue 11/6/7	Fri 11/8/5	372
381	**Utilities laying**	**59 days**	**Tue 11/6/7**	**Thu 11/8/4**	
382	CLP Cable	15 days	Tue 11/6/7	Tue 11/6/21	372
383	Gas main and Towngas Telecom	15 days	Wed 11/6/22	Wed 11/7/6	382SS+15 days
384	PCCW	25 days	Thu 11/7/7	Sun 11/7/31	383SS+15 days
385	HKBN	14 days	Fri 11/7/22	Thu 11/8/4	384SS+15 days
386	CATV	7 days	Fri 11/7/29	Thu 11/8/4	385FF
387	Construction of footpath	50 days	Sat 11/8/6	Sat 11/9/24	386,380
388	Construction of surface drain and cycle track	70 days	Sun 11/9/25	Sat 11/12/3	387
389	Misc. works	3 days	Sun 11/12/4	Tue 11/12/6	388
390	Completion of D1(W) Road	0 days	Tue 11/12/6	Tue 11/12/6	379,389
391	**Works at Access Road to Pump House**	**276 days**	**Sun 11/3/6**	**Tue 11/12/6**	
392	**Stage 1 (CHE100 to CHE220)**	**180 days**	**Sun 11/3/6**	**Thu 11/9/1**	
393	Laying of sewerage pipe	30 days	Sun 11/3/6	Mon 11/4/4	150
394	Laying of rising main	30 days	Tue 11/4/5	Wed 11/5/4	393
395	Laying of water main	30 days	Thu 11/5/5	Fri 11/6/3	394
396	Laying of public lighting	30 days	Sat 11/6/4	Sun 11/7/3	395
397	Utility laying (CLP Cable and PCCW)	25 days	Thu 11/5/5	Sun 11/5/29	394,150
398	Construction of rigid pavement access road to pump station	30 days	Mon 11/7/4	Tue 11/8/2	396
399	Surface drainage and concrete verge construction	30 days	Wed 11/8/3	Thu 11/9/1	398
400	**Stage 2 (CHE220 to CHE325)**	**132 days**	**Thu 11/7/28**	**Tue 11/12/6**	
401	Utility laying (CLP Cable and PCCW)	8 days	Thu 11/7/28	Thu 11/8/4	157,397
402	Laying of sewerage pipe	20 days	Thu 11/7/28	Tue 11/8/16	393,157
403	Laying of rising main	20 days	Wed 11/8/17	Mon 11/9/5	402
404	Pressure test of rising main along access road	6 days	Tue 11/9/6	Sun 11/9/11	403
405	Laying of water main	20 days	Mon 11/9/12	Sat 11/10/1	404
406	Pressure test and swabbing of water main along access road	10 days	Sun 11/10/2	Tue 11/10/11	405
407	Connection water main to Main pipe line along D1(N)	3 days	Wed 11/10/12	Fri 11/10/14	406
408	Laying of public lighting	20 days	Sun 11/10/2	Fri 11/10/21	405
409	V.O.27 - Construction of retaining wall RW7	10 days	Sat 11/10/15	Mon 11/10/24	407,157,559
410	Construction of rigid pavement access road to pump station	20 days	Tue 11/10/25	Sun 11/11/13	157,409
411	Surface drainage and concrete verge construction	20 days	Mon 11/11/14	Sat 11/12/3	410,399
412	Misc. works	3 days	Sun 11/12/4	Tue 11/12/6	411
413	**V.O.20 - Construction of sewerage pipe along Sha on Street**	**629 days**	**Tue 09/10/20**	**Sun 11/7/10**	
414	Application of Excavation Permit for gravity sewer pipe at Sha On street	180 days	Tue 09/10/20	Sat 10/4/17	42
415	V.O. 20 issued on 2 July 2010	1 day	Fri 10/7/2	Fri 10/7/2	414
416	Material submission	10 days	Sat 10/7/3	Mon 10/7/12	415
417	Temporary Design and submission	15 days	Sat 10/7/3	Sat 10/7/17	415
418	Method statement of pipe jacking submission	15 days	Sat 10/7/3	Sat 10/7/17	415
419	Modification works for existing intake chamber of 108 Pumping Station	30 days	Sun 10/7/18	Mon 10/8/16	418
420	**Construction of Manhole FM103A and FM104A**	**262 days**	**Sat 10/7/3**	**Mon 11/3/21**	
421	Revise TTA scheme and get approval from TLMG	45 days	Sat 10/7/3	Mon 10/8/16	415
422	Appointment booking from RMO to implement of TTA	15 days	Tue 10/8/17	Tue 10/8/31	421
423	Implement of TTA (stage 1)	1 day	Mon 10/9/6	Mon 10/9/6	422
424	UU dectection	1 day	Tue 10/9/7	Tue 10/9/7	423
425	Trial pit to identify the existing UU	30 days	Wed 10/9/8	Thu 10/10/7	424
426	Construct Jacking Pit and Receiving Pit	60 days	Fri 10/10/8	Mon 10/12/6	425
427	Mobilization and establishmnet for pipe jacking	6 days	Tue 10/12/7	Sun 10/12/12	426
428	Pipe jacking by segment method	35 days	Mon 10/12/13	Sun 11/1/16	427
429	Installation of 2nos. HDPE pipes	15 days	Mon 11/1/17	Mon 11/1/31	428
430	Grouting work for internal of 1300dia. Sleeve pipe	4 days	Tue 11/2/1	Fri 11/2/4	429
431	Construct manhole FM103 & FM104	30 days	Sat 11/2/5	Sun 11/3/6	430
432	Connection to Existing Chamber in PS108	15 days	Mon 11/3/7	Mon 11/3/21	431
433	Backfilling and reinstatement of planter wall	15 days	Mon 11/3/7	Mon 11/3/21	431
434	**Construction of Manhole FM102A and associated pipeworks**	**50 days**	**Sun 11/3/6**	**Mon 11/4/25**	
435	Implement of TTA (stage 1)	0 days	Sun 11/3/6	Sun 11/3/6	431
436	Construct 2nos. Sewerage pipes	30 days	Mon 11/3/7	Tue 11/4/5	435
437	Construct Manhole FM102A	15 days	Wed 11/4/6	Wed 11/4/20	436
438	Reinstatement of existing carriageway	5 days	Thu 11/4/21	Mon 11/4/25	437
439	**Construction of Manhole FM101A and associated pipeworks**	**66 days**	**Tue 11/4/26**	**Thu 11/6/30**	
440	Appointment booking from RMO to implement of TTA	15 days	Tue 11/4/26	Tue 11/5/10	438
441	Implement of TTA (stage 2)	1 day	Wed 11/5/11	Wed 11/5/11	440
442	Construct 2nos. Sewerage pipes	20 days	Thu 11/5/12	Tue 11/5/31	441
443	Reinstatement of existing carriageway	10 days	Wed 11/6/1	Fri 11/6/10	442
444	Construct Manhole FM101A	20 days	Sat 11/6/11	Thu 11/6/30	443
445	Misc. works	10 days	Fri 11/7/1	Sun 11/7/10	444
446	Completion of Section I	0 days	Tue 11/12/6	Tue 11/12/6	159,186,390,265,445,41
447	**Section IA Works**	**902 days**	**Thu 09/6/18**	**Tue 11/12/6**	
448	Possession of Site	0 days	Thu 09/6/18	Thu 09/6/18	
449	Soiling for landscape soft works	35 days	Sun 11/9/25	Sat 11/10/29	448,387
450	Landscape soft work in Portion 1 (Exclude Section IV)	35 days	Sun 11/10/30	Sat 11/12/3	449



Task Critical Task Milestone Summary

ST/2008/02
Date:Mon 11/7/25

ID	Task Name	Duration	Start	Finish	Predecessors
451	Misc. works	3 days	Sun 11/12/4	Tue 11/12/6	450
452	Completion of Section IA	0 days	Tue 11/12/6	Tue 11/12/6	451
453	**Section IB Works**	**1267 days**	**Thu 09/6/18**	**Wed 12/12/5**	
454	Possession of Site	0 days	Thu 09/6/18	Thu 09/6/18	
455	Establishment works in Portion 1 (Excluded Section IVA)	365 days	Wed 11/12/7	Wed 12/12/5	454,451
456	Completion of Section IB	0 days	Wed 12/12/5	Wed 12/12/5	455
457	**Section II Works (Portion 2A and Portion 2B)**	**786 days**	**Thu 09/6/18**	**Fri 11/8/12**	
458	Commencement Date	0 days	Thu 09/6/18	Thu 09/6/18	
459	**Works in Portion 2A, Site G/IC**	**486 days**	**Wed 10/4/14**	**Fri 11/8/12**	
460	Possession of Portion 2A & 2B (Excision No:1)	0 days	Wed 10/4/14	Wed 10/4/14	458SS
461	Mobilization of plants and set up	7 days	Wed 10/4/14	Tue 10/4/20	460
462	Site clearance	14 days	Wed 10/4/21	Tue 10/5/4	461
463	Temporary stockpile	350 days	Wed 10/5/5	Tue 11/4/19	462
464	Site formation works	60 days	Wed 11/4/20	Sat 11/6/18	463
465	Construction of surface drain	50 days	Sun 11/6/19	Sun 11/8/7	464
466	Proposed fence erection	45 days	Fri 11/6/24	Sun 11/8/7	465FF
467	Misc. works	5 days	Mon 11/8/8	Fri 11/8/12	466
468	**Works in Portion 2B, Site LWS-B**	**486 days**	**Wed 10/4/14**	**Fri 11/8/12**	
469	Mobilization of plants and set up	7 days	Wed 10/4/14	Tue 10/4/20	460
470	Site clearance	14 days	Wed 10/4/21	Tue 10/5/4	469
471	Site formation works	60 days	Wed 10/5/5	Sat 10/7/3	470
472	Construction of U-Channel	60 days	Sun 10/7/4	Wed 10/9/1	471
473	Proposed fence erection	60 days	Sun 10/7/4	Wed 10/9/1	472FF
474	Misc. works	7 days	Thu 10/9/2	Wed 10/9/8	473
475	Completion of Section II	0 days	Fri 11/8/12	Fri 11/8/12	474,467
476	**Section III Works (Portion 3)**	**791 days**	**Thu 09/6/18**	**Wed 11/8/17**	
477	Commencement Date	0 days	Thu 09/6/18	Thu 09/6/18	
478	Possession of Portion 3 (Excision No:2)	0 days	Wed 10/4/14	Wed 10/4/14	477SS+300 days
479	**Tree Transplant - L3**	**64 days**	**Fri 10/6/4**	**Fri 10/8/6**	
480	Tree - Crown pruning	2 days	Fri 10/6/4	Sat 10/6/5	478,51
481	Tree - Root pruning 1st stage - Pruning	2 days	Sun 10/6/6	Mon 10/6/7	478,480
482	Tree - Root pruning 1st stage - Wait	28 days	Sun 10/6/6	Sat 10/7/3	480
483	Tree - Root pruning 2nd stage - Pruning	2 days	Sun 10/7/4	Mon 10/7/5	482
484	Tree - Root pruning 2nd stage - Wait	28 days	Tue 10/7/6	Mon 10/8/2	483
485	Tree - Transplant	4 days	Tue 10/8/3	Fri 10/8/6	484
486	**Road Works Construction**	**491 days**	**Wed 10/4/14**	**Wed 11/8/17**	
487	Mobilization of plants and set up	7 days	Wed 10/4/14	Tue 10/4/20	478
488	Site clearance	14 days	Wed 10/4/21	Tue 10/5/4	487
489	**Filling Works at Portion 3 of Site in LWS-B Site**	**450 days**	**Wed 10/5/5**	**Thu 11/7/28**	**488**
490	**Filling and compaction works at level +4.6mPD**	**195 days**	**Wed 10/5/5**	**Mon 10/11/15**	
491	Filling and compation to level +4.6mPD	30 days	Wed 10/5/5	Thu 10/6/3	488
492	Deposite the excavated rock material from box culvert	90 days	Fri 10/6/4	Wed 10/9/1	491
493	Mobiligation of mini rock crusher and establishment	5 days	Thu 10/9/2	Mon 10/9/6	492
494	Breakdown rock to 75mm by mini rock crusher	70 days	Tue 10/9/7	Mon 10/11/15	493
495	**Filling and compaction works above level +4.6mPD**	**141 days**	**Tue 10/11/16**	**Tue 11/4/5**	
496	**Quadrant no.1 Works**	**54 days**	**Tue 10/11/16**	**Sat 11/1/8**	
497	Excavate quadrant no.1 down to the proposed level at +4.6mPD	15 days	Tue 10/11/16	Tue 10/11/30	494
498	Site inspection at level +4.6mPD at quadrant no.1 and verification c	3 days	Wed 10/12/1	Fri 10/12/3	497
499	Excavate quadrant no.2 down to the proposed level at +4.6mPD	36 days	Sat 10/12/4	Sat 11/1/8	498
500	Filling and compaction to final formation at quadrant no.1	36 days	Sat 10/12/4	Sat 11/1/8	499FF
501	**Quadrant no.2 Works**	**28 days**	**Sun 11/1/9**	**Sat 11/2/5**	
502	Site inspection at level +4.6mPD at quadrant no.2 and verification c	3 days	Sun 11/1/9	Tue 11/1/11	500
503	Excavate quadrant no.3 down to the proposed level at +4.6mPD	25 days	Wed 11/1/12	Sat 11/2/5	502
504	Filling and compaction to final formation at quadrant no.2	25 days	Wed 11/1/12	Sat 11/2/5	503FF
505	**Quadrant no.3 Works**	**31 days**	**Sun 11/2/6**	**Tue 11/3/8**	
506	Site inspection at level +4.6mPD at quadrant no.3 and verification c	3 days	Sun 11/2/6	Tue 11/2/8	504
507	Excavate quadrant no.4 down to the proposed level at +4.6mPD	28 days	Wed 11/2/9	Tue 11/3/8	506
508	Filling and compaction to final formation at quadrant no.3	28 days	Wed 11/2/9	Tue 11/3/8	507FF
509	**Quadrant no.4 Works**	**28 days**	**Wed 11/3/9**	**Tue 11/4/5**	
510	Site inspection at level +4.6mPD at quadrant no.4 and verification c	3 days	Wed 11/3/9	Fri 11/3/11	507
511	Filling and compaction to final formation at quadrant no.4	25 days	Sat 11/3/12	Tue 11/4/5	510
512	Completion of filling works in Portion 3 of the Site in LWS-B Site	0 days	Tue 11/4/5	Tue 11/4/5	511
513	Diversion of existing access road	2 days	Wed 11/7/27	Thu 11/7/28	275,512
514	Construction of U-Channel	50 days	Tue 11/5/10	Tue 11/6/28	512
515	Proposed fence erection	30 days	Mon 11/5/30	Tue 11/6/28	514FF
516	Construction of storm drain works at Road L3	90 days	Wed 11/4/6	Mon 11/7/4	512
517	Laying of water main at road L3	90 days	Wed 11/4/6	Mon 11/7/4	516SS
518	Pressure test and swabbing of water main along L3 road	14 days	Tue 11/7/5	Mon 11/7/18	517
519	Connection of water main to Main pipe line along D1(N)	5 days	Tue 11/7/19	Sat 11/7/23	518
520	Construction of proposed road L3	20 days	Fri 11/7/29	Wed 11/8/17	513
521	Erection of proposed fence	40 days	Tue 11/7/5	Sat 11/8/13	517
522	Misc. works	4 days	Sun 11/8/14	Wed 11/8/17	521
523	Public lighting and street furniture	20 days	Tue 11/7/5	Sun 11/7/24	517
524	**Utilities laying**	**34 days**	**Tue 11/7/5**	**Sun 11/8/7**	
525	Gas main	14 days	Tue 11/7/5	Mon 11/7/18	517



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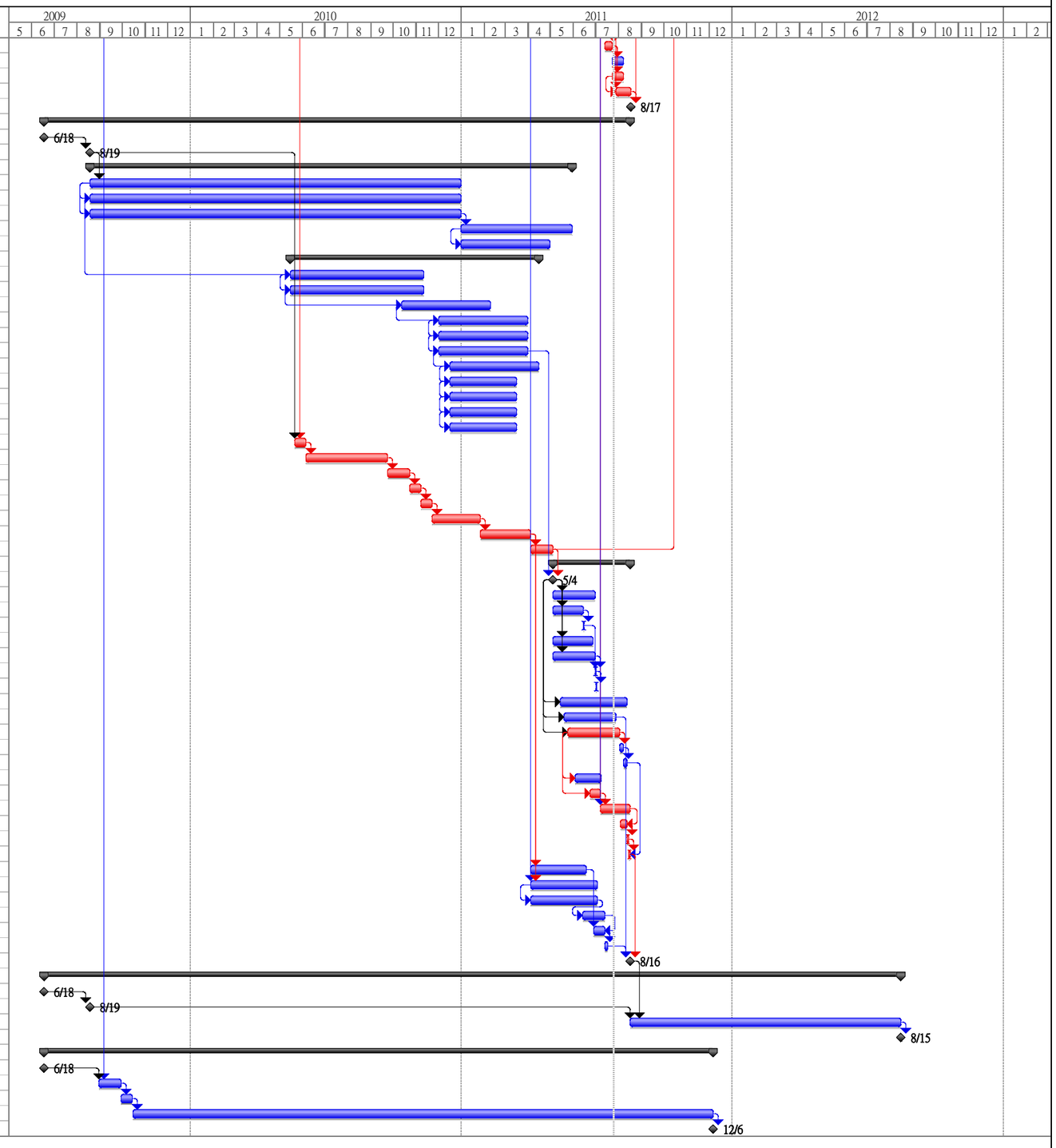
Task Critical Task Milestone Summary

ID	Task Name	Duration	Start	Finish	Predecessors
526	CLP Cable	10 days	Thu 11/7/14	Sat 11/7/23	525FS-5 days
527	PCCW	15 days	Sun 11/7/24	Sun 11/8/7	526
528	HKBN	15 days	Sun 11/7/24	Sun 11/8/7	526
529	Construction of footpath	20 days	Fri 11/7/29	Wed 11/8/17	528SS+5 days,517
530	Completion of Section III	0 days	Wed 11/8/17	Wed 11/8/17	529,522
531	**Section IV Works (Sewage Pumping Station)**	**790 days**	**Thu 09/6/18**	**Tue 11/8/16**	
532	Possession of Portion 1	0 days	Thu 09/6/18	Thu 09/6/18	
533	Instruction by the Engineer (Excision No:3)	0 days	Wed 09/8/19	Wed 09/8/19	532
534	**E&M design and submission for approval**	**650 days**	**Wed 09/8/19**	**Mon 11/5/30**	
535	Equipment submission & approval	500 days	Wed 09/8/19	Fri 10/12/31	533
536	Submission & approval of builder's works requirement drawings	500 days	Wed 09/8/19	Fri 10/12/31	535SS
537	Drawing submission & approval	500 days	Wed 09/8/19	Fri 10/12/31	535SS
538	Application of electricity supply	150 days	Sat 11/1/1	Mon 11/5/30	537
539	Application of telecommunication services	120 days	Sat 11/1/1	Sat 11/4/30	538SS
540	**Order and Delivery of E&M material**	**335 days**	**Sun 10/5/16**	**Fri 11/4/15**	
541	Sewage pumpsets	180 days	Sun 10/5/16	Thu 10/11/11	536SS+270 days
542	Valves	180 days	Sun 10/5/16	Thu 10/11/11	541SS
543	Penstocks	120 days	Wed 10/10/13	Wed 11/2/9	542SS+150 days
544	Instrumentation	120 days	Thu 10/12/2	Thu 11/3/31	543SS+50 days
545	L.V. Switchboard	120 days	Thu 10/12/2	Thu 11/3/31	544SS
546	Lifting appliance	120 days	Thu 10/12/2	Thu 11/3/31	545SS
547	Deodourising system	120 days	Fri 10/12/17	Fri 11/4/15	546SS+15 days
548	Basket screens	90 days	Fri 10/12/17	Wed 11/3/16	547SS
549	Pipework, fittings, flange adaptors & jointing accessories	90 days	Fri 10/12/17	Wed 11/3/16	548SS
550	Building services, fire services & electrical services equipment	90 days	Fri 10/12/17	Wed 11/3/16	549SS
551	MACS equipment	90 days	Fri 10/12/17	Wed 11/3/16	550SS
552	Minor earthwork for pump house (Below +10.3 mPD)	15 days	Sat 10/5/22	Sat 10/6/5	533,79
553	Construction of pump house (below +8.6 mPD)	110 days	Sun 10/6/6	Thu 10/9/23	552
554	Construction of inlet chamber	30 days	Fri 10/9/24	Sat 10/10/23	553
555	Connection of rising main and sewerage in pump house	15 days	Sun 10/10/24	Sun 10/11/7	554
556	Backfill and compaction adjacent to pump house	15 days	Mon 10/11/8	Mon 10/11/22	555
557	Construction of pump house (between +8.6 mPD and +10.3 mPD)	65 days	Tue 10/11/23	Wed 11/1/26	556
558	Construction of superstructure	68 days	Thu 11/1/27	Mon 11/4/4	557
559	Metal works and internal finishing to pump house	30 days	Tue 11/4/5	Wed 11/5/4	558
560	**Installation of E&M System**	**104 days**	**Wed 11/5/4**	**Tue 11/8/16**	
561	JEC's possession of site	0 days	Wed 11/5/4	Wed 11/5/4	559,546
562	Installation & testing of lifting appliance by temporary electricity	57 days	Thu 11/5/5	Thu 11/6/30	561
563	Installation of building services & fire services equipment for CLP	41 days	Thu 11/5/5	Tue 11/6/14	561
564	Handover of transformer room to CLP	1 day	Wed 11/6/15	Wed 11/6/15	563
565	Installation of building services & fire services equipment	54 days	Thu 11/5/5	Mon 11/6/27	561
566	Installation of L.V. switchboard	57 days	Thu 11/5/5	Thu 11/6/30	561
567	Permanent electricity energization by CLP	1 day	Fri 11/7/1	Fri 11/7/1	564,566
568	All necessary public utilities available	1 day	Sat 11/7/2	Sat 11/7/2	567
569	Installation of MACS equipment	90 days	Sun 11/5/15	Fri 11/8/12	561SS+10 days
570	Installation of deodourising system	70 days	Fri 11/5/20	Thu 11/7/28	561SS+15 days
571	Installation of DI pipe, valve and flowmeter	70 days	Wed 11/5/25	Tue 11/8/2	561SS+20 days
572	Pressure test of DI pipework	5 days	Wed 11/8/3	Sun 11/8/7	571
573	Installation of submersible pump	5 days	Mon 11/8/8	Fri 11/8/12	572
574	Submission of Form WWO.46 to WSD.	35 days	Sat 11/6/4	Fri 11/7/8	571SS+10 days
575	Installation work in Shatin Sewage treatment works	14 days	Fri 11/6/24	Thu 11/7/7	571SS+30 days
576	Testing and commission of system	40 days	Fri 11/7/8	Tue 11/8/16	382,575,397
577	Submission of Form 314 & 501 to FSD	9 days	Thu 11/8/4	Fri 11/8/12	576FF-4 days
578	FSD inspection	2 days	Sat 11/8/13	Sun 11/8/14	577
579	Training & Handover	2 days	Mon 11/8/15	Tue 11/8/16	578,573FF
580	Misc. works and irrigation system at roof of pump house	75 days	Tue 11/4/5	Sat 11/6/18	558
581	Construction of boundary wall	90 days	Tue 11/4/5	Sun 11/7/3	558,83
582	External cladding system and finishing for pump house	90 days	Tue 11/4/5	Sun 11/7/3	581SS
583	Road work inside pump house	30 days	Tue 11/6/14	Wed 11/7/13	582FS-20 days
584	Landscaping works	15 days	Wed 11/6/29	Wed 11/7/13	580,583FF
585	Misc. works	4 days	Thu 11/7/14	Sun 11/7/17	584
586	Completion of Section IV	0 days	Tue 11/8/16	Tue 11/8/16	585,579,570
587	**Section IVA Works (Sewage Pumping Station)**	**1155 days**	**Thu 09/6/18**	**Wed 12/8/15**	
588	Possession of Portion 1	0 days	Thu 09/6/18	Thu 09/6/18	
589	Instruction by the Engineer (Excision No:4)	0 days	Wed 09/8/19	Wed 09/8/19	588
590	Establishment works	365 days	Wed 11/8/17	Wed 12/8/15	586,589
591	Completion of Section IVA	0 days	Wed 12/8/15	Wed 12/8/15	590
592	**Section V Works (Preservation and protection of existing trees)**	**902 days**	**Thu 09/6/18**	**Tue 11/12/6**	
593	Possession of Portion 1	0 days	Thu 09/6/18	Thu 09/6/18	
594	Propose methodology of tree preservation and protection	30 days	Mon 09/8/31	Tue 09/9/29	593,48
595	Approval of methodology by the ER	15 days	Wed 09/9/30	Wed 09/10/14	594
596	Carry out tree preservation and protection within site boundary	782 days	Fri 09/10/16	Tue 11/12/6	595
597	Completion of Section V	0 days	Tue 11/12/6	Tue 11/12/6	596

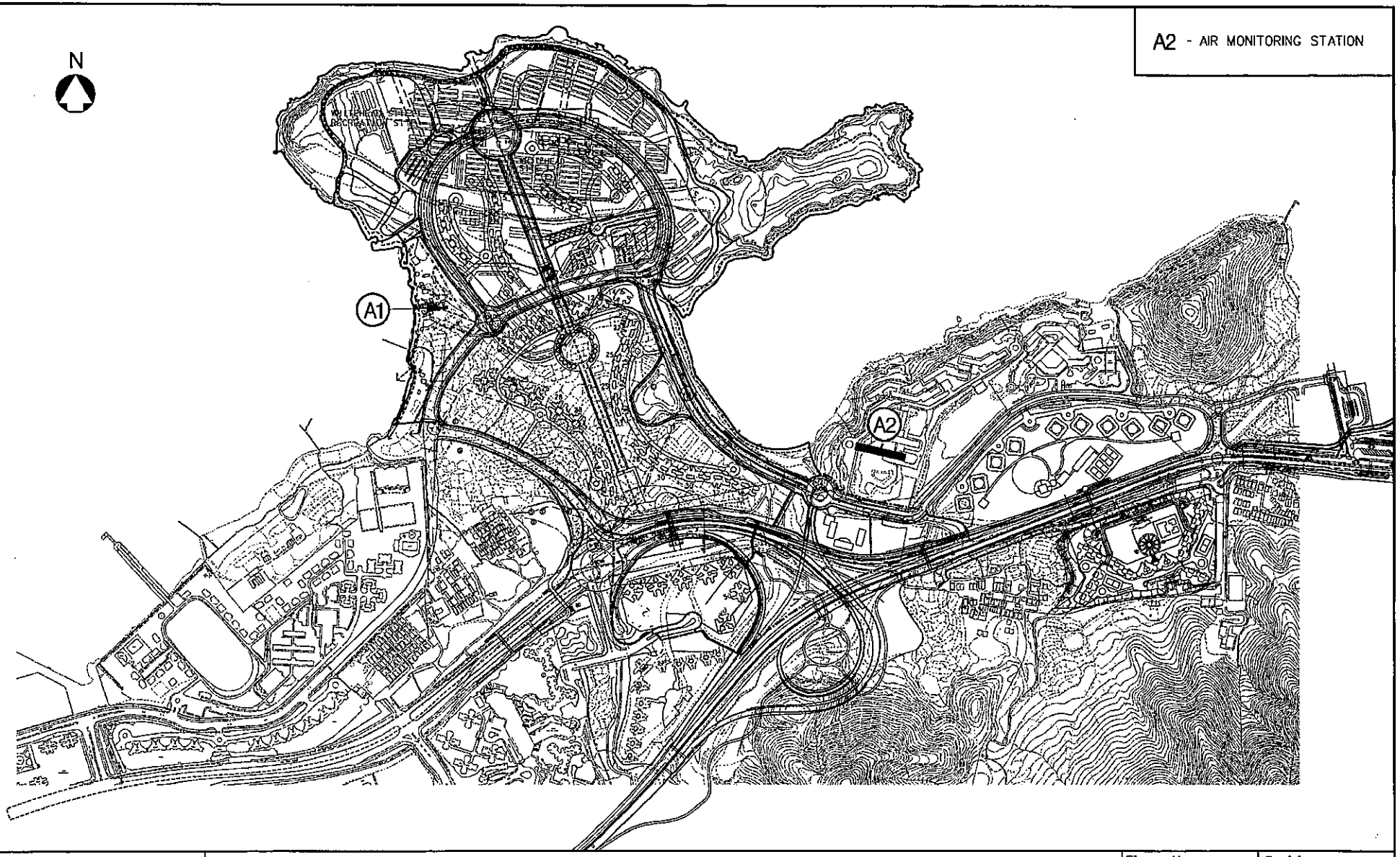


ST/2008/02
Date:Mon 11/7/25

Task | Critical Task | Milestone | Summary

Annex D

Monitoring Locations Designated in the EM&A Manual



AGREEMENT NO. CE 16/99
FEASIBILITY STUDY FOR HOUSING DEVELOPMENT AT WHITEHEAD AND LEE ON IN MA ON SHAN, SHATIN

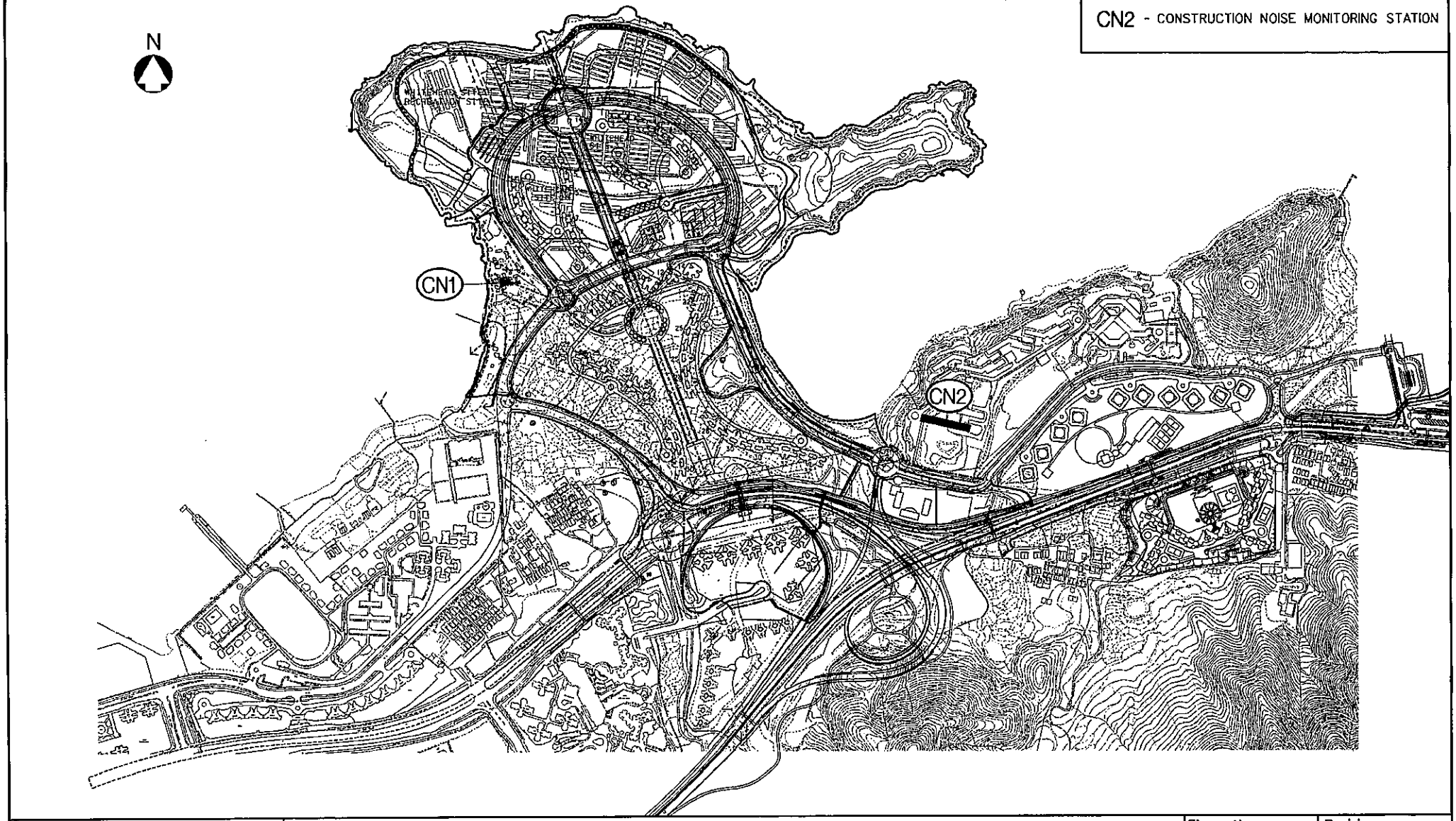
Binnie Black & Veatch Hong Kong Limited
博威工程顧問有限公司
Engineers and Scientists

Title :

LOCATIONS OF AIR MONITORING STATION

Figure No.	Revision
2.2	0
Reference	File Name
-	3820950206-76.DGN
Prepared	Checked
MC	YWL
Date	Scale
MAY. 2002	N.T.S.

CN2 - CONSTRUCTION NOISE MONITORING STATION



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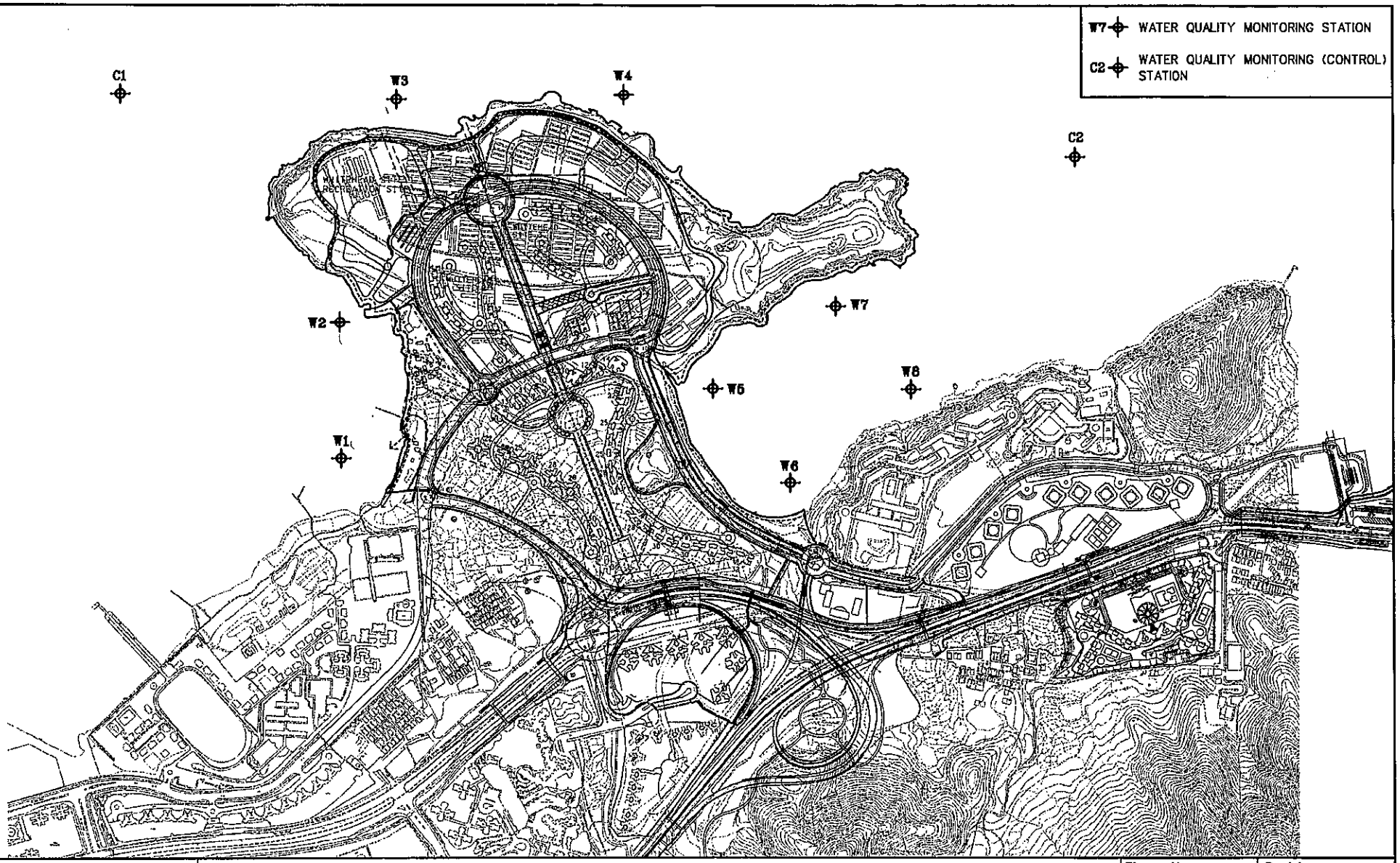
Binnie Black & Veatch Hong Kong Limited
博威工程顧問有限公司
Engineers and Scientists

Title :

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATION

Figure No.	Revision
3.2	0
Reference	File Name
-	3820950206-77.DGN
Prepared	Checked
MC	YWL
Date	Scale
MAY. 2002	N.T.S.



