AUES PROJECT NO.: TCS/00684/13

WSD CONTRACT NO. 1/WSD/13 - IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT (NO.27) – JUNE 2016

PREPARED FOR
CHINA ROAD- CHINA PIPELINE JOINT VENTURE

Quality Index

Date	Reference No.	Prepared By	Approved By
13 July 2016	TCS00684/13/600/R0235v2	Martin Li Assistant Environmental Consultant	T.W. Tam Environmental Team Leader

Version	Date	Description
1	11 July 2016	First Submission
2	13 July 2016	Amended against IEC's comments

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By Email and Fax
(no. 2981 1146)

Attention: Mr. Ernest CHAN

Dear Sir

Contract No. 1/WSD/13
Independent Environmental Checker Services for
Improvement of Freshwater Supply to Cheung Chau
Verification of Monthly EM&A Report

Reference is made to the *Monthly Environmental Monitoring and Audit (EM&A) Report (No.27) – June 2016 Version 2 (Ref No: TCS00684/13/600/R00235v2)* dated 13 July 2016 submitted by the Environmental Team via their e-mail on 13 July 2016.

We are pleased to inform you that we have no further comment on the captioned document. We herewith verify that the Monthly EM&A Report for June 2016 is prepared in accordance with Condition 5.4 of Environmental Permit No. EP-392/2010A.

Thank you very much for your kind attention. Please do not hesitate to contact the undersigned should you have any queries.

Yours faithfully
for and on behalf of
SMEC Asia Limited

Vivian CHAN
Independent Environmental Checker

cc:	WSD	Mr. Lo	(By Fax: 2351 6949)
	CRBC	Mr. Raymond Mau	(By Fax: 2283 1689)
	AUES	Mr. Tam	(By Fax: 2959 6079)

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EXECUTIVE SUMMARY

ES.01 Water Supplies Department (hereafter referred as "WSD") is the Project Proponent and the Permit Holder of *Improvement of Fresh Water Supply to Cheung Chau* (hereinafter referred as "the Project"), which is a Designated Project to be implemented under Environmental Permit number EP-392/2010/B (hereinafter referred as "the EP-392/2010/B" or "the EP"). The Works is predicted to take about 36 months.

ES.02 In the Project, China Road - China Pipeline Joint Venture (hereinafter "CRCPJV") is the Main Contractor, SMEC Asia Limited as an Independent Environmental Checker (IEC), Black & Veatch Hong Kong Limited is the representative engineer on site to manage the Project and Action-United Environmental Services and Consulting (AUES) has been appointed as the independent Environmental Team (ET) to implement the relevant EM&A programme.

ES.03 This is the **27th** monthly Environmental Monitoring and Audit Report for **June 2016** covering the period from **1st to 30th June 2016** (the Reporting Month).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.04 Environmental monitoring activities under the EM&A program in this Reporting Month are summarized in the following table.

Table ES-1 Environmental Monitoring Activities in Reporting Month

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Construction Noise	$L_{eq(30min)}$ Daytime	**5**
Water Quality	Marine Water Sampling	**13**
	Total Residual Chlorine of In Situ Measurement	**NA**
Inspection / Audit	ET Regular Environmental Site Inspection	**5**
	IEC Monthly Environmental Site Audit	**1**

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.05 No exceedance of construction noise and marine water monitoring were recorded in this Reporting Month. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Table ES-2 Summary NOE issued and investigation of exceedance in Reporting Month

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Construction Noise	$L_{eq(30min)}$ Daytime	0	0	0	--	--
Water Quality	DO	0	0	0	--	--
	Turbidity	0	0	0	--	--
	SS	0	0	0	--	--

Note: NOE – Notification of Exceedance

ENVIRONMENTAL COMPLAINT

ES.08 No environmental complaint was recorded or received in this Reporting Month.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.09 No environmental summons or successful prosecutions were recorded in this Reporting Month.

REPORTING CHANGE

ES.10 No reporting changes were made in this Reporting Month.

SITE INSPECTION BY EXTERNAL PARTIES

ES.11 No joint site inspection with AFCD and EPD was carried out in the Reporting Period

FUTURE KEY ISSUES

ES.12 During wet season, water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should paid attention. Moreover, noise mitigation measures should be properly maintained to prevent construction noise as impacted surrounding resident.

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1. INTRODUCTION

PROJECT BACKGROUND

1.1 Water Supplies Department (hereafter referred as "WSD") is the Project Proponent and the Permit Holder of *Improvement of Fresh Water Supply to Cheung Chau* (hereinafter referred as "the Project"), which is a Designated Project to be implemented under Environmental Permit number EP-392/2010/B (hereinafter referred as "the EP-392/2010/B" or "the EP").

1.2 The scope of the works comprises primarily the laying of a new submarine fresh water main across the Adamasta Channel from Lantau Island to Cheung Chau by horizontal directional drilling method to enhance the reliability of fresh water supply to Cheung Chau. The Works is commenced on 28 March 2014 and predicted to be undertaken about 24 months. The layout plan of project is shown in ***Appendix A***.

1.3 Action-United Environmental Services and Consulting (AUES) has been appointed as the independent environmental team (ET) to implement the relevant EM&A programme of Water Supplies Department (WSD) Contract No. ***1/WSD/13 – Improvement of Fresh Water Supply to Cheung Chau***. In the Project, **China Road - China Pipeline Joint Venture** (hereinafter "CRCPJV") is a main-contractor, SMEC Asia Limited as an Independent Environmental Checker (IEC), and Black & Veatch Hong Kong Limited is the representative engineer on site to manage the Project.

1.4 According to the Particular Specification (PS) Section 25 and the EP-392/2010/B, overall scope of environmental monitoring including construction noise and water quality, and site environmental audit should be undertaken in accordance with the provided Environmental Monitoring and Audit Manual by an independent Environmental Team (ET).

1.5 The baseline monitoring program was carried out during the period between ***4 January*** and ***31 January 2014*** at the designated monitoring locations by the ET according to the EM&A Manual. The "Baseline Monitoring Report (R0014 Version 3)" had submitted to EPD before commencement of major construction works and approved by the IEC on 21 February 2014. Further to CRCPJV's instructions, the EM&A program was commenced on 1 April 2014 and the monitoring schedule had been issued to relevant parties on 28 March 2014.

1.6 This is the **27th** monthly Environmental Monitoring and Audit Report for **June 2016** covering the period from **1st** to **30th June 2016** (the Reporting Month).

REPORT STRUCTURE

1.7 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

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

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

CONSTRUCTION PROGRESS

2.2 The layout plans with location of construction activities carried out are enclosed in ***Appendix A,*** the master and three month rolling construction programs are enclosed in ***Appendix C***, and the major construction activities undertaken in this Reporting Month and their potential environmental impacts are listed below:-

Table 2-1 Construction activities and potential environmental impacts in Reporting Month

Construction Activities	Potential Environmental Impact(s)
Excavation work as preparation for landmain work	Air impact and noise generated during excavation work.

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

Table 2-2 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air pollution Control (Construction Dust)	Notified EPD on 28/10/2013 Ref. no. 366253
2	Chemical waste Producer Registration	Application date: 20/12/2013 Date approved: 30/01/2014 WPN: 8334-920-C3839-01
3	Water Pollution Control Ordinance (Discharge License)	Application date: 03/01/2014 License no. WT00018191-2014 Valid to 28/02/2019
4	Billing Account for Disposal of Construction Waste	Application no. :RS01134 Date approved: 1/11/2013 Account Number: 7018602
5	Construction Noise permit	Permit Number: GW-RS0020-16 Valid from 11 Jan 2016 to 10 Jun 2016
6	Construction Noise permit	Permit Number: GW-RS0021-16 Valid from 11 Jan 2016 to 10 Jun 2016
7	Construction Noise permit	Permit Number: GW-RS0211-16 Valid from 9 Mar 2016 to 8 Jun 2016

2.4 Baseline Monitoring Report (TCS00684/13/600/R0014Ver.3) for the Project was issued by the ETL and verified by the IEC on 24 March 2014. The report was also submitted to the EPD for endorsement.

2.5 According to Clause 3.9 EP-392/2010/B stipulation, the detailed proposal of the HDD technique and the management of the drilling fluid for construction of the Project were submitted on 9 July 2014.