AGREEMENT NO. CE 16/99
FEASIBILITY STUDY FOR HOUSING DEVELOPMENT AT WHITEHEAD AND LEE ON IN MA ON SHAN, SHATIN

Binnie Black & Veatch Hong Kong Limited
博威工程顧問有限公司
Engineers and Scientists

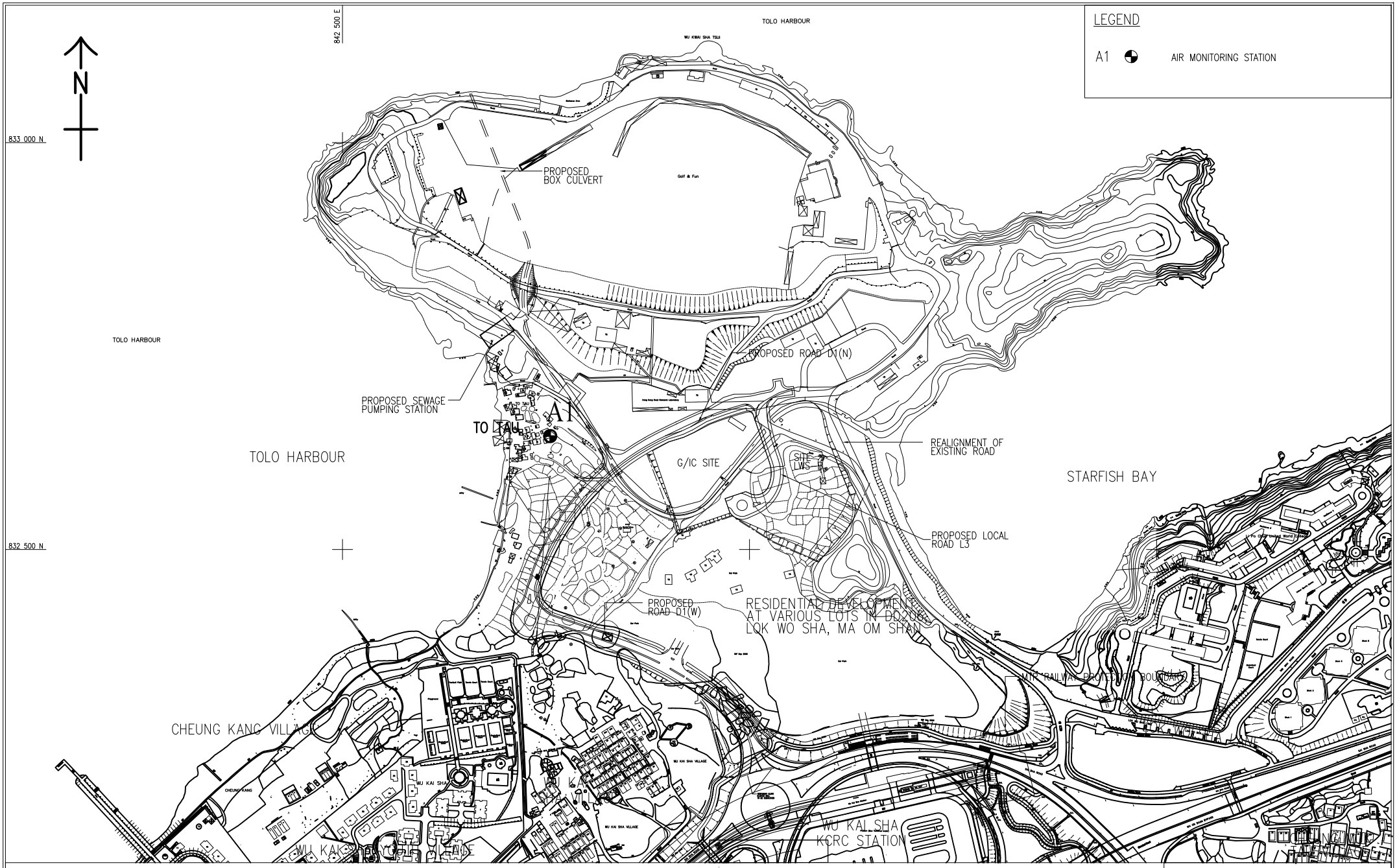
Title :

LOCATIONS OF WATER QUALITY MONITORING STATIONS

Figure No.	Revision
4.2	0
Reference	File Name
-	3820950206-94.DGN
Prepared	Checked
MC	YWL
Date	Scale
May. 2002	N.T.S.

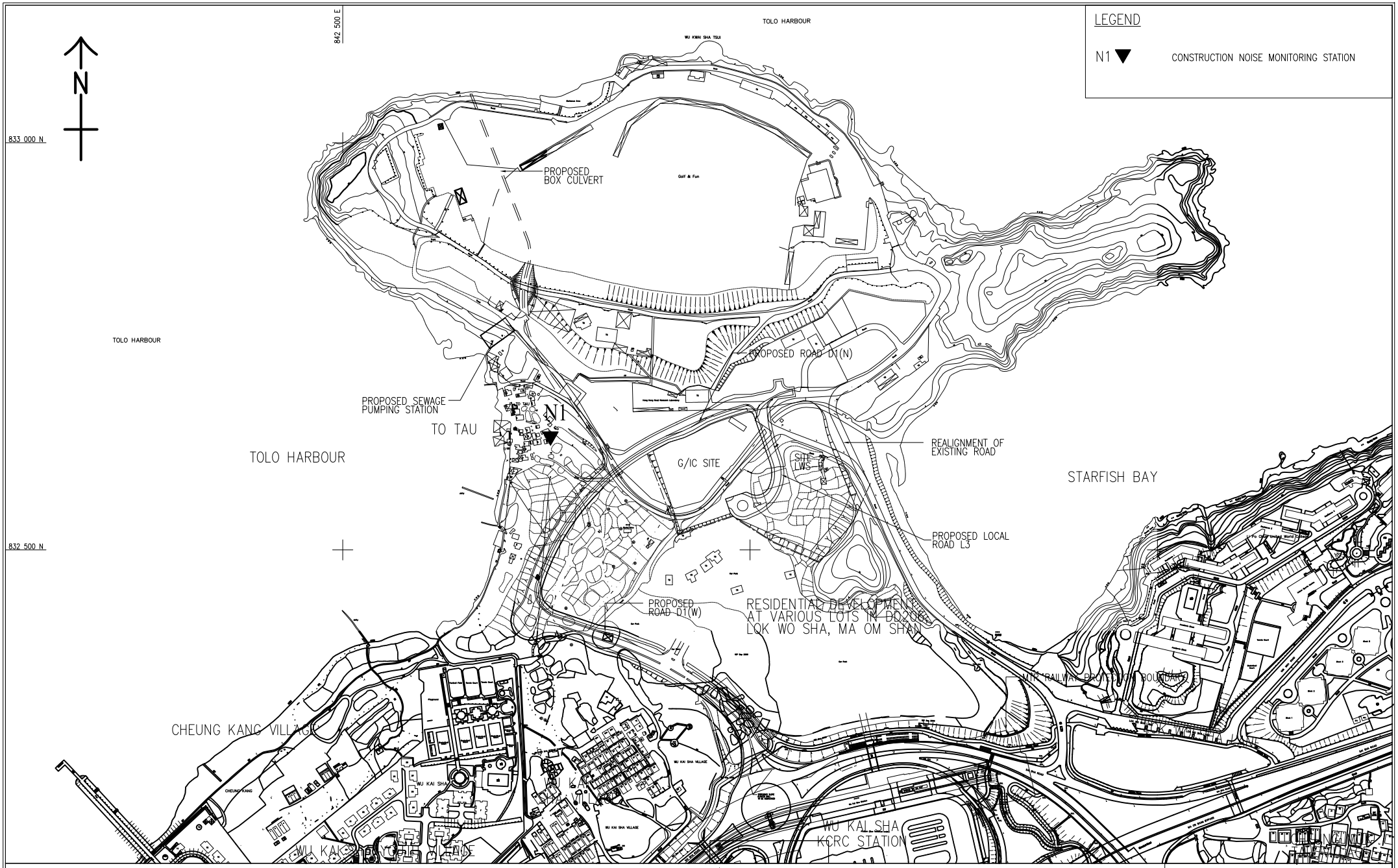
Annex E

Current Impact Monitoring Stations



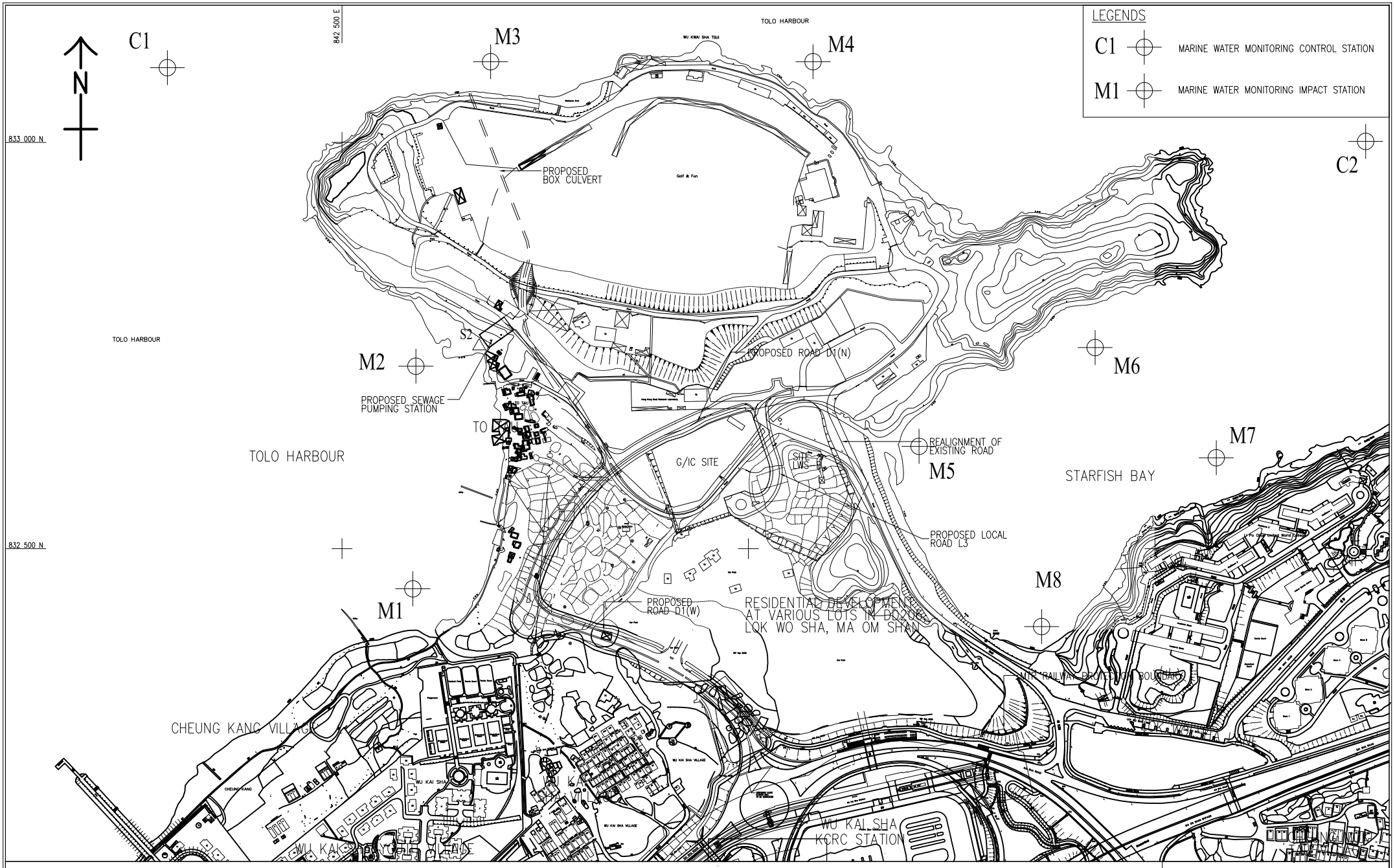
LOCATION OF AIR MONITORING STATION

AUES



LOCATION OF NOISE MONITORING STATION

AUES



LOCATION OF WATER QUALITY MONITORING STATION

AUES

Annex F

Monitoring Equipment Calibrated Certificates and Laboratory Certificate

輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C112473

Certificate of Calibration

This is to certify that the equipment

Description : Acoustical Calibrator (EQ081)

Manufacturer : Bruel & Kjaer

Model No. : 4231

Serial No. : 2326408

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C112473.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 5 May 2011

Certified by : _____
H C Chan

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. : C112473

Calibration Report

ITEM TESTED

DESCRIPTION : Acoustical Calibrator (EQ081)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 4231
SERIAL NO. : 2326408

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 4 May 2011 ***JOB NO.*** : IC11-0947

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

Tested by : *K C Lee* *Date : 5 May 2011*

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. : C112473

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	Description	Certificate No.
CL130	Universal Counter	C103289
CL281	Multifunction Acoustic Calibrator	C1006860
TST150A	Measuring Amplifier	C101008

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 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.

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

Certificate No. : C112474

Certificate of Calibration

This is to certify that the equipment

Description : Integrating Sound Level Meter (EQ008)

Manufacturer : Bruel & Kjaer

Model No. : 2238

Serial No. : 2285690

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C112474.

The equipment is supplied by

Co. Name : Action-United Environmental Services and Consulting

Address : Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

Date of Issue : 5 May 2011

Certified by : *H C Chan*

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. : C112474

Calibration Report

ITEM TESTED

DESCRIPTION : Integrating Sound Level Meter (EQ008)
MANUFACTURER : Bruel & Kjaer
MODEL NO. : 2238
SERIAL NO. : 2285690

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 4 May 2011 ***JOB NO.*** : IC11-0947

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

Tested by : K C Lee *Date : 5 May 2011*

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. : C112474

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 using the B & K Acoustic Calibrator 4231, S/N : 2326408 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	C110018
CL281	Multifunction Acoustic Calibrator	C1006860

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.3	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.3 (Ref.)
				104.00		104.3
				114.00		114.3

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

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. : C112474

Calibration Report

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.3	Ref.
	L_{ASP}		S			94.3	± 0.1
	L_{AIP}		I			94.3	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	55.0	-39.4 ± 1.5
					63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.1	-16.1 ± 1.0
					250 Hz	85.6	-8.6 ± 1.0
					500 Hz	91.1	-3.2 ± 1.0
					1 kHz	94.3	Ref.
					2 kHz	95.5	+1.2 ± 1.0
					4 kHz	95.3	+1.0 ± 1.0
					8 kHz	93.2	-1.1 (+1.5 ; -3.0)
					12.5 kHz	90.1	-4.3 (+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.

Report No. : C112474

Calibration Report

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.5	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.0
					250 Hz	94.3	0.0 ± 1.0
					500 Hz	94.3	0.0 ± 1.0
					1 kHz	94.3	Ref.
					2 kHz	94.1	-0.2 ± 1.0
					4 kHz	93.5	-0.8 ± 1.0
					8 kHz	91.3	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.2	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^2$		90	90.1	± 0.5
			60 sec.			$1/10^3$		80	79.8	± 1.0
			5 min.			$1/10^4$		70	69.7	± 1.0

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

- Uncertainties of Applied Value :

94 dB :	31.5 Hz - 125 Hz	: ± 0.40 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz	: ± 0.40 dB
	4 kHz	: ± 0.50 dB
	8 kHz	: ± 0.70 dB
	12.5 kHz	: ± 1.20 dB
104 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- 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.
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CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

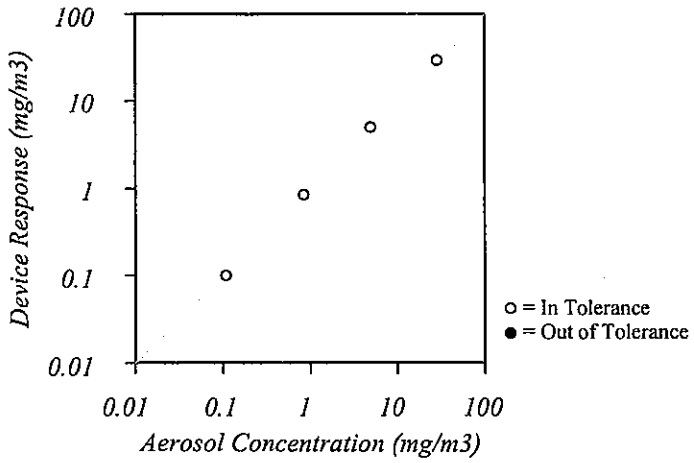
Environment Condition		
Temperature	73.8 (23.2)	°F (°C)
Relative Humidity	14	%RH
Barometric Pressure	29.41 (995.9)	inHg (hPa)

Model	**8520**
Serial Number	**23080**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

Zero Stability Results			
Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.001 :mg/m³	4.00 :hrs.

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	01-15-11	02-15-12
Humidity	E002873	11-24-10	11-24-11
DC Voltage	E003315	01-05-11	01-05-12
Microbalance	E001324	01-04-11	01-04-12
Pressure	E003511	11-12-10	11-12-11

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-24-10	11-24-11
DC Voltage	E003314	01-05-11	01-05-12
Photometer	E003319	01-27-11	07-27-11
Flow and Temperature	E003769	06-15-10	06-15-11

Calibrated

☑ Final Function Check

February 1, 2011
Date

Litho. in U.S.A.

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1111142
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	**DATE RECEIVED:**	17/05/2011
		DATE OF ISSUE:	20/05/2011
PROJECT:	--		

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal aceptance criteria of ALS will be followed.

Scope of Test:	Dissolved Oxygen, pH, Salinity and Temperature
Description:	YSI Professional Plus
Brand Name:	YSI
Model No.:	YSI Professional Plus
Serial No.:	10G101946
Equipment No.:	--
Date of Calibration:	19 May, 2011

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd

11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village house in To Tau near the proposed pumping station
Location ID : A1
HVAS Model No: TISCH TE-5170 TSP MFC Sampler System

Date of Calibration: 30-Jun-11
Next Calibration Date: 30-Aug-11
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1007.6	Corrected Pressure (mm Hg)	755.7
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11693
Model->	5025A	Qstd Intercept ->	-0.02568
Calibration Date->	2-Jun-11	Expiry Date->	2-Jun-12

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.5	4.5	9.0	1.419	54	53.40	Slope = 36.4581
13	3.2	3.2	6.4	1.199	46	45.49	Intercept = 1.8086
10	2	2	4.0	0.950	37	36.59	Corr. coeff. = 0.9988
7	1.4	1.4	2.8	0.797	32	31.64	
5	1.0	1.0	2.0	0.676	26	25.71	

Calculations :

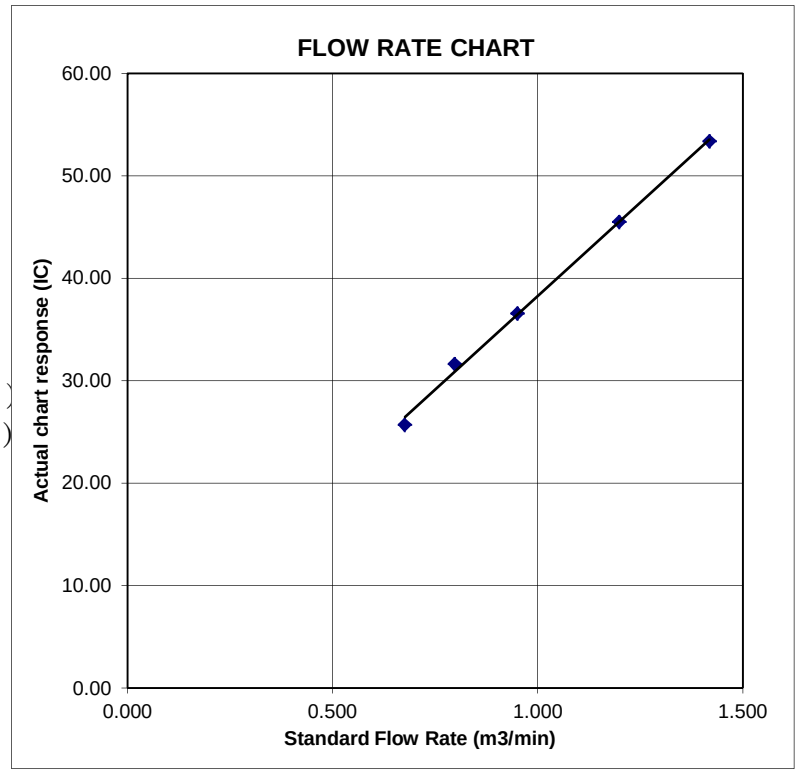
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1111142
Date of Issue: 20/05/2011
Client: ACTION UNITED ENVIRO SERVICES

Description: YSI Professional Plus
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 10G101946
Equipment No.: --
Date of Calibration: 19 May, 2011 Date of next Calibration: 19 August, 2011

Parameters:

Dissolved Oxygen **Method Ref: APHA (21st edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.72	2.90	0.18
5.52	5.60	0.08
7.75	7.61	-0.14
	Tolerance Limit (±mg/L)	0.20

pH Value **Method Ref: APHA (21st edition), 4500H:B**

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.00	4.19	0.19
7.00	7.19	0.19
10.00	10.10	0.10
	Tolerance Limit (±unit)	0.20

Salinity **Method Ref: APHA (21st edition), 2520B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.00	0.00	--
10.00	10.15	1.5
20.00	20.26	1.3
30.00	30.62	2.1
	Tolerance Limit (±%)	10.0

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
14.5	13.9	-0.6
21.0	20.8	-0.2
32.5	32.2	-0.3
	Tolerance Limit (°C)	2.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager – Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1119232
Date of Issue: 17/08/2011
Client: ACTION UNITED ENVIRO SERVICES

Description: YSI Professional Plus
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 10G101946
Equipment No.: --
Date of Calibration: 16 August, 2011 Date of next Calibration: 16 November, 2011

Parameters:

Dissolved Oxygen **Method Ref: APHA (21st edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.61	4.76	0.15
6.82	7.00	0.18
8.12	8.31	0.19
	Tolerance Limit (±mg/L)	0.20

pH Value **Method Ref: APHA (21st edition), 4500H:B**

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.00	4.10	0.10
7.00	7.06	0.06
10.00	9.92	-0.08
	Tolerance Limit (±unit)	0.20

Salinity **Method Ref: APHA (21st edition), 2520B**

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)
0.00	0.00	--
10.00	10.22	2.2
20.00	20.28	1.4
30.00	30.57	1.9
	Tolerance Limit (±%)	10.0

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
9.5	9.1	-0.4
22.0	21.6	-0.4
35.5	35.1	-0.4
	Tolerance Limit (°C)	2.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1112942
Date of Issue: 14/06/2011
Client: ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY

Description: Turbidity Meter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 13 June, 2011 Date of next Calibration: 13 September, 2011

Parameters:

Turbidity

Method Ref: ALPHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.00	0.00	--
4.00	3.69	-7.8
40.0	39.9	-0.3
80.0	73.6	-8.0
400	376	-6.0
800	771	-3.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager – Hong Kong

Annex G

Event and Action Plan

Event and Action Plan for Air Quality

EVENT	ACTION			
	ET leader	*IEC*	*ER*	*Contractor*
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source 2. Inform IEC, ER and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET leader 2. Check Contractor's working method	1. Notify Contractor	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source 2. Inform IEC, ER and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with IEC, Contractor and ER on remedial actions required 6. If exceedance continue, arrange meeting with IEC, ER and Contractor 7. If exceedance stops, cease additional monitoring	1. Checking monitoring data submitted by ET leader. 2. Check Contractor's working method 3. Discuss with ET leader and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source 2. Inform IEC, ER, EPD and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and kept IEC, EPD and ER informed of the results	1. Check monitoring data submitted by ET leader 2. Check Contractor's working method 3. Discuss with ET leader and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Audit implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid for the exceedance 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 3. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET leader and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Audit the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. In consultation with IEC, agree with the Contractor on the remedial measures to be implemented 4. Ensure remedial measures properly implemented 5. 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.	1. Take immediate action to avoid for the exceedance 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abate.

Event and Action Plan for Construction Noise Quality

EVENT	ACTION			
	ET Leader	IEC	ER	Contractor
Action Level	1. Notify IEC, Contractor and ER 2. Carry out investigation 3. Report the results of investigation to the IEC, Contractor and ER 4. Discuss with the Contractor and formulate remedial measures 5. Double monitoring frequency 6. Check compliance to Action/Limit Levels after application of mitigation measures	1. Review the analysed results submitted by the ET leader 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Review the implementation of remedial measures	1. Confirm receipt of notification of complaint in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to ER and IEC 2. Implement noise mitigation proposals
Limit Level	1. Notify IEC, ER, EPD and Contractor 2. Identify Source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER and EPD the causes & actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET leader and Contractor on the potential remedial actions 2. Review remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Audit the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. 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	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event and Action Plan for Water Quality

Event	ET leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings Identify source(s) of impact Inform IEC and Contractor Check monitoring data, all plant, equipment and Contractor's working methods Discuss mitigation measures with IEC and Contractor Repeat measurement on next day of exceedance	Discuss with ET leader and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures	Discuss with IEC on the proposed mitigation measures Make agreement on the mitigation measures to be implemented	Inform the ER and confirm notification of the non-compliance in writing Rectify unacceptable practice Check all plant and equipment Consider changes of working method Discuss with ET leader and IEC and propose mitigation measures to IEC and ER Implement the agreed mitigation measures
Action level being exceeded by more than one consecutive sampling days	Repeat in-situ measurement to confirm findings Identify source(s) of impact Inform IEC and Contractor Check monitoring data, all plant, equipment and Contractor's working methods Discuss mitigation measures with IEC and Contractor Ensure mitigation measures are implemented Prepare to increase the monitoring frequency to daily Repeat measurement on next day of exceedance	Discuss with ET leader and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures	Discuss with IEC on the proposed mitigation measures Make agreement on the mitigation measures to be implemented Assess the effectiveness of the implemented mitigation measures	Inform the ER and confirm notification of the non-compliance in writing Rectify unacceptable practice Check all plant and equipment Consider changes of working method Discuss with ET leader and IEC and propose mitigation measures to IEC and ER Implement the agreed mitigation measures
Limit level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings Identify source(s) of impact Inform IEC, Contractor and EPD Check monitoring data, all plant, equipment and Contractor's working methods Discuss mitigation measures with IEC and Contractor Ensure mitigation measures are implemented Increase the monitoring frequency to daily until no exceedance of Limit level	Discuss with ET leader and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures	Discuss with IEC on the proposed mitigation measures Request Contractor to critically review the working methods Make agreement on the mitigation measures to be implemented Assess the effectiveness of the implemented mitigation measures	Inform the ER and confirm notification of the non-compliance in writing Rectify unacceptable practice Check all plant and equipment Consider changes of working method Discuss with ET leader and IEC and propose mitigation measures to IEC and ER within 3 working days Implement the agreed mitigation measures
Limit level being exceeded by more than one consecutive sampling days	Repeat i n-situ measurement to confirm findings Identify source(s) of impact Inform IEC, Contractor and EPD Check monitoring data, all plant, equipment and Contractor's working methods Discuss mitigation measures with IEC and Contractor Ensure mitigation measures are implemented Increase the monitoring frequency to daily until no exceedance of Limit level	Discuss with ET leader and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures	Discuss with IEC on the proposed mitigation measures Request Contractor to critically review the working methods Make agreement on the mitigation measures to be implemented Assess the effectiveness of the implemented mitigation measures Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level	Inform the ER and confirm notification of the non-compliance in writing Rectify unacceptable practice Check all plant and equipment Consider changes of working method Discuss with ET leader and IEC and propose mitigation measures to IEC and ER within 3 working days Implement the agreed mitigation measures As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities

Annex H

Monitoring Schedule This Reporting Month And Next Reporting Month

Monitoring Schedule in the Reporting Month

Date		Air Quality		Noise	Water Quality
		1-hour TSP	24-hour TSP	Leq (30min)	
Tue	26-July-11	✓		✓	✓ (C1, C2, M1 – M8)
Wed	27-July-11				
Thu	28-July-11				✓ (C1, C2, M1 – M8)
Fri	29-July-11		✓		
Sat	30-July-11				✓ (C1, C2, M1 – M8)
Sun	31-July-11				
Mon	1-August-11	✓		✓	
Tue	2-August-11				✓ (C1, C2, M1 – M8)
Wed	3-August-11				
Thu	4-August-11		✓		✓ (C1, C2, M1 – M8)
Fri	5-August-11				
Sat	6-August-11	✓		✓	✓ (C1, C2, M1 – M8)
Sun	7-August-11				
Mon	8-August-11				✓ (C1, C2, M1 – M8)
Tue	9-August-11				
Wed	10-August-11		✓		✓ (C1, C2, M1 – M8)
Thu	11-August-11				
Fri	12-August-11	✓		✓	✓ (C1, C2, M1 – M8)
Sat	13-August-11				
Sun	14-August-11				
Mon	15-August-11				
Tue	16-August-11		✓		✓ (C1, C2, M1 – M8)
Wed	17-August-11				
Thu	18-August-11	✓		✓	✓ (C1, C2, M1 – M8)
Fri	19-August-11				
Sat	20-August-11				✓ (C1, C2, M1 – M8)
Sun	21-August-11				
Mon	22-August-11		✓		✓ (C1, C2, M1 – M8)
Tue	23-August-11				
Wed	24-August-11	✓		✓	✓ (C1, C2, M1 – M8)
Thu	25-August-11				

Time Schedule for Impact Water Quality Monitoring for August 2011

Week	Scheduled Monitoring Day		Scheduled Time for Measurements	
			Mid-Flood	Mid-Ebb
1	Tuesday	26-July-11	17:31	09:50
	Thursday	28-July-11	*18:00	10:25
	Saturday	30-July-11	*18:00	12:38
2	Tuesday	2-August-11	08:13	14:47
	Thursday	4-August-11	09:52	16:10
	Saturday	6-August-11	11:49	17:50
3	Monday	8-August-11	16:35	09:43
	Wednesday	10-August-11	17:17	10:23
	Friday	12-August-11	*18:00	11:55
4	Tuesday	16-August-11	08:09	14:28
	Thursday	18-August-11	09:19	15:29
	Saturday	20-August-11	10:35	16:22
5	Monday	22-August-11	12:35	16:52
	Wednesday	24-August-11	*18:00	09:15

***** Due to safety precaution, the subsequent monitoring time the most early will be 8:00 and the latest will be 17:00.

Predicted Monitoring Schedule in the coming Month

Date		Air Quality		Noise	Water Quality
		1-hour TSP	24-hour TSP	Leq (30min)	
Fri	26-August-11				✓ (C1, C2, M1 – M8)
Sat	27-August-11		✓		
Sun	28-August-11				
Mon	29-August-11				
Tue	30-August-11	✓		✓	✓ (C1, C2, M1 – M8)
Wed	31-August-11				
Thu	1-September-11				✓ (C1, C2, M1 – M8)
Fri	2-September-11		✓		
Sat	3-September-11				✓ (C1, C2, M1 – M8)
Sun	4-September-11				
Mon	5-September-11	✓		✓	✓ (C1, C2, M1 – M8)
Tue	6-September-11				
Wed	7-September-11				✓ (C1, C2, M1 – M8)
Thu	8-September-11		✓		
Fri	9-September-11	✓		✓	✓ (C1, C2, M1 – M8)
Sat	10-September-11				
Sun	11-September-11				
Mon	12-September-11				✓ (C1, C2, M1 – M8)
Tue	13-September-11				
Wed	14-September-11		✓		
Thu	15-September-11	✓		✓	✓ (C1, C2, M1 – M8)
Fri	16-September-11				
Sat	17-September-11				✓ (C1, C2, M1 – M8)
Sun	18-September-11				
Mon	19-September-11				✓ (C1, C2, M1 – M8)
Tue	20-September-11		✓		
Wed	21-September-11	✓		✓	✓ (C1, C2, M1 – M8)
Thu	22-September-11				
Fri	23-September-11				✓ (C1, C2, M1 – M8)
Sat	24-September-11				
Sun	25-September-11				

Time Schedule for Impact Water Quality Monitoring for September 2011

Week	Scheduled Monitoring Day		Scheduled Time for Measurements	
			Mid-Flood	Mid-Ebb
1	Friday	26-August-11	17:47	10:16
	Tuesday	30-August-11	*08:00	13:41
	Thursday	1-September-11	08:52	15:06
2	Saturday	3-September-11	10:32	16:29
	Monday	5-September-11	15:05	08:10
	Wednesday	7-September-11	16:23	08:58
3	Friday	9-September-11	17:29	10:47
	Tuesday	12-September-11	*08:00	12:50
	Thursday	15-September-11	08:24	14:28
4	Saturday	17-September-11	09:37	15:30
	Monday	19-September-11	11:06	15:44
	Wednesday	21-September-11	17:09	*08:00
5	Friday	23-September-11	16:46	09:02

***** Due to safety precaution, the subsequent monitoring time the most early will be 8:00 and the latest will be 17:00.

Annex I

Database of Monitoring Results

Impact 24-hour TSP Monitoring Results - A1 (Village house in To Tau near the proposed pumping station)

Date of Calibration: 30-Jun-11 Slope = 36.4581

Next Calibration Date: 30-Aug-11 Intercept = 1.8086

DATE	SAMPLE NUMBER	ELAPSED TIME INITIAL	ELAPSED TIME FINAL	ELAPSED TIME (min)	MIN CHART READING	MAX CHART READING	AVG CHART READING	AVG TEMP (oC)	STANDARD			BLANK SAMPLE NUMBER	BLANK INTIAL WEIGHT (g)	BLANK FINAL WEIGHT (g)	BLANK DIFF WEIGHT (g)	INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
									AVG PRESS (hPa)	FLOW RATE (m3/min)	AIR VOLUME (std m3)								
29-Jul-11	23903	5667.33	5691.02	1421.40	36	38	37.0	28.2	1002.8	0.95	1357	NA	2.8306	2.8311	0.0005	3.0494	3.1283	0.0789	58
4-Aug-11	23904	5691.02	5715.11	1445.40	36	38	37.0	29.9	1002.9	0.95	1376	NA	3.5762	3.5763	0.0001	3.0652	3.1841	0.1189	86
10-Aug-11	23905	5715.11	5739.08	1438.20	36	38	37.0	26.8	1005.8	0.96	1378	NA	3.5723	3.5716	-0.0007	3.0481	3.0728	0.0247	18
16-Aug-11	24033	5739.08	5764.02	1496.40	35	37	36.0	29.3	1009.9	0.93	1390	NA	3.5716	3.5713	-0.0003	2.8344	2.8988	0.0644	47
22-Aug-11	24034	5764.02	5787.51	1409.40	33	34	33.5	29	1008.1	0.86	1213	NA	3.5630	3.5626	-0.0004	2.8327	2.88	0.0473	39