3. SUMMARY OF MONITORING REQUIREMENTS

GENERAL

3.1 The Environmental Monitoring and Audit requirements are set out in the Approved EM&A manual. Environmental aspects such as the construction noise and marine water quality were identified as the key issues during the construction phase of the Project. The detailed requirements are presented in the sub-sections below.

MONITORING PARAMETERS

3.2 The EM&A baseline and impact monitoring program covers the following environmental issues:

- Construction noise; and
- Marine Water quality

3.3 A summary of the monitoring parameters is presented in ***Table 3-1***:

Table 3-1 Summary of the monitoring parameters of EM&A Requirements

Environmental Issue	Parameters
Marine Water Quality	In-situ Measurements • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH value; • Salinity (ppt); • Water depth (m); • Temperature (ºC); and • # Total residual chlorine (TRC) (mg/L)
	Laboratory Analysis • Suspended Solids (mg/L)
Noise	• $L_{eq(30min)}$ during normal working hours; and • $L_{eq(5min)}$ during Restricted Hours.

 # TRC monitoring would be carried out by the Main-Contractor.

MONITORING LOCATION

Water Quality

3.4 Two control stations (W8 and W9) and seven impact stations (W1-W7) were recommended in the *EM&A Manual Section 2.5*. Detailed and co-ordinance of water quality monitoring stations is described in ***Table 3-2*** and the graphical is shown in ***Appendix D***.

Table 3-2 Location of Marine Water Quality Monitoring Station

Station	Description	Co-ordinance	
		Easting	Northing
W1	Impact Station – Marine waters near the proposed launching site at Cheung Chau	820 704	808 688
W2	Impact Station – Marine waters near the proposed launching site at Cheung Chau	820 656	808 631
W3	Impact Station – Marine waters along the proposed water main alignment	820 445	809 036
W4	Impact Station – Marine waters along the proposed water main alignment	820 072	809 297
W5	Impact Station – Marine waters near the proposed reception site at Lantau	819 875	809 700
W6	Impact Station – Marine waters near the Cheung Sha Wan Fish Culture Zone	819 174	810 917
W7	Impact Station – Marine waters between the works and the Cheung Sha Wan Fish Culture Zone	820 055	810 523

Station	Description	Co-ordinance	
		Easting	Northing
W8	Control station – Marine waters of Adamasta Channel	821 328	810 240
W9	Control station – Marine waters of Adamasta Channel	819 045	807 953

Construction Noise

3.5 According to *EM&A Manual Section 6.4*, only one noise sensitive receiver (NSR) is designated for the construction noise monitoring. The detailed construction noise monitoring station to under the Project is described in ***Table 3-3*** and graphical is shown in ***Appendix D***.

Table 3-3 Location of Construction Noise Monitoring Station

Noise Monitoring Station	NSR ID	Location
N1	NSR2	Village house at No. 1A Tai Kwan Wan San Tsuen

MONITORING FREQUENCY AND PERIOD

3.6 The requirements of impact monitoring are stipulated in ***Sections 2.6*** and ***2.7*** of the EM&A Manual and listed as follows.

Construction 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 the construction period

Water Quality (Marine) 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	:	(i.) Three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m. (ii.) If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above sea bottom. (iii.) If the water depth is less than 3m, 1 sample at mid-depth is taken
Duration	:	Throughout the construction period

MONITORING EQUIPMENT

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 – 20 mgL^{-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°C 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.

Noise Monitoring

3.7 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 ms^{-1}.

3.8 The monitoring equipment 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 equipment used for impact monitoring are listed in ***Table 3-4*** below.

Table 3-4 Monitoring Equipment Used in EM&A Program

Equipment	Model
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 ProDSS Digital Sampling System Water Quality Meter
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)
Total residual chlorine	Would be provided by CRCPJV later

MONITORING METHODOLOGY

Water Quality

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

Sampling Procedures

3.10 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 sample 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.

3.11 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.

3.12 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.

3.13 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.

3.14 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

3.15 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

3.16 The *YSI ProDSS Digital Sampling System Water Quality Meter* 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.

Total Residual Chlorine

3.17 Total residual chlorine shall be measured in-situ using approved test kit at the effluent discharge point. When de-chlorinated water is being discharged, Total Residual Chlorine measurement will conducted continuous hourly.

Laboratory Analysis

3.18 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 ***Appendix E***.

Construction Noise

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

3.20 Sound level meters listed in ***Table 3-4*** 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).*

3.21 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.

3.22 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.

3.23 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.

EQUIPMENT CALIBRATION

3.24 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.

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

3.26 All updated calibration certificates of the monitoring equipment used for the impact monitoring program in this Reporting Month are attached in ***Appendix E***.

METEOROLOGICAL INFORMATION

3.27 The meteorological information during the construction phase is obtained from Cheung Chau Station of the Hong Kong Observatory (HKO).

DATA MANAGEMENT AND DATA QA/QC CONTROL

3.28 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.

3.29 The monitoring data recorded in the equipment e.g. 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.

DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.30 According to the approved Environmental Monitoring and Audit Manual, the construction noise and water quality criteria were set up, namely Action and Limit levels are listed in ***Tables 3-5 and 3-6*** as below.

Table 3-5 Action and Limit Levels for Water Quality

Impact Station	Dissolved Oxygen (mg/L) Depth Average of Surface & Middle Action Level	Dissolved Oxygen (mg/L) Depth Average of Surface & Middle Limit Level	Dissolved Oxygen (mg/L) Bottom Action Level	Dissolved Oxygen (mg/L) Bottom Limit Level	Depth Average of Turbidity (NTU) Action Level	Depth Average of Turbidity (NTU) Limit Level	Depth Average of SS (mg/L) Action Level	Depth Average of SS (mg/L) Limit Level
W1	5.64	4.54	NA	NA	5.87	8.81	7.00	8.00
W2	5.16	5.02	NA	NA	5.50	5.66	7.00	8.00
W3	6.18	5.66	5.36	5.05	6.94	7.29	8.00	8.00
W4	5.94	4.95	5.71	5.54	7.50	8.03	7.85	11.57
W5	5.14	5.00	5.79	5.79	5.44	7.43	6.00	6.43
W6	5.92	4.26	6.04	4.49	6.82	7.10	8.00	9.59
W7	6.08	5.78	6.08	5.60	5.71	6.26	7.85	10.00

Table 3-6 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
N1	When one or more documented complaints are received	75 dB(A)

If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

3.31 Furthermore, Action/Limit Levels of Total residual chlorine is 2mg/L as stipulated by EM&A Manual.

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

4. IMPACT MONITORING RESULTS

4.1 The monitoring schedule of **June 2016** had been issued to relevant parties on **27 May 2016** and listed in ***Appendix G***. The works undertaken during the report month has been illustrated in ***Appendix C.*** The monitoring results are presented in the following sub-sections.

RESULTS OF WATER QUALITY MONITORING

4.2 In this Reporting Month, a total of **13** sampling days perform marine water monitoring at the nine designated locations. Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids in this Reporting Month, are summarized in ***Tables 4-1*** and ***4-4***.

Table 4-1 Results Summary of Depth Average (Surface & Middle Layer) of DO (mg/L)