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 26-Jul-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/7/26 09:55:52	M1	ME	842518	832561	2	1.000	29.80	6.71	105.3	1.8	31.54	8.50	4
2011/7/26 09:55:54						1.000	29.80	6.72	105.4	1.8	31.55	8.50	
2011/7/26 09:58:31	M2	ME	842535	832795	1.6	0.900	29.60	6.84	107.0	1.7	31.63	8.50	<2
2011/7/26 09:58:33						0.900	29.50	6.87	107.3	1.7	31.66	8.50	
2011/7/26 10:02:19	C1	ME	842187	833014	8	1.000	29.80	6.97	109.4	1.9	31.60	8.50	2
2011/7/26 10:02:21						1.000	29.90	6.95	109.1	2.0	31.58	8.50	
2011/7/26 10:03:00						3.900	27.90	6.09	93.0	2.0	32.55	8.44	4
2011/7/26 10:03:02						3.900	27.80	6.10	93.1	2.1	32.56	8.44	
2011/7/26 10:04:02						6.800	26.80	4.90	73.8	2.1	33.03	8.37	6
2011/7/26 10:04:04						6.800	26.80	4.92	74.1	2.0	33.02	8.37	
2011/7/26 10:10:35	M3	ME	842649	833094	2.2	1.000	29.70	6.66	104.4	1.6	31.61	8.50	3
2011/7/26 10:10:37						1.000	29.70	6.68	104.6	1.7	31.61	8.50	
2011/7/26 10:14:57	M4	ME	843038	833110	4.4	1.000	29.80	6.76	106.0	1.6	31.60	8.50	4
2011/7/26 10:14:59						1.000	29.80	6.75	105.8	1.6	31.61	8.51	
2011/7/26 10:15:34						3.200	26.90	5.82	87.7	1.7	33.00	8.43	4
2011/7/26 10:15:36						3.200	26.90	5.79	87.3	1.7	33.00	8.42	
2011/7/26 10:21:24	C2	ME	832995	843811	9.2	1.000	29.80	6.48	101.7	1.6	31.58	8.50	4
2011/7/26 10:21:26						1.000	29.80	6.50	102.0	1.5	31.60	8.50	
2011/7/26 10:21:56						4.400	27.60	6.00	91.4	1.8	32.68	8.44	4
2011/7/26 10:21:58						4.400	27.60	5.95	90.5	1.8	32.70	8.44	
2011/7/26 10:22:35						7.800	27.00	5.36	80.9	1.8	32.95	8.40	6
2011/7/26 10:22:37						7.800	27.00	5.34	80.6	1.9	32.97	8.40	
2011/7/26 10:29:28	M8	ME	832650	843634	1.8	0.800	29.70	6.51	101.9	1.6	31.54	8.51	4
2011/7/26 10:29:30						0.800	29.70	6.51	102.0	1.5	31.54	8.51	
2011/7/26 10:31:57	M6	ME	832580	843477	1.4	0.600	29.30	6.80	105.8	1.6	31.69	8.52	5
2011/7/26 10:31:59						0.600	29.20	6.87	106.8	1.7	31.71	8.52	
2011/7/26 10:35:19	M5	ME	832717	843396	2	0.900	29.20	6.96	108.2	1.6	31.73	8.51	3
2011/7/26 10:35:21						0.900	29.20	6.98	108.5	1.6	31.73	8.51	
2011/7/26 10:38:51	M7	ME	832779	843492	2	0.800	29.20	6.98	108.6	1.5	31.66	8.52	2
2011/7/26 10:38:54						0.800	29.30	6.95	108.1	1.6	31.63	8.52	
2011/7/26 17:36:05	M1	MF	842518	832561	2.2	1.200	29.30	6.95	108.1	1.5	31.43	8.53	4
2011/7/26 17:36:08						1.200	29.20	6.99	108.6	1.5	31.55	8.52	
2011/7/26 17:39:59	M2	MF	842535	832795	2	1.000	29.00	6.59	102.2	1.6	31.83	8.49	5
2011/7/26 17:40:01						1.000	29.10	6.56	101.8	1.6	31.82	8.49	
2011/7/26 17:44:51	C1	MF	842187	833014	8.4	1.000	29.10	6.93	107.7	1.6	31.73	8.51	2
2011/7/26 17:44:54						1.000	29.10	6.93	107.6	1.6	31.77	8.51	
2011/7/26 17:45:29						4.300	27.10	5.70	86.1	1.7	32.92	8.42	4
2011/7/26 17:45:32						4.300	27.10	5.67	85.8	1.6	32.91	8.42	
2011/7/26 17:46:06						7.600	26.60	5.01	75.1	1.7	33.12	8.38	5
2011/7/26 17:46:08						7.600	26.60	5.01	75.2	1.8	33.13	8.38	
2011/7/26 17:53:58	M3	MF	842649	833094	2.6	1.200	29.60	6.79	106.0	1.6	31.49	8.51	4
2011/7/26 17:54:01						1.200	29.60	6.76	105.5	1.6	31.50	8.51	
2011/7/26 17:57:31	M4	MF	843038	833110	5.2	1.000	29.50	6.90	107.7	1.5	31.52	8.52	5
2011/7/26 17:57:34						1.000	29.50	6.88	107.3	1.4	31.53	8.52	
2011/7/26 17:58:02						4.400	26.90	5.61	84.6	1.6	33.01	8.41	5
2011/7/26 17:58:05						4.400	26.90	5.64	85.1	1.6	32.99	8.41	
2011/7/26 18:03:58	C2	MF	832999	843826	9.6	1.000	29.50	6.61	103.1	1.5	31.50	8.50	4
2011/7/26 18:04:00						1.000	29.50	6.63	103.5	1.5	31.50	8.51	
2011/7/26 18:04:37						4.800	27.00	5.53	83.5	1.6	32.95	8.41	<2
2011/7/26 18:04:42						4.800	27.00	5.50	83.1	1.6	32.95	8.41	
2011/7/26 18:05:22						8.600	26.50	4.64	69.5	1.6	33.18	8.34	<2
2011/7/26 18:05:25						8.600	26.50	4.63	69.4	1.7	33.18	8.35	
2011/7/26 18:12:35	M8	MF	832640	843644	2.2	1.100	28.90	6.77	104.9	1.5	31.95	8.50	3
2011/7/26 18:12:38						1.100	28.60	6.74	104.0	1.5	32.10	8.49	
2011/7/26 18:14:14	M6	MF	832577	843479	1.6	0.900	28.90	6.60	102.3	1.6	31.93	8.48	5
2011/7/26 18:14:17						0.900	28.90	6.64	102.8	1.5	31.92	8.49	
2011/7/26 18:17:37	M5	MF	832710	843394	2.2	1.200	28.10	6.45	98.8	1.5	32.37	8.47	5
2011/7/26 18:17:40						1.200	27.80	6.25	95.3	1.4	32.56	8.46	
2011/7/26 18:21:29	M7	MF	832784	843493	2.2	1.200	28.80	6.63	102.6	1.5	32.01	8.48	7
2011/7/26 18:21:33						1.200	28.90	6.64	102.8	1.4	31.97	8.48	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 28-Jul-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/7/28 10:25:35	M1	ME	842518	832561	2	1.100	30.70	7.13	113.1	1.7	31.09	8.59	3
2011/7/28 10:25:39						1.100	30.80	7.10	112.8	1.7	31.09	8.58	
2011/7/28 10:27:58	M2	ME	842535	832795	1.6	0.900	30.60	6.93	109.8	1.8	31.11	8.59	5
2011/7/28 10:28:02						0.900	30.60	6.93	110.0	1.8	31.13	8.58	
2011/7/28 10:31:33	C1	ME	842187	833014	8	1.000	30.70	6.96	110.5	1.6	31.09	8.58	3
2011/7/28 10:31:37						1.000	30.70	6.96	110.5	1.7	31.06	8.58	
2011/7/28 10:32:15						3.900	28.80	5.58	86.4	1.7	32.23	8.43	<2
2011/7/28 10:32:19						3.900	28.70	5.57	86.1	1.7	32.25	8.43	
2011/7/28 10:33:19						6.800	28.70	5.41	83.5	1.8	31.72	8.44	3
2011/7/28 10:33:22						6.800	28.70	5.35	82.6	1.7	31.71	8.43	
2011/7/28 10:40:04	M3	ME	842649	833094	2.2	1.200	30.60	7.06	111.8	1.6	31.11	8.59	2
2011/7/28 10:40:07						1.200	30.60	7.09	112.3	1.6	31.09	8.59	
2011/7/28 10:44:27	M4	ME	843038	833110	4.4	1.000	30.70	7.19	114.1	1.9	31.05	8.59	2
2011/7/28 10:44:30						1.000	30.70	7.18	113.9	1.9	31.08	8.59	
2011/7/28 10:45:10						3.400	29.30	5.89	91.9	1.9	32.01	8.44	4
2011/7/28 10:45:14						3.400	29.30	5.87	91.5	1.9	32.00	8.45	
2011/7/28 10:51:16	C2	ME	832995	843811	9.2	1.000	30.70	7.02	111.3	1.6	31.07	8.59	3
2011/7/28 10:51:20						1.000	30.70	7.01	111.2	1.5	31.09	8.59	
2011/7/28 10:52:02						4.500	29.30	6.01	93.7	1.6	31.90	8.47	3
2011/7/28 10:52:06						4.500	29.20	5.92	92.1	1.6	31.97	8.47	
2011/7/28 10:52:38						8.000	28.80	5.48	84.9	1.7	32.22	8.42	2
2011/7/28 10:52:42						8.000	28.80	5.49	85.1	1.6	32.21	8.42	
2011/7/28 10:59:29	M8	ME	832650	843634	1.8	0.900	30.60	6.92	109.7	1.7	31.08	8.59	3
2011/7/28 10:59:33						0.900	30.60	6.90	109.3	1.7	31.07	8.59	
2011/7/28 11:01:58	M6	ME	832580	843477	1.4	0.800	30.70	7.06	112.0	1.5	31.06	8.59	3
2011/7/28 11:02:02						0.800	30.70	7.11	112.7	1.5	31.07	8.59	
2011/7/28 11:05:20	M5	ME	832717	843396	2	0.900	30.60	7.24	114.8	1.6	31.07	8.60	4
2011/7/28 11:05:24						0.900	30.70	7.22	114.5	1.6	31.09	8.60	
2011/7/28 11:08:55	M7	ME	832779	843492	2	0.900	30.70	7.19	114.1	1.7	31.05	8.60	2
2011/7/28 11:08:59						0.900	30.60	7.24	114.7	1.7	31.07	8.59	
2011/7/28 17:57:42	M1	MF	842518	832561	2.2	1.300	30.10	7.28	114.6	1.5	31.20	8.58	5
2011/7/28 17:57:45						1.300	30.10	7.25	114.0	1.5	31.21	8.58	
2011/7/28 18:01:55	M2	MF	842535	832795	2	1.000	29.90	6.48	101.7	1.6	31.30	8.55	3
2011/7/28 18:01:59						1.000	30.00	6.56	103.0	1.5	31.29	8.55	
2011/7/28 18:05:34	C1	MF	842187	833014	8.4	1.000	30.00	6.75	106.0	1.5	31.20	8.57	3
2011/7/28 18:05:38						1.000	30.00	6.72	105.5	1.6	31.20	8.57	
2011/7/28 18:06:04						4.100	27.90	5.37	82.2	1.6	32.71	8.42	5
2011/7/28 18:06:08						4.100	27.90	5.24	80.3	1.6	32.71	8.41	
2011/7/28 18:06:47						7.200	27.00	3.84	58.0	1.7	33.12	8.29	<2
2011/7/28 18:06:51						7.200	26.90	3.84	57.9	1.6	33.15	8.30	
2011/7/28 18:14:48	M3	MF	842649	833094	2.6	1.300	30.10	6.74	105.9	1.3	31.16	8.58	4
2011/7/28 18:14:52						1.300	30.10	6.77	106.3	1.4	31.16	8.58	
2011/7/28 18:17:59	M4	MF	843038	833110	5.2	1.000	30.10	6.98	109.8	1.4	31.17	8.59	4
2011/7/28 18:18:04						1.000	30.00	6.90	108.5	1.4	31.19	8.58	
2011/7/28 18:18:55						3.800	27.70	4.58	69.9	1.6	32.78	8.35	2
2011/7/28 18:18:59						3.800	27.70	4.54	69.3	1.5	32.79	8.35	
2011/7/28 18:24:11	C2	MF	832999	843826	9.6	1.000	30.00	6.79	106.7	1.4	31.22	8.57	6
2011/7/28 18:24:16						1.000	30.00	6.68	104.9	1.4	31.26	8.57	
2011/7/28 18:24:48						4.800	28.40	5.64	86.8	1.6	32.43	8.43	2
2011/7/28 18:24:53						4.800	28.40	5.65	87.1	1.6	32.39	8.42	
2011/7/28 18:25:17						8.600	27.00	4.30	65.0	1.9	33.18	8.34	2
2011/7/28 18:25:21						8.600	27.00	4.32	65.3	1.8	33.12	8.34	
2011/7/28 18:31:45	M8	MF	832640	843644	2.2	1.100	30.10	7.23	113.6	1.4	31.16	8.58	3
2011/7/28 18:31:49						1.100	30.10	7.26	114.2	1.5	31.15	8.59	
2011/7/28 18:34:08	M6	MF	832577	843479	1.6	1.000	30.20	7.35	115.7	1.4	31.18	8.57	4
2011/7/28 18:34:13						1.000	30.20	7.34	115.6	1.3	31.19	8.58	
2011/7/28 18:38:09	M5	MF	832710	843394	2.2	1.200	29.70	6.45	100.9	1.5	31.50	8.53	3
2011/7/28 18:38:14						1.200	29.90	6.64	104.2	1.5	31.39	8.54	
2011/7/28 18:41:53	M7	MF	832784	843493	2.2	1.200	29.60	6.66	104.1	1.4	31.63	8.53	4
2011/7/28 18:41:57						1.200	29.80	6.76	106.0	1.5	31.42	8.55	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 30-Jul-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/7/30 11:45:50	M1	ME	842518	832561	2	1.000	30.20	8.22	127.5	2.1	29.24	8.57	3
2011/7/30 11:46:10						1.000	30.30	8.19	127.2	2.0	29.24	8.57	
2011/7/30 11:48:58	M2	ME	842535	832795	1.6	0.700	30.20	8.00	124.1	1.9	29.25	8.57	4
2011/7/30 11:49:12						0.700	30.20	8.01	124.4	1.9	29.27	8.57	
2011/7/30 11:53:03	C1	ME	842187	833014	8	1.000	30.30	8.00	124.3	1.9	29.23	8.57	3
2011/7/30 11:53:26						1.000	30.30	8.00	124.2	2.0	29.21	8.56	
2011/7/30 11:54:15						4.200	28.70	6.00	92.8	2.1	32.25	8.34	3
2011/7/30 11:54:38						4.200	28.70	5.73	88.6	2.2	32.27	8.34	
2011/7/30 11:55:26						7.400	28.60	5.27	81.3	2.4	32.11	8.32	5
2011/7/30 11:55:40						7.400	28.60	5.14	79.4	2.4	32.10	8.31	
2011/7/30 11:58:04	M3	ME	842649	833094	2.2	1.100	30.20	7.59	117.9	1.9	29.24	8.57	3
2011/7/30 11:58:16						1.100	30.20	7.77	120.7	1.8	29.23	8.57	
2011/7/30 12:04:37	M4	ME	843038	833110	4.4	1.000	30.30	7.79	121.2	2.3	29.22	8.57	5
2011/7/30 12:04:49						1.000	30.30	8.00	124.4	2.4	29.23	8.57	
2011/7/30 12:05:01						4.000	29.00	6.02	93.6	2.7	32.23	8.34	3
2011/7/30 12:05:14						4.000	29.00	5.57	86.7	2.6	32.23	8.35	
2011/7/30 12:11:26	C2	ME	832995	843811	9.2	1.000	30.30	8.02	124.6	1.8	29.25	8.58	7
2011/7/30 12:11:39						1.000	30.30	8.01	124.5	1.7	29.25	8.58	
2011/7/30 12:11:50						4.700	29.00	6.09	94.6	1.9	32.18	8.37	3
2011/7/30 12:11:59						4.700	29.00	5.80	90.0	2.0	32.22	8.37	
2011/7/30 12:12:18						8.400	28.60	5.15	79.7	2.2	32.48	8.32	4
2011/7/30 12:12:36						8.400	28.60	4.91	76.0	2.1	32.47	8.32	
2011/7/30 12:19:22	M8	ME	832650	843634	1.8	0.900	30.20	7.59	118.1	1.6	29.25	8.59	4
2011/7/30 12:19:39						0.900	30.20	7.68	119.4	1.5	29.23	8.59	
2011/7/30 12:21:52	M6	ME	832580	843477	1.4	0.600	30.30	7.99	124.3	1.8	29.20	8.58	6
2011/7/30 12:22:12						0.600	30.30	7.94	123.4	1.8	29.22	8.58	
2011/7/30 12:25:06	M5	ME	832717	843396	2	1.000	30.10	8.15	126.6	1.4	29.28	8.56	6
2011/7/30 12:25:24						1.000	30.20	8.01	124.3	1.5	29.30	8.57	
2011/7/30 12:28:50	M7	ME	832779	843492	2	1.000	30.30	7.93	123.4	1.5	29.20	8.59	4
2011/7/30 12:28:59						1.000	30.20	8.00	124.2	1.6	29.26	8.58	
2011/7/30 17:47:12	M1	MF	842518	832561	2.2	1.100	29.80	8.00	124.9	1.6	30.76	8.52	3
2011/7/30 17:47:25						1.100	29.70	7.81	121.7	1.7	30.87	8.50	
2011/7/30 17:51:35	M2	MF	842535	832795	2	0.900	29.60	6.88	107.2	1.5	30.95	8.49	8
2011/7/30 17:51:59						0.900	29.70	6.83	106.3	1.6	30.61	8.50	
2011/7/30 17:55:41	C1	MF	842187	833014	8.4	1.000	29.80	7.15	111.0	1.4	29.97	8.54	4
2011/7/30 17:55:58						1.000	29.70	7.24	112.4	1.4	30.24	8.53	
2011/7/30 17:56:24						4.400	28.10	5.59	85.9	1.5	32.74	8.34	6
2011/7/30 17:56:48						4.400	28.10	5.27	81.0	1.6	32.73	8.33	
2011/7/30 17:56:57						7.800	27.40	4.26	64.9	1.7	33.07	8.24	3
2011/7/30 17:57:15						7.800	27.30	4.16	63.2	1.8	33.10	8.25	
2011/7/30 18:04:18	M3	MF	842649	833094	2.6	1.200	29.90	7.65	118.4	1.5	29.36	8.58	4
2011/7/30 18:04:32						1.200	29.90	7.69	118.8	1.5	29.40	8.58	
2011/7/30 18:07:59	M4	MF	843038	833110	5.2	1.000	29.90	7.50	116.1	1.7	29.23	8.58	3
2011/7/30 18:08:14						1.000	29.80	7.56	116.9	1.8	29.25	8.57	
2011/7/30 18:08:50						4.600	28.00	4.66	71.4	1.8	32.75	8.29	2
2011/7/30 18:08:58						4.600	28.00	4.53	69.4	1.8	32.76	8.29	
2011/7/30 18:14:12	C2	MF	832999	843826	9.6	1.000	29.90	7.77	120.2	1.9	29.35	8.57	4
2011/7/30 18:14:26						1.000	29.90	7.73	119.5	2.0	29.35	8.58	
2011/7/30 18:14:50						4.900	28.40	6.56	101.1	2.4	32.55	8.35	4
2011/7/30 18:14:59						4.900	28.40	5.75	88.7	2.3	32.51	8.35	
2011/7/30 18:15:17						8.800	27.40	4.37	66.4	2.4	33.16	8.26	5
2011/7/30 18:15:23						8.800	27.40	4.18	63.6	2.5	33.12	8.25	
2011/7/30 18:21:35	M8	MF	832640	843644	2.2	1.100	30.00	8.02	124.1	1.7	29.31	8.59	3
2011/7/30 18:21:47						1.100	30.00	8.18	126.7	1.6	29.30	8.60	
2011/7/30 18:24:18	M6	MF	832577	843479	1.6	0.900	30.00	8.26	128.0	1.5	29.31	8.59	5
2011/7/30 18:24:26						0.900	30.00	8.22	127.4	1.6	29.31	8.59	
2011/7/30 18:28:19	M5	MF	832710	843394	2.2	1.100	29.70	7.67	118.3	1.8	29.52	8.56	3
2011/7/30 18:28:34						1.100	29.80	7.74	119.6	1.8	29.48	8.55	
2011/7/30 18:31:43	M7	MF	832784	843493	2.2	1.000	29.50	7.59	117.1	1.7	29.88	8.53	2
2011/7/30 18:31:57						1.000	29.70	7.66	118.3	1.8	29.61	8.55	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 2-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/2 14:05:04	M1	ME	842518	832561	2	1.200	29.90	8.28	128.0	2.1	28.69	8.53	5
2011/8/2 14:05:19						1.200	29.90	8.45	130.5	2.1	28.73	8.52	
2011/8/2 14:08:52	M2	ME	842535	832795	1.6	0.800	30.00	8.91	137.9	2.3	28.84	8.52	<2
2011/8/2 14:09:16						0.800	30.20	8.92	138.5	2.4	28.66	8.52	
2011/8/2 14:13:10	C1	ME	842187	833014	8	1.000	29.90	8.08	125.5	2.1	29.56	8.46	3
2011/8/2 14:13:29						1.000	29.80	8.14	126.3	2.1	29.71	8.44	
2011/8/2 14:13:51						3.700	28.60	6.86	106.3	2.5	32.57	8.26	<2
2011/8/2 14:14:11						3.700	28.60	6.68	103.5	2.4	32.57	8.26	
2011/8/2 14:15:06						6.400	27.30	6.29	95.7	2.6	33.28	8.07	3
2011/8/2 14:15:42						6.400	27.20	4.63	70.1	2.6	33.33	8.07	
2011/8/2 14:18:14	M3	ME	842649	833094	2.2	1.100	30.10	8.06	125.1	2.4	29.09	8.48	4
2011/8/2 14:18:26						1.100	30.00	8.12	125.9	2.3	29.09	8.48	
2011/8/2 14:24:01	M4	ME	843038	833110	4.4	1.000	29.80	7.86	121.8	2.5	29.26	8.44	3
2011/8/2 14:24:17						1.000	30.30	7.92	123.2	2.4	28.50	8.48	
2011/8/2 14:24:52						3.000	28.50	6.41	99.0	2.9	32.45	8.22	<2
2011/8/2 14:25:14						3.000	28.30	6.04	93.1	2.9	32.61	8.22	
2011/8/2 14:31:06	C2	ME	832995	843811	9.2	1.000	30.40	8.30	129.4	2.1	28.75	8.50	<2
2011/8/2 14:31:19						1.000	30.50	8.50	132.6	2.2	28.68	8.51	
2011/8/2 14:31:43						4.200	28.60	7.38	114.1	2.4	32.50	8.25	<2
2011/8/2 14:31:59						4.200	28.60	6.79	105.0	2.5	32.50	8.24	
2011/8/2 14:32:11						7.400	25.00	3.78	55.7	2.8	34.35	7.99	2
2011/8/2 14:32:39						7.400	25.00	3.55	52.3	2.9	34.36	7.99	
2011/8/2 14:39:02	M8	ME	832650	843634	1.8	0.800	29.70	7.80	120.9	2.6	30.06	8.43	<2
2011/8/2 14:39:19						0.800	29.80	7.97	123.7	2.7	29.85	8.43	
2011/8/2 14:41:57	M6	ME	832580	843477	1.4	0.600	29.90	8.60	133.6	2.9	29.78	8.44	2
2011/8/2 14:42:17						0.600	30.00	8.33	129.6	3.0	29.66	8.44	
2011/8/2 14:45:26	M5	ME	832717	843396	2	0.800	29.60	7.88	122.2	2.8	30.20	8.41	2
2011/8/2 14:45:44						0.800	29.70	7.89	122.4	2.8	30.10	8.41	
2011/8/2 14:48:50	M7	ME	832779	843492	2	0.800	29.50	7.84	121.6	2.4	30.33	8.40	<2
2011/8/2 14:48:52						0.800	29.60	7.85	121.8	2.4	30.24	8.41	
2011/8/2 08:49:02	M1	MF	842518	832561	2.2	1.300	30.80	7.91	123.6	2.4	28.33	8.49	2
2011/8/2 08:49:22						1.300	30.60	7.98	124.5	2.4	28.53	8.47	
2011/8/2 08:51:26	M2	MF	842535	832795	2	1.000	30.60	7.98	124.6	2.6	28.62	8.49	3
2011/8/2 08:51:50						1.000	30.50	8.02	125.3	2.9	28.84	8.49	
2011/8/2 08:55:23	C1	MF	842187	833014	8.4	1.000	30.20	8.21	127.8	2.7	29.40	8.47	3
2011/8/2 08:55:41						1.000	30.20	8.24	128.2	2.8	29.37	8.47	
2011/8/2 08:56:02						4.100	28.90	7.20	111.8	2.9	32.40	8.27	2
2011/8/2 08:56:26						4.100	28.90	6.88	106.8	2.9	32.40	8.28	
2011/8/2 08:57:01						7.200	28.40	5.86	90.3	3.1	32.64	8.14	3
2011/8/2 08:57:22						7.200	28.40	4.93	76.1	3.0	32.69	8.12	
2011/8/2 09:03:47	M3	MF	842649	833094	2.6	1.300	30.77	7.63	119.3	2.4	28.53	8.51	3
2011/8/2 09:03:58						1.300	30.40	8.03	125.4	2.5	29.11	8.50	
2011/8/2 09:06:47	M4	MF	843038	833110	5.2	1.000	30.80	8.22	128.7	2.1	28.60	8.50	4
2011/8/2 09:07:11						1.000	30.80	8.26	129.4	2.3	28.60	8.50	
2011/8/2 09:07:53						3.300	29.10	7.66	119.3	2.1	32.24	8.29	2
2011/8/2 09:08:08						3.300	29.10	7.48	116.4	2.2	32.24	8.30	
2011/8/2 09:11:02	C2	MF	832999	843826	9.6	1.000	30.70	7.82	122.2	1.9	28.54	8.53	<2
2011/8/2 09:11:22						1.000	30.70	8.30	129.9	1.8	28.56	8.53	
2011/8/2 09:11:57						4.500	28.90	7.20	111.9	2.1	32.41	8.29	<2
2011/8/2 09:12:13						4.500	28.90	6.97	108.3	2.2	32.43	8.29	
2011/8/2 09:12:58						8.000	27.70	4.50	68.8	2.4	33.10	8.11	2
2011/8/2 09:13:10						8.000	27.70	4.28	65.4	2.3	33.10	8.11	
2011/8/2 09:18:26	M8	MF	832640	843644	2.2	1.000	30.30	8.00	124.6	3.0	28.86	8.50	<2
2011/8/2 09:18:49						1.000	30.30	8.08	125.9	2.9	29.08	8.50	
2011/8/2 09:21:59	M6	MF	832577	843479	1.6	0.800	30.70	8.30	129.7	1.9	28.49	8.53	<2
2011/8/2 09:22:16						0.800	30.90	8.32	130.3	1.9	28.33	8.53	
2011/8/2 09:26:29	M5	MF	832710	843394	2.2	1.100	30.50	8.48	132.5	2.4	28.98	8.51	2
2011/8/2 09:26:57						1.100	30.50	8.40	131.3	2.3	28.99	8.50	
2011/8/2 09:29:23	M7	MF	832784	843493	2.2	1.100	30.70	8.07	126.3	2.7	28.81	8.50	<2
2011/8/2 09:29:57						1.100	30.60	8.12	126.9	2.6	28.98	8.49	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 4-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/4 15:55:20	M1	ME	842518	832561	2	1.200	30.20	7.48	116.2	2.4	28.70	8.32	3
2011/8/4 15:55:37						1.200	30.10	7.53	116.8	2.5	28.83	8.31	
2011/8/4 15:58:12	M2	ME	842535	832795	1.6	0.800	30.00	7.51	116.5	2.3	28.89	8.31	2
2011/8/4 15:58:36						0.800	30.00	7.51	116.6	2.3	29.03	8.31	
2011/8/4 16:02:12	C1	ME	842187	833014	8	1.000	29.80	7.64	118.4	2.2	29.42	8.29	2
2011/8/4 16:02:29						1.000	29.80	7.62	118.1	2.2	29.41	8.29	
2011/8/4 16:03:33						3.800	28.30	6.61	101.7	2.6	32.35	8.21	<2
2011/8/4 16:03:53						3.800	28.30	6.40	98.5	2.7	32.34	8.22	
2011/8/4 16:04:36						6.600	27.70	5.29	80.9	2.7	32.69	8.19	3
2011/8/4 16:05:00						6.600	27.70	4.68	71.4	2.7	32.73	8.17	
2011/8/4 16:08:12	M3	ME	842649	833094	2.2	1.300	29.90	7.09	110.1	3.0	29.48	8.39	2
2011/8/4 16:08:26						1.300	29.60	7.32	113.5	3.0	29.94	8.39	
2011/8/4 16:13:41	M4	ME	843038	833110	4.4	1.000	30.30	7.71	119.9	2.7	28.58	8.32	3
2011/8/4 16:14:03						1.000	30.30	7.76	120.7	2.6	28.62	8.32	
2011/8/4 16:14:55						3.100	28.50	7.05	108.9	2.8	32.22	8.22	2
2011/8/4 16:05:12						3.100	28.50	6.89	106.3	2.7	32.23	8.23	
2011/8/4 16:11:22	C2	ME	832995	843811	9.2	1.000	30.10	7.37	114.5	2.0	28.77	8.36	3
2011/8/4 16:11:29						1.000	30.10	7.42	120.0	2.1	28.77	8.36	
2011/8/4 16:12:21						4.300	28.30	6.64	102.3	2.6	32.37	8.24	<2
2011/8/4 16:12:59						4.300	28.30	6.48	99.8	2.5	32.38	8.24	
2011/8/4 16:13:41						7.600	27.10	4.28	64.9	2.8	33.04	8.19	2
2011/8/4 16:13:51						7.600	27.10	4.16	63.1	2.8	33.03	8.19	
2011/8/4 16:19:12	M8	ME	832650	843634	1.8	0.800	29.50	7.51	116.3	2.8	29.15	8.35	<2
2011/8/4 16:19:29						0.800	29.50	7.57	117.2	2.8	29.30	8.34	
2011/8/4 16:21:51	M6	ME	832580	843477	1.4	0.800	30.10	7.78	120.7	2.4	28.89	8.36	2
2011/8/4 16:22:11						0.800	30.20	7.78	121.0	2.4	28.78	8.36	
2011/8/4 16:25:31	M5	ME	832717	843396	2	0.900	29.70	7.78	120.8	2.6	29.75	8.36	4
2011/8/4 16:25:44						0.900	29.70	7.71	119.7	2.6	29.82	8.35	
2011/8/4 16:28:30	M7	ME	832779	843492	2	1.000	30.10	7.53	117.1	2.2	29.10	8.35	<2
2011/8/4 16:28:58						1.000	30.00	7.56	117.4	2.3	29.21	8.34	
2011/8/4 09:11:33	M1	MF	842518	832561	2.2	1.400	29.60	7.70	118.5	2.3	28.78	8.34	4
2011/8/4 09:11:47						1.400	29.60	7.82	120.4	2.2	28.77	8.34	
2011/8/4 09:15:31	M2	MF	842535	832795	2	1.000	29.60	8.13	125.4	2.6	29.02	8.55	5
2011/8/4 09:15:50						1.000	29.70	8.15	126.0	2.5	28.92	8.56	
2011/8/4 09:20:01	C1	MF	842187	833014	8.4	1.000	29.60	7.54	116.6	2.4	29.43	8.51	2
2011/8/4 09:20:16						1.000	29.50	7.60	117.4	2.3	29.53	8.50	
2011/8/4 09:21:10						4.300	28.10	6.39	98.2	2.6	32.48	8.42	2
2011/8/4 09:21:27						4.300	28.10	6.25	96.1	2.7	32.49	8.42	
2011/8/4 09:22:02						7.600	26.80	5.30	80.1	2.8	33.23	8.26	<2
2011/8/4 09:22:16						7.600	26.70	4.20	63.2	2.9	33.25	8.26	
2011/8/4 09:26:27	M3	MF	842649	833094	2.6	1.300	29.70	7.42	114.7	3.1	29.09	8.42	3
2011/8/4 09:26:58						1.300	29.70	7.50	115.8	3.3	29.09	8.41	
2011/8/4 09:29:13	M4	MF	843038	833110	5.2	1.000	29.50	7.42	114.5	2.3	29.22	8.36	<2
2011/8/4 09:29:29						1.000	29.90	7.46	115.4	2.4	28.73	8.38	
2011/8/4 09:30:04						3.700	28.10	6.24	95.7	2.6	32.32	8.26	2
2011/8/4 09:30:47						3.700	28.00	5.98	91.7	2.6	32.40	8.26	
2011/8/4 09:34:22	C2	MF	832999	843826	9.6	1.000	30.00	7.71	119.5	2.1	28.88	8.46	<2
2011/8/4 09:34:57						1.000	30.00	7.82	121.3	2.2	28.85	8.46	
2011/8/4 09:35:29						4.800	28.20	6.90	106.1	2.5	32.32	8.31	<2
2011/8/4 09:35:50						4.800	28.20	6.50	99.8	2.5	32.32	8.30	
2011/8/4 09:36:35						8.600	25.30	3.84	56.6	2.8	33.90	8.18	3
2011/8/4 09:36:41						8.600	25.30	3.62	53.4	2.8	33.90	8.18	
2011/8/4 09:40:12	M8	MF	832640	843644	2.2	1.000	29.60	7.25	112.0	3.0	29.71	8.38	<2
2011/8/4 09:40:26						1.000	29.70	7.37	114.1	2.9	29.55	8.38	
2011/8/4 09:44:10	M6	MF	832577	843479	1.6	0.900	29.80	7.83	121.3	2.7	29.45	8.36	<2
2011/8/4 09:44:26						0.900	29.90	7.65	118.7	2.6	29.37	8.36	
2011/8/4 09:49:38	M5	MF	832710	843394	2.2	1.200	29.40	7.38	114.0	3.0	29.93	8.35	2
2011/8/4 09:49:53						1.200	29.50	7.39	114.2	3.0	29.86	8.35	
2011/8/4 09:53:13	M7	MF	832784	843493	2.2	1.100	29.30	7.47	115.3	2.6	30.02	8.34	<2
2011/8/4 09:53:47						1.100	29.40	7.43	114.8	2.6	29.96	8.35	

Remarks: MF - Middle Flood tida
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Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 6-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/6 16:55:02	M1	ME	842518	832561	2	1.100	29.30	7.37	113.2	2.0	29.30	8.40	<2
2011/8/6 16:55:17						1.100	29.20	7.41	113.6	1.9	29.35	8.39	
2011/8/6 16:57:42	M2	ME	842535	832795	1.6	0.700	29.00	7.19	110.4	2.1	29.88	8.38	9
2011/8/6 16:58:16						0.700	29.00	7.18	110.3	2.1	29.98	8.37	
2011/8/6 17:02:06	C1	ME	842187	833014	8	1.000	29.00	7.38	113.2	1.9	29.75	8.38	3
2011/8/6 17:02:18						1.000	29.00	7.38	113.2	1.9	29.75	8.38	
2011/8/6 17:02:58						3.900	27.90	6.25	95.5	1.9	32.23	8.29	2
2011/8/6 17:03:11						3.900	27.90	6.14	93.7	1.9	32.22	8.30	
2011/8/6 17:03:49						6.800	27.20	4.52	68.7	2.1	32.68	8.22	3
2011/8/6 17:04:22						6.800	27.20	4.19	63.6	2.2	32.69	8.21	
2011/8/6 17:07:02	M3	ME	842649	833094	2.2	1.200	29.10	7.02	107.7	1.9	29.79	8.44	4
2011/8/6 17:07:21						1.200	28.90	7.15	109.7	2.0	30.07	8.43	
2011/8/6 17:13:41	M4	ME	843038	833110	4.4	1.000	29.30	7.44	114.4	2.1	29.26	8.39	5
2011/8/6 17:13:55						1.000	29.30	7.48	114.9	2.0	29.29	8.39	
2011/8/6 17:14:25						3.400	28.00	6.62	101.3	2.4	32.11	8.30	2
2011/8/6 17:14:44						3.400	28.00	6.53	99.9	2.3	32.12	8.31	
2011/8/6 17:19:03	C2	ME	832995	843811	9.2	1.000	29.20	7.28	111.8	2.0	29.47	8.42	4
2011/8/6 17:19:29						1.000	29.20	7.31	115.2	2.1	29.47	8.42	
2011/8/6 17:20:04						4.200	27.90	6.48	99.1	2.2	32.22	8.32	2
2011/8/6 17:20:36						4.200	27.90	6.39	97.6	2.2	32.23	8.32	
2011/8/6 17:21:12						7.300	26.90	4.11	62.1	2.3	32.90	8.23	2
2011/8/6 17:21:36						7.300	26.90	4.09	61.8	2.3	32.86	8.23	
2011/8/6 17:25:06	M8	ME	832650	843634	1.8	0.700	28.90	7.24	111.0	1.9	29.58	8.41	4
2011/8/6 17:25:27						0.700	28.90	7.27	111.6	1.9	29.68	8.41	
2011/8/6 17:29:34	M6	ME	832580	843477	1.4	0.600	29.20	7.50	115.2	1.9	29.44	8.42	2
2011/8/6 17:29:51						0.600	29.30	7.52	115.6	1.9	29.38	8.42	
2011/8/6 17:32:06	M5	ME	832717	843396	2	0.900	28.90	7.52	115.6	2.1	30.09	8.42	<2
2011/8/6 17:32:44						0.900	28.90	7.47	114.7	2.0	30.13	8.42	
2011/8/6 17:35:21	M7	ME	832779	843492	2	0.800	29.10	7.28	112.0	2.0	29.90	8.41	5
2011/8/6 17:35:52						0.800	29.00	7.29	112.0	2.0	29.99	8.40	
2011/8/6 11:21:12	M1	MF	842518	832561	2.2	1.300	28.80	7.30	111.7	2.1	29.76	8.39	<2
2011/8/6 11:21:47						1.300	28.80	7.37	112.8	2.1	29.79	8.39	
2011/8/6 11:25:24	M2	MF	842535	832795	2	1.100	28.80	7.32	112.2	2.0	30.06	8.51	2
2011/8/6 11:25:57						1.100	28.80	7.33	112.5	2.1	29.97	8.51	
2011/8/6 11:29:01	C1	MF	842187	833014	8.4	1.000	28.80	6.98	107.0	2.2	30.18	8.48	6
2011/8/6 11:29:18						1.000	28.70	6.98	106.9	2.2	30.32	8.47	
2011/8/6 11:29:48						4.200	27.50	5.53	84.2	2.4	32.44	8.38	4
2011/8/6 11:30:08						4.200	27.50	5.45	83.2	2.5	32.44	8.38	
2011/8/6 11:30:50						7.400	26.40	4.33	65.1	2.6	33.10	8.24	4
2011/8/6 11:31:16						7.400	26.40	3.65	54.7	2.6	33.11	8.24	
2011/8/6 11:35:14	M3	MF	842649	833094	2.6	1.400	29.00	7.29	111.5	2.7	29.45	8.47	2
2011/8/6 11:35:58						1.400	29.00	7.35	112.5	2.3	29.46	8.47	
2011/8/6 11:39:08	M4	MF	843038	833110	5.2	1.000	28.90	7.37	112.7	2.3	29.56	8.43	4
2011/8/6 11:39:29						1.000	29.10	7.39	113.2	2.2	29.25	8.44	
2011/8/6 11:40:12						3.600	27.70	5.89	89.9	2.4	32.30	8.32	4
2011/8/6 11:40:36						3.600	27.70	5.72	87.2	2.5	32.36	8.31	
2011/8/6 11:44:32	C2	MF	832999	843826	9.6	1.000	29.20	7.45	114.2	2.3	29.32	8.48	<2
2011/8/6 11:44:58						1.000	29.20	7.52	115.4	2.2	29.29	8.48	
2011/8/6 11:45:41						4.700	27.80	6.07	92.8	2.4	32.35	8.33	<2
2011/8/6 11:45:59						4.700	27.80	5.85	89.3	2.4	32.33	8.32	
2011/8/6 11:46:28						8.400	25.60	4.46	68.2	2.6	33.50	8.20	3
2011/8/6 11:46:49						8.400	25.60	4.31	64.2	2.5	33.50	8.20	
2011/8/6 11:50:49	M8	MF	832640	843644	2.2	1.100	29.00	7.21	110.3	2.2	29.75	8.44	2
2011/8/6 11:51:06						1.100	29.00	7.28	111.6	2.2	29.66	8.44	
2011/8/6 11:54:23	M6	MF	832577	843479	1.6	1.000	29.10	7.51	115.2	2.4	29.64	8.42	4
2011/8/6 11:54:57						1.000	29.10	7.41	113.8	2.3	29.59	8.42	
2011/8/6 11:59:24	M5	MF	832710	843394	2.2	1.100	28.80	7.24	110.8	2.3	29.95	8.42	<2
2011/8/6 11:59:48						1.100	28.90	7.26	111.1	2.2	29.91	8.42	
2011/8/6 12:04:00	M7	MF	832784	843493	2.2	1.100	28.70	7.29	111.5	2.2	30.32	8.40	3
2011/8/6 12:04:27						1.100	28.70	7.27	111.2	2.1	30.28	8.41	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 8-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/8 09:30:12	M1	ME	842518	832561	2	1.100	29.80	7.19	110.4	3.0	29.94	8.06	<2
2011/8/8 09:30:16						1.100	29.70	7.21	110.5	3.1	29.97	8.05	
2011/8/8 09:33:26	M2	ME	842535	832795	1.6	0.700	29.60	7.05	108.2	3.1	30.39	8.04	4
2011/8/8 09:33:41						0.700	29.60	6.97	107.0	3.1	30.46	8.04	
2011/8/8 09:37:02	C1	ME	842187	833014	8	1.000	29.50	7.16	109.5	3.1	30.47	8.04	4
2011/8/8 09:37:18						1.000	29.50	7.15	109.5	3.0	30.47	8.04	
2011/8/8 09:37:49						4.900	28.70	6.00	91.5	3.1	32.11	7.95	4
2011/8/8 09:38:01						4.900	28.70	5.91	90.1	3.2	32.09	7.96	
2011/8/8 09:38:53						6.800	27.60	4.15	62.7	3.2	32.77	7.84	4
2011/8/8 09:39:06						6.800	27.60	3.93	59.3	3.2	32.77	7.84	
2011/8/8 09:44:11	M3	ME	842649	833094	2.2	1.200	29.70	7.12	109.2	3.1	30.43	8.09	3
2011/8/8 09:44:33						1.200	29.50	7.23	110.9	3.2	30.59	8.08	
2011/8/8 09:49:20	M4	ME	843038	833110	4.4	1.000	29.70	7.41	113.8	2.9	30.14	8.06	4
2011/8/8 09:49:35						1.000	29.70	7.40	113.7	2.9	30.18	8.06	
2011/8/8 09:50:10						3.200	28.80	6.32	96.5	2.7	32.01	7.96	3
2011/8/8 09:50:29						3.200	28.80	6.26	95.6	3.0	32.01	7.97	
2011/8/8 09:56:01	C2	ME	832995	843811	9.2	1.000	29.70	7.37	113.0	2.8	30.09	8.08	4
2011/8/8 09:56:16						1.000	29.70	7.40	115.3	2.8	30.09	8.09	
2011/8/8 09:57:11						4.200	28.70	6.20	94.6	3.0	32.09	7.97	2
2011/8/8 09:57:23						4.200	28.70	6.10	93.1	3.0	32.09	7.97	
2011/8/8 09:57:59						7.400	27.20	3.67	55.0	3.1	32.98	7.83	<2
2011/8/8 09:58:10						7.400	27.20	3.64	54.6	3.2	32.96	7.83	
2011/8/8 10:03:37	M8	ME	832650	843634	1.8	0.800	29.60	7.29	111.8	3.2	30.13	8.08	4
2011/8/8 10:03:47						0.800	29.10	7.34	112.6	3.2	30.19	8.08	
2011/8/8 10:09:23	M6	ME	832580	843477	1.4	0.600	29.80	7.54	115.7	2.9	30.04	8.09	3
2011/8/8 10:09:42						0.600	29.80	7.56	116.2	2.9	30.01	8.09	
2011/8/8 10:13:17	M5	ME	832717	843396	2	0.900	29.60	7.62	117.0	3.1	30.43	8.09	<2
2011/8/8 10:13:55						0.900	29.60	7.59	116.5	3.1	30.45	8.09	
2011/8/8 10:18:42	M7	ME	832779	843492	2	0.900	29.60	7.01	107.6	3.2	30.41	8.08	2
2011/8/8 10:19:02						0.900	29.60	7.03	107.8	3.2	30.47	8.07	
2011/8/8 15:40:06	M1	MF	842518	832561	2.2	1.400	29.40	7.14	109.2	2.8	30.34	8.05	3
2011/8/8 15:40:36						1.400	29.40	7.19	110.0	2.9	30.36	8.05	
2011/8/8 15:43:14	M2	MF	842535	832795	2	1.000	29.40	7.06	108.2	2.9	30.52	8.12	4
2011/8/8 15:43:21						1.000	29.40	7.03	107.7	3.0	30.47	8.12	
2011/8/8 15:48:22	C1	MF	842187	833014	8.4	1.000	29.50	7.31	112.0	2.6	30.49	8.12	9
2011/8/8 15:48:38						1.000	29.50	7.30	111.9	2.7	30.58	8.12	
2011/8/8 15:49:41						4.100	28.50	7.57	86.9	2.9	32.19	8.02	3
2011/8/8 15:49:57						4.100	28.50	5.64	86.0	2.9	32.19	8.02	
2011/8/8 15:50:54						7.200	27.10	3.91	58.5	3.1	33.04	7.84	<2
2011/8/8 15:51:08						7.200	27.10	3.47	51.9	3.0	33.05	7.84	
2011/8/8 15:56:21	M3	MF	842649	833094	2.6	1.400	29.60	7.08	108.4	3.3	30.08	8.11	3
2011/8/8 15:56:34						1.400	29.60	7.15	109.5	3.3	30.09	8.11	
2011/8/8 15:59:42	M4	MF	843038	833110	5.2	1.000	29.50	7.24	110.7	3.1	30.13	8.09	3
2011/8/8 15:59:57						1.000	29.70	7.23	110.8	3.0	29.94	8.10	
2011/8/8 16:00:47						4.100	28.60	5.90	90.0	3.2	32.12	7.98	4
2011/8/8 16:01:00						4.100	28.60	5.79	88.3	3.1	32.16	7.97	
2011/8/8 16:06:26	C2	MF	832999	843826	9.6	1.000	29.80	7.35	112.6	3.0	30.03	8.12	3
2011/8/8 16:06:39						1.000	29.80	7.40	113.5	3.0	30.01	8.12	
2011/8/8 16:07:17						4.900	28.50	5.73	87.4	3.2	32.30	7.96	4
2011/8/8 16:07:33						4.900	28.50	5.57	84.7	3.3	32.28	7.96	
2011/8/8 16:08:40						8.800	26.60	3.92	59.4	3.4	33.32	7.81	<2
2011/8/8 16:08:55						8.800	26.60	3.82	56.9	3.4	33.32	7.81	
2011/8/8 16:13:11	M8	MF	832640	843644	2.2	1.200	29.60	7.20	110.1	3.5	30.21	8.10	<2
2011/8/8 16:13:30						1.200	29.60	7.26	111.3	3.3	30.16	8.10	
2011/8/8 16:17:03	M6	MF	832577	843479	1.6	0.900	29.70	7.52	115.2	3.2	30.14	8.09	3
2011/8/8 16:17:39						0.900	29.70	7.48	114.8	3.1	30.11	8.09	
2011/8/8 16:22:46	M5	MF	832710	843394	2.2	1.300	29.50	7.41	113.4	3.4	30.33	8.09	5
2011/8/8 16:22:58						1.300	29.50	7.43	113.7	3.3	30.30	8.09	
2011/8/8 16:26:04	M7	MF	832784	843493	2.2	1.300	29.40	7.47	114.3	3.3	30.49	8.08	4
2011/8/8 16:26:30						1.300	29.50	7.45	114.1	3.3	30.51	8.09	