Tidal	Sampling date	W1	W2	W3	W4	W5	W6	W7	W8	W9
Mid-Ebb	2-Jun-16	6.57	6.57	6.27	6.08	6.40	6.33	6.40	6.29	6.13
	4-Jun-16	8.88	8.79	7.74	7.67	8.60	8.06	7.87	7.38	8.20
	6-Jun-16	8.63	8.69	7.78	7.58	8.39	8.01	7.87	7.23	7.79
	8-Jun-16	5.97	6.07	6.27	6.32	6.10	6.29	6.36	6.35	6.49
	11-Jun-16	5.94	5.93	6.22	6.40	6.09	6.20	6.22	6.50	6.32
	13-Jun-16	6.11	6.22	6.38	6.40	6.36	6.25	6.41	6.21	6.04
	15-Jun-16	8.02	7.95	8.08	8.03	7.99	7.86	8.00	8.13	8.06
	17-Jun-16	9.67	9.61	10.14	11.71	12.16	12.25	12.46	10.35	9.69
	20-Jun-16	13.57	13.44	12.15	11.82	13.91	11.79	13.39	12.72	11.48
	22-Jun-16	5.89	5.97	6.36	5.96	5.94	6.25	6.40	5.81	6.06
	24-Jun-16	8.35	8.62	7.56	7.65	8.18	7.57	7.35	8.34	9.09
	27-Jun-16	16.24	15.37	14.05	14.95	15.62	16.91	14.24	13.51	15.61
	29-Jun-16	8.84	7.26	7.95	7.93	7.72	8.38	7.81	7.98	8.62
Mid-Flood	2-Jun-16	6.17	6.38	6.51	6.13	6.40	6.38	6.44	6.17	6.20
	4-Jun-16	8.65	8.87	7.55	7.48	8.23	8.00	7.62	7.45	7.86
	6-Jun-16	8.55	8.57	7.45	7.39	8.18	7.96	7.59	7.56	8.06
	8-Jun-16	6.30	6.10	6.19	6.49	6.03	6.37	6.45	6.23	6.37
	11-Jun-16	6.28	6.30	6.22	6.23	6.12	6.14	6.22	6.30	6.29
	13-Jun-16	6.01	5.96	6.30	6.27	6.12	6.32	6.31	6.20	5.93
	15-Jun-16	7.74	7.63	7.93	7.84	8.03	8.09	8.04	7.96	7.85
	17-Jun-16	8.77	11.36	8.36	10.62	10.31	8.11	7.70	10.65	8.34
	20-Jun-16	12.52	13.04	9.70	10.22	12.85	11.51	10.88	10.54	10.35
	22-Jun-16	6.20	6.48	6.55	6.41	6.41	6.35	6.25	6.35	5.34
	24-Jun-16	8.91	8.89	7.83	7.54	9.42	10.34	8.50	7.39	7.83
	27-Jun-16	16.12	12.85	13.34	14.65	13.39	16.41	12.63	12.63	12.96
	29-Jun-16	7.02	7.11	8.64	7.34	8.92	8.63	7.89	7.84	8.75

Table 4-2 Results Summary of Bottom Depth of DO (mg/L)

Tidal	Sampling date	W1	W2	W3	W4	W5	W6	W7	W8	W9
Mid-Ebb	2-Jun-16	NA	NA	5.38	6.05	6.52	6.06	6.11	6.09	5.76
	4-Jun-16	NA	NA	5.88	5.75	6.55	6.40	6.11	5.59	5.33
	6-Jun-16	NA	NA	5.87	5.73	6.59	6.36	6.26	5.59	5.44
	8-Jun-16	NA	NA	6.11	6.06	5.99	6.08	6.11	6.11	6.14
	11-Jun-16	NA	NA	5.95	6.19	5.99	6.07	6.09	6.17	6.25
	13-Jun-16	NA	NA	5.92	6.05	6.18	6.07	6.11	5.69	5.41
	15-Jun-16	NA	NA	7.82	7.95	7.94	8.04	8.10	8.07	8.08
	17-Jun-16	NA	NA	9.51	10.40	12.09	11.69	11.30	10.93	7.45
	20-Jun-16	NA	NA	7.16	6.60	7.69	6.16	11.61	10.74	6.55
	22-Jun-16	NA	NA	6.05	5.81	5.94	6.06	6.10	6.00	5.93
	24-Jun-16	NA	NA	6.17	6.11	6.41	6.15	6.10	6.09	6.47
	27-Jun-16	NA	NA	11.12	8.96	10.51	11.86	9.45	8.39	10.07
	29-Jun-16	NA	NA	6.87	6.25	7.22	7.41	7.06	7.32	8.61
Mid-Flood	2-Jun-16	NA	NA	6.49	6.12	6.52	6.04	6.12	6.08	6.19
	4-Jun-16	NA	NA	5.75	6.18	6.45	6.58	6.16	5.72	5.31

Tidal	Sampling date	W1	W2	W3	W4	W5	W6	W7	W8	W9
	6-Jun-16	NA	NA	5.98	5.73	6.56	6.43	6.25	5.89	5.84
	8-Jun-16	NA	NA	6.03	6.10	5.95	6.07	6.16	6.04	5.88
	11-Jun-16	NA	NA	5.96	5.98	6.07	6.05	6.10	6.12	6.16
	13-Jun-16	NA	NA	6.08	6.08	5.95	6.10	6.10	5.97	5.38
	15-Jun-16	NA	NA	7.84	7.94	8.01	7.93	8.15	8.14	7.94
	17-Jun-16	NA	NA	7.19	8.83	7.46	6.48	7.42	7.79	7.50
	20-Jun-16	NA	NA	6.21	6.11	6.20	6.27	6.12	6.21	5.04
	22-Jun-16	NA	NA	6.08	6.04	6.10	6.05	6.08	6.14	5.09
	24-Jun-16	NA	NA	5.69	6.27	9.15	6.35	6.50	5.92	5.94
	27-Jun-16	NA	NA	9.08	9.73	9.69	14.83	10.16	10.16	7.49
	29-Jun-16	NA	NA	8.03	6.84	8.37	6.58	6.77	7.26	7.19

Table 4-3 Results Summary of Depth Average of Turbidity (NTU)

Tidal	Sampling date	W1	W2	W3	W4	W5	W6	W7	W8	W9
Mid-Ebb	2-Jun-16	0.55	0.52	1.66	0.96	3.78	2.40	3.25	1.91	1.99
	4-Jun-16	2.15	2.30	1.93	2.18	1.68	1.63	2.68	2.00	1.77
	6-Jun-16	1.55	1.25	1.98	1.82	1.68	1.97	2.65	2.48	1.88
	8-Jun-16	2.51	2.40	1.57	1.88	2.00	1.39	1.14	1.18	1.33
	11-Jun-16	1.35	2.35	2.35	2.15	3.00	1.42	1.92	3.08	1.75
	13-Jun-16	1.70	2.45	2.58	2.17	1.50	2.87	2.62	2.32	1.85
	15-Jun-16	2.15	2.85	3.05	3.02	3.03	1.65	1.45	2.25	1.85
	17-Jun-16	2.35	2.85	1.92	2.38	2.50	1.32	1.75	1.55	0.95
	20-Jun-16	1.75	2.55	3.18	3.53	2.55	3.48	2.98	3.08	3.02
	22-Jun-16	1.45	1.85	3.02	3.30	2.85	2.15	1.52	2.22	2.73
	24-Jun-16	3.80	2.55	2.75	2.25	2.28	2.83	3.72	2.55	3.65
	27-Jun-16	2.85	4.00	2.92	2.95	2.50	2.90	3.82	3.78	2.65
	29-Jun-16	2.55	3.70	2.78	2.87	2.23	2.60	3.42	3.35	2.27
Mid-Flood	2-Jun-16	2.70	2.45	2.53	2.72	2.48	1.85	2.02	2.62	2.48
	4-Jun-16	2.60	2.90	1.90	2.52	1.35	2.25	1.65	1.92	2.43
	6-Jun-16	2.25	2.60	1.90	2.32	2.25	2.37	2.02	2.00	1.90
	8-Jun-16	2.43	2.33	1.74	1.67	2.00	1.66	1.24	1.06	1.50
	11-Jun-16	3.15	2.55	2.42	2.18	2.15	2.68	1.83	1.55	2.02
	13-Jun-16	2.85	3.15	2.35	2.97	1.90	2.92	1.65	2.25	1.45
	15-Jun-16	3.45	2.45	1.97	1.62	2.95	2.85	1.80	2.65	2.22
	17-Jun-16	2.75	3.25	1.93	2.55	2.45	1.63	2.78	2.37	1.83
	20-Jun-16	2.85	3.50	2.92	2.95	2.65	2.93	2.70	2.77	2.72
	22-Jun-16	2.55	3.45	2.23	2.72	3.20	2.95	2.80	2.52	2.95
	24-Jun-16	2.45	2.75	2.93	2.95	3.20	2.88	3.95	2.92	3.18
	27-Jun-16	3.85	2.75	2.95	3.00	2.00	2.95	2.38	2.38	3.53
	29-Jun-16	3.15	2.55	3.05	2.90	1.90	2.75	2.20	2.15	3.38

Table 4-4 Results Summary of Depth Average of Suspended Solids (mg/L)