Remarks: MF - Middle Flood tida
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Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 10-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/10 09:41:26	M1	ME	842518	832561	2	1.200	27.70	7.09	108.8	3.5	30.86	8.01	8
2011/8/10 09:41:39						1.200	27.60	7.11	109.0	3.6	30.87	8.00	
2011/8/10 09:44:12	M2	ME	842535	832795	1.6	0.800	27.60	7.42	114.0	3.6	31.15	8.03	9
2011/8/10 09:44:34						0.800	27.60	7.40	113.7	3.6	31.21	8.03	
2011/8/10 09:47:16	C1	ME	842187	833014	8	1.000	27.60	7.15	109.7	3.2	30.99	8.02	4
2011/8/10 09:47:29						1.000	27.60	7.10	109.0	3.2	31.00	8.02	
2011/8/10 09:42:09						3.800	26.60	5.92	90.0	3.4	32.60	7.95	2
2011/8/10 09:42:24						3.800	26.60	5.78	87.9	3.4	32.60	7.95	
2011/8/10 09:43:17						6.600	26.00	4.98	75.4	3.6	32.92	7.88	2
2011/8/10 09:43:37						6.600	26.00	4.75	71.8	3.5	32.92	7.87	
2011/8/10 09:49:03	M3	ME	842649	833094	2.2	1.200	27.80	7.28	112.0	3.7	31.03	8.10	<2
2011/8/10 09:49:27						1.200	27.70	7.35	113.0	3.8	31.20	8.09	
2011/8/10 09:53:41	M4	ME	843038	833110	4.4	1.000	27.90	7.65	117.9	3.7	30.70	8.06	<2
2011/8/10 09:53:58						1.000	27.90	7.69	118.4	3.7	30.71	8.05	
2011/8/10 09:54:28						3.000	26.60	6.56	100.0	3.7	32.63	7.96	3
2011/8/10 09:54:59						3.000	26.60	6.49	98.7	3.8	32.64	7.97	
2011/8/10 09:58:01	C2	ME	832995	843811	9.2	1.000	27.80	7.57	116.5	3.2	30.92	8.09	<2
2011/8/10 09:58:22						1.000	27.80	7.59	118.6	3.3	30.92	8.08	
2011/8/10 09:58:59						4.300	26.60	6.27	95.7	3.5	32.68	7.99	<2
2011/8/10 09:59:12						4.300	26.60	6.21	94.6	3.4	32.69	7.99	
2011/8/10 10:00:08						7.600	25.70	5.45	82.0	3.6	33.14	7.89	2
2011/8/10 10:00:28						7.600	25.70	5.41	81.2	3.6	33.11	7.89	
2011/8/10 10:06:12	M8	ME	832650	843634	1.8	1.000	27.60	7.32	112.3	3.9	30.96	8.07	<2
2011/8/10 10:06:47						1.000	27.60	7.34	112.7	3.9	31.02	8.07	
2011/8/10 10:10:11	M6	ME	832580	843477	1.4	0.900	27.90	7.43	114.3	3.6	30.76	8.08	3
2011/8/10 10:10:38						0.900	27.90	7.44	114.5	3.5	30.75	8.07	
2011/8/10 10:14:26	M5	ME	832717	843396	2	1.200	27.70	7.53	116.0	3.7	31.14	8.07	2
2011/8/10 10:14:55						1.200	27.70	7.49	115.2	3.7	31.17	8.06	
2011/8/10 10:20:00	M7	ME	832779	843492	2	1.100	27.80	7.32	112.8	3.8	31.08	8.07	3
2011/8/10 10:20:34						1.100	27.80	7.27	112.0	3.9	31.14	8.06	
2011/8/10 16:20:20	M1	MF	842518	832561	2.2	1.400	27.60	7.18	110.2	3.9	30.96	8.05	<2
2011/8/10 16:20:47						1.400	27.60	7.25	111.4	3.9	30.98	8.05	
2011/8/10 16:23:17	M2	MF	842535	832795	2	0.900	27.60	7.54	115.8	3.8	31.26	8.15	2
2011/8/10 16:23:36						0.900	27.60	7.54	115.8	3.9	31.21	8.15	
2011/8/10 16:28:12	C1	MF	842187	833014	8.4	1.000	27.70	7.39	114.0	3.5	31.33	8.12	3
2011/8/10 16:28:31						1.000	27.70	7.36	113.3	3.5	31.41	8.11	
2011/8/10 16:29:15						4.200	26.50	5.88	89.5	3.7	32.79	8.04	<2
2011/8/10 16:29:30						4.200	26.50	5.83	88.9	3.6	32.79	8.04	
2011/8/10 16:30:04						7.400	25.50	4.84	72.9	3.7	33.27	7.95	<2
2011/8/10 16:30:31						7.400	25.50	4.43	66.5	3.8	33.27	7.95	
2011/8/10 16:06:01	M3	MF	842649	833094	2.6	1.400	27.70	7.46	114.4	3.7	30.83	8.11	<2
2011/8/10 16:06:13						1.400	27.70	7.49	115.1	3.9	30.84	8.11	
2011/8/10 16:09:12	M4	MF	843038	833110	5.2	1.000	27.80	7.67	117.9	3.8	30.80	8.09	<2
2011/8/10 16:09:42						1.000	27.90	7.66	117.8	3.9	30.62	8.10	
2011/8/10 16:10:33						4.600	26.40	6.08	92.5	4.0	32.74	7.98	4
2011/8/10 16:10:51						4.600	26.40	5.92	89.9	3.9	32.77	7.98	
2011/8/10 16:15:49	C2	MF	832999	843826	9.6	1.000	28.00	7.65	118.0	3.5	30.81	8.12	<2
2011/8/10 16:16:02						1.000	28.00	7.70	118.8	3.5	30.79	8.12	
2011/8/10 16:17:00						4.900	26.80	6.41	98.2	3.6	32.70	8.01	2
2011/8/10 16:17:18						4.900	26.80	6.28	96.1	3.6	32.69	8.00	
2011/8/10 16:18:34						8.800	25.10	5.10	77.5	3.7	33.48	7.91	2
2011/8/10 16:18:55						8.800	25.10	5.00	74.9	3.9	33.48	7.91	
2011/8/10 16:22:08	M8	MF	832640	843644	2.2	1.300	27.80	7.59	116.7	3.2	31.00	8.11	<2
2011/8/10 16:22:22						1.300	27.80	7.62	117.2	3.6	30.95	8.11	
2011/8/10 16:27:14	M6	MF	832577	843479	1.6	1.000	27.90	7.69	118.4	3.9	30.93	8.08	2
2011/8/10 16:27:30						1.000	27.90	7.63	117.6	3.8	30.91	8.08	
2011/8/10 16:30:08	M5	MF	832710	843394	2.2	1.400	27.70	7.33	112.8	3.8	31.13	8.07	<2
2011/8/10 16:30:31						1.400	27.80	7.34	112.9	3.9	31.11	8.07	
2011/8/10 16:36:17	M7	MF	832784	843493	2.2	1.400	27.50	7.39	113.3	3.9	31.33	8.06	<2
2011/8/10 16:36:39						1.400	27.50	7.35	112.7	4.0	31.30	8.07	

Remarks: MF - Middle Flood tida
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Contract ST/2008/02
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Baseline Marine Water Quality Monitoring

AUES

Impact Data 12-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/12 11:32:02	M1	ME	842518	832561	2	1.000	28.50	6.86	105.2	1.8	31.38	8.33	3
2011/8/12 11:32:24						1.000	28.50	6.80	104.4	1.9	31.37	8.33	
2011/8/12 11:35:41	M2	ME	842535	832795	1.6	0.600	28.70	7.36	113.3	2.1	31.31	8.36	4
2011/8/12 11:35:58						0.600	28.70	7.33	112.7	2.2	31.31	8.36	
2011/8/12 11:40:03	C1	ME	842187	833014	8	1.000	28.80	7.02	108.1	1.9	31.08	8.35	5
2011/8/12 11:40:19						1.000	28.70	6.97	107.2	2.0	31.09	8.35	
2011/8/12 11:41:40						3.600	27.70	5.43	82.7	2.0	32.46	8.24	3
2011/8/12 11:41:57						3.600	27.70	5.30	80.5	2.1	32.47	8.24	
2011/8/12 11:42:48						6.200	27.20	5.02	76.0	2.1	32.79	8.16	<2
2011/8/12 11:43:06						6.200	27.20	4.97	75.2	2.1	32.79	8.16	
2011/8/12 11:48:38	M3	ME	842649	833094	2.2	1.000	28.90	7.54	116.2	2.5	31.15	8.41	2
2011/8/12 11:48:57						1.000	28.90	7.53	116.1	2.6	31.17	8.40	
2011/8/12 11:52:06	M4	ME	843038	833110	4.4	1.000	29.00	7.78	120.2	1.8	30.95	8.41	3
2011/8/12 11:52:38						1.000	29.00	7.80	120.4	1.9	30.95	8.40	
2011/8/12 11:53:41						2.900	27.40	6.03	91.6	2.0	32.79	8.26	4
2011/8/12 11:54:02						2.900	27.40	5.87	89.0	2.0	32.79	8.23	
2011/8/12 11:59:11	C2	ME	832995	843811	9.2	1.000	28.90	7.59	117.1	1.9	31.27	8.42	3
2011/8/12 11:59:28						1.000	28.90	7.63	117.6	1.8	31.28	8.41	
2011/8/12 12:00:26						4.300	27.70	5.81	88.5	1.9	32.55	8.29	<2
2011/8/12 12:00:41						4.300	27.70	5.76	87.8	1.9	32.55	8.29	
2011/8/12 12:01:22						7.600	27.10	6.16	92.8	2.0	32.87	8.18	2
2011/8/12 12:01:39						7.600	27.10	6.13	92.2	2.1	32.87	8.18	
2011/8/12 12:05:42	M8	ME	832650	843634	1.8	0.800	28.80	7.20	110.8	1.7	31.26	8.40	4
2011/8/12 12:06:07						0.800	28.70	7.24	111.3	1.7	31.27	8.40	
2011/8/12 12:10:41	M6	ME	832580	843477	1.4	0.500	29.00	7.23	111.5	1.8	31.11	8.41	4
2011/8/12 12:10:59						0.500	28.90	7.21	111.2	1.7	31.16	8.39	
2011/8/12 12:15:33	M5	ME	832717	843396	2	0.900	29.00	7.40	114.2	1.7	31.18	8.37	2
2011/8/12 12:15:50						0.900	28.90	7.40	114.0	1.7	31.21	8.36	
2011/8/12 12:22:04	M7	ME	832779	843492	2	0.900	28.70	7.22	111.4	1.6	31.62	8.37	5
2011/8/12 12:22:47						0.900	28.70	7.16	110.4	1.6	31.61	8.36	
2011/8/12 17:02:13	M1	MF	842518	832561	2.2	1.200	28.90	7.00	108.0	1.7	31.15	8.40	5
2011/8/12 17:02:36						1.200	28.90	7.06	108.8	1.7	31.17	8.39	
2011/8/12 17:07:41	M2	MF	842535	832795	2	0.700	28.70	7.72	118.8	1.9	31.50	8.41	3
2011/8/12 17:07:58						0.700	28.60	7.60	117.0	1.9	31.65	8.40	
2011/8/12 17:11:00	C1	MF	842187	833014	8.4	1.000	29.10	7.72	119.6	1.7	31.37	8.41	4
2011/8/12 17:11:17						1.000	29.10	7.67	118.8	1.7	31.39	8.40	
2011/8/12 17:12:34						4.000	27.90	6.19	94.5	1.8	32.55	8.31	6
2011/8/12 17:12:51						4.000	27.90	6.15	94.0	1.8	32.55	8.31	
2011/8/12 17:13:20						7.000	27.30	5.15	78.2	1.9	32.88	8.26	4
2011/8/12 17:13:42						7.000	27.30	5.13	77.7	1.9	32.88	8.26	
2011/8/12 17:18:22	M3	MF	842649	833094	2.6	1.200	28.80	7.45	114.8	2.1	31.28	8.41	4
2011/8/12 17:18:41						1.200	28.90	7.52	116.0	2.3	31.20	8.40	
2011/8/12 17:22:46	M4	MF	843038	833110	5.2	1.000	29.00	7.84	121.1	1.9	31.26	8.40	4
2011/8/12 17:23:01						1.000	29.00	7.80	120.5	1.9	31.26	8.40	
2011/8/12 17:23:49						3.300	27.40	5.78	87.8	2.0	32.71	8.25	5
2011/8/12 17:24:18						3.300	27.40	5.64	85.7	2.0	32.72	8.25	
2011/8/12 17:30:22	C2	MF	832999	843826	9.6	1.000	29.30	7.61	118.0	1.7	31.09	8.42	3
2011/8/12 17:30:51						1.000	29.30	7.66	118.8	1.8	31.09	8.42	
2011/8/12 17:31:48						4.500	28.10	6.42	98.4	1.8	32.46	8.30	3
2011/8/12 17:32:08						4.500	28.10	6.40	98.0	1.8	32.46	8.30	
2011/8/12 17:33:01						8.000	27.30	5.24	79.3	1.9	32.87	8.23	2
2011/8/12 17:33:26						8.000	27.30	5.25	79.6	1.9	32.88	8.24	
2011/8/12 17:37:28	M8	MF	832640	843644	2.2	1.000	28.90	7.90	122.0	2.0	31.39	8.42	3
2011/8/12 17:37:50						1.000	28.90	7.88	121.6	2.2	31.40	8.42	
2011/8/12 17:41:51	M6	MF	832577	843479	1.6	0.800	28.80	7.49	115.6	1.9	31.75	8.36	3
2011/8/12 17:42:09						0.800	28.80	7.46	115.3	2.0	31.76	8.36	
2011/8/12 17:47:01	M5	MF	832710	843394	2.2	1.000	29.00	7.30	112.9	2.1	31.35	8.37	3
2011/8/12 17:47:20						1.000	29.00	7.29	112.7	2.0	31.37	8.37	
2011/8/12 17:52:46	M7	MF	832784	843493	2.2	1.100	28.70	7.38	113.6	1.9	31.40	8.38	4
2011/8/12 17:52:57						1.100	28.70	7.33	112.7	1.9	31.38	8.38	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 16-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/16 13:32:16	M1	ME	842518	832561	2	1.100	28.50	5.80	88.4	3.5	32.90	8.24	<2
2011/8/16 13:32:29						1.100	29.00	5.85	89.4	3.3	31.81	8.33	
2011/8/16 13:36:01	M2	ME	842535	832795	1.6	0.700	29.10	6.12	93.5	3.3	31.62	8.35	3
2011/8/16 13:36:27						0.700	29.20	6.35	97.3	3.2	31.67	8.36	
2011/8/16 13:41:11	C1	ME	842187	833014	8	1.000	29.40	6.48	99.1	3.1	31.14	8.38	3
2011/8/16 13:41:26						1.000	29.40	6.26	95.9	3.2	30.98	8.37	
2011/8/16 13:42:05						3.600	28.80	5.48	83.7	3.3	31.84	8.31	4
2011/8/16 13:42:28						3.600	28.20	4.53	68.5	3.4	32.66	8.24	
2011/8/16 13:43:48						6.200	28.20	4.55	68.8	3.5	32.65	8.25	3
2011/8/16 13:43:52						6.200	27.90	4.38	66.1	3.6	32.85	8.20	
2011/8/16 13:49:03	M3	ME	842649	833094	2.2	1.100	28.40	4.92	74.5	3.9	32.25	8.24	3
2011/8/16 13:49:34						1.100	29.50	6.42	98.6	3.9	31.29	8.39	
2011/8/16 13:52:46	M4	ME	843038	833110	4.4	1.000	29.20	6.29	96.5	3.3	31.67	8.37	3
2011/8/16 13:52:59						1.000	29.30	6.42	98.6	3.4	31.54	8.38	
2011/8/16 13:53:46						2.900	28.50	5.97	91.4	3.8	31.78	8.34	3
2011/8/16 13:54:07						2.900	27.90	4.95	74.8	3.7	32.89	8.26	
2011/8/16 13:58:48	C2	ME	832995	843811	9.2	1.000	28.50	5.42	82.2	3.4	32.46	8.28	3
2011/8/16 13:59:02						1.000	29.40	6.41	98.5	3.6	31.54	8.40	
2011/8/16 13:59:56						4.200	28.70	5.79	88.6	3.8	32.00	8.34	4
2011/8/16 14:00:17						4.200	28.10	4.75	71.8	3.7	32.75	8.27	
2011/8/16 14:01:36						7.400	27.30	4.22	63.8	3.8	32.98	8.24	3
2011/8/16 14:01:50						7.400	27.00	4.46	66.7	3.9	33.17	8.17	
2011/8/16 14:06:03	M8	ME	832650	843634	1.8	0.900	28.50	5.89	89.1	3.5	32.37	8.27	3
2011/8/16 14:06:17						0.900	29.50	6.53	100.2	3.6	31.36	8.40	
2011/8/16 14:11:21	M6	ME	832580	843477	1.4	0.800	29.40	6.50	99.6	3.4	31.42	8.40	3
2011/8/16 14:11:56						0.800	29.60	6.47	99.3	3.4	31.34	8.40	
2011/8/16 14:16:03	M5	ME	832717	843396	2	1.000	29.50	6.49	99.7	3.6	31.38	8.39	3
2011/8/16 14:16:26						1.000	29.50	6.44	99.0	3.5	31.50	8.37	
2011/8/16 14:23:01	M7	ME	832779	843492	2	1.000	29.50	6.36	97.6	3.7	31.52	8.36	<2
2011/8/16 14:23:27						1.000	29.30	6.24	95.9	3.6	31.76	8.37	
2011/8/16 08:11:23	M1	MF	842518	832561	2.2	1.300	28.20	6.25	95.8	3.0	31.88	8.38	3
2011/8/16 08:11:41						1.300	28.30	6.12	93.8	2.8	31.62	8.40	
2011/8/16 08:15:20	M2	MF	842535	832795	2	0.900	28.30	6.06	92.9	3.2	31.66	8.37	3
2011/8/16 08:15:33						0.900	28.10	6.44	98.6	3.3	31.86	8.39	
2011/8/16 08:19:24	C1	MF	842187	833014	8.4	1.000	28.20	6.72	103.1	2.5	31.79	8.40	<2
2011/8/16 08:19:41						1.000	28.50	6.78	104.4	2.6	31.62	8.41	
2011/8/16 08:20:26						3.800	27.80	5.90	90.5	2.9	32.08	8.34	4
2011/8/16 08:20:39						3.800	27.10	4.95	75.1	3.0	32.77	8.28	
2011/8/16 08:21:16						6.600	26.50	4.75	71.8	3.1	32.96	8.27	3
2011/8/16 08:21:29						6.600	26.10	4.12	61.8	3.1	33.18	8.23	
2011/8/16 08:24:34	M3	MF	842649	833094	2.6	1.100	27.30	4.97	75.3	3.4	32.68	8.31	3
2011/8/16 08:24:50						1.100	28.20	6.35	97.3	3.3	31.72	8.40	
2011/8/16 08:27:12	M4	MF	843038	833110	5.2	1.000	28.30	6.36	97.6	2.9	31.68	8.39	2
2011/8/16 08:27:30						1.000	28.40	6.54	100.5	3.0	31.71	8.39	
2011/8/16 08:28:17						3.000	27.70	5.72	87.7	3.2	32.05	8.31	2
2011/8/16 08:28:39						3.000	26.70	4.42	66.8	3.0	32.92	8.22	
2011/8/16 08:33:11	C2	MF	832999	843826	9.6	1.000	27.60	5.48	83.2	2.7	32.02	8.32	3
2011/8/16 08:33:30						1.000	28.80	6.68	102.9	2.7	31.05	8.42	
2011/8/16 08:34:26						4.400	28.10	6.33	97.1	3.0	31.88	8.38	3
2011/8/16 08:34:47						4.400	27.30	5.43	82.5	3.0	32.71	8.30	
2011/8/16 08:35:19						7.800	27.00	4.75	72.1	3.1	32.83	8.25	5
2011/8/16 08:35:48						7.800	26.50	3.99	60.0	3.1	33.07	8.20	
2011/8/16 08:40:14	M8	MF	832640	843644	2.2	1.000	27.40	5.15	78.0	3.0	32.62	8.29	5
2011/8/16 08:40:33						1.000	28.40	6.68	102.7	3.0	31.71	8.39	
2011/8/16 08:44:48	M6	MF	832577	843479	1.6	0.900	28.40	6.62	101.8	3.0	31.67	8.39	<2
2011/8/16 08:45:09						0.900	28.40	6.35	97.6	3.1	31.86	8.36	
2011/8/16 08:49:22	M5	MF	832710	843394	2.2	1.000	28.40	6.52	100.3	2.9	31.82	8.37	3
2011/8/16 08:49:33						1.000	28.60	6.42	98.8	2.8	31.58	8.37	
2011/8/16 08:55:05	M7	MF	832784	843493	2.2	1.000	28.60	6.37	98.0	2.9	31.59	8.37	6
2011/8/16 08:55:24						1.000	28.40	6.44	98.9	2.9	31.62	8.38	

Remarks: MF - Middle Flood tida
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Baseline Marine Water Quality Monitoring

AUES

Impact Data 18-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/18 14:42:22	M1	ME	842518	832561	2	1.200	29.40	6.26	96.4	2.4	28.97	8.37	4
2011/8/18 14:42:38						1.200	29.60	6.28	96.5	2.4	28.54	8.41	
2011/8/18 14:45:59	M2	ME	842535	832795	1.6	1.000	29.70	6.62	101.6	2.5	29.87	8.36	4
2011/8/18 14:46:13						1.000	29.70	6.69	102.9	2.6	29.90	8.37	
2011/8/18 14:51:01	C1	ME	842187	833014	8	1.000	29.90	6.89	106.4	2.2	29.27	8.38	7
2011/8/18 14:51:22						1.000	29.90	6.78	104.6	2.2	29.21	8.38	
2011/8/18 14:52:03						4.000	29.30	5.66	86.5	2.1	30.75	8.30	5
2011/8/18 14:52:19						4.000	29.10	5.26	80.2	2.3	31.08	8.28	
2011/8/18 14:53:38						47.000	28.90	4.62	70.0	2.4	32.25	8.23	4
2011/8/18 14:53:52						7.000	28.80	4.56	68.9	2.4	32.33	8.21	
2011/8/18 14:59:26	M3	ME	842649	833094	2.2	1.100	29.50	6.15	94.3	2.9	29.87	8.32	4
2011/8/18 14:59:48						1.100	29.90	6.76	104.1	3.0	29.51	8.38	
2011/8/18 15:03:14	M4	ME	843038	833110	4.4	1.000	29.80	6.89	106.3	2.6	29.44	8.38	5
2011/8/18 15:03:47						1.000	29.90	6.92	106.8	2.5	29.39	8.39	
2011/8/18 15:04:44						3.600	29.10	5.74	87.4	2.7	31.34	8.27	3
2011/8/18 15:04:58						3.600	28.80	5.22	79.2	2.7	31.72	8.24	
2011/8/18 15:08:21	C2	ME	832995	843811	9.2	1.000	29.50	6.36	97.9	2.2	28.69	8.37	4
2011/8/18 15:08:47						1.000	29.80	6.78	104.6	2.1	28.27	8.42	
2011/8/18 15:09:47						4.500	29.30	5.97	91.5	2.2	30.96	8.31	4
2011/8/18 15:09:59						4.500	29.10	5.54	84.5	2.2	31.28	8.28	
2011/8/18 15:10:39						8.000	28.60	4.75	71.9	2.3	32.36	8.23	6
2011/8/18 15:10:50						8.000	28.60	4.84	72.9	2.2	32.44	8.19	
2011/8/18 15:15:21	M8	ME	832650	843634	1.8	1.000	29.60	6.63	101.6	2.6	30.55	8.33	3
2011/8/18 15:15:36						1.000	30.00	6.88	106.0	2.7	30.15	8.38	
2011/8/18 15:20:22	M6	ME	832580	843477	1.4	0.800	29.90	6.85	105.7	2.5	30.18	8.38	5
2011/8/18 15:20:56						0.800	29.90	6.84	105.5	2.5	30.18	8.38	
2011/8/18 15:24:17	M5	ME	832717	843396	2	1.100	29.90	6.69	103.2	2.3	29.61	8.37	5
2011/8/18 15:24:34						1.100	29.90	6.67	103.0	2.4	29.66	8.36	
2011/8/18 15:30:01	M7	ME	832779	843492	2	1.100	29.70	6.62	101.7	2.5	29.79	8.35	4
2011/8/18 15:30:19						1.100	29.60	6.55	100.8	2.6	29.89	8.36	
2011/8/18 09:01:11	M1	MF	842518	832561	2.2	1.400	28.30	6.26	95.9	2.9	29.33	8.37	5
2011/8/18 09:01:34						1.400	28.30	6.19	95.1	2.8	29.15	8.38	
2011/8/18 09:04:48	M2	MF	842535	832795	2	1.200	28.30	6.61	101.6	2.7	29.16	8.38	4
2011/8/18 09:05:41						1.200	28.20	6.72	103.1	2.8	29.27	8.38	
2011/8/18 09:10:13	C1	MF	842187	833014	8.4	1.000	28.30	6.53	100.3	2.7	29.78	8.37	6
2011/8/18 09:10:33						1.000	28.40	6.52	100.3	2.6	29.73	8.37	
2011/8/18 09:11:36						4.300	27.80	5.46	83.3	2.8	29.99	8.33	5
2011/8/18 09:11:52						4.300	27.50	5.00	75.9	3.0	30.29	8.30	
2011/8/18 09:12:35						7.600	27.30	4.88	73.8	3.0	32.29	8.23	6
2011/8/18 09:12:56						7.600	27.10	4.58	69.1	2.9	32.38	8.21	
2011/8/18 09:16:22	M3	MF	842649	833094	2.6	1.300	28.00	6.09	98.3	3.1	31.69	8.30	4
2011/8/18 09:16:47						1.300	28.40	6.66	102.3	3.1	31.28	8.34	
2011/8/18 09:19:33	M4	MF	843038	833110	5.2	1.000	28.40	6.70	103.1	2.7	29.72	8.38	4
2011/8/18 09:20:04						1.000	28.40	6.78	104.4	2.8	29.74	8.38	
2011/8/18 09:21:13						4.500	27.80	5.63	86.0	3.0	31.94	8.26	7
2011/8/18 09:21:39						4.500	27.40	5.07	77.0	3.0	32.28	8.22	
2011/8/18 09:26:54	C2	MF	832999	843826	9.6	1.000	28.20	6.42	98.6	2.4	29.69	8.37	5
2011/8/18 09:27:17						1.000	28.70	6.91	106.7	2.4	29.32	8.40	
2011/8/18 09:28:26						4.900	28.00	5.83	89.1	2.7	30.51	8.33	4
2011/8/18 09:28:45						4.900	27.70	5.45	83.0	2.7	30.88	8.30	
2011/8/18 09:29:50						8.800	27.40	5.42	81.9	2.9	32.30	8.21	4
2011/8/18 09:30:12						8.800	27.20	5.10	76.8	2.9	32.39	8.19	
2011/8/18 09:36:21	M8	MF	832640	843644	2.2	1.100	27.90	6.15	94.1	3.0	30.15	8.34	4
2011/8/18 09:36:38						1.100	28.30	6.76	104.0	3.1	29.79	8.38	
2011/8/18 09:40:22	M6	MF	832577	843479	1.6	1.000	28.30	6.59	101.5	2.7	30.02	8.38	6
2011/8/18 09:41:09						1.000	28.30	6.46	99.5	2.7	30.09	8.37	
2011/8/18 09:46:22	M5	MF	832710	843394	2.2	1.200	28.50	6.68	102.9	2.8	30.10	8.36	5
2011/8/18 09:46:57						1.200	28.50	6.62	102.0	2.9	29.97	8.36	
2011/8/18 09:50:00	M7	MF	832784	843493	2.2	1.300	28.50	6.57	101.2	2.9	29.99	8.37	3
2011/8/18 09:50:21						1.300	28.40	6.54	100.9	2.9	30.10	8.37	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 20-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/20 15:30:13	M1	ME	842518	832561	2	1.100	30.10	6.86	106.5	2.2	30.23	8.40	6
2011/8/20 15:30:26						1.100	30.10	6.92	107.2	2.2	30.10	8.41	
2011/8/20 15:34:41	M2	ME	842535	832795	1.6	0.800	30.20	7.16	110.9	2.0	30.94	8.40	4
2011/8/20 15:34:52						0.800	30.10	7.23	112.1	2.1	31.09	8.40	
2011/8/20 15:39:26	C1	ME	842187	833014	8	1.000	30.00	7.46	115.7	2.1	31.05	8.40	4
2011/8/20 15:39:40						1.000	30.00	7.41	114.8	2.0	31.01	8.40	
2011/8/20 15:40:41						3.900	29.20	6.52	100.4	2.2	33.14	8.28	<2
2011/8/20 15:41:03						3.900	29.00	6.14	94.5	2.3	33.34	8.27	
2011/8/20 15:41:55						6.800	28.60	5.23	79.9	2.3	34.21	8.16	7
2011/8/20 15:42:16						6.800	28.60	4.67	71.1	2.2	34.29	8.14	
2011/8/20 15:46:05	M3	ME	842649	833094	2.2	1.200	30.20	6.75	104.6	2.7	30.89	8.38	3
2011/8/20 15:46:29						1.200	30.10	7.31	113.5	2.7	31.03	8.41	
2011/8/20 15:50:49	M4	ME	843038	833110	4.4	1.000	30.30	7.51	116.7	2.3	30.68	8.42	3
2011/8/20 15:51:07						1.000	30.30	7.51	116.8	2.3	30.65	8.42	
2011/8/20 15:51:49						3.600	29.00	6.84	105.3	2.5	33.40	8.27	4
2011/8/20 15:52:08						3.600	28.90	6.50	100.0	2.5	33.63	8.25	
2011/8/20 15:57:13	C2	ME	832995	843811	9.2	1.000	30.10	6.90	107.1	1.9	30.19	8.43	3
2011/8/20 15:57:28						1.000	30.00	7.45	115.8	1.9	29.95	8.46	
2011/8/20 15:58:24						4.800	29.10	6.68	103.1	2.0	33.29	8.29	5
2011/8/20 15:58:41						4.800	29.00	6.35	97.7	2.1	33.48	8.27	
2011/8/20 15:59:28						7.600	28.10	4.52	68.5	2.2	34.48	8.14	3
2011/8/20 15:59:48						7.600	28.10	4.49	67.8	2.2	34.53	8.12	
2011/8/20 16:04:39	M8	ME	832650	843634	1.8	1.000	29.90	7.26	112.1	2.4	31.49	8.38	4
2011/8/20 16:04:52						1.000	30.10	7.44	115.2	2.4	31.39	8.41	
2011/8/20 16:10:34	M6	ME	832580	843477	1.4	0.700	30.30	7.49	116.4	2.1	31.06	8.43	4
2011/8/20 16:10:56						0.470	30.20	7.51	116.8	2.1	30.96	8.43	
2011/8/20 16:14:46	M5	ME	832717	843396	2	1.000	30.20	7.47	116.1	2.2	31.00	8.41	2
2011/8/20 16:15:03						1.000	30.20	7.44	115.7	2.2	31.03	8.40	
2011/8/20 16:19:44	M7	ME	832779	843492	2	1.000	30.20	7.23	112.1	2.0	31.02	8.39	4
2011/8/20 16:20:09						1.000	30.10	7.20	111.8	2.0	31.17	8.40	
2011/8/20 10:01:28	M1	MF	842518	832561	2.2	1.300	29.00	7.12	109.3	2.1	30.36	8.43	5
2011/8/20 10:01:44						1.300	29.00	7.22	111.0	2.0	30.25	8.44	
2011/8/20 10:05:20	M2	MF	842535	832795	2	1.000	29.10	7.93	112.3	2.2	30.31	8.44	<2
2011/8/20 10:05:41						1.000	29.10	8.02	123.7	2.2	30.34	8.44	
2011/8/20 10:09:34	C1	MF	842187	833014	8.4	1.000	28.90	7.34	113.3	1.9	31.31	8.39	2
2011/8/20 10:09:55						1.000	29.00	7.35	113.5	2.0	31.31	8.38	
2011/8/20 10:11:07						4.200	28.20	6.28	96.6	2.2	32.69	8.29	4
2011/8/20 10:11:28						4.200	28.10	5.95	91.4	2.2	32.87	8.27	
2011/8/20 10:12:45						7.400	27.00	5.85	88.7	2.4	34.43	8.13	4
2011/8/20 10:12:58						7.400	27.10	4.69	70.9	2.4	34.50	8.12	
2011/8/20 10:17:01	M3	MF	842649	833094	2.6	1.300	28.90	6.96	110.4	2.5	32.30	8.35	4
2011/8/20 10:17:30						1.300	29.10	7.33	113.1	2.5	32.04	8.38	
2011/8/20 10:21:46	M4	MF	843038	833110	5.2	1.000	29.00	7.24	111.7	2.1	31.24	8.38	4
2011/8/20 10:22:01						1.000	29.30	7.31	113.2	2.1	30.80	8.40	
2011/8/20 10:22:13						4.300	28.20	6.29	96.7	2.2	33.78	8.23	4
2011/8/20 10:22:56						4.300	27.80	5.76	88.2	2.3	34.08	8.21	
2011/8/20 10:27:32	C2	MF	832999	843826	9.6	1.000	29.20	7.28	112.8	2.0	30.89	8.41	<2
2011/8/20 10:27:54						1.000	29.50	7.70	119.7	2.0	30.63	8.43	
2011/8/20 10:28:49						4.600	28.30	6.61	101.7	2.2	33.00	8.28	3
2011/8/20 10:29:15						4.600	28.10	6.19	95.0	2.1	33.22	8.25	
2011/8/20 10:30:47						8.200	26.00	4.64	69.3	2.3	35.06	8.07	4
2011/8/20 10:31:02						8.200	25.80	4.35	64.7	2.2	35.13	8.06	
2011/8/20 10:35:21	M8	MF	832640	843644	2.2	1.100	28.60	6.77	104.2	2.4	31.96	8.34	4
2011/8/20 10:35:48						1.100	28.90	7.20	111.3	2.5	31.62	8.37	
2011/8/20 10:39:07	M6	MF	832577	843479	1.6	0.900	28.90	7.46	115.5	2.3	31.72	8.38	4
2011/8/20 10:39:41						0.900	29.00	7.23	112.0	2.2	31.69	8.37	
2011/8/20 10:43:51	M5	MF	832710	843394	2.2	1.100	28.90	7.20	111.4	2.5	31.98	8.35	3
2011/8/20 10:44:13						1.100	28.90	7.16	110.7	2.4	31.85	8.35	
2011/8/20 10:48:26	M7	MF	832784	843493	2.2	1.200	28.90	7.13	110.2	2.4	31.91	8.36	2
2011/8/20 10:48:50						1.200	28.90	7.10	109.9	2.3	31.98	8.36	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 22-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/22 16:01:21	M1	ME	842518	832561	2.4	1.200	29.10	6.86	105.7	2.3	30.92	8.36	4
2011/8/22 16:01:48						1.200	29.10	6.85	105.5	2.2	30.86	8.36	
2011/8/22 16:05:31	M2	ME	842535	832795	1.6	0.800	29.30	7.27	112.3	2.4	31.16	8.38	4
2011/8/22 16:05:49						0.800	29.30	7.29	112.5	2.3	31.22	8.38	
2011/8/22 16:09:10	C1	ME	842187	833014	8	1.000	29.30	7.20	111.1	2.4	31.07	8.37	3
2011/8/22 16:09:27						1.000	29.20	7.15	110.2	2.5	31.06	8.37	
2011/8/22 16:10:28						4.000	28.30	5.87	89.8	2.6	32.73	8.26	3
2011/8/22 16:10:40						4.000	28.20	5.64	86.1	2.6	32.82	8.25	
2011/8/22 16:11:32						7.000	27.80	5.10	77.6	2.9	33.36	8.16	6
2011/8/22 16:11:58						7.000	27.80	4.85	73.6	2.9	33.39	8.15	
2011/8/22 16:17:24	M3	ME	842649	833094	2.4	1.200	29.40	7.22	111.6	3.1	31.05	8.40	4
2011/8/22 16:17:38						1.200	29.40	7.44	115.1	3.1	31.11	8.40	
2011/8/22 16:21:06	M4	ME	843038	833110	4.4	1.000	29.50	7.67	118.8	2.6	30.84	8.41	3
2011/8/22 16:21:19						1.000	29.50	7.68	119.0	2.6	30.83	8.41	
2011/8/22 16:22:33						3.400	28.00	6.35	97.1	2.9	33.03	8.26	6
2011/8/22 16:22:50						3.400	28.00	6.12	93.4	2.8	33.13	8.24	
2011/8/22 16:27:09	C2	ME	832995	843811	8.8	1.000	29.40	7.31	113.1	2.0	30.84	8.42	6
2011/8/22 16:27:22						1.000	29.30	7.56	116.9	2.1	30.75	8.43	
2011/8/22 16:28:30						4.400	28.30	6.16	94.3	2.2	32.85	8.29	3
2011/8/22 16:28:54						4.400	28.20	6.00	91.8	2.3	32.92	8.28	
2011/8/22 16:29:57						7.800	27.50	5.50	83.1	2.4	33.51	8.16	4
2011/8/22 16:30:10						7.800	27.50	5.47	82.4	2.4	33.53	8.16	
2011/8/22 16:36:41	M8	ME	832650	843634	2	1.000	29.20	7.22	111.3	2.7	31.35	8.39	3
2011/8/22 16:36:58						1.000	29.30	7.32	112.9	2.7	31.32	8.40	
2011/8/22 16:40:24	M6	ME	832580	843477	1.6	0.800	29.50	7.33	113.5	2.4	31.09	8.42	4
2011/8/22 16:40:46						0.800	29.40	7.33	113.4	2.3	31.08	8.41	
2011/8/22 16:44:23	M5	ME	832717	843396	2	1.000	29.50	7.43	115.0	2.5	31.11	8.39	6
2011/8/22 16:44:37						1.000	29.40	7.42	114.7	2.6	31.15	8.38	
2011/8/22 16:50:10	M7	ME	832779	843492	2	1.000	29.30	7.22	111.7	2.4	31.38	8.38	4
2011/8/22 16:50:32						1.000	29.30	7.18	111.0	2.4	31.43	8.38	
2011/8/22 11:49:06	M1	MF	842518	832561	2.6	1.300	28.90	7.05	108.5	2.4	30.83	8.41	8
2011/8/22 11:49:24						1.300	28.90	7.12	109.7	2.4	30.80	8.41	
2011/8/22 11:53:37	M2	MF	842535	832795	2.2	1.100	28.90	7.80	116.2	2.6	31.02	8.42	8
2011/8/22 11:53:54						1.100	28.80	7.77	119.7	2.6	31.13	8.42	
2011/8/22 11:58:16	C1	MF	842187	833014	8.6	1.000	29.00	7.57	117.1	2.2	31.35	8.40	6
2011/8/22 11:58:30						1.000	29.10	7.54	116.7	2.2	31.36	8.39	
2011/8/22 11:59:47						4.300	28.00	6.23	95.3	2.5	32.61	8.30	4
2011/8/22 12:00:13						4.300	28.00	6.07	93.0	2.4	32.68	8.29	
2011/8/22 12:01:42						7.600	27.20	5.43	82.4	2.5	33.50	8.21	4
2011/8/22 12:01:58						7.600	27.20	4.95	75.0	2.5	33.53	8.20	
2011/8/22 12:06:13	M3	MF	842649	833094	2.4	1.200	28.80	7.25	113.0	2.9	31.69	8.39	3
2011/8/22 12:06:30						1.200	29.00	7.44	114.8	2.9	31.54	8.39	
2011/8/22 12:10:44	M4	MF	843038	833110	5	1.000	29.00	7.60	117.3	2.4	31.25	8.39	4
2011/8/22 12:10:58						1.000	29.10	7.60	117.6	2.4	31.08	8.40	
2011/8/22 12:11:43						4.000	27.70	5.98	91.4	2.6	33.15	8.24	4
2011/8/22 12:11:59						4.000	27.60	5.69	86.7	2.5	33.26	8.23	
2011/8/22 12:16:41	C2	MF	832999	843826	9.4	1.000	29.30	7.48	115.9	2.0	31.01	8.42	4
2011/8/22 12:16:54						1.000	29.40	7.68	119.2	2.0	30.91	8.42	
2011/8/22 12:17:37						4.700	28.20	6.50	99.7	2.1	32.68	8.29	5
2011/8/22 12:17:48						4.700	28.10	6.32	96.8	2.2	32.76	8.28	
2011/8/22 12:19:04						8.400	26.80	5.00	75.3	2.3	33.75	8.17	7
2011/8/22 12:19:22						8.400	26.70	4.89	73.6	2.4	33.78	8.17	
2011/8/22 12:23:46	M8	MF	832640	843644	2.4	1.200	28.80	7.45	114.9	2.6	31.62	8.39	4
2011/8/22 12:23:58						1.200	28.90	7.61	117.5	2.5	31.49	8.40	
2011/8/22 12:27:33	M6	MF	832577	843479	2	1.000	28.80	7.48	115.6	2.2	31.74	8.37	5
2011/8/22 12:27:47						1.000	28.90	7.37	114.0	2.2	31.73	8.36	
2011/8/22 12:31:03	M5	MF	832710	843394	2.2	1.100	29.00	7.26	112.3	2.2	31.60	8.36	9
2011/8/22 12:31:24						1.100	29.00	7.24	111.9	2.2	31.56	8.36	
2011/8/22 12:35:44	M7	MF	832784	843493	2.4	1.200	28.80	7.28	112.2	2.2	31.60	8.37	3
2011/8/22 12:36:00						1.200	28.80	7.24	111.6	2.3	31.62	8.37	

Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

Contract ST/2008/02
Ma On Shan Development - Roads, Drainage and Sewerage Works at whitehead and Lok Wo Sha, Phase 1
Baseline Marine Water Quality Monitoring

AUES

Impact Data 24-Aug-11

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			North	East	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
2011/8/24 08:47:06	M1	ME	842518	832561	2.4	1.200	29.80	7.68	118.8	1.9	29.91	8.49	8
2011/8/24 08:47:21						1.200	29.90	7.66	118.6	2.0	29.89	8.49	
2011/8/24 08:51:42	M2	ME	842535	832795	1.4	0.700	29.90	7.71	119.4	2.3	30.01	8.50	10
2011/8/24 08:51:57						0.700	29.90	7.73	119.7	2.3	30.05	8.50	
2011/8/24 08:55:22	C1	ME	842187	833014	7.4	1.000	29.90	7.68	119.1	2.0	29.97	8.49	7
2011/8/24 08:55:37						1.000	29.90	7.66	118.6	1.9	29.95	8.49	
2011/8/24 08:56:24						3.700	28.60	5.95	91.6	2.1	32.44	8.31	6
2011/8/24 08:56:32						3.700	28.50	5.70	87.6	2.0	32.49	8.31	
2011/8/24 08:57:43						6.400	28.30	5.21	79.9	2.2	32.61	8.26	4
2011/8/24 08:57:58						6.400	28.30	5.03	77.1	2.2	32.62	8.25	
2011/8/24 09:01:48	M3	ME	842649	833094	2.2	1.100	29.90	7.45	115.4	2.7	29.97	8.51	4
2011/8/24 09:02:12						1.100	29.90	7.64	118.5	2.7	29.99	8.51	
2011/8/24 09:06:26	M4	ME	843038	833110	4.4	1.000	30.00	7.75	120.3	2.1	29.87	8.51	4
2011/8/24 09:06:47						1.000	30.00	7.88	122.3	2.2	29.87	8.51	
2011/8/24 09:07:44						3.400	28.60	6.16	95.0	2.3	32.55	8.31	4
2011/8/24 09:07:58						3.400	28.60	5.79	89.4	2.2	32.59	8.31	
2011/8/24 09:12:15	C2	ME	832995	843811	8.2	1.000	30.00	7.74	120.0	1.8	29.89	8.52	6
2011/8/24 09:12:34						1.000	29.90	7.83	121.5	1.9	29.85	8.52	
2011/8/24 09:13:08						4.100	28.80	6.12	94.5	2.0	32.45	8.34	4
2011/8/24 09:13:18						4.100	28.70	5.88	90.8	2.0	32.50	8.34	
2011/8/24 09:14:25						7.200	28.20	5.29	81.1	2.2	32.90	8.26	6
2011/8/24 09:14:36						7.200	28.20	5.14	78.6	2.2	32.90	8.26	
2011/8/24 09:20:22	M8	ME	832650	843634	1.8	0.900	29.80	7.45	115.4	2.0	30.09	8.51	4
2011/8/24 09:20:40						0.900	29.90	7.54	116.8	2.0	30.07	8.52	
2011/8/24 09:24:57	M6	ME	832580	843477	1.4	0.700	30.00	7.73	120.0	1.8	29.96	8.52	5
2011/8/24 09:25:10						0.700	30.00	7.70	119.4	1.8	29.97	8.52	
2011/8/24 09:28:26	M5	ME	832717	843396	2	1.000	29.90	7.87	122.0	1.9	30.02	8.50	4
2011/8/24 09:28:33						1.000	29.90	7.78	120.5	1.9	30.04	8.50	
2011/8/24 09:33:04	M7	ME	832779	843492	2	1.000	29.90	7.65	118.8	1.9	30.08	8.51	4
2011/8/24 09:33:17						1.000	29.90	7.68	119.0	2.0	30.13	8.50	
2011/8/24 17:02:00	M1	MF	842518	832561	2.6	1.300	29.50	7.62	118.4	2.2	30.79	8.48	3
2011/8/24 17:02:14						1.300	29.40	7.54	116.9	2.2	30.85	8.47	
2011/8/24 17:05:48	M2	MF	842535	832795	2.4	1.200	29.40	7.25	110.8	2.3	30.98	8.47	3
2011/8/24 17:05:58						1.200	29.40	7.21	111.7	2.3	30.82	8.47	
2011/8/24 17:08:58	C1	MF	842187	833014	8	1.000	29.50	7.32	113.5	2.1	30.53	8.49	4
2011/8/24 17:09:08						1.000	29.50	7.36	114.2	2.1	30.69	8.48	
2011/8/24 17:09:52						4.000	28.10	5.85	89.7	2.3	32.69	8.33	4
2011/8/24 17:10:10						4.000	28.10	5.59	85.8	2.4	32.71	8.32	
2011/8/24 17:11:02						7.000	27.40	4.73	71.9	2.5	33.25	8.23	3
2011/8/24 17:11:14						7.000	27.30	4.48	68.0	2.5	33.28	8.23	
2011/8/24 17:15:33	M3	MF	842649	833094	2.4	1.200	29.50	7.49	116.3	2.9	30.30	8.51	4
2011/8/24 17:15:47						1.200	29.60	7.59	117.2	2.9	30.26	8.51	
2011/8/24 17:20:04	M4	MF	843038	833110	5.2	1.000	29.60	7.54	116.6	2.5	30.04	8.51	3
2011/8/24 17:20:17						1.000	29.60	7.58	117.2	2.4	29.99	8.51	
2011/8/24 17:20:53						4.200	27.90	5.19	79.4	2.7	32.91	8.27	4
2011/8/24 17:21:06						4.200	27.90	5.00	76.4	2.8	32.96	8.27	
2011/8/24 17:26:29	C2	MF	832999	843826	9	1.000	29.70	7.66	118.5	2.1	30.02	8.51	3
2011/8/24 17:26:37						1.000	29.70	7.71	119.4	2.1	29.98	8.52	
2011/8/24 17:27:35						4.500	28.40	6.54	100.6	2.2	32.61	8.33	3
2011/8/24 17:28:01						4.500	28.30	5.98	92.0	2.2	32.61	8.33	
2011/8/24 17:28:48						8.000	27.20	4.63	70.0	2.4	33.40	8.23	4
2011/8/24 17:29:00						8.000	27.20	4.47	67.6	2.3	33.39	8.22	
2011/8/24 17:33:11	M8	MF	832640	843644	2.2	1.100	29.60	7.80	120.5	2.4	30.24	8.51	4
2011/8/24 17:33:24						1.100	29.60	7.96	123.1	2.5	30.18	8.52	
2011/8/24 17:37:46	M6	MF	832577	843479	2	1.000	29.60	7.95	123.1	2.1	30.29	8.51	3
2011/8/24 17:37:59						1.000	29.60	7.88	122.1	2.1	30.28	8.50	
2011/8/24 17:41:01	M5	MF	832710	843394	2.4	1.200	29.50	7.51	115.9	2.2	30.36	8.48	3
2011/8/24 17:41:13						1.200	29.50	7.54	116.6	2.2	30.32	8.48	
2011/8/24 17:45:28	M7	MF	832784	843493	2.4	1.200	29.30	7.47	115.2	2.4	30.57	8.47	2
2011/8/24 17:45:34						1.200	29.40	7.50	115.7	2.3	30.42	8.48	

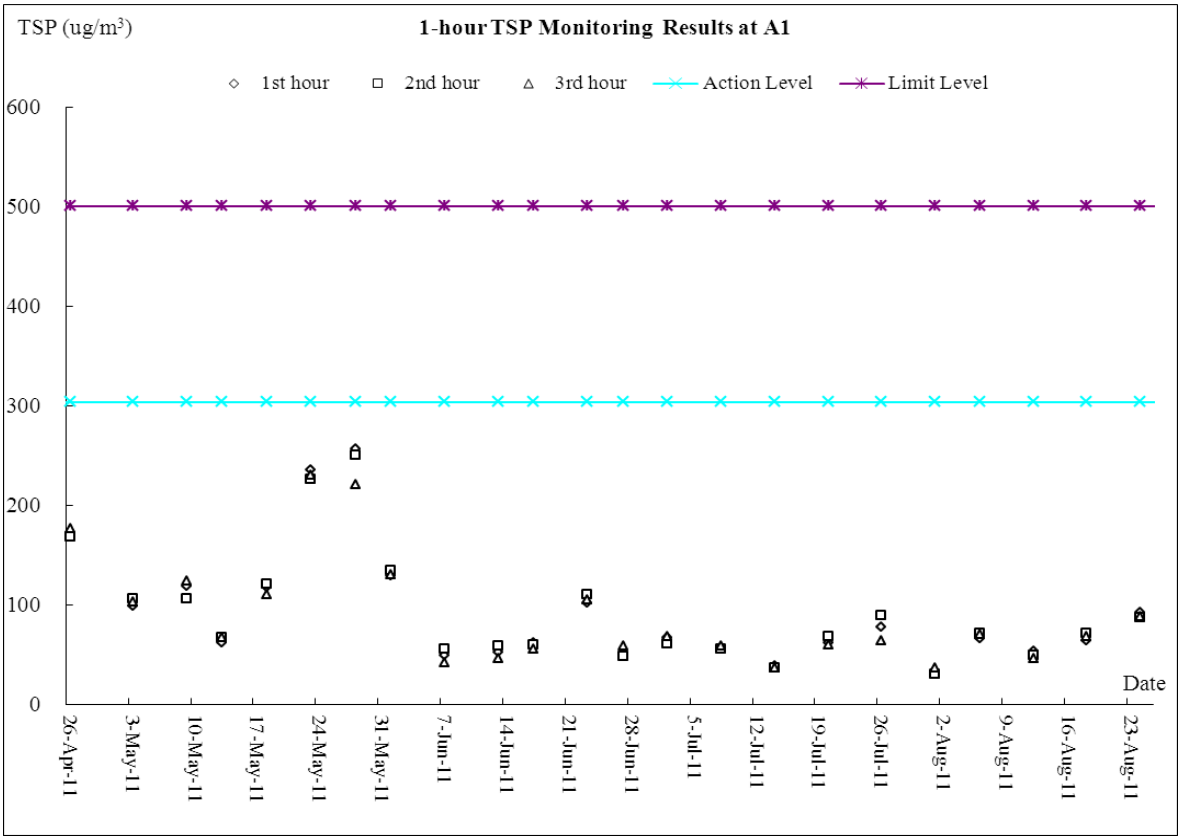
Remarks: MF - Middle Flood tida
ME - Middle Ebb tida

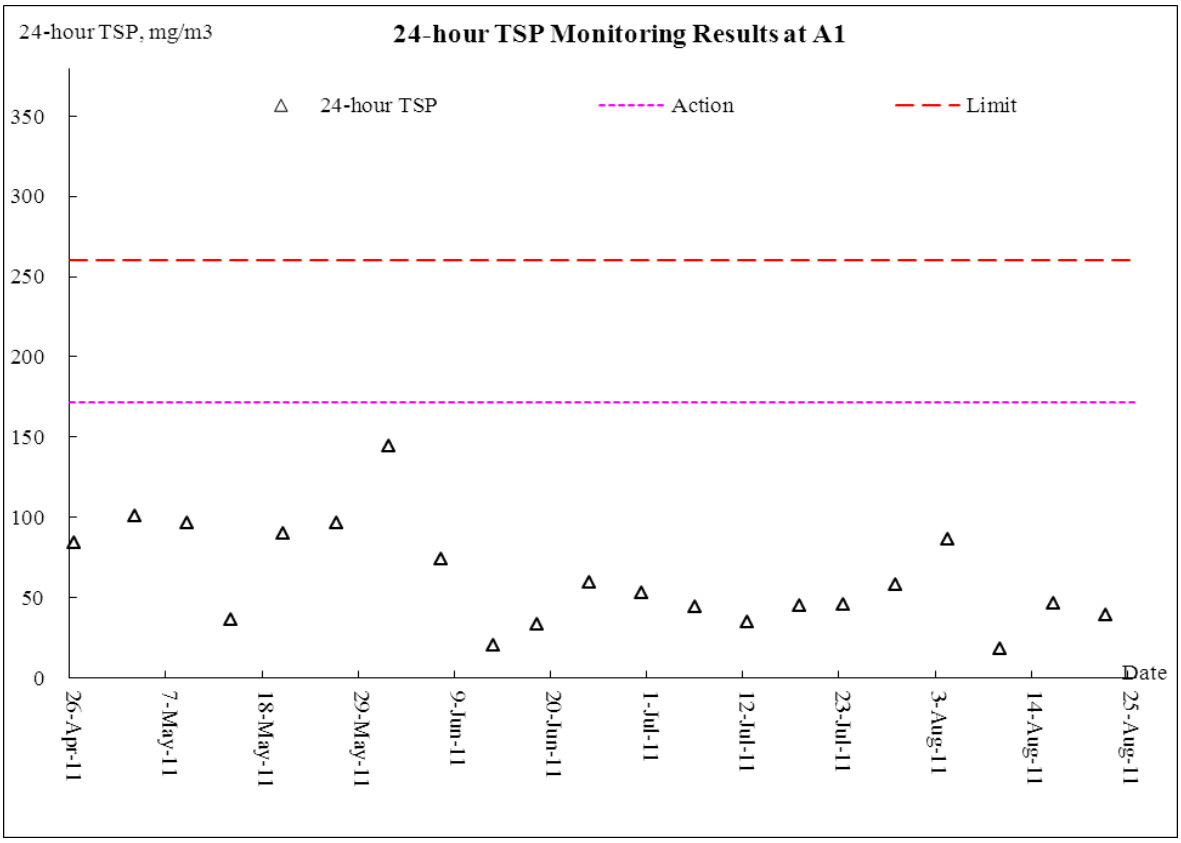
Annex J

Graphical Plots of Impact Monitoring

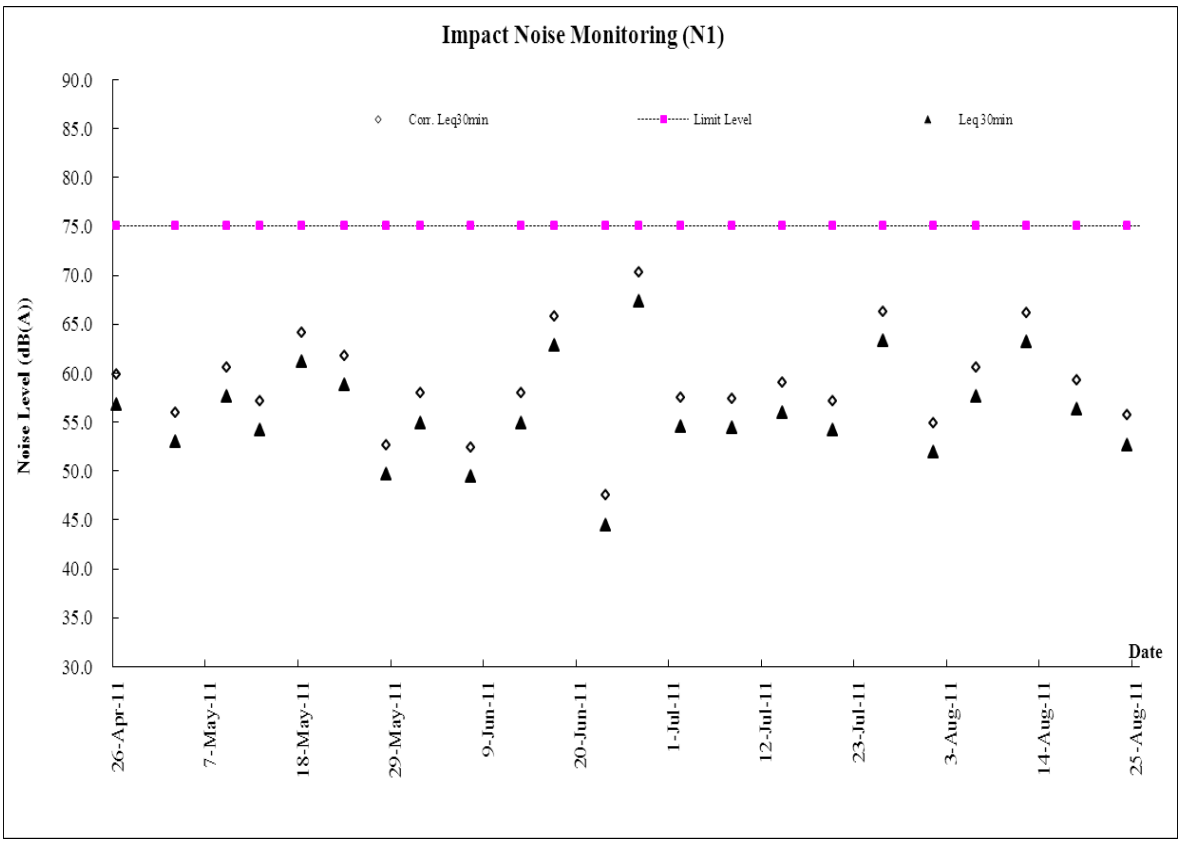
1. Air
2. Noise
3. Marine Water

Air Quality


TSP (ug/m3)
1-hour TSP Monitoring Results at A1
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
26-Apr-11
3-May-11
10-May-11
17-May-11
24-May-11
31-May-11
7-Jun-11
14-Jun-11
21-Jun-11
28-Jun-11
5-Jul-11
12-Jul-11
19-Jul-11
26-Jul-11
2-Aug-11
9-Aug-11
16-Aug-11
23-Aug-11


24-hour TSP, mg/m3
24-hour TSP Monitoring Results at A1
24-hour TSP
Action
Limit
350
300
250
200
150
100
50
0
Date
26-Apr-11
7-May-11
18-May-11
29-May-11
9-Jun-11
20-Jun-11
1-Jul-11
12-Jul-11
23-Jul-11
3-Aug-11
14-Aug-11
25-Aug-11

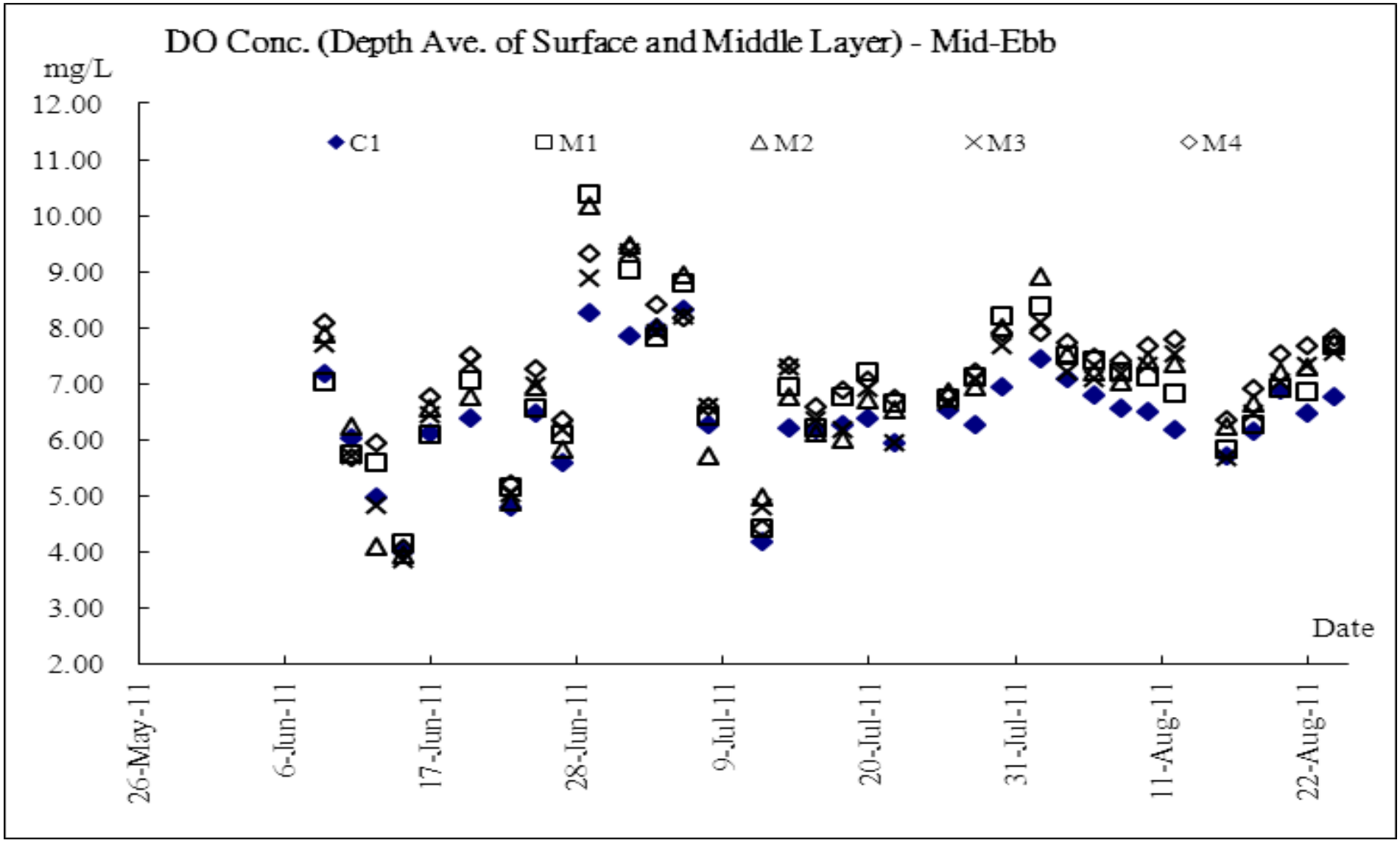
Construction Noise

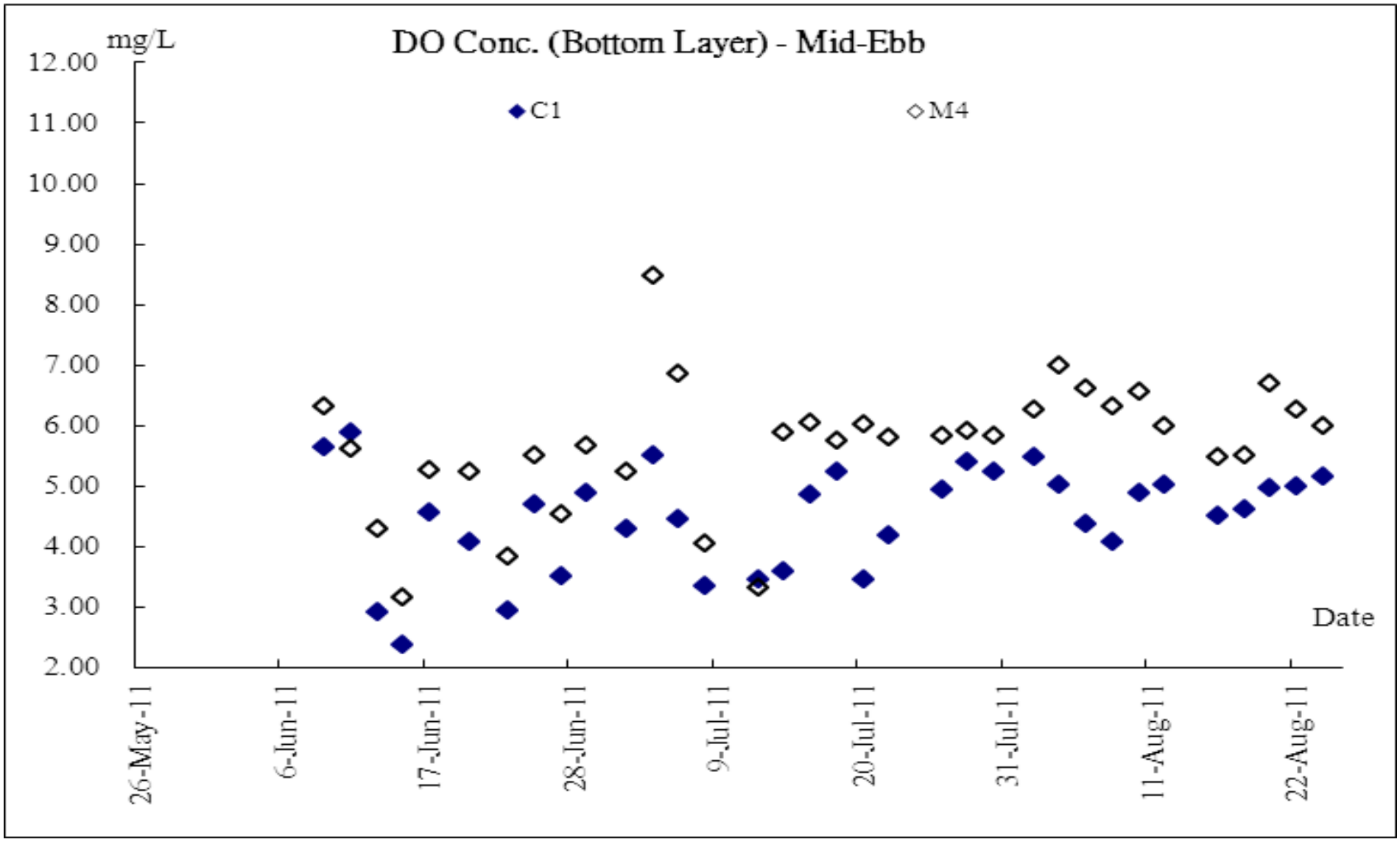


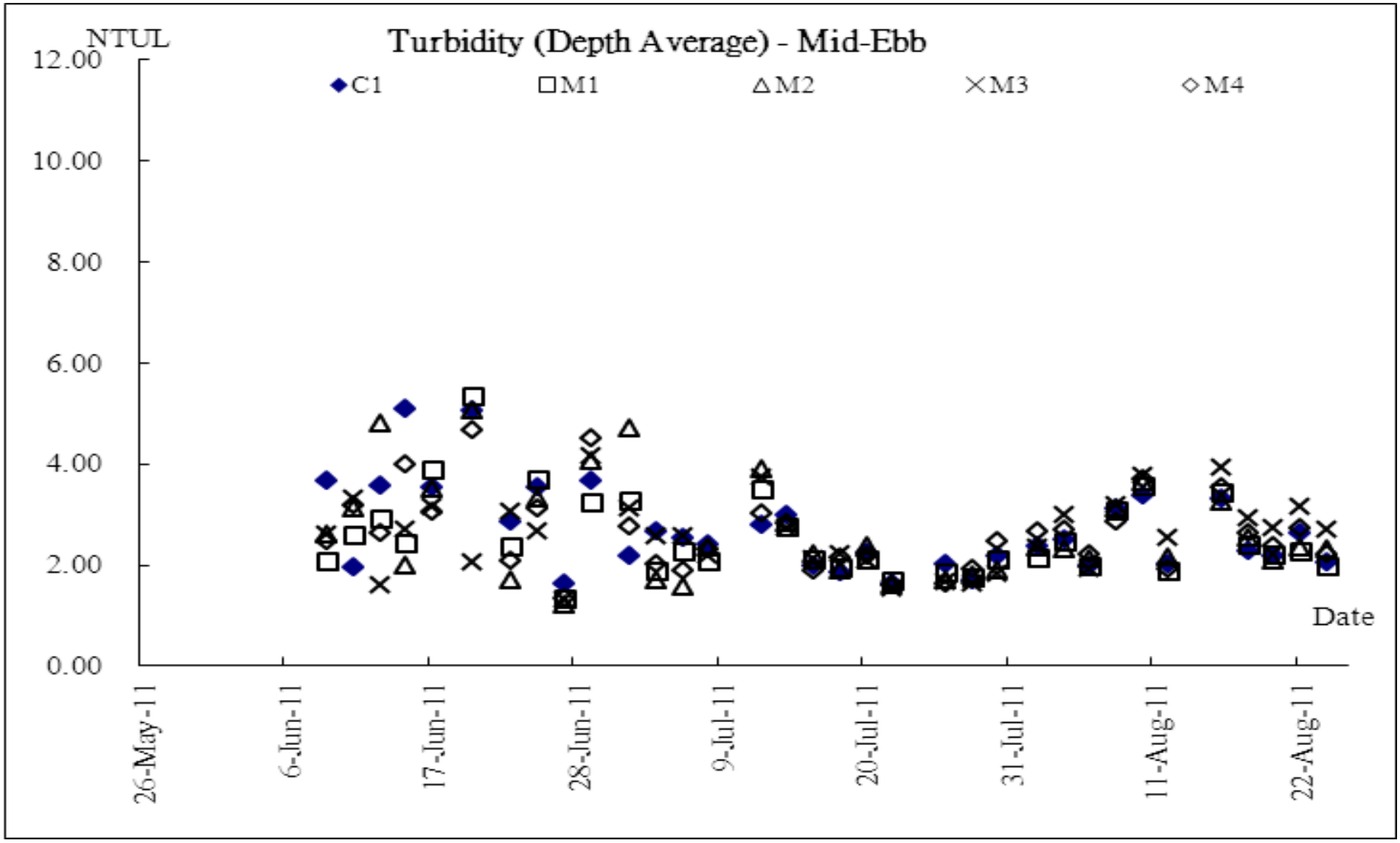
Remark: Due to abnormally low noise data recorded on 23 June 2011, the noise monitoring result on 23 June 2011 was considered as invalid and discarded as agreed by IEC.