Tidal	Sampling date	W1	W2	W3	W4	W5	W6	W7	W8	W9
Mid-Ebb	2-Jun-16	3.00	5.00	4.83	4.83	4.00	4.17	4.00	3.67	4.17
	4-Jun-16	4.50	3.50	4.00	3.50	3.75	4.17	5.00	4.17	4.83
	6-Jun-16	3.50	4.00	4.50	5.17	5.25	4.00	4.83	4.33	4.17
	8-Jun-16	5.50	7.00	5.33	4.17	3.25	3.67	5.33	4.83	3.83
	11-Jun-16	2.00	2.00	1.83	1.83	1.75	1.83	1.17	1.33	1.60
	13-Jun-16	2.50	1.00	1.00	5.00	3.75	2.33	3.50	2.00	1.20
	15-Jun-16	5.00	5.00	3.67	4.50	5.00	5.00	5.00	5.17	4.50
	17-Jun-16	3.00	3.00	3.33	4.00	3.75	6.17	5.33	3.50	4.83
	20-Jun-16	6.50	6.00	6.83	5.67	6.00	8.00	5.83	6.83	5.33
	22-Jun-16	4.50	4.50	4.67	5.67	5.75	5.50	5.00	5.67	4.83

Tidal	Sampling date	W1	W2	W3	W4	W5	W6	W7	W8	W9
	24-Jun-16	5.00	6.00	7.17	4.67	6.00	7.50	5.50	4.00	5.83
	27-Jun-16	4.00	6.50	3.50	3.17	3.00	4.00	3.17	3.67	3.50
	29-Jun-16	5.00	7.00	6.83	7.17	5.75	8.00	7.67	5.67	5.00
Mid-Flood	2-Jun-16	2.50	3.00	3.17	3.33	3.50	3.67	3.67	3.00	3.17
	4-Jun-16	5.50	5.00	4.17	4.67	6.00	5.17	3.83	4.00	4.50
	6-Jun-16	4.00	3.50	4.67	2.67	4.00	3.50	4.83	4.33	4.83
	8-Jun-16	5.00	5.00	4.33	3.33	3.75	3.83	3.50	4.50	3.17
	11-Jun-16	1.00	1.00	1.50	1.67	1.67	1.80	1.60	1.50	1.67
	13-Jun-16	1.00	2.00	1.80	2.17	3.00	2.00	2.67	2.50	2.40
	15-Jun-16	4.50	4.00	4.00	4.67	4.00	3.67	4.33	3.83	3.50
	17-Jun-16	5.00	5.50	4.33	3.67	4.75	3.83	4.67	4.33	3.83
	20-Jun-16	6.00	6.50	6.67	6.17	6.00	7.50	7.50	6.00	5.17
	22-Jun-16	3.50	4.00	6.00	5.00	5.75	5.50	4.67	5.00	7.83
	24-Jun-16	5.00	5.00	7.00	6.17	5.50	7.83	6.17	5.67	6.50
	27-Jun-16	3.00	3.00	4.17	4.17	3.50	4.17	4.50	5.17	4.17
	29-Jun-16	5.00	6.00	6.83	6.67	4.75	6.00	6.33	6.67	6.83

Remark: *If the monitoring result is less than 1, the average was calculated by assuming the measurement value to be 1.*
Italic and bold value indicated Action Level exceedance
Underlined and bold value indicated Limit Level exceedance

4.3 During the Reporting Period, field measurements showed that temperatures of marine water were within 25.0°C to 31.2°C; the salinity concentrations within 16.39 to 30.40 ppt and pH values within 7.92 to 9.02.

4.4 The monitoring results including in-situ measurements and laboratory testing results are provided in ***Appendix H***. The graphical plots are shown in ***Appendix I***.

4.5 A summary of exceedances for the three parameters: dissolved oxygen (DO), turbidity and suspended solids is shown in ***Table 4-5***.