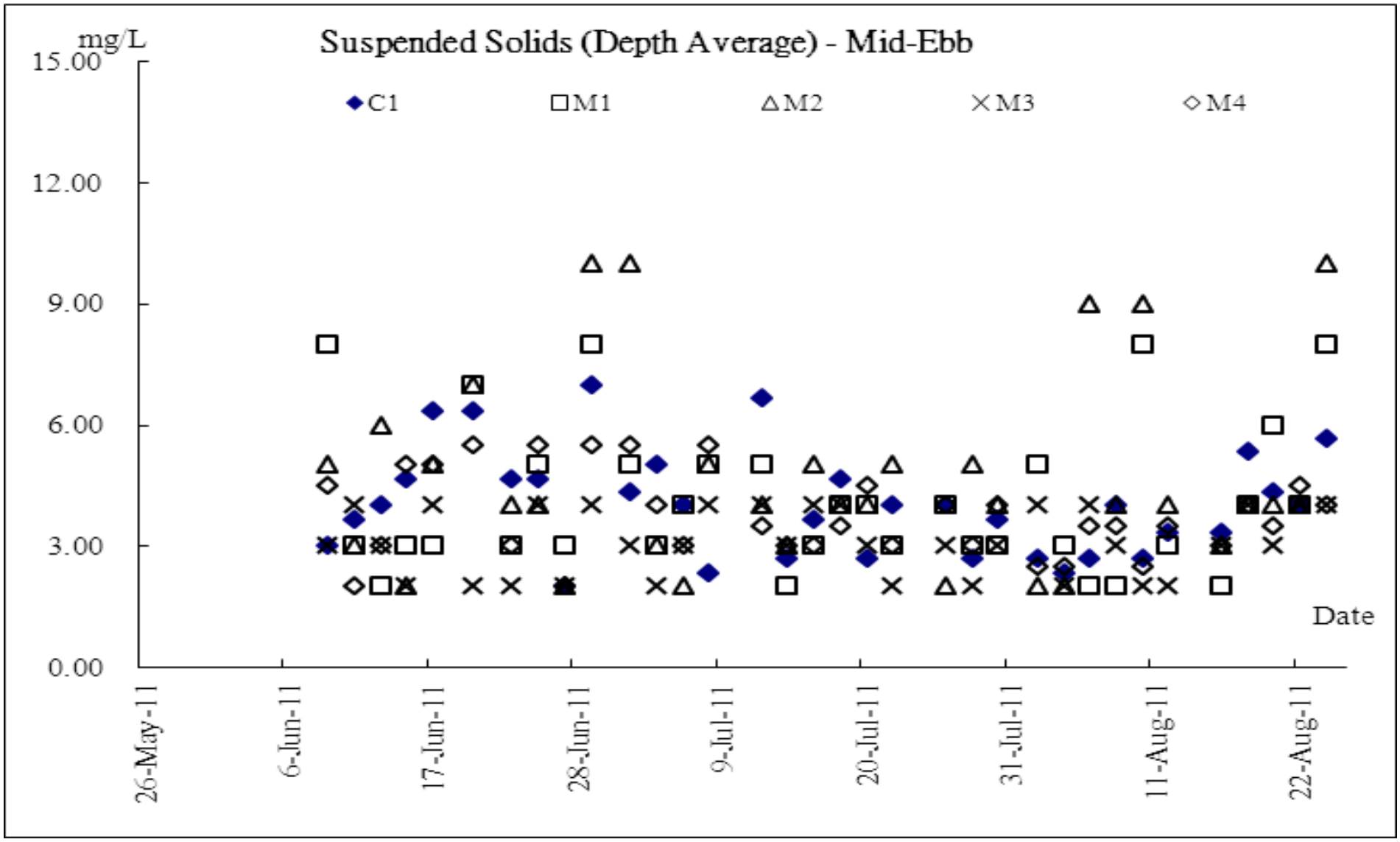
Marine Water

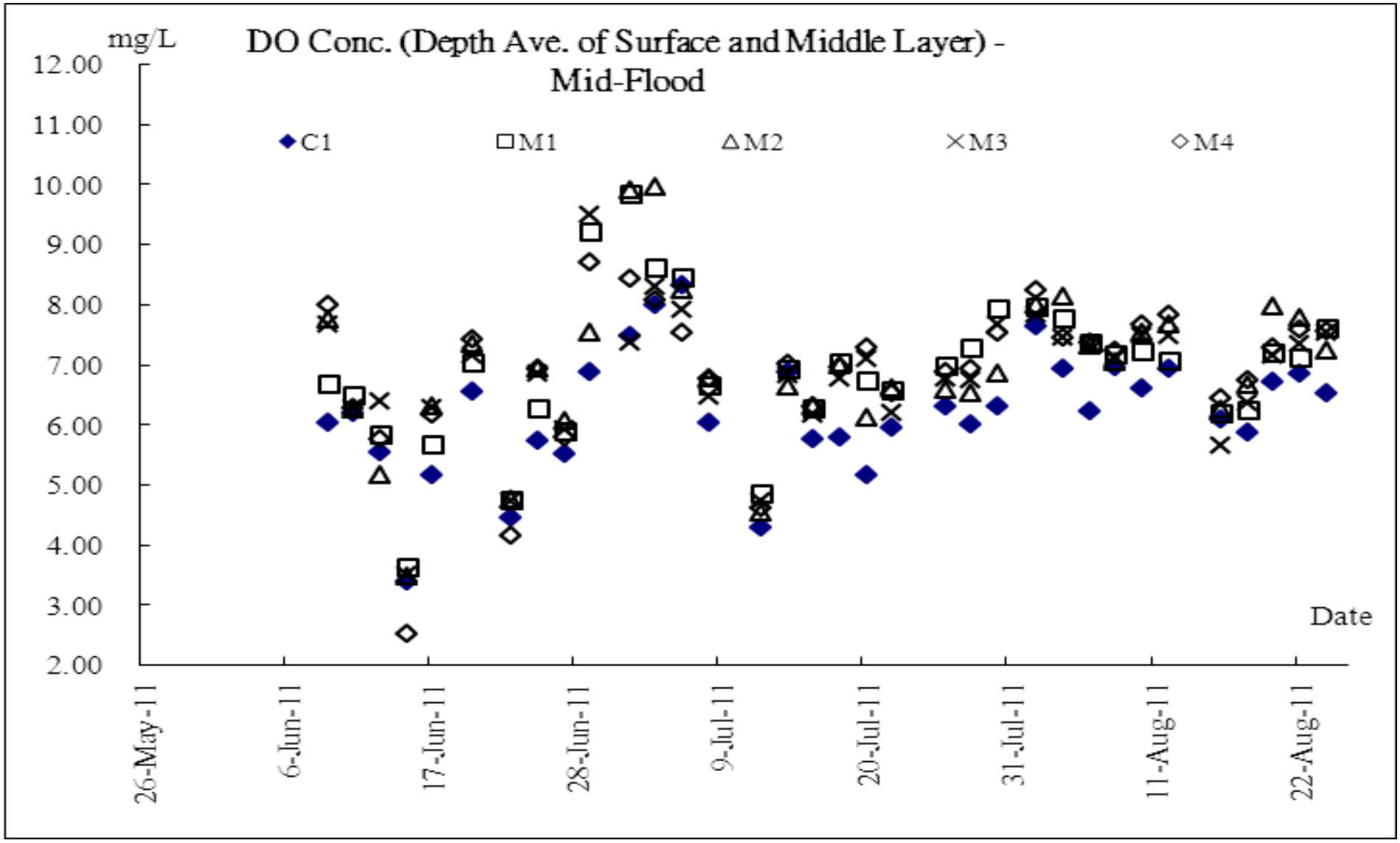
The Sea Zone of the Project West and North (Tolo Harbour)

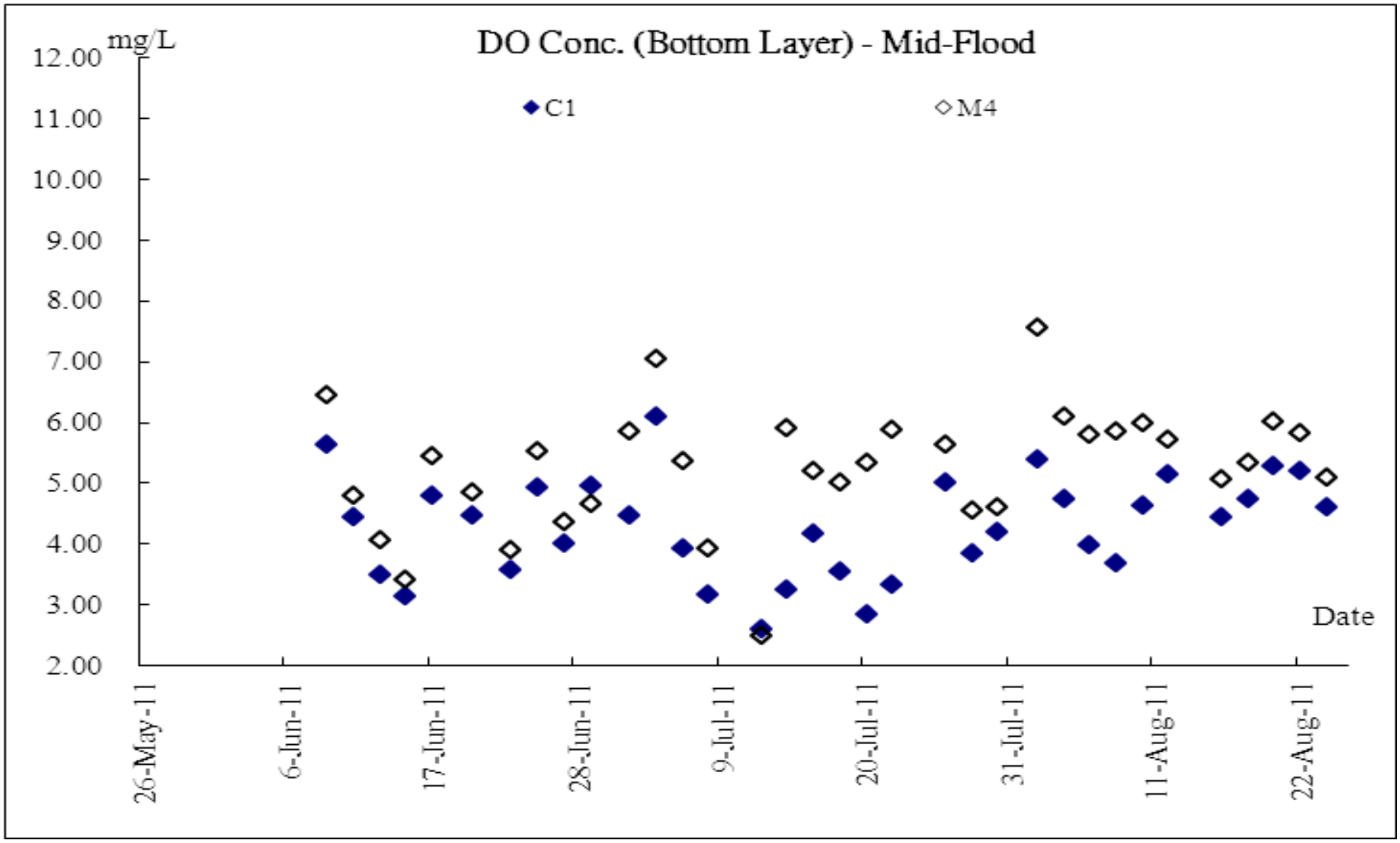

DO Conc. (Depth Ave. of Surface and Middle Layer) - Mid-Ebb
mg/L
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
C1
M1
M2
M3
M4
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

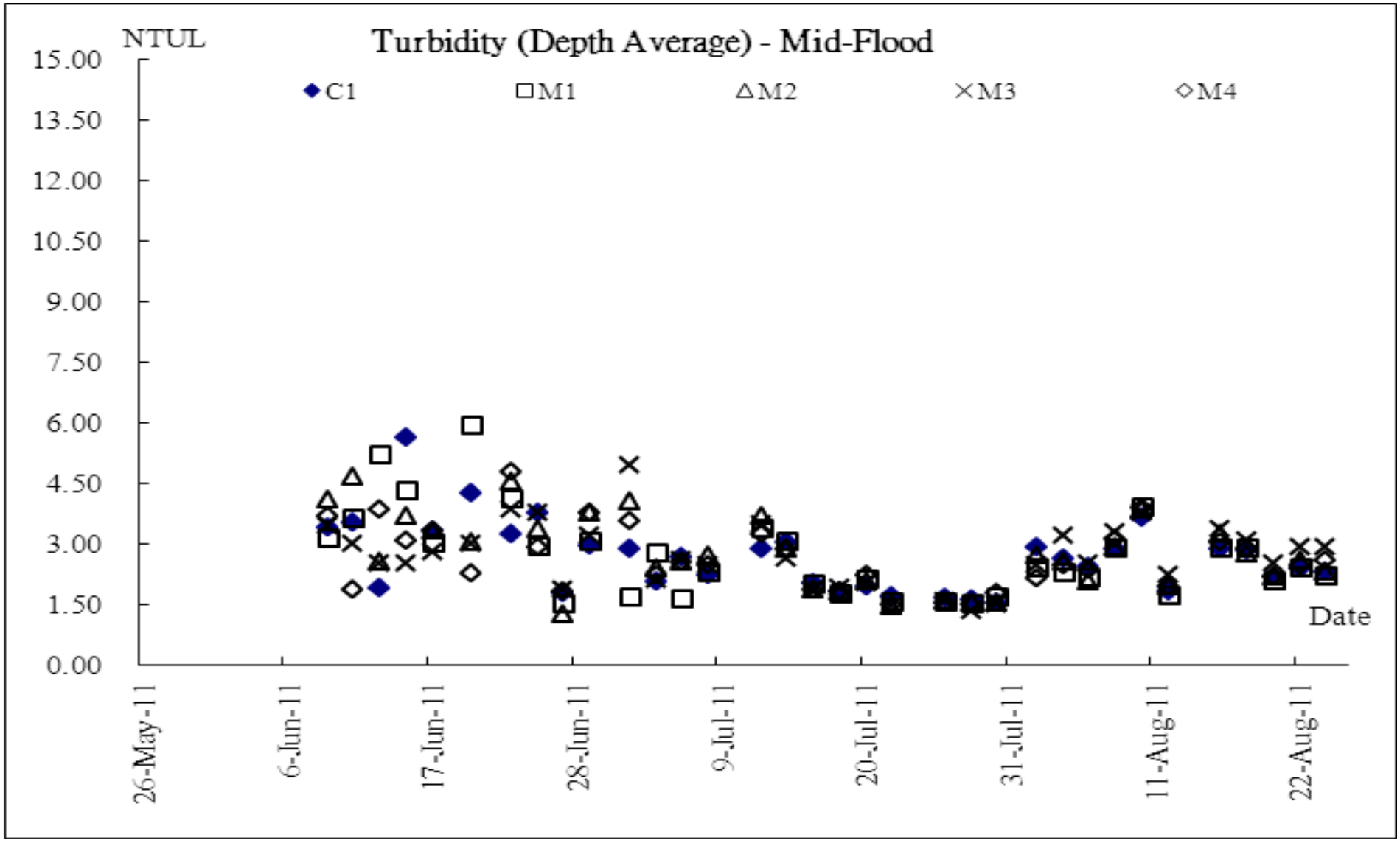

DO Conc. (Bottom Layer) - Mid-Ebb
mg/L
C1
M4
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

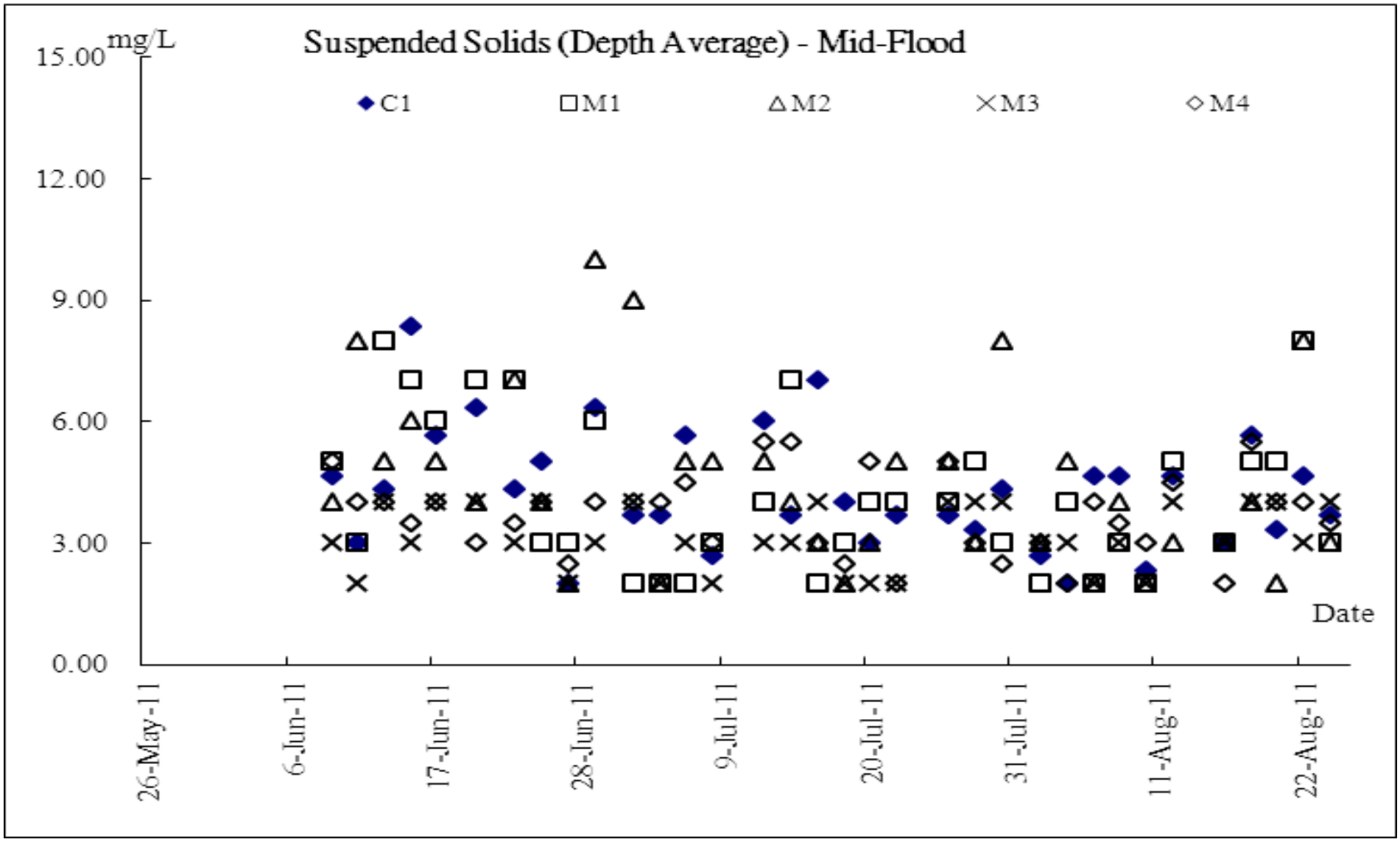

Turbidity (Depth Average) - Mid-Ebb
NTUL
12.00
10.00
8.00
6.00
4.00
2.00
0.00
C1
M1
M2
M3
M4
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11


Suspended Solids (Depth Average) - Mid-Ebb
mg/L
15.00
12.00
9.00
6.00
3.00
0.00
C1
M1
M2
M3
M4
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

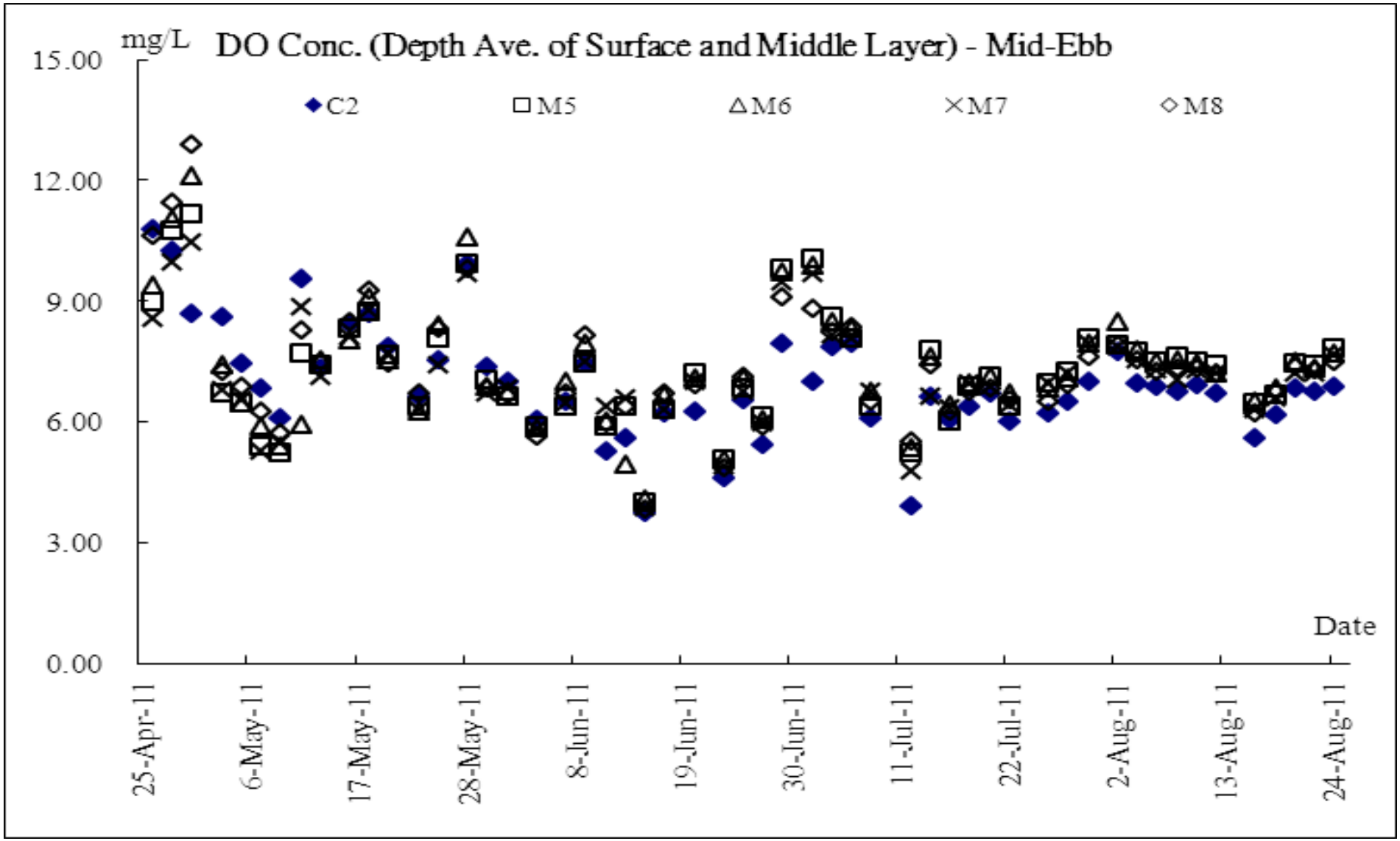

DO Conc. (Depth Ave. of Surface and Middle Layer) - Mid-Flood
mg/L
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
C1
M1
M2
M3
M4
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

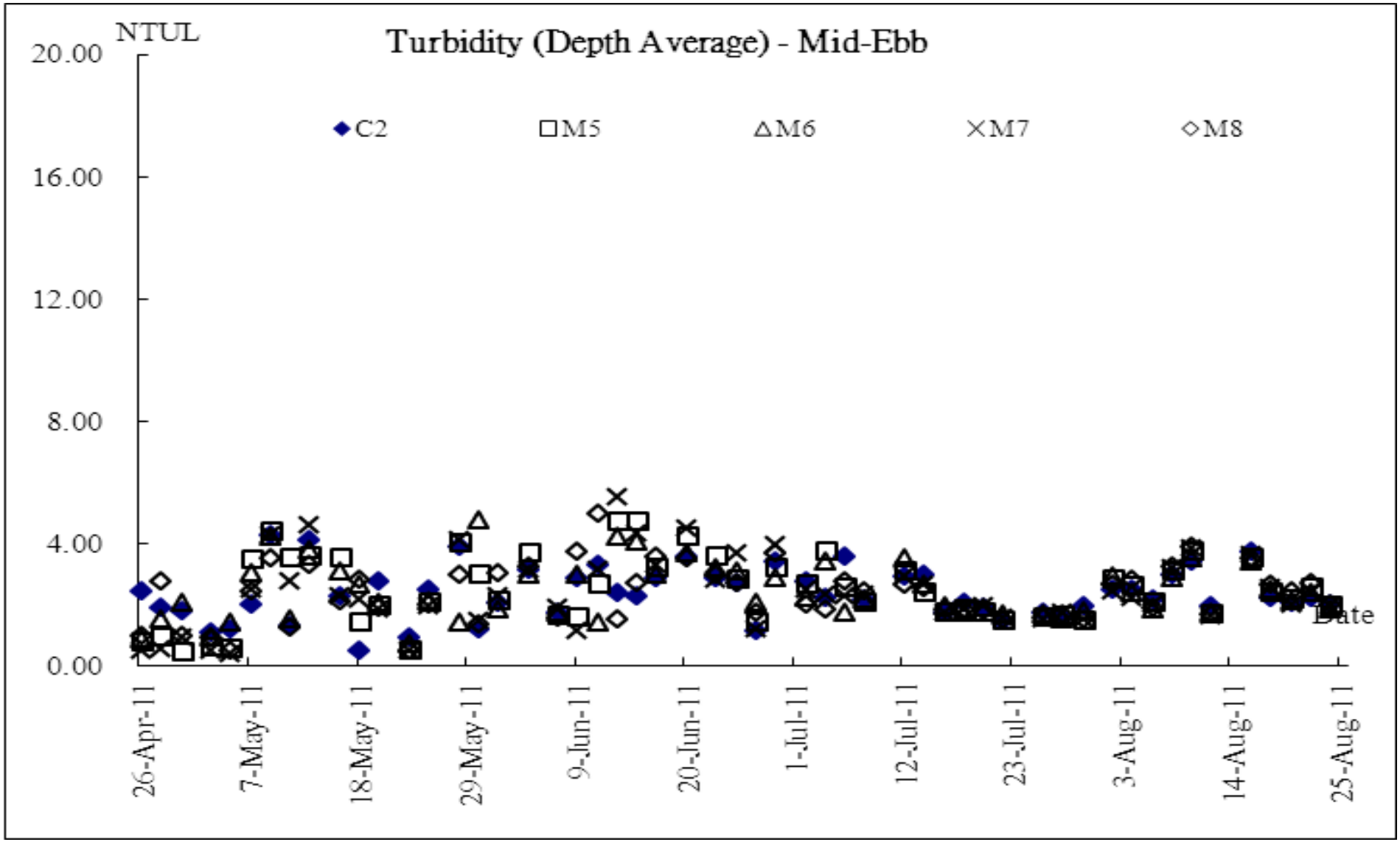

DO Conc. (Bottom Layer) - Mid-Flood
mg/L
C1
M4
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

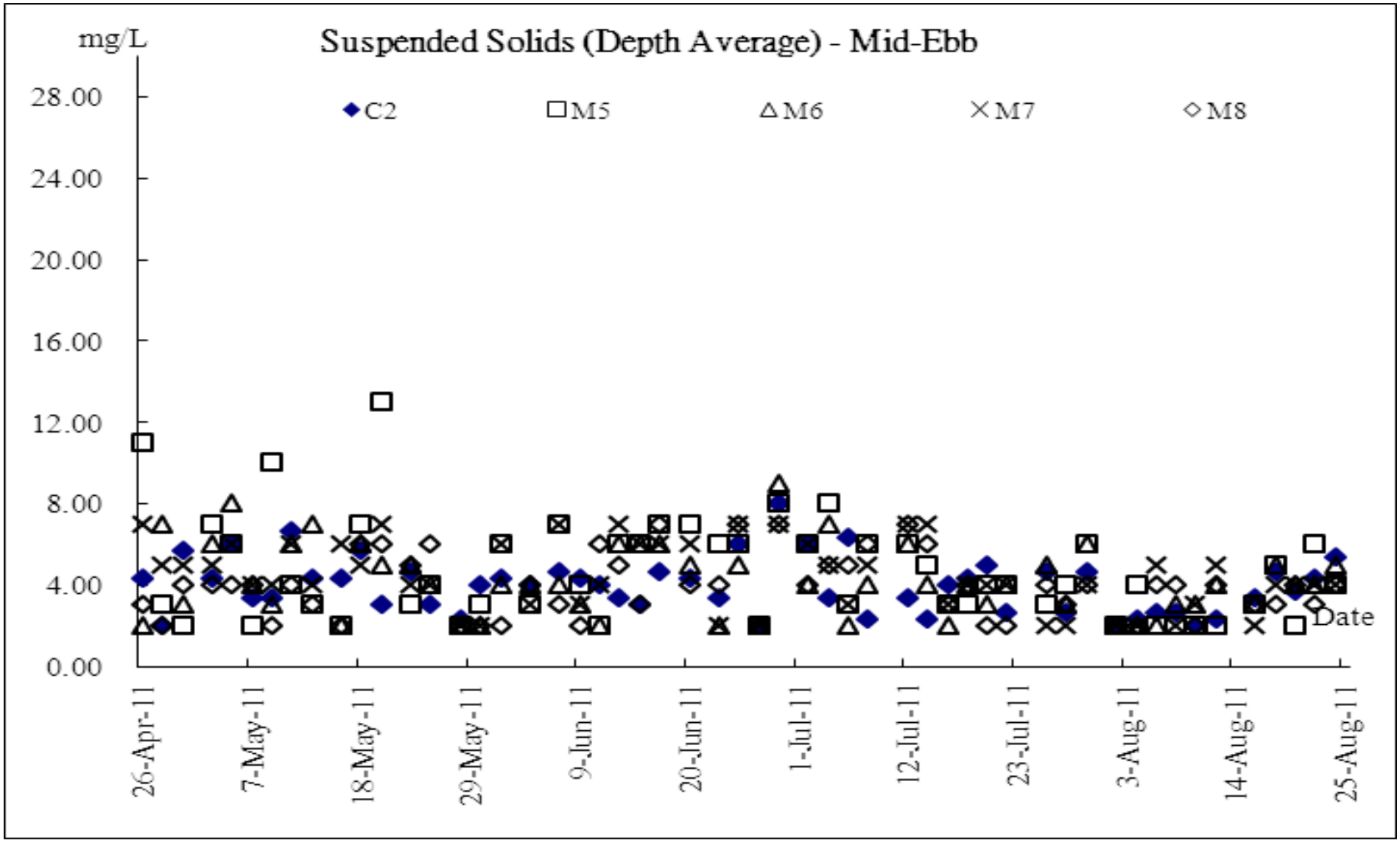

Turbidity (Depth Average) - Mid-Flood
NTUL
C1
M1
M2
M3
M4
15.00
13.50
12.00
10.50
9.00
7.50
6.00
4.50
3.00
1.50
0.00
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

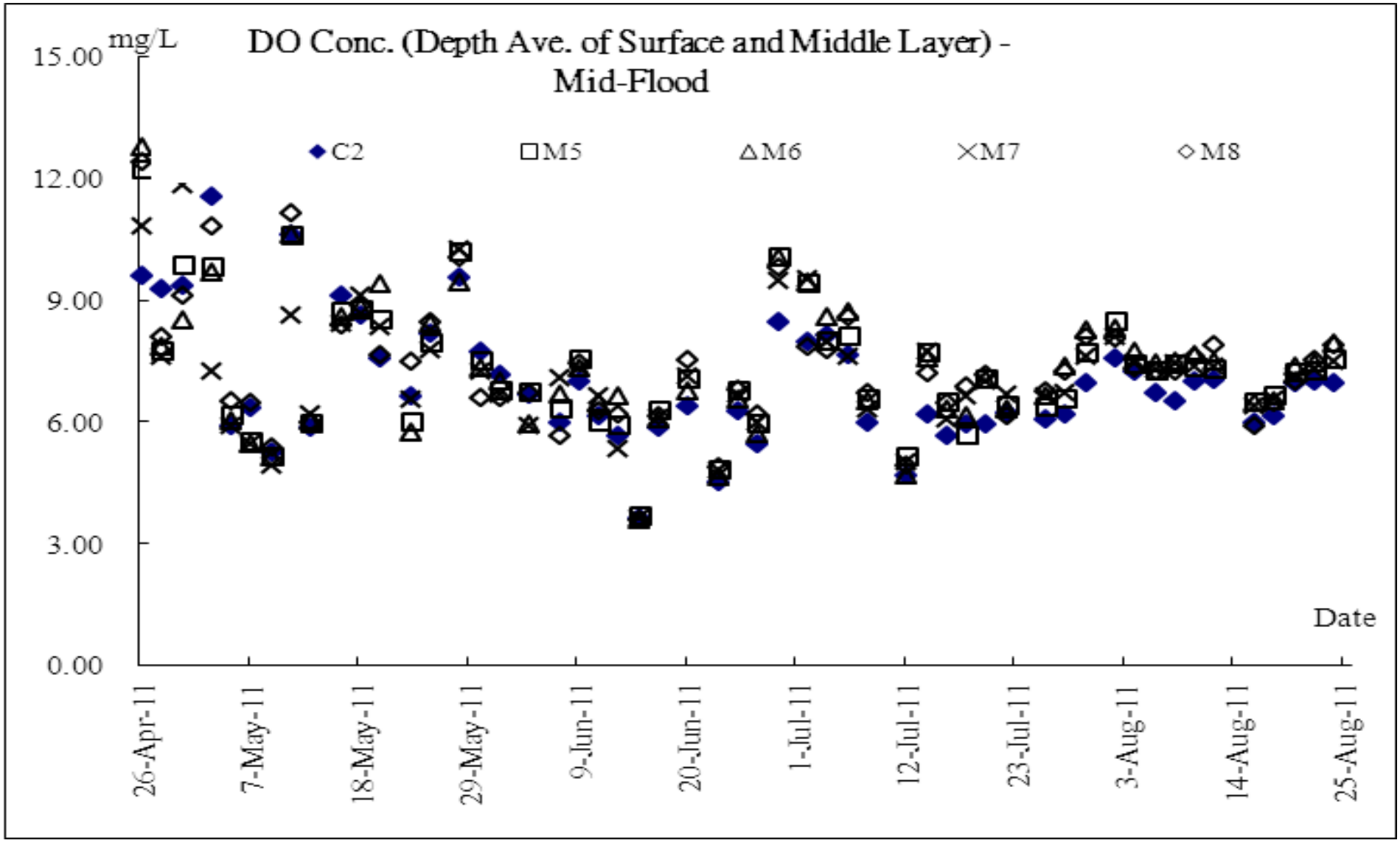

Suspended Solids (Depth Average) - Mid-Flood
mg/L
15.00
12.00
9.00
6.00
3.00
0.00
C1
M1
M2
M3
M4
Date
26-May-11
6-Jun-11
17-Jun-11
28-Jun-11
9-Jul-11
20-Jul-11
31-Jul-11
11-Aug-11
22-Aug-11

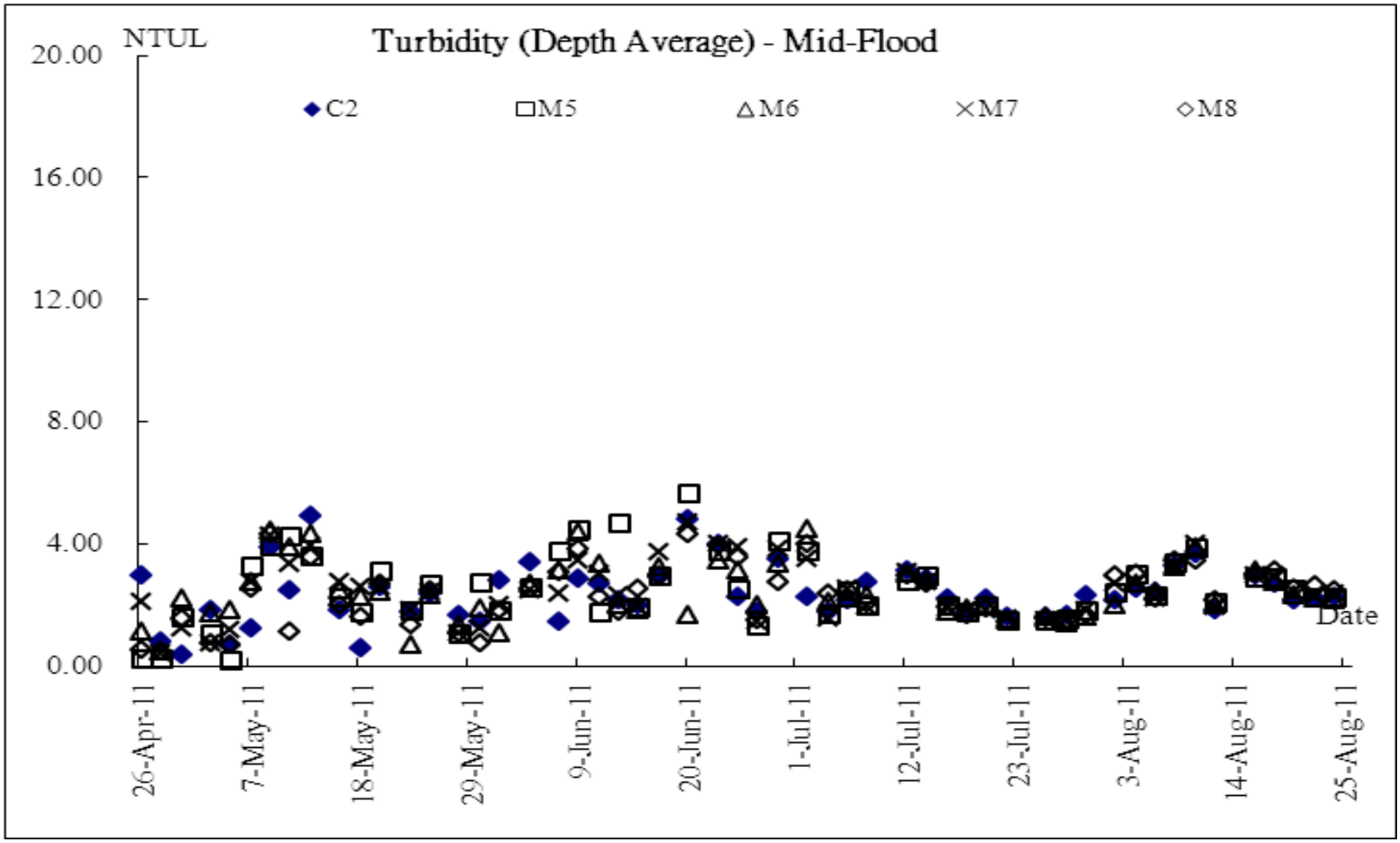
The Sea Zone of Starfish Bay

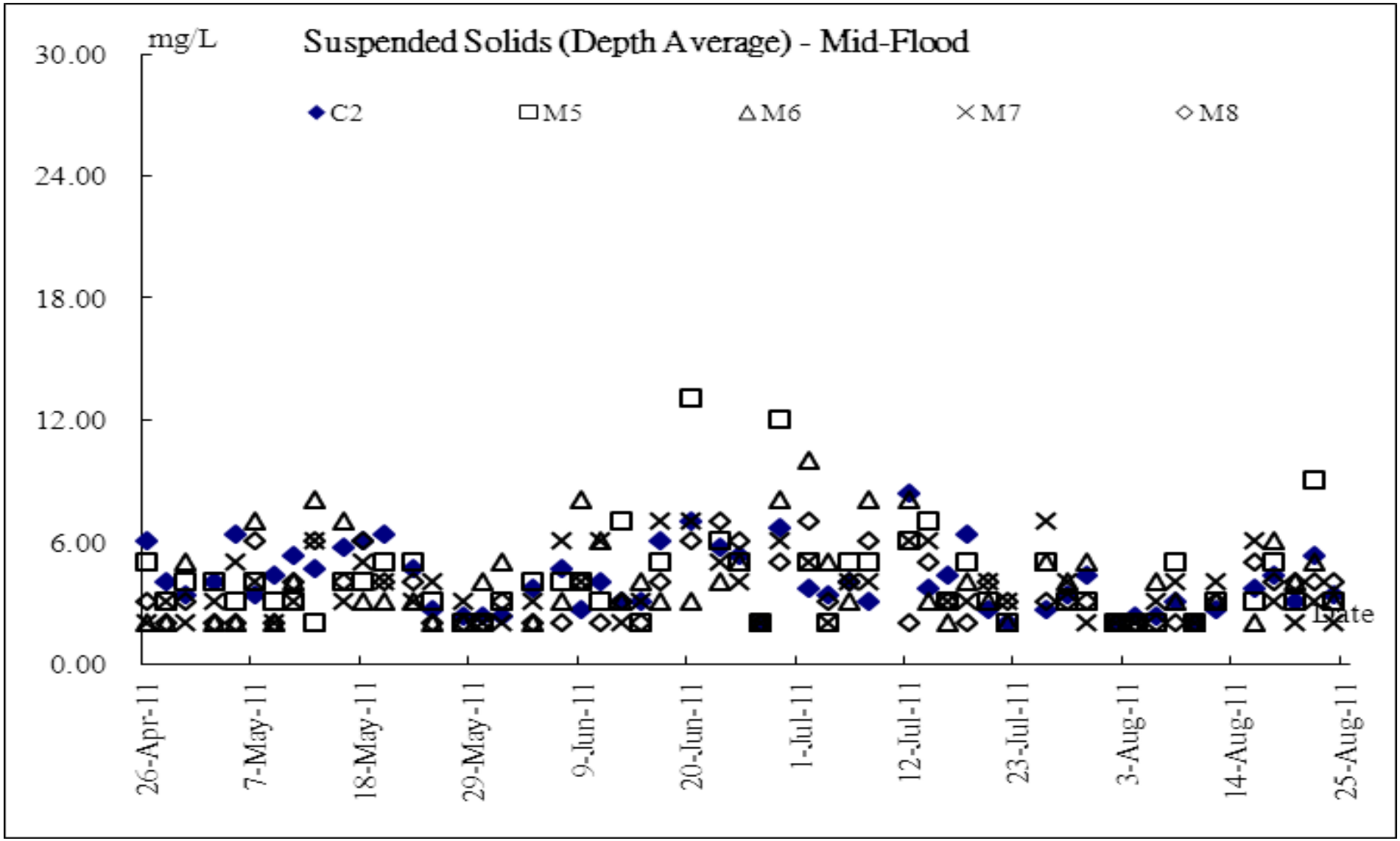

mg/L
DO Conc. (Depth Ave. of Surface and Middle Layer) - Mid-Ebb
C2
M5
M6
M7
M8
15.00
12.00
9.00
6.00
3.00
0.00
Date
25-Apr-11
6-May-11
17-May-11
28-May-11
8-Jun-11
19-Jun-11
30-Jun-11
11-Jul-11
22-Jul-11
2-Aug-11
13-Aug-11
24-Aug-11


Turbidity (Depth Average) - Mid-Ebb
NTUL
20.00
16.00
12.00
8.00
4.00
0.00
C2
M5
M6
M7
M8
Date
26-Apr-11
7-May-11
18-May-11
29-May-11
9-Jun-11
20-Jun-11
1-Jul-11
12-Jul-11
23-Jul-11
3-Aug-11
14-Aug-11
25-Aug-11


Suspended Solids (Depth Average) - Mid-Ebb
mg/L
C2
M5
M6
M7
M8
28.00
24.00
20.00
16.00
12.00
8.00
4.00
0.00
Date
26-Apr-11
7-May-11
18-May-11
29-May-11
9-Jun-11
20-Jun-11
1-Jul-11
12-Jul-11
23-Jul-11
3-Aug-11
14-Aug-11
25-Aug-11


DO Conc. (Depth Ave. of Surface and Middle Layer) - Mid-Flood
mg/L
15.00
12.00
9.00
6.00
3.00
0.00
C2
M5
M6
M7
M8
Date
26-Apr-11
7-May-11
18-May-11
29-May-11
9-Jun-11
20-Jun-11
1-Jul-11
12-Jul-11
23-Jul-11
3-Aug-11
14-Aug-11
25-Aug-11


Turbidity (Depth Average) - Mid-Flood
NTUL
20.00
16.00
12.00
8.00
4.00
0.00
C2
M5
M6
M7
M8
Date
26-Apr-11
7-May-11
18-May-11
29-May-11
9-Jun-11
20-Jun-11
1-Jul-11
12-Jul-11
23-Jul-11
3-Aug-11
14-Aug-11
25-Aug-11


Suspended Solids (Depth Average) - Mid-Flood
mg/L
C2
M5
M6
M7
M8
30.00
24.00
18.00
12.00
6.00
0.00
Date
26-Apr-11
7-May-11
18-May-11
29-May-11
9-Jun-11
20-Jun-11
1-Jul-11
12-Jul-11
23-Jul-11
3-Aug-11
14-Aug-11
25-Aug-11

Annex K

Meteorological Data of Reporting Month

Meteorological Data in This Reporting Period

Date		Weather	Total Rainfall (mm)	Tai Po Station (Wind Speed & Direction use Shatin Station)			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
26-Jul-11	Tue	Mainly fine and very hot.	0	29.7	11	74.5	E
27-Jul-11	Wed	Moderate westerly winds	Trace	29.7	14.5	73.7	E/SE
28-Jul-11	Thu	Cloudy with squally showers and thunderstorms.	Trace	29.3	10.9	75.2	E/NE
29-Jul-11	Fri	Cloudy with squally showers and a few thunderstorms	12.4	27.5	15	84	E/SE
30-Jul-11	Sat	Fine and hot. Light winds.	Trace	27.3	8.5	84.7	E/SE
31-Jul-11	Sun	Hot with sunny periods	0	28.5	7.5	74.5	E/SE
1-Aug-11	Mon	Fine and very hot	0	29.2	7.5	74.7	S/SE
2-Aug-11	Tue	Fine and very hot. Light winds.	0	28	7	79	S/SE
3-Aug-11	Wed	Fine and very hot.	0	29.2	7.4	70	SE
4-Aug-11	Thu	There will be a few showers	0	29.4	7.3	74	SE
5-Aug-11	Fri	Very hot with sunny periods	0	29.5	6.6	74.5	S/SE
6-Aug-11	Sat	Light to moderate southwesterly winds.	0	29.6	7.1	69.5	SE
7-Aug-11	Sun	Fine and very hot. Light winds.	0	30.2	9	74.2	S/SE
8-Aug-11	Mon	Fine and very hot.	22.1	28.5	8.2	83.5	S/SE
9-Aug-11	Tue	Light to moderate southerly winds.	9.9	27.7	8.3	85	S/SE
10-Aug-11	Wed	Cloudy with showers and a few squally thunderstorms.	60.5	26.9	10	86	SE
11-Aug-11	Thu	Fine and very hot.	17.9	28.9	9.2	83	S/SE
12-Aug-11	Fri	Light to moderate easterly winds.	0	28.9	10.3	79.7	SE
13-Aug-11	Sat	Very hot with sunny periods	0	29	7	78.5	SE
14-Aug-11	Sun	Fine and very hot. Light winds.	Trace	29.1	8.1	76.5	S/SE
15-Aug-11	Mon	Mainly fine.	0	29.3	7	82	S/SE
16-Aug-11	Tue	Moderate southeasterly winds.	8.5	29.1	7.5	79.5	SE
17-Aug-11	Wed	Mainly fine.	10.1	29.4	10.4	76	SE
18-Aug-11	Thu	Very hot in the afternoon.	0	29.5	8.2	73	E/SE
19-Aug-11	Fri	Light to moderate easterly winds.	0	29.7	9.7	65.5	E/SE
20-Aug-11	Sat	Fine and very hot.	3.7	30.9	10.8	71	E/NE
21-Aug-11	Sun	Very hot with sunny periods	Trace	29.8	10	80	S/SW
22-Aug-11	Mon	Light to moderate northerly winds.	1.4	29	8	78.7	S/SE
23-Aug-11	Tue	Mainly fine.	0	29.1	7	81.7	SE
24-Aug-11	Wed	Fine and very hot. Light winds.	3.9	29.3	7.3	81	S/SE
25-Aug-11	Thu	Light to moderate northerly winds.	13.7	28.5	7.5	78.7	N/NW

Annex L

Monthly Summary Waste Flow Table

Name of Department: CEDD

Contract No. ST/2008/02

Monthly Summary Waste Flow Table for August 2011											
Month /Year	Actual Quantities of Inert C & D Materials Generated Monthly						Actual Quantities of C & D Wastes Generated Monthly				
	Total Quantitiy Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ Cardboard packaging	Plastics (see note 3)	Chemical Waste	Others, e.g. General refuse
	(in '000M^3)	(in '000M^3)	(in '000M^3)	(in '000M^3)	(in '000M^3)	(in '000M^3)	(in '000KG)	(in '000KG)	(in '000KG)	(in '000KG)	(in '000M^3)
Accumulate	18.184	18.184	0.000	0.000	0.000	13.614	0.000	0.000	0.000	0.000	0.218
Jan-11	0.100	0.100	0.000	0.000	0.000	0.678	0.000	0.000	0.000	0.000	0.046
Feb-11	0.030	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
Mar-11	0.020	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
Apr-11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
May-11	(2.300)	0.000	2.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
Jun-11	(2.500)	0.000	2.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
Sub-Total	13.534	18.334	4.800	0.000	0.000	14.292	0.000	0.000	0.000	0.000	0.328
Jul-11	(10.000)	0.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.115
Aug-11	(3.534)	0.000	3.534	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
Sep-11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct-11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov-11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec-11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	18.334	18.334	0.000	0.000	14.292	0.000	0.000	0.000	0.000	0.473

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken	Reused in the Contract	Reused in other projects	Disposed as Public Fill	Imported Fill	Metals	Paper / cardboard	Plastics (See Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
0.00	20.00	7.00	13.00	0.00	23.00	2.00	2.00	1.00	1.00	5.00

Notes:

(1) The performance targets are given in PS Clause 1.100(14).

(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the site.

(3) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.

* (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the natrue where the total amou C&D materials expected to be generated from the works is equal to or exceeding 50,000m^3.

Annex M

Inspection and Audit Checklist

Item No.	Environmental Aspect	Reference Document(s)			Operational Control	Compliance Status √ = compliant x = non-compliant	Remarks
		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Air Emissions							
A1	Notification of Works	**Cap 311R** s.3			• The contractor responsible for a construction site where any notifiable work is proposed to be carried out shall give notice to the Authority of the proposal to carry out the work.	√	
A2	Dust emissions from site in general	**Cap 311R Schd** s.13(a)			• Vehicle washing facilities including a high pressure water jet shall be provided at every discernible or designated vehicle exit point.	√	Wheel washing facility was observed at the site exit
A3	Site entrance	**Cap 311R Schd** s.13(b)			• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcores. (exempted for slope stabilization work)	√	
A4	Site boundary	**Cap 311R Schd** s.13(c)			• Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level shall be provided along the entire length of that part of the site boundary except for a site entrance or exit. (exempted for (i) slope stabilization work if the site boundary adjoins any road for vehicular traffic with or without a footway; and (ii) road construction work)	√	
A5	Access road	**Cap 311R Schd** s.14(1)			• Pave main haul road with hard surface (i.e. either concrete, bituminous materials, hardcores or metal plate) and keep clear of dusty materials.	√	
					• Spray main haul road with water or dust suppression chemical so as to maintain the entire road surface wet.	√	Water tanker spraying water on haul roads was observed, the contract also be reminded to increase the frequency for water spraying to minimize the dust generation.
					• The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit shall be kept clear of dusty materials.	√	
A6	Dust emissions from malfunctioning of air pollution control system/equipment	**Cap 311R Schd** s.12(1) & (2)			• Any air pollution control system, equipment or measure shall be operated or implemented properly and effectively. In the case of malfunctioning or breakdown of the system / equipment, the activity concerned shall be stopped as soon as practicable until the system / equipment is restored to proper functioning.	**NA**	
A7	Dust emissions caused by the use of compressed air jet	**Cap 311R Schd** s.12(3)			• Except for cleaning formwork prior to concreting, or cleaning of slope prior to shotcreting, a compressed air jet shall not be used for cleaning or clearing dust from any vehicle, equipment, other materials or person. (use vacuum cleaner instead of air jet for clearing dust as far as practicable)	√	
A8	Dust emissions from cement & dry pulverised fuel ash (PFA)	**Cap 311R Schd** s.15(1)			• Every stock of more than 20 bags of cement or dry PFA shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	**NA**	
			GS 16.33(1)		• Cement in bags shall be stored in a dry, weatherproof store sheltered on the top and 3 sides with a raised floor. Each delivery shall be identified and kept separate and shall be used in the order of delivery.	**NA**	
		Cap 311R Schd s.15(2)	**GS 16.33**(2)		• Cement or dry PFA delivered in bulk shall be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line such that, in the event of the silo approaching an overfilling condition, an audible alarm is triggered and the material filling stops within 1 minute.	**NA**	

		Cap 311R Schd s.15(4)			• The handling of bulk cement or dry PFA shall be carried out in totally enclosed system, and any vent or exhaust shall be fitted with an effective fabric filter or equivalent air pollution control system or equipment.	**NA**	
			GS 25.83		• Cement, gypsum plaster and lime shall be delivered in sealed bags or containers bearing the manufacturer's name. The bags and containers shall be stored in a dry weatherproof store with a raised floor.	**NA**	
A9	Dust emissions from exposed earth	**Cap 311R Schd** s.16			• Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within 6 months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.	√	Exposed slope without cover was observed, the contractor was reminded to provide tarpaulin sheet covering the exposed slope to prevent dust generation.
			GS 6.13(1) (Also relevant to surface run-off)		• Earthworks after site clearance, excavation or filling and earthworks material after excavation shall be kept free from water and shall be protected from damage due to water and from exposure to weather conditions which may affect the earthworks or earthworks material. Measures taken shall include the following - The area of exposed surfaces shall be kept to a minimum.	√	
A10	Dust emissions from stockpiling of dusty materials	**Cap 311R Schd** s.18			• Any stockpile of dusty materials shall be either: (a) covered entirely by impervious sheeting (b) placed in an area sheltered on top and the 3 sides (c) sprayed with water or a dust suppression chemical so as to maintain the entire surface wet	√	
			GS 1.45(5)		• The location and size of stockpiles of materials, including excavated material, within the Site shall be as agreed by the Engineer. Stockpiles shall be maintained in a stable condition.	√	
A11	Dust emissions from loading, unloading or transfer of dusty materials and entrainment of dust	**Cap 311R Schd** s.19			• All dusty materials (except for cement and PFA and for cases where the moisture content is a matter of concern) shall be sprayed with water or a dust suppression chemical immediately prior to loading or unloading or transfer operation so as to maintain the dusty materials wet.	√	
		Cap 311R Schd s.21(1)	**GS 1.16**(4)		• Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels.	√	
		Cap 311R Schd s.21(2)			• Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	√	
			Applicable if included in **PS**		• Without prejudice to the generality of Clause 30 of the General Conditions of Contract, any vehicle with an open load compartment used for transferring dusty materials off Site shall have properly fitted side and tail boards. Dusty materials shall not be loaded to a higher level than the side and tail boards, and shall be covered by a suitable tarpaulin (or any other impervious covering material as approved by the Engineer) in good condition before leaving the Site. The tarpaulin shall be properly secured and extended at least 300 mm over the edges of the side and tail boards and be properly secured and maintained throughout the journey to the off-loading destination. For the purpose of this Particular Specification clause, "dusty materials" include cement, earth, pulverised fuel ash, aggregates, silt, stonefines, sand, debris, saw dust and wooden chips.	√	
A12	Dust emissions from transfer of dusty materials using a belt conveyor system	**Cap 311R Schd** s.20(1)			• Every belt conveyor used for the transfer of dusty materials shall be enclosed on the top and the 2 sides.	NA	
		Cap 311R Schd s.20(2)			• Every transfer point between any 2 belt conveyors shall be totally enclosed.	NA	

		Cap 311R Schd s.20(3)			• An effective belt scraper or equivalent device shall be installed at the head pulley of every belt conveyor to dislodge fine particles that may adhere to the belt surface and to reduce carry-back of fine particles on the return belt, and the belt scraper or equivalent device shall be equipped with bottom plates or other similar means to prevent falling of materials from the return belt.	NA	
		Cap 311R Schd s.20(4)			• Every stockpiling belt conveyor shall be provided with a mechanism to adjust its level such that the vertical distance between the belt conveyor outlet and the material landing point is maintained at not more than 1 m.	NA	
		Cap 311R Schd s.20(5)			• The area for the unloading of dusty materials from a belt conveyor outlet to any stockpile, storage bin, truck and barge shall be enclosed on the top and the 3 sides.	NA	
A13	Dust emissions from use of pneumatic or power-driven drilling, cutting and polishing	**Cap 311R Schd** s.22			• Spray water/dust suppression chemical continuously on the surface where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation that causes dust emission is carried out, unless the process is accompanied by the operation of an effective dust extraction and filtering device.	√	
A14	Dust emissions from debris handling	**Cap 311R Schd** s.23(1)			• Cover entirely the debris with impervious sheeting or store them in a debris collection area sheltered on the top and the 3 sides.	√	
		Cap 311R Schd s.23(2)			• Enclose every debris chute with impervious sheeting or similar materials.	√	
		Cap 311R Schd s.23(3)			• Spray the debris with water/dust suppression chemical to keep it wet before it is dumped into a debris chute.	√	
A15	Dust emissions from excavation or earth moving	**Cap 311R Schd** s.24			• Spray the working area of any excavation or earth moving operation with water or dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.	√	
A16	Dust emissions from concrete production	**Cap 311R Schd** s.25(2)			• For production of concrete or other substances using bagged cement or dry PFA in a standard bag (not exceeding 50 kg), the de-bagging, batching and mixing processes shall be carried out in an area sheltered on the top and the 3 sides.	NA	
A17	Dust emissions from site clearance	**Cap 311R Schd** s.26(1)			• The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.	NA	
		Cap 311R Schd s.26(2)			• All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition.	NA	
A18	Dust emissions from blasting	**Cap 311R Schd** s.27(1)			• Wet the area within 30m from the blasting area with water prior to blasting.	NA	
		Cap 311R Schd s.27(2)	**GS 6.33**(d)		• Blasting shall not be carried out when the strong wind signal or tropical cyclone warning no. 3 is hoisted unless prior permission of the Commissioner of Mines is obtained.	NA	
			GS 6.33(c)		• Blasting shall not be carried out when a Hong Kong Observatory Thunderstorm Warning is in force.	NA	
A19	Dust emissions from reclamation	**Cap 311R Schd** s.2 (See also Cap 311R Schd, s.12-27 where relevant.)			• If a stockpile of dusty materials is more than 1.2m high and lies within 50m from any site boundary that adjoins the public, the stockpile shall be properly treated and sealed with latex, vinyl, bitumen or other suitable surface stabilizer.	NA	
A20	Dust emissions during disposal of fabric filters	**Cap 311R Schd** s.17			• Cement, pulverised fuel ash or any other dusty materials collected by fabric filters or other air pollution control system or equipment shall be disposed of in totally enclosed containers.	NA	
A21	Dust emissions from demolition of a building	**Cap 311R Schd** s.3 (See also Cap 311R Schd, s.12-27 where relevant.)			• Spray the area where demolition work takes place with water or a dust suppression chemical immediately prior to, during and immediately after the demolition activities so as to maintain the entire surface wet.	NA	
					• For any wall of the building to be demolished that abuts or fronts upon a street, service lane or other open area accessible to the public, impervious dust screens or sheeting shall be used to enclose the whole wall to a height of at least 1m higher than the highest level of the structure being demolished.	NA	

					• Any dusty materials remaining after a stockpile is moved shall be wetted with water and cleared from the surface of roads or streets.	NA	
A22	Dust emissions from construction of the superstructure of a building, and dust emissions from the renovation carried out on the outer surface of the external wall or upper surface of the roof of a building	**Cap 311R Schd** s.6 (See also Cap 311R Schd, s.12-27 where relevant.)			• Where a scaffolding is erected around the perimeter of a building under construction/renovation, effective dust screens shall be provided to enclose the scaffolding from the G/F level of the building, or if a canopy is provided at the 1/F level, from the 1/F level up to the highest level of the scaffolding.	NA	
					• Any skip hoist for material transport shall be totally enclosed by impervious sheeting.	NA	
		Cap 311R Schd s.8(c)			• Any dusty materials remaining after a stockpile is moved shall be wetted with water and cleared from the surface of roads or streets.	NA	
A23	Dust emissions from road opening or resurfacing work	**Cap 311R Schd** s.9 (See also Cap 311R Schd, s.12-27 where relevant.)			• Any excavated dusty materials or stockpile of dusty materials shall be covered by impervious sheeting, or sprayed with water so as to maintain the entire surface wet and removed or backfilled or reinstated within 24 hours of the excavation or unloading.	NA	
					• A stockpile of dusty materials shall not extend beyond the pedestrian barriers, fencing or traffic cones.	NA	
					• Any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads or streets.	NA	
A24	Dust emissions from blasting for finishing works		**GS 14.42**		• Blasting to produce Class T5 and T6 finishes shall not be carried out until the concrete has hardened sufficiently for the cement matrix to be removed without disturbing the coarse aggregate. Adjacent surfaces shall be protected from blasting and dust shall be controlled by screens and by water-spraying.	NA	
A25	Dust emissions from blast cleaning steelwork		**GS 18.55**(5)		• Blast cleaning shall be carried out in a fully enclosed space separated from the space of painting. The enclosed space shall be fitted with dust extractors and filters to prevent the dispersal of dust outside the enclosed space.	NA	
A26	Dust emissions from the operation of a concrete batching plant (cement works) (See also A8)	**Cap 311** s.12(1)			• The owner of any premises used for the conduct of any specified process shall use the best practicable means for preventing the emission of noxious or offensive emissions from such premises, and for preventing the discharge, whether directly or indirectly, of such emissions into the atmosphere, and for rendering such emissions where discharged harmless and inoffensive. (Comply with requirements of Best Practical Means Requirements for Cement Works [concrete batching plant].)	NA	
		Cap 311 s.13(1)			• Subject to section 20, the owner of any premises shall not use those premises, or permit those premises to be used, for the conduct of a specified process unless he is the holder of a license to use the premises for the conduct of that specified process. (Check that valid licence is in place as appropriate (for concrete batching plant) and check compliance with conditions.)	NA	
A27	Dust (general)		**GS 1.34**		• Work shall be carried out in such a manner that avoidable dust is not generated.	√	
			Applicable if included in **PS**		• Areas of the Site in which dust is likely to be generated shall be sprayed with water regularly. Screens, dust sheets, tarpaulins or other methods agreed by the Engineer shall be used to prevent generation of dust. Materials, including earthworks material, from which dust may be generated when being transported to or from the Site shall be sprayed with water or covered.	√	
A28	Asbestos	**Cap 311** s.69(1)			• The owner of the premises which contain or be suspected of containing asbestos shall engage a registered asbestos consultant to carry out investigation on any asbestos containing material which may be in the premises and submit an asbestos investigation report.	NA	
A29	Undertaking asbestos works where a premises is suspected of containing asbestos	**Cap 311** s.69(1)			• If asbestos material is found in the premises, an asbestos abatement plan in accordance with section 71 has to be submitted at least 28 days before he carries out any intended asbestos abatement work.	NA	
		Cap 311 s.74(1)			• Appoint a registered asbestos consultant to supervise the implementation of the asbestos abatement plan or the asbestos management plan.	NA	
		Cap 311 s.75(3)			• Appoint a registered asbestos contractor to supervise the work and give continuous supervision through registered asbestos supervisors stationed continuously at the works area.	NA	

		Cap 311 s.76(1)			• Appoint a registered asbestos laboratory to carry out the sampling, measurement or analysis of the material.	NA	
A30	Not used						
A31	Smoke/fume from construction equipment such as generator set, diesel hammer etc.	**Cap 311C reg 3** **Cap 311C reg 2**			• An owner who operates any plant in such a manner that any dark smoke is emitted for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at any one time, commits an offence. ("dark smoke" means smoke which, if compared in the appropriate manner with the Ringelmann Chart or an approved device, would appear to be as dark as or darker than shade 1 on the Ringelmann Chart.) (Check for dark smoke from relevant plant.)	√	

A32	Smoke from open burning	**Cap 311O** s.4(1)			• Open burning for the purpose of disposal of construction waste / tyres, the salvage of metal, or the clearance of site in preparation for construction work is prohibited. (Check that no open burning is carried out.)	√	
A33	Kitchen fume from site canteen	**Cap 311A reg 4** subreg (1) **Cap 311A reg 3** subreg (1)			• The occupier of any premises on which work is intended to be carried out in relation to: (a) the installation on the premises of a furnace, oven, chimney or flue; (b) the alteration or modification of a furnace, oven or chimney existing on the premises; or (c) the alteration or modification of a flue between a furnace and chimney or between an oven and chimney existing on the premises, shall, not less than 28 days prior to the commencement of such work submit plans to the Authority for approval. (Check whether approvals have been obtained where appropriate). (Note: This does not apply where a furnace or oven, or a chimney or flue consumes no more than 25l/hr of conventional liquid fuel, 35kg/hr of conventional solid fuel, 1150 megajoules/hr of any gaseous fuel.)	NA	
A34	Emissions from stationary and other combustion sources (using diesel and other fuels)	**Cap 311I reg 4** subreg (2)			• No person shall use conventional liquid fuel in any relevant plant in Hong Kong which has:- (a) a sulphur content of more than 0.5% by weight; or (b) a viscosity of more than 6 centistokes at 40ºC.	√	
		Cap 311I reg 4 subreg (3)			• No person shall use conventional solid fuel in any relevant plant in Hong Kong which has a sulphur content of more than 1% by weight.	√	
			ETWB TCW 19/2005 and ETWB's Guidance Note for TCW 19/2005		• For capital works contracts tendered on or after 16 January 2006, with contract sum >= $20M and contract period > 6 months [term contracts excluded], all constructional plant powered by diesel fuel must use ultra low sulphur diesel (ULSD). (Ensure fuel is obtained from legal sources)	√	
			GS 1.35(6)		• The Contractor shall protect and maintain equipment provided by the employer while it is on the Site and shall provide operatives, fuel and other consumables required to operate the equipment.	√	
A35	Leakage of ozone depleting substances (road vehicles, firefighting equipment and controlled refrigerants)	**Cap 403B** s.5(1)			• A person who allows or causes any controlled refrigerant used or intended for use in a refrigeration equipment or motor vehicle air-conditioner to escape into the atmosphere commits an offence. (Ensure relevant equipment is maintained.)	NA	
		Cap 403B s.6(1)			• No person shall recover, recycle or otherwise treat or cause or allow to be recovered, recycled or otherwise treated a controlled refrigerant unless (a) refrigerant recycling equipment approved by the Director (DEP) under section 4 is used for recovering or recycling the controlled refrigerant; and (b) the equipment is used (i) in accordance with any instruction issued by the manufacturer of the equipment; and (ii) in a manner as may be specified by notice in the Gazette by the Director of Environmental Protection. (Check the competence of refrigerant recycling contractors.)	NA	
		Cap 403B s.7(1)			• The owner or occupier of premises in which there is refrigeration equipment shall keep in the premises up-to-date records of (a) the dates on which any controlled refrigerant was removed from that equipment during servicing or repairing that equipment; (b) the dates on which any replacement controlled refrigerant is added to that equipment during servicing or repairing and the weight, in kilograms, of the controlled refrigerant.	NA	

		Cap 403B s.7(2)			• The owner or occupier shall retain the records referred to above for at least 1 year after they were made. (Check records.)	NA	
A36	Black smoke from vehicle emissions	**Cap 374A reg 31** subreg (1)			• Every motor vehicle shall be so maintained that – (a) no excessive smoke or visible vapour is emitted therefrom; (b) so far as is reasonably practicable, the products of combustion, ashes, steam, cinders, petrol, water or oil are not discharged on the road or in such manner as to be likely to cause damage to property or injury or danger or loss of amenity or annoyance to persons (Check that vehicles are maintained, observe for black smoke)	√	
			GS 1.52(3)		• The transport shall be maintained in a clean and serviceable condition and shall be serviced regularly.	√	

Item No.	Environmental Aspect	Reference Document(s)			Operational Control	Compliance Status √ = compliant x = non-compliant	Remarks
		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Noise/Vibration							
NV1	Noise from construction work other than percussive piling	**Cap 400** s.6(1)			• A construction noise permit (CNP) is required for the use of powered mechanical equipment for the purpose of carrying out construction work between the hours of 7pm and 7am on weekdays or at any time on Sunday or a public holiday. (Check CNPs are used as appropriate and compliance with conditions of the CNP.)	NA	
		Cap 400 s.6(2)			• A CNP is required for the carrying out of any prescribed construction work at any place within a designated area between the hours of 7pm and 7am on weekdays or at any time on Sunday or a public holiday. Prescribed construction works (see Cap 400G Schedule) are:- (a) Erection or dismantling of formwork or scaffolding; (b) Loading, unloading or handling of rubble, wooden boards, steel bars, wood or scaffolding material; and (c) Hammering. (Check CNPs are used as appropriate and compliance with conditions of the CNP.)	NA	
NV2	Noise from percussive piling	**Cap 400** s.6(3)			• A CNP is required for percussive piling between the hours of 7am and 7pm on weekdays (except Sunday and public holidays). (Check CNPs are used as appropriate and compliance with conditions of CNP.)	NA	
		Cap 400 s.6(4)			• Percussive piling between the hours of 7pm and 7am on weekdays or at any time on Sunday or a public holiday is prohibited.	NA	
NV3	Noise from hand-held percussive breakers and air-compressors	**Cap 400D reg 2, 4 & 6** **Cap 400C reg 2, 4 & 6** **Cap 400** s.17(1)			• Hand-held percussive breakers heavier than 10kg and air-compressors capable of supplying compressed air at 500kPa or above used for construction work are required to comply with specified noise emission standards and to affix a Noise Emission Label (NEL) when being operated. (check valid NELs are in place)	NA	
NV4	Noise from blasting		**GS 6.33**(a)&(b)		• Blasting shall not be carried out at the following times: (a) on General Holidays. (b) before 8.30am or after 5.30pm on any day.	NA	
NV5	Vibration from blasting trials		**GS 6.23**(1)(b)		• Blasting trials shall be carried out for each proposed blasting procedure to demonstrate that the resulting ground vibrations at locations stated in the Contract or instructed by the Engineer can be satisfactorily predicted, recorded and are within acceptable limits, and shall not adversely affect the safety and stability of adjoining structures, installations, slopes and land.	NA	
			GS 6.34(8)		• Unless stated otherwise permitted by the engineer, the vibration at the adjoining slopes and land due to blasting measured in terms of peak particle acceleration and peak particle velocity shall not exceed the values stated in the Contract.	NA	
NV6	Vibration from piling works		**GS 8.34**(3)		• The vibrations due to piling works at structures, utilities and previously installed piles measured in terms of peak particle velocity shall not exceed 25 mm/s.	NA	

NV7	Monitoring noise vibration		**GS 8.35**(1)		• Measurements of noise level, vibration, ground movement and groundwater level shall be taken at locations and time intervals stated in the Contract or instructed by the Engineer when piling works are being carried out. Records of the measurements shall be kept and a copy of the records supplied to the Engineer. Arrangement for installing instruments and taking measurements both inside and outside the Site shall be made by the Contractor.	√	
			GS 8.35(2)		• Measurements of noise level and vibration shall be made with instruments of a type agreed by the Engineer.	√	
			GS 8.35(3)		• Sufficient numbers of piezometers and survey points shall be installed to allow the changing groundwater levels and the effects on structures, utilities and previously installed piles to be measured. Measurements shall be taken at regular intervals when groundwater control is carried out and until such time as the groundwater has resumed its natural regime.	√	
			GS 8.35(4)		• The Contractor shall inform the Engineer immediately of any unanticipated change in measurements.	√	
			GS 8.35(5)		• If the specified limits, or limits agreed by the Engineer, on vibration, groundwater movement or groundwater level are exceeded, the work causing the limits to be exceeded shall be stopped and particulars of proposed changes to the methods of construction shall be submitted to the Engineer for approval.	√	
NV8	Noise from vehicles (See also A36)	**Cap 374A reg 30** subreg (1)			• Every vehicle propelled by an internal combustion engine shall be fitted with a silencer, expansion chamber or other contrivance suitable and sufficient for reducing, as far as may be reasonable, the noise caused by the escape of the exhaust gases from the engine.	√	

Item No.	Environmental Aspect	Reference Document(s)			Operational Control	Compliance Status √ = compliant x = non-compliant	Remarks
		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Water Pollution							
WP1	Flooding and wastewater including surface run-off discharges from construction site/works to inland coastal waters, communal sewers and drains	Cap 358 s.8 & 9			• Apply for and maintain a wastewater discharge licence to comply with the Water Pollution Control Ordinance prior to discharging any polluting matters including surface water run-off to foul sewers, stormwater drains, inland and coastal waters.	√	Issued on 19 Feb 2010
					• Establish water quality baseline and carry out tests for checking compliance with the "Limitations on Discharge" specified in the license.	√	Discharge water sampled on 28 April 2011 and all parameters are satisfactory
			GS 1.16(2)		• Measures shall be taken to prevent excavated material, silt or debris from entering drainage systems in roads and footways, entry of water to the gullies shall not be obstructed.	√	
			GS 1.19(1)		• Unless otherwise permitted by the Engineer, all work shall be carried out, as near as may be practicable in the circumstances, in dry conditions, except where the work is required to be carried out in or with water or other fluids.	√	
			GS 1.19(3)		• The Contractor shall make all arrangements with and obtain the necessary approvals and inspections from the relevant authorities for discharging water to drains, watercourses or the sea. The relevant work shall not start until the approved arrangements for disposal of the water have been implemented.	√	
			GS 1.51(1)		• Temporary water, electricity, telephone, sewerage and drainage facilities shall be provided for the Engineer's accommodation and for the Contractor's use in carrying out the Works. The Contractor shall make all arrangements with and obtain the necessary approvals from the relevant authorities for the facilities.	√	
			GS 1.19(2)		• Water on the Site and water entering the Site shall be disposed of by temporary drainage or pumping systems or by other methods capable of keeping the Works free of water and protected from damage due to water. Silt and debris shall be intercepted by traps before water is discharged from the Site.	√	The Contractor was request to maintain the function of the silt curtains. Muddy water ponding was observed after heavy rainfall. The contractor was reminded to provide necessary pumping and desilting measures to treat the water before discharging.
			GS 1.23(2)		• Measures shall be taken to prevent excavated material, silt or debris from being deposited in existing drainage systems, watercourses or the sea. (Guidance Note: Heavy rain can occur at any time. Consequently, when considering giving approval to temporary drainage systems, it is wise not to place too much reliance on the Contractor's assurances that action can and will be taken to remove obstructions or improve flow as and when necessary. By the time the Contractor has managed to mobilise plant and labour, flooding and damage may have occurred already.)	√	
			GS 6.52(1) (Also relevant to dust emissions)		• Earthworks final surfaces and formations shall be maintained in a stable condition and shall be protected from damage due to water or other causes and from exposure to conditions which may adversely affect the surface.	√	

			GS 7.27(4)		• The flushing medium for drilling shall be passed through a sedimentation basin and shall either be reused or be discharged to surface drains or natural stream courses. Measures shall be taken to prevent flushing mediums seeping through the ground.	√	
			GS 7.27(5)		• The flushing medium for drilling shall not be discharged to stream courses which are used as a supply of drinking water.	√	
			GS 24.16		• Measures shall be taken to prevent concrete and deleterious material from being deposited in drainage systems under floors and on roofs of water retaining structures. After construction and before testing, the drainage system shall be thoroughly cleaned by rodding and flushing to remove any deleterious material which may impede the flow of water into or through the drainage system. The lines and levels of drainage systems shall be within 20mm of the specified horizontal alignment and within 10mm of the specified vertical alignment.	NA	
WP2	Leakage from marine vessels		**GS 21.39**(2)		• Work boats shall be licensed under the Merchant Shipping (Launches and Ferry Vessels) Regulations, Chapter 281 and shall be manned and maintained in good seaworthy condition.	NA	
WP3	Suspended solids from dredging and filling works		**GS 21.23**		• The following particulars of the proposed methods of dredging shall be submitted to the Engineer: (a) Type and capacity of dredgers, (b) Methods of anchorage and positioning of dredgers, (c) Sequence and rate of working, and (d) Arrangements for the transportation and disposal of dredged material. (Guidance Note: The Fill Management Committee co-ordinates the disposal of fill territory wide. They should be contacted at an early stage for advice on suitable locations for the disposal of dredged material.) (The Contractor should obtain a valid dumping licence from EPD for disposal of dredged materials at approved marine dumping grounds.)	NA	
			GS 21.43		• Concreting in locations affected by tides shall be carried out in dry conditions unless otherwise permitted by the Engineer. After concreting is complete, the top of the concrete shall be covered with polyethylene sheets fixed to the formwork. (Guidance Note: Polythene sheets are used to prevent the washout of cement mortar as the tide rises and falls.)	NA	
			GS 21.47(1)		• Fill material shall be deposited in a manner and sequences such that minimum lateral displacement of the underlying material will be induced and such that slopes are stable at all times.	NA	
			GS 21.24(1)(c)&(e)		• The following particulars of the proposed materials and methods of deposition of fill material shall be submitted to the engineer: (a) methods of deposition and compaction of fill material; and (b) sequence and rate of working.	NA	
			GS 21.30		• Fill material and dredged material shall not be stockpiled on the foreshore, seabed or river bed within the Site unless permitted by the Engineer. (Guidance Note : If it is necessary to stockpile fill material or dredged material on a foreshore, seabed or river bed within the Site, the Engineer should ensure that it will not affect the Works, and that the material can be easily recovered or removed entirely. Adequate precautions should be taken to ensure that the stockpiled material does not pollute the land or sea.)	NA	
			GS 21.31(1)		• Fill material shall not be handled or stored in a manner which will result in segregation, deterioration, erosion or instability of the material.	NA	

Item No.	Environmental Aspect	Reference Document(s)			Operational Control	Compliance Status √ = compliant x = non-compliant	Remarks
		Ordinances/[a] Regulations	C.CI.[b]	EM&A[c]			
Maintenance of Roads/Blockage of Drains							
MB1	Contamination and blockage of drains (flooding)		**GS 24.16**		• Measures shall be taken to prevent concrete and deleterious material from being deposited in drainage systems under floors and on roofs of water retaining structures. After construction and before testing, the drainage system shall be thoroughly cleaned by rodding and flushing to remove any deleterious material which may impede the flow of water into or through the drainage system. The lines and levels of drainage systems shall be within 20mm of the specified horizontal alignment and within 10mm of the specified vertical alignment.	√	
MB2	Excavated material, silt or debris blocking drainage systems and potential flooding		**GS 1.16**(2)		• Measures shall be taken to prevent excavated material, silt or debris from entering drainage systems in roads and footways; entry of water to the gullies shall not be obstructed.	√	

Item No.	Environmental Aspect	Reference Document(s)			Operational Control	Compliance Status √ = compliant x = non-compliant	Remarks
		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Waste Management							
WM1	Disposal of waste (general)	Cap 354 s.16A(1)			• Any person who without lawful authority or excuse deposits or causes or permits to be deposited any waste:- (a) in a public place; (b) on any Government land; or (c) on any land other than Government land without the consent of the owner or lawful occupier, commits an offence.	√	
			GS 1.32		• Rubbish and debris shall be disposed of at least once per week.	√	
			WBTC 16/96		• All contracts including the operation of public dumping shall include a particular specification on "Acceptance of Wet Soil".	√	
WM2	Generation and disposal of construction and demolition waste		WBTC 21/2002, App A - PS See note (1)		• The Contractor shall produce a Construction and Demolition Material Disposal Delivery Form (the Form) for each and every vehicular trip transporting construction and demolition (C&D) material, i.e. public fill or C&D waste, off Site. The Contractor shall complete all relevant details on the Form in duplicate except for the Time of Departure.	√	
					• Prior to the vehicle leaving the Site, the Contractor shall present to the site supervisory staff the completed Form. The site supervisory staff shall insert the Time of Departure and stamp the Form. The site supervisory staff shall retain a copy of the Form and return the original to the Contractor. The Form shall be carried on board the vehicle at all times throughout the vehicular trip.	√	
					• For each vehicular trip, the Contractor shall present to the operator of the Designated Public Filling Facility or the Landfill (the Operator) the stamped Form prior to the disposal of C&D material. The Operator shall stamp and return the Form to the Contractor together with a computer print-out receipt to acknowledge the disposal of public fill. The Contractor shall submit the stamped Form and the original receipt to the Engineer's Representative within 2 working days of the vehicular trip. Late return without any acceptable reason might be regarded as non-compliance by the Engineer's Representative.	√	
					• The Contractor acknowledges and shall permit the ER to request and obtain information from the operator of the Designated Public Filling Facility or the Landfill verifying the receipt and the accuracy of the information on that receipt.	√	
					• All C&D material shall become the property of the Contractor when it is removed from the Site.	√	
			ETWB TCW 31/2004 See note (2)		• The Contractor shall implement a trip ticket system (TTS) for the removal of construction and demolition (C&D) materials from the site to the designated disposal ground.	√	
					• Written approval should be obtained if the Contractor has identified a project which can be used as an alternative disposal ground for the C&D materials.	√	
					• The Contractor shall prepare a site management plan for implementation of the TTS. The plan shall include: (a) site organisation and staff duties; (b) disposal programme; (c) site procedures; (d) surveillance; (e) recording system; and (f) control measures to track internal movement of materials .	√	
					• The Contractor shall devise appropriate control measures to ensure that recyclable materials are sorted and delivered to a proper recycling outlet for processing.	√	

Note (3) - applicable to capital works contracts for which tenders were invited between 1st July 2003 and 15th January 2006.
- for all PWP contracts (excluding term contracts and contracts administered by EMSD) invited between 1 January 2001 and 30 June 2003, WBTC 29/2000 shall be applicable.
- for capital works contracts (including E&M contracts, with contract sum >= $20M and contract period > 6 months but excluding term contracts) invited on or after 16th January 2006, ETWB TCW 19/2005 shall be applicable.
- for designated projects under the EIAO, the project officer should incorporate in the PS other relevant requirements/conditions as set out in the Environmental Permit.

					• For each truckload of C&D materials leaving the site, the Contractor's truck driver must bear a duly completed, signed and stamped Disposal Delivery Form (DDF). The Contractor shall maintain a daily record of disposal of C&D materials from the site including details of the C&D materials, the truck number, departure time, etc, using the Daily Record Summary (DRS).	√	
WM2	Generation and disposal of construction and demolition waste (cont'd)		**ETWB TCW 15/2003, App C - PS** See note (3)		**Waste Management Plan** • The Contractor shall prepare and implement a Waste Management Plan (WMP).	√	
					• The Contractor shall review the WMP at monthly intervals and shall submit a revised and updated WMP if necessary. If and when the Engineer is of the opinion that the WPM does not meet the requirements of the contract, the Engineer may, by notice in writing, require the contractor to revise or update the WMP and the contractor shall comply with that requirement within 7 days of the date of the notice.	√	
					Policy • The Contractor shall include in the WMP, a statement setting out the management's approach, commitment and targets/measures for the waste management on the Site.	√	
					Organisation • The Contractor shall include in the WMP, a chart showing the manpower resources for the implementation of WMP.	√	
					• The Contractor shall assign a senior staff (assigned person) to oversee the implementation and the performance of the WMP. The assigned person shall be working full-time on the Site but not necessarily working solely for waste management matters.	√	
					Duties and Responsibilities • The duties and responsibilities of individuals and/or different levels of staff (including sub-contractors) involved in the waste management of the Site shall be clearly defined in the WMP.	√	
					Waste Flow Table (WFT) • The Contractor shall include a yearly summary WFT covering the whole construction period in the WMP to list out the estimates of all C&D materials to be generated annually. It shall include the followings: i. Inert C&D materials to be generated from the Contract; ii. Broken concrete (arising from demolition or construction activities in the Contract) for recycling into aggregates; iii. Inert C&D reused in the Contract; iv. Inert C&D materials reused in other projects (including reclamation projects) or the Contractor's outlet approved by the Engineer; v. Inert C&D materials for disposed of to public filling outlets [i.e. (v) = (i) – (ii) – (iii) – (iv)]; vi. Metals (including reinforcement bars) for collection by recycling contracts; vii. Paper/cardboard packaging for collection by recycling contractors; viii. Plastics (i.e. plastic bottles/containers, plastic sheets/foam from equipment or material packaging.); ix. Chemical wastes for collection by specialist contractors; and x. General refuses to be disposed of at landfills.	√	
					Use of Timber • Where the Contractor has to use timber for temporary works construction for one process/activity with an estimated quantity exceeding 5m^3, he should submit a method statement to the Engineer's Representative for agreement prior to commencement of the works. The method statement should include the justification for and the measures taken to minimize the use of timber in the temporary works. (See also RM2 and RM3.)	√	

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- for designated projects under the EIAO, the project officer should incorporate in the PS other relevant requirements/conditions as set out in the Environmental Permit.

WM2	Generation and disposal of construction and demolition waste (cont'd)		**ETWB TCW 15/2003, App C - PS** See note (3)		**Measures to Reduce / Minimize Generation of C&D material** • The Contractor shall include in the WMP a list of work processes or activities that will generate C&D materials during construction and the proposed measures to reduce / minimize such generation in particular metallic waste, timber, paper/cardboard packaging and chemical waste. The following performance targets should be adopted: (a) All excavated materials should be sorted to recover the inert portions for reuse on site or disposal to designated outlets; (b) All metal should be recovered on site for collection by recycling contractors; (c) All cardboard and paper packing should be recovered on site and properly stockpiled; and (d) All demolition debris from demolition works should be sorted to recovered on site broken concrete, reinforcement bars, mechanical and electrical fittings as well as other building services fittings/materials that have established recycling outlets. (See also Demolition Waste below)	√	
					On-site Sorting of C&D material • All C&D materials arising from or in collection with the Works shall be sorted on-site to recover the inert C&D materials and reusable and/or recyclable materials prior to disposal of the waste portions off-site.	√	
					• The Contractor shall devise a system of work for on-site sorting of C&D materials. The system shall include the identification of the source of generation, estimated quantity, arrangement for on-site sorting and/or collection, temporary storage areas, frequency of collection by recycling contractors or frequency of removal off site, etc. The Contractor shall advise the resources and facilities required to carry out effective on-site sorting for each type of C&D materials arising from or in connection with the Works.	√	
					• If there are chemical wastes to be generated on the Site, the Contractor shall include a method statement in the WMP giving details on the nature of the chemicals, details and method of storage, as well as the proposed collection and disposal arrangements, etc. (See also Chemical Waste below)	√	
					• The Contractor shall check and ensure that as far as possible the general refuse should contain no observable inert or reusable/recyclable C&D materials before disposal to landfills. In addition, sorted inert C&D materials for disposal to public filling outlets should contain no observable non-inert materials.	√	
					Identification of Temporary Storage Areas • The Contractor shall identify and provide sufficient space for the temporary storage of C&D materials to facilitate collection and/or sorting on the Site.	√	Some waste materials were observed scattered at the site areas. Designated storage and sorting area should be assigned.
					Arrangement for Collection of Recyclable Materials by Recycling Contractors • The Contractor shall make arrangements with potential recycling contractors to facilitate that recyclable materials sorted from the Site are collected with reasonable care.	√	
					Mechanism for Recording C&D materials Removed off Site • The Contractor shall establish a disposal recording system similar to the trip-ticket system or alike, to ensure proper disposal of C&D materials. The requirements of the disposal recording system are stipulated in clause 9(b) of Appendix C of ETWB TCW 15/2003.	√	
					Inspection Programme • The Contractor shall arrange weekly inspection attended by his Agent and the assigned person and the Engineer's nominated site representative to inspect the Site to ensure satisfactory performance on compliance with the WMP.	√	

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- for capital works contracts (including E&M contracts, with contract sum >= $20M and contract period > 6 months but excluding term contracts) invited on or after 16th January 2006, ETWB TCW 19/2005 shall be applicable.
- for designated projects under the EIAO, the project officer should incorporate in the PS other relevant requirements/conditions as set out in the Environmental Permit.

WM2	Generation and disposal of construction and demolition waste (cont'd)		**ETWB TCW 15/2003, App C - PS** See note (3)		**Rectification of defects and deficiencies** • The Contractor shall take prompt action to rectify the defects and deficiencies identified during the inspection and shall report the status of action taken before the forthcoming weekly inspection.	√	
					Performance Monitoring • The following items should be included in the agenda for discussion at every Site Safety and Environmental Management Committee meeting, and Site Safety and Environmental Committee meeting, or other established channels for performance monitoring as agreed by the Engineer: (a) Review the WMP including the quantities and types of C&D materials generated, reused and disposed of off-site; the amount of fill materials imported to the Site and quantity of timber used in temporary works for each construction process/activity; (b) Monitor the achievement of the WMP to assess its effectiveness; and (c) Monitor the follow-up action on defects and deficiencies identified.	√	
					Provision of Training • The Contractor shall make his own arrangement for his Agent, the assigned person and other site personnel to attend the training on waste management organized by training institutes or organizations as considered appropriate by the Engineer's Representative if they have not attended similar courses before.	√	
					• The Contractor shall arrange and provide training on waste management in the site-specific induction and its refresher training for all persons employed by the Contractor or his sub-contractor on the Works or in connection with the Contract. The training should cover the waste management policy, targets, measures for on-site sorting of C&D materials and measurement on waste management performance on the Site.	√	
					Records • The Contractor shall complete the monthly summary WFT to record the actual quantities of C&D materials generated each month on the Site and submit the completed monthly summary WFT to the Engineer's Representative by not later than the 15th day of each month following the reporting month, or if it is a General Holiday, the day following the General Holiday.	√	
					• The Contractor shall update the yearly summary WFT on a half-yearly basis and submit it to the Engineer's Representative by not later than 1st of June and December of each year, or if it is a General Holiday, the day following the General Holiday.	√	
					• The Contractor shall record the quantities of all the recyclable materials before removal off sites by the recycling contractors and include the details in the WFT for submission to the Engineer's Representative.	√	
					• The Contractor shall keep a register for each and every vehicular trip of transporting C&D materials off site for inspection by the Engineer's Representative upon request.	√	
					• The Contractor shall provide the Engineer's Representative with a summary table containing the description, justification and the estimated quantity for every work process/activity requiring the use of timbers for temporary works construction irrespective of the quantity of timber used. The summary table shall be updated and submitted to the Engineer's Representative together with the monthly summary WFT for monitoring and review by not later than the 15th day of each month, or if it is a General Holiday, the day following the General Holiday.	√	

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- for capital works contracts (including E&M contracts, with contract sum >= $20M and contract period > 6 months but excluding term contracts) invited on or after 16th January 2006, ETWB TCW 19/2005 shall be applicable.
- for designated projects under the EIAO, the project officer should incorporate in the PS other relevant requirements/conditions as set out in the Environmental Permit.

WM2	Generation and disposal of construction and demolition waste (cont'd)		**ETWBTCW 19/2005** See note (4)		**Policy** • Capital works contracts having an estimated contract sum of $20M or more, or term contracts having a total estimated expenditure of $50M or more shall be included under the "Pay for Safety and Environment Scheme" (PFSES) excluding contracts with duration of 6 months or less.	√	
					Environment Management • The Contractor shall (a) complete an Environmental Management Plan (EMP); (b) update the EMP periodically as specified; (c) introduce an item into the agenda for the Site Safety and Environmental Management Committee meeting and the Site Safety and Environmental Committee meeting for discussion on environmental issues of the site; (d) arrange and attend weekly environmental walk; and (e) expand site-specific induction training and toolbox talks to cover environmental topics.	√	
					Environment Measures • The Contractor shall take the following measures: **Air Pollution Control** (a) *Providing covering/containment for dusty material (b) *Providing screens/enclosures for smoky/dusty activities (c) Compacting road surfaces (d) Providing automatic water spraying system (e) Providing automatic wheel washing system (f) Providing mechanical covers for dump trucks (g) Providing vacuum cleaners for dusty operations **Noise Pollution Control** (h) *Use of "quality powered mechanical equipment (QPME)" (i) *Providing acoustic screens/enclosures **Wastewater Pollution Control** (j) *Providing measures to prevent ingress of surface run-off into site (k) Providing wastewater collection system (l) *Arranging disposal of sewage by a licensed contractor (m) Providing wastewater treatment facilities **Waste Management** (n) *Arranging and conducting on-site sorting of construction and demolition (C&D) materials (Items marked with * are mandatory items to be provided by the contractors.)	√	
					• All constructional plant powered by diesel fuel and operating on public works construction sites must use ULSD. The Contractor shall maintain a summary record of ULSD delivered to the site, including those ordered by his sub-contractors, together with the details of consumption of such fuel by individual constructional plant on the site and the date of arrival and departure of the constructional plant to and from the site.	√	
			WBTC 2/93		• Specifies the requirements for filling where public dumping is used as a source of fill	√	

Note (4) introduced into the Contract documents on and after 16th January 2006.

WM3	Demolition waste		**ETWB TCW 15/2003, App B - SCC** See note (3)		• For Works involving demolition, the Contractor shall submit a method statement for the works as part of the WMP to the Engineer for approval prior to the commencement of the demolition on the Site. The Contractor shall include in the method statement the sequence of demolition and the work programme to facilitate effective recovery of reusable and/or recyclable portions of the C&D materials at the earliest stage, so as to minimise the need for subsequent sorting. Particular attention shall be given to materials that will cause contamination or ill-health to workers. Demolition debris shall be separated into the following categories: (a) Broken concrete (b) Other inert materials (i.e. blockwork, brickwork, etc.) (c) Metals (e.g. reinforcement bars, metal from mechanical and electrical fittings, and other building services fittings) (d) General refuse	√	
			ETWB TCW 19/2005 See note (4)		• The contractor should establish a mechanism to record the quantities of C&D materials generated each month and report on a monthly basis using the "Monthly Summary Waste Flow Table". In addition, the Contractor should provide the estimated quantities of C&D materials that will be generated each year from the site and recorded in the "Yearly Summary Waste Flow Table".	√	
WM4	Production of chemical waste	**Cap 354C** s.6(1)			• A person shall not produce or cause to be produced chemical waste unless he is registered. (Check for valid chemical waste producer licence and requirements of the conditions of the licence).	√	
WM5	Disposal of chemical waste	**Cap 354C** s.8(1)			• A waste producer shall cause or arrange for any chemical waste produced by him or in his possession or custody:- (a) to be delivered to a reception point (consigning waste to a waste collector complies with this requirement); or (b) disposed of at a premises covered by a valid waste disposal license.	√	
		Cap 354C s.21(1)			• Where chemical waste is to be removed or transported from the site or premises where it is produced, stored or located, a waste producer or any person authorised on that behalf by the waste producer shall engage the services of a waste collector. (Ensure all Chemical Waste is collected by licensed contractor and disposal of to a licensed facility.)	√	
		Cap 354C s.22(1)			• Any person who engages the services of a waste collector shall:- (a) record on a trip ticket and also on 2 copies thereof the particulars or information required by the trip ticket to be furnished by the waste producer; (b) ensure that the chemical waste to be delivered is correctly classified, described, quantified and labelled, and certify accordingly on the trip ticket and the 2 copies.	√	
		Cap 354C s.28(1)			• Waste producer shall retain a copy and original of the trip ticket for at least 12 months after the waste consignment.	√	
WM6	Storage of chemical waste (See also Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.)	**Cap 354C** s.13(2)			• The storage area should be used for chemical waste storage only.	√	
					• The storage area should be enclosed on at least three sides by a wall, partition fence or a similar device with a height of not less than two metres or the total height of containers in stack, whichever is less.	√	
					• Adequate ventilation should be allowed by leaving some space between the top of the enclosure walls and ceiling, or provision of louvres on the sides of the enclosure walls. (to prevent the formation of any dangerous or harmful concentration of vapour in the event of spillage or leakage).	√	
					• There should not be any connection to any surface water drains or foul sewers.	√	
					• Where the storage area is not within a building, it should be provided with a roof or similar covering designed to prevent rain and reduce heat from sunlight. Where flooding of the area is likely, the floor area should be raised, for example by adopting a raised platform design.	√	
					• The storage area should be kept clean and dry.	√	

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- for capital works contracts (including E&M contracts, with contract sum >= $20M and contract period > 6 months but excluding term contracts) invited on or after 16th January 2006, ETWB TCW 19/2005 shall be applicable.
- for designated projects under the EIAO, the project officer should incorporate in the PS other relevant requirements/conditions as set out in the Environmental Permit.

Note (4) introduced into the Contract documents on and after 16th January 2006.

WM6	Storage of chemical waste (cont'd) (See also Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.)	**Cap 354C** s.13(3)			• A chemical waste producer should provide a suitable area for temporary storage of chemical waste. The storage area should be located close to the source of waste generation.	√	
					• Where the storage area is not located within the premises in which chemical waste is produced, the storage area should be kept secured with an appropriate door/gate and locked at all times.	√	
		Cap 354C s.14(1)			• The storage area should have an impermeable floor or surface made of suitable materials for the storage of containers of liquid chemical waste.	√	n
					• Where containers of liquid chemical waste are stored, the storage area should be designed to contain the content of the largest container intended to be stored or 20% of the total quantity of the chemical wastes stored, whichever is the greater.	√	
					• Where containers of liquid chemical waste are stacked, the storage area should be enclosed by walls or partitions constructed out of an impermeable material.	√	
		Cap 354C s.15(1)			• Any chemical waste container should not be stored with other wastes, whether chemical or otherwise, if it is likely that there will be dangerous consequences to the health or safety of any person in the event of its contact with such other wastes.	√	
					• Any stacks of containers of chemical waste shall be made secure to prevent their falling down.	√	
		Cap 354C s.16			• A small quantity of chemical waste, not exceeding 50 litres, may be stored at the working or processing area provided that it is appropriately packed and labelled in containers, and the containers are kept in a cupboard, cabinet or bin of robust design.	√	
		Cap 354C s.18(1) & (2)			• Every chemical waste storage area, including any cupboard, cabinet or bin, should display a hazard warning panel, notice or marking at or near the entrance or opening of the storage area and such panel, notice or marking should – (a) indicate the English words and Chinese characters "CHEMICAL WASTE" ""化學廢物"" clearly and boldly in red on a white background with a letter/character size of not less than 60mm high; (b) be securely attached to or worked on a vertical plane of the storage structure; (c) be weather resistant and rigid; and (d) be kept clean and free from obstruction.	√	
		Cap 354C s.19			• Containers which contain residues of chemical waste and have not been cleaned should be handled in the same manner as filled containers.	√	
WM7	Packaging of chemical waste (See also Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.)	**Cap 354C** s.9(2)			• All parts of the container (including closures) in direct contact with chemical waste must be resistant to any chemical or other action of such waste.	√	
					• It is the responsibility of waste producers to ensure that the containers are compatible with the chemical waste to be packed.	√	
					• Any container used should be in good condition and free from corrosion, contamination, damage or any other defects which may impair the performance of the container.	√	
		Cap 354C s.10(1)			• Every container of chemical waste should be securely closed or sealed, correctly placed and kept clean.	√	
					• In general, separate containers should be used for packing different types of waste or waste arising from different sources and processes.	√	
					• When packing a container with liquid chemical waste, sufficient ullage (air space) should be allowed to ensure that neither leakage nor permanent distortion of the container occurs as a result of liquid expansion caused by changes in temperature or other physical conditions which are likely to occur under normal conditions of handling, storage and transport. Generally 100mm air space should be allowed between the top of the container and the level of the liquid contents. (Check specification of containers and ensure containers are suitable in design, material type and construction)	√	

		Cap 354C s.11(1)			• DEP's approval is required when large containers (i.e. capacity in excess of 450 litres) are to be used. (Check for approval where appropriate)	√	
WM8	Labelling of container of chemical waste	**Cap 354C** s.12			• Labels for the containers should be in accordance with the requirements stipulated in Cap 354C, s12.	√	
WM9	Precautions against dangers from spillages, leakages or accidents involving chemical waste	**Cap 354C** s.30(1)			• A waste producer shall prepare and make available written procedures to be observed in the event of emergencies due to spillage, leakage or accidents arising in the course of or from the handling and the storage of chemical waste	√	
					• A waste producer shall ensure that his employees or agents have received adequate instructions and training for implementing such procedures	√	
		Cap 354C s.32(1)			• Any person shall, in the storage, collection, transportation, reception, transfer, disposal, import or export or in otherwise handling chemical waste, take all necessary precautions for preventing any hazard or danger to public health or safety or pollution or risk of pollution to the environment.	√	
WM10	Disposal of dredged/excavated material from marine works		**GS 21.45**(3)		• Dredged material shall be disposed of by the Contractor in the dumping ground stated in the Contract.	√	

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		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Spillage/Material Storage Leakage							
SL1	Potential leakage from the storage of materials (general)		**GS 1.16**(1)		• Roads and footways on the site in which work is not being carried out shall be maintained in a clean and passable condition and shall not be used to store materials or park Constructional Plant or other vehicles.	√	
SL2	Potential leakage from the storage of LPG	**Cap 51B reg 3** subreg (1) & (3)			• Storage of LPG above 130 litres capacity requires prior approval, for construction and use of the storage facility.	NA	
SL3	Spillage of bentonite		**GS 8.32**		• Bentonite shall be handled and stored in a manner which will not result in spillages on the Site.	NA	
SL4	Leakage from the storage of paints and other materials (including cement)		**GS 18.42**		• Paint and associated materials shall be stored in sealed containers marked as stated in Clause 18.16(2) and protected from exposure to conditions which may affect the material. The materials shall be stored in accordance with the manufacturer's recommendations and shall not be used after the recommended expiry date has been exceeded. The materials shall be stored in a locked store.	NA	
			GS 25.11		• Isolating membrane, bitumen dressing compound, bituminous paint, sand, stone chippings, reflective paint and metal latching shall be stored in a dry weatherproof store.	NA	
			GS 25.83		• Cement, gypsum plaster and lime shall be delivered in sealed bags or containers bearing the manufacturer's name. The bags and containers shall be stored in a dry weatherproof store with a raised floor.	NA	
			GS 25.124		• Paint and associated materials shall be stored in a dry weatherproof store; the store shall be maintained in a cool, well ventilated condition.	NA	
					• Tins of paint shall be labeled as being for external use, internal use, undercoating and finishing, as appropriate, and shall be protected from exposure to conditions which may adversely affect the material. Paint and associated materials shall be stored in accordance with the manufacturer's recommendations and shall not be used after the recommended shelf life has been exceeded.	NA	
			GS 11.66		• Sand for filling joints between units shall be stored in waterproof bags and shall be kept under cover until used.	NA	
			GS 16.33(1)		• Cement in bags shall be stored in a dry, weatherproof store sheltered on the top and 3 sides with a raised floor. Each delivery shall be identified and kept separate and shall be used in the order of delivery.	NA	
			GS 20.07(1)		• Prefabricated sheeting and Bentonite panels shall be stored in accordance with the manufacturers' recommendations in a dry weatherproof store with a raised floor.	NA	
			GS 20.07(2)		• Bituminous paint shall be stored in sealed containers marked to identify the contents and protected from exposure to conditions which may affect the bituminous paint. The bituminous paint shall be stored in accordance with the manufacturer's recommendations and shall not be used after the recommended shelf life has been exceeded.	NA	
SL5	Spillage during handling of paints (See also storage of chemical waste, dangerous goods)		**GS 18.63**(2)		• Paint shall be taken from the paint store ready for application. Thinning, if necessary, shall be carried out in the paint store in the presence of the Engineer and using the type of thinner in the ratio stated in the manufacture's data sheets.	NA	
SL6	Leakage/spillage of fuel oil from machinery/vehicle/plant		**GS 1.35**(6)		• The Contractor shall protect and maintain equipment provided by the Employer while it is on the Site and shall provide operatives, fuel and other consumables required to operate the equipment.	NA	
			GS 1.52(3)		• The transport shall be maintained in a clean and serviceable condition and shall be serviced regularly.	NA	
SL7	Leakage of oil from marine vessels	**Cap 281** s.3(1)	**GS 21.39**(2)		• Work boats shall be licensed under the Merchant Shipping (Launches and Ferry Vessels) Regulations, Chapter 281 and shall be manned and maintained in good seaworthy condition.	NA	

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		Ordinances/[a] Regulations	C.CI.[b]	EM&A[c]			
Dangerous Goods							
DG1	Storage of dangerous goods	**Cap 295** s.6(1)			• Licenses for storage of Dangerous Goods must be maintained when the goods are stored in quantities in excess of the 'exempt quantities'. For details of exempt quantities refer to Fire Protection Notice 4.	√	
					• Storage must not exceed permitted exempt quantity	√	
					• Labels shall comply with schedule 1 of sub. Leg. B.	√	
					• Conditions of licence must be complied with.	√	
			GS 6.32		• Explosives and detonators shall not be stored on the Site overnight unless permitted by the Commissioner of Mines. Explosives and detonators which are not used by the end of each day shall be disposed of as stipulated by the Commissioner of Mines.	√	

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		Legal Ordinances/ Regulations	C.CI.[a]	EM&A[b]			
Resource Management							
RM1	Use of water for testing water retaining structures		**GS 24.31**(7)		• Unless otherwise instructed by the Engineer, the water used for the final tests on water retaining structures for potable or fresh water shall be retained in the structure and shall not be wasted or contaminated.	√	
RM2	Use of timber (general)		**WBTC 32/92 - PS**		• Hardwood for temporary works (site hoardings, falsework and shoring of trenches and pits) shall be specified as not to be used in all contracts.	√	
RM3	Use of timber for hoardings and sign boards		**WBTC 19/2001**		• All contracts tendered on or after 1 November 1999 shall specify the use of metal in all components of site hoardings and signboards.	√	
RM4	Use of fill material		**GS 6.37**		• Fill material shall be obtained from excavation within the Site. If there is insufficient fill material of the required types within the Site, imported fill material shall be provided by the contractor from sources outside the Site.	√	
			GS 21.11(2)		• Underwater fill material (Type 1) shall consist of natural material extracted from the sea bed or a river bed.	√	
RM5	Use of steel for formwork		**GS 10.33**(1)		• Unless otherwise approved by the Engineer, formwork for concrete carriageways shall be steel.	√	
RM6	Use of paint		**GS 18.62**(1) **PS**		• The painting system to be used for steelwork shall be one or more of the systems as stated in the Contract.	√	
			GS 18.64(1)		• Paint shall not be applied to steelwork under the following conditions: (a) When the ambient temperature falls below 4°C or the relative humidity rises above 90%; (b) For outdoor work, during periods of inclement weather including fog, frost, mist and rain or when condensation has occurred or is likely to occur on the metal; (c) When the surface temperature of the metal to be painted is less than 3°C above the dew point of the ambient air; and (d) When the amount of dust in the air or on the surface to be painted is in the opinion of the Engineer excessive.	√	
RM7	Use of material for landscape work		**GS Section 3**		• Refer to GS.	√	

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		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Flora & Fauna Protection							
FF1	Damage/removal of trees/vegetation during construction and demolition		**ETWB TCW 3/2006**		• Trees should not be felled without prior approval of the Authority.	√	
			GS 1.27		• Trees which are to be retained or which are not required to be removed in order to carry out the Works, shall be protected from damage at all times by methods agreed by the Engineer. Materials, including excavated materials, shall not be banked around such trees and they shall not be trimmed or cut without the approval of the Engineer.	√	
			GS 2.06		• The roots of trees and shrubs which have been cut down shall be grubbed up. Branches shall not be removed from trees which are to be retained unless permitted by the Engineer; if permitted, the branches shall be removed in accordance with BS 3998 and the cut surfaces shall be treated with a wound sealant approved by the Engineer. (Guidance Note : The Engineer should consult the relevant department/authority where there are reasons for existing trees to be reserved or retained.)	√	
		Cap 96 s.21			• Any person who without lawful authority, or excuse, in any forest or plantation (a) cut grass, removes turf or earth, rakes pine needles; (b) plucks or damages any bud, blossom or leaf of any tree, shrub or plant. shall be guilty of an offence.	√	
			GS 1.22(1)		• Work shall be carried out in such a manner that, as far as is reasonable and practicable, there is no damage to or interference with the following, other than such damage as is required to enable the execution of the Works: (a) Watercourses or drainage systems, (b) Utilities, (c) Structures, roads including street furniture, or other property, (d) Public or private vehicular or pedestrian accesses, and (e) Trees, graves or burial urns. The Contractor shall inform the Engineer as soon as practicable of any item, utility or thing which is not stated in the contract as requiring diversion, removal or relocation but which the Contractor considers as requiring diversion, removal or relocation to enable the Works to be executed. The Contractor shall not divert, remove or relocate any such item, utility or thing without the prior approval of the Engineer.	√	
			GS 3.39		• Plants shall be wrapped and protected to prevent mechanical damage during lifting and transportation. The trunk from soil level to the lower branches of trees in the light standard, standard and heavy standard categories shall be securely wrapped to prevent moisture loss using hessian, straw or other material agreed by the Engineer. All plant material which is to be removed while in leaf shall be covered with tarpaulin during transport to reduce excessive transpiration.	√	
			GS 3.82		• Pruning and removal of branches shall be carried out using sharp, clean implements. Pruning shall be carried out with the cut just above the sloping away from an outward facing healthy bud. Removal of branches shall be carried out by cutting outside of a line drawn between the branch bark ridge and the branch collar in such a way that no part of the stem is damaged or torn, and leaving no snags or stumps.	√	
			WBTC 25/1992		• Trees have minimum requirements for growth space and soil rooting volume.	√	

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		Ordinances/[a] Regulations	C.Cl.[b]	EM&A[c]			
Emergency Preparedness & Response							
E1	Spillage of chemical waste/DGs/chemicals	**Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes**, section 5.4 See note (5)			• Waste producers should prepare and make available written procedures for dealing with emergencies due to spillage, leakage or accidents arising from the handling and storage of chemical waste/DGs/chemicals. (Check procedures)	√	
E2	Flooding from tropical cyclones and heavy rainstorms		**ETWB's Construction Site Safety Manual (CSSM)**		• Submit proposals for rainstorm protection. Carry out rainstorm drills on a regular basis.	MA	
					• Upon receipt of heavy rainstorm warnings, ensure drainage system is cleared of mud or other obstructions. All pumping systems to be tested, primed, refueled and filters cleared.	NA	
					• Carry out protection to open cut slopes and excavations.	NA	
					• Secure, reinforce, dismantle or demolish as appropriate hoardings, temporary structures and other loose objects. Check and properly tension guy ropes or wires attached to temporary structures.	NA	
E3	Fire protection/precautions		**ETWB's Construction Site Safety Handbook (CSSH)**		• Install fire alarm for the D.G. Store and test the fire alarm system regularly.	NA	
					• Similar provision shall be made at L.P.G. and flammable substances storage areas.	NA	
			ETWB's CSSM cl 2.3.4 & ch 8 Appendix I & CSSH Ch 5		• Site accommodation such as offices, stores, workshops and welfare accommodation shall be provided with an adequate supply of suitable portable fire extinguishers located at strategic points.	√	
					• The extinguishers shall be regularly serviced and maintained.	√	
					• LPG containers and flammable substances will be stored in suitably ventilated compounds or fire proof containers except when in immediate use. The LPG storage compound will be at least 4 metres from any occupied building and be on level ground free of vegetation.	NA	
					• All dangerous goods shall be stored in appropriate Dangerous Goods Stores approved by the Director of Fire Services. Unused dangerous goods should be returned to and stored at Dangerous Goods Stores. Safety precautions on the use of dangerous goods should be observed at all times.	NA	
					• The contractor may require sub-contractor carrying out "hot work: e.g. welding to introduce a "permit to work" system for specific activities at which there is an increased risk of fire. In any event, the contractor will ensure that all combustible materials are removed from the immediate vicinity, and portable fire extinguishers are located at immediate readiness.	√	
					• Regularly maintain all equipments used for gas or electric burning or welding. Fit on flash back arrestors and non-return valves on such equipments when appropriate.	√	
					• All offices, stores, workshops, welfare accommodation and other buildings will display appropriate fire advisory and warning notices in both English and Chinese. The notice displayed will include:- - Fire alarm signs - Fire exit routes - Fire emergency procedures and assembly points - Fire extinguisher points	√	
					• "No Smoking" signs should be prominently displayed and strictly observed in the construction areas especially where highly inflammable adhesives or solvents are used.	√	

Note (5) This Code of Practice is a statutory document.

					• Designate an emergency team and provide training on the use of fire fighting equipment and relevant rescue equipment. Carry out fire drills on a regular basis.	√	
E3	Fire protection/precautions (cont'd)				• Good housekeeping measures: - Store materials in an orderly manner - Remove periodically of discarded combustible packing materials, wood chips, saw dust etc. - Maintain an unobstructed exit route at all times	√	
E4	Leakage of water, gas emissions and suspension of electricity supply from accidental damage		**GS 1.24**(1)		• The details of existing utilities are given for information only and the accuracy of the details is not guaranteed. The Contractor shall make his own enquiries and shall carefully excavate trial holes to locate accurately the utilities indicated to him by the utility undertakings.	**NA**	
			GS 1.24(2)		• Temporary supports and protection to utilities shall be provided by methods agreed by the Engineer, permanent supports and protection shall be provided if instructed by the Engineer.	√	
			GS 1.24(3)		• The Contractor shall inform the Engineer and the utility undertakings without delay of the following: (a) Damage to utilities, (b) Leakage of utilities, (c) Discovery of utilities not shown on the Drawings, and (d) Diversion, removal, reposition or re-erection of utilities which is required to enable the execution of the Works. (See also WSD Guidelines for excavation Near Water Mains, EMSD code or practice on Avoiding Danger from Gas Pipes)	√	
			ETWB's CSSM		• It is the Contractor's responsibility to formulate emergency procedures, and drill/test them regularly in relation to: - A fire breaking out - Flooding (that threatens life or site) - Leakage of dangerous goods or chemicals.	√	

Note (5) This Code of Practice is a statutory document.

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		Ordinances/[a] Regulations	C.CI.[b]	EM&A[c]			
Land/Soil Erosion/Contamination							
L1	Soil erosion		**GS 6.12**(1)		• Earthworks material shall not be handled or stored in a manner which will result in segregation, deterioration, erosion or instability of the material.	√	
L2	Land contamination from use of fill (See also Spillage/Material Storage Leakage)		**GS 6.07**(2)(b)&(c) **GS 6.07**(3)-(8)		• Fill material shall not contain any of the following:- - Peat, vegetation, timber, organic, soluble or perishable material. - Dangerous or toxic material or material susceptible to combustion. (Guidance Note : The requirements for rock fill material are partially subjective, and the Engineer should exercise as much flexibility as possible to ensure that rock and other hard materials arising from within the Site are not unnecessarily excluded from use in the works. The main criterion should be whether they are acceptable for the purpose for which they are required, bearing in mind that if they are not used, it is likely that significant additional cost will be incurred in importing replacement materials.)	√	

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Miscellaneous							
M1	Debris and mud on roads deposited from vehicles and/or construction plant. (See also A11)		**GS 1.16**(4)		• Constructional Plant and other vehicles leaving the Site shall be loaded in such a manner that excavated material, mud or debris will not be deposited on roads; loads shall be covered or protected to prevent dust being emitted. The wheels of Constructional Plant and other vehicles shall be washed when necessary before leaving the Site to avoid the deposition of mud and debris on roads.	√	
M2	Damage to natural resources/utilities		**GS 1.22**(1)		• Work shall be carried out in such a manner that, as far as practicable, there is no damage to or interference with the following, other than such damage as is required to enable the execution of the works (a) Watercourses or drainage systems. (b) Utilities. (c) Structures, roads including street furniture, or other property. (d) Trees, graves or burial urns.	√	
M3	Litter from construction site works		**GS 1.32**		• The Site shall be maintained in a clean and tidy condition. Materials, including materials required for Temporary Works, shall be stored in an orderly manner. Rubbish and debris shall be disposed of at least once a week.	√	
			GS 1.53 **GCC 35**		• Temporary Works which are not to remain on the Site after completion of the Works shall be removed on completion of the Works or at other times instructed by the Engineer. The Site shall be cleared and reinstated to the lines and levels and to the same condition as was existing before the Works started except as otherwise stated in the Contract.	√	
M4	Floating debris (marine works)		**GS 21.40**		• Floating debris within the site arising from any source shall be collected and disposed of by the contractor at regular intervals agreed with by the Engineer. Floating debris shall be prevented from dispersing outside the site.	NA	
			WBTC 10/92, App A - PS See note (6)		**Refuse Containment Booms and Floating Refuse** i. The Contractor shall provide and install refuse containment booms as detailed on the Drawing before commencing dumping from barges and before direct land dumping of fill material into the sea. The Contractor shall provide adequate sinker blocks and lit marker buoys to ensure that the booms are visible above the water line and are securely anchored. The lights on the marker buoys shall be quick flashing yellow lights visible all round the horizon at a distance of at least 2 kilometres and details shall be submitted to the Engineer for approval. The maximum spacing between the flashing yellow lights shall be 30 metres. The Contractor shall properly maintain and operate the booms to the satisfaction of the Engineer throughout the progress of the reclamation work and shall replace the same if necessary when they are under repair or beyond repair. ii. The Contractor shall provide sufficient light mechanised marine craft with crew and labour for collecting floating refuse and preventing floating refuse within the Site from drifting into public waters. Floating refuse collected shall be removed to _____ (location to be specified or "approved tips off the Site") by the Contractor. iii. The Contractor shall make due allowance in programming the reclamation work for the provision, installation, operation and maintenance of the refuse booms and the regular collection of the floating refuse throughout the progress of the reclamation work.	NA NA NA	
M5	Visual intrusion		**GS 1.48**(1)		• Hoardings, fences, gates and signs on the Site shall be maintained in a clean, stable and secure condition.	√	
			GS 1.48(3)		• The permission of the Engineer shall be obtained before hoardings, fences, gates or signs are removed. Hoardings, fences, gates and signs which are to be left in position after completion of the Works shall be repaired and repainted as instructed by the Engineer.	√	
			GS 2.07(4)		• The ends of fences, walls, structures, utilities and other items shall be made good in such a manner that the affected parts will not corrode or deteriorate, and will remain stable.	√	

Note (6) – applicable to reclamation contracts involving public dumping for which tenders were invited on or after 1st October 1992.

M6	Mosquito breeding & rodent infestation		**GS 1.33**(1)		• Empty cans, oil drums, packings and other receptacles which may retain water shall be deposited at a central collection point and those not required for future use shall be removed from the Site regularly.	√	
					• Standing water shall be treated at least once every week with an oil which will prevent mosquito breeding.	√	
					• Constructional Plant and other items on the Site which may retain water shall be stored, covered or treated in such a manner that water will not be retained.	√	
M7	Hygiene		**GCC 38**		• The Contractor shall provide and maintain efficient and hygienic toilet facilities for the use of all persons o the Site and shall keep the Site in a clean and hygienic condition.	√	
M8	Site security		**GCC 20**(2)		• The Contractor shall in connection with the Works provide and maintain all lights, guards, fences and warning signs and provide watchmen when and where necessary or required by the Engineer or by any competent statutory or other authority for the protection of the Works or for the safety and convenience of the public or others.	√	
M9	Impacts on antiquities and monuments		**GCC 33**		• All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site shall, as between the Employer and the Contractor, be the absolute property of the Employer and the Contractor shall take reasonable precautions to prevent his workers or any other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal acquaint the Engineer or the Engineer's Representative of such discovery and carry out at the expense of the Employer the instructions of the Engineer as to the disposal of the same.	NA	
			PWDTC 14/73		• When a contractor/resident engineer makes a discovery (of antiquities), he shall report the matter to the engineer or architect in charge of the contract.	NA	

ET's representative	Contractor's representative	EO's representative	RE's representative
(Ben Tam)	( )	( )	( )