Table 4-5 Summary of Water Quality Exceedance

Station	DO (Ave of Top & mid-depth)		DO Bottom Depth		Turbidity (Depth Ave.)		SS (Depth Ave)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
W1	0	0	0	0	0	0	0	0	0	0
W2	0	0	0	0	0	0	0	0	0	0
W3	0	0	0	0	0	0	0	0	0	0
W4	0	0	0	0	0	0	0	0	0	0
W5	0	0	0	0	0	0	0	0	0	0
W6	0	0	0	0	0	0	0	0	0	0
W7	0	0	0	0	0	0	0	0	0	0
No of Exceedance	0	0	0	0	0	0	0	0	0	0

4.6 In this Reporting Month, no Action and Limit Level exceedances recorded in water quality recorded.

RESULTS OF IN SITU TOTAL RESIDUAL CHLORINE MEASUREMENT

4.7 In this Reporting Month, no de-chlorinated water discharge was undertaken by the main contractor. Hence, in-situ Total residual chlorine measurement is still yet conducted.

RESULTS OF CONSTRUCTION NOISE MONITORING

4.8 Total **5** occasions construction noise monitoring was undertaken in Reporting Period. The noise monitoring results at the designated location (N1) are summarized in ***Table 4-6***.

Table 4-6 Summary of Construction Noise Monitoring Results – N1

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}
2-Jun-16	13:41	59	54.7	55.3	54.8	54.1	54.9	55.8	59.0
8-Jun-16	13:34	56.8	55.9	55.8	57	54	55.2	55.9	59.0
15-Jun-16	13:46	52.8	54.1	52.1	51.6	50.4	52.1	52.3	55.0
22-Jun-16	13:41	51.2	49.2	49.6	52.2	50.4	51.6	50.8	54.0
27-Jun-16	14:12	53.8	56.9	52.8	59.6	58.1	58.3	57.2	60.0
Limit Level		-						> 75 dB(A)	

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

4.9 As shown in the results were well below 75dB(A), also no noise complaint (which is an Action Level exceedance) was received by the RE, WSD, EPD and the Contractor. Hence, no Action or Limit Level exceedance was triggered during this month. The graphical plot is shown in ***Appendix I***.

4.10 The meteorological information during reporting month extracted from Cheung Chau Station of the Hong Kong Observatory (HKO) shows in ***Appendix J***.

5. WASTE MANAGEMENT

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

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.

5.2 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 ***Appendix K***. 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
C&D Materials (Inert) (‘000 m^3)	0	-
Reused in this Contract (Inert) (‘000 m^3)	0	-
Reused in other Projects (Inert) (‘000 m^3)	0	-
Disposal as Public Fill (Inert) (‘000 m^3)	2.0	Outlaying Island Transfer facility (Cheung Chau Station)

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (‘000kg)	0	-
Recycled Paper / Cardboard Packing (‘000kg)	0	-
Recycled Plastic (‘000kg)	0	-
Chemical Wastes (‘000kg)	0	-
General Refuses (‘000 m^3)	0.02	Outlaying Island Transfer facility (Cheung Chau Station)

5.3 There was no site effluent discharged but the estimated volume of surface runoff should be less than $50m^3$ in this month period.

6. SITE INSPECTION

6.1 According to the Environmental Monitoring and Audit Manual, the environmental site inspection should been formulation by ET Leader. Regular environmental site inspections had been carried out by the ET to confirm the environmental performance. **5** weekly site inspections were carried out on **1, 7, 15, 21 and 28 June 2016** with the Representatives of the Engineer and the Contractor to evaluate the site environmental performance in this Reporting Month. Furthermore, joint site inspection with IEC also undertaken on **28 June 2016**. No non-compliance was noted. However, minor deficiencies were observed during weekly site inspection or joint site inspection.

6.2 Observations for the site inspections and monthly audit within this Reporting Month are summarized in ***Table 6-1***.

Table 6-1 Site Observations

Date	Findings / Deficiencies	Follow-Up Status
24 May 2016	Observation: • Stagnant water was observed at the drainage channel on site. The Contractor should remove the stagnant water to prevent mosquito breeding.	Stagnant water was removed from the drainage channel.
1 June 2016	Observation: • Part of the noise barrier was observed to be dismantled. The Contractor should reinstall the temporary noise barrier according to the EP requirement.	To be followed.
7 June 2016	Observation: • Part of the noise barrier was observed to be dismantled. The Contractor should reinstall the temporary noise barrier according to the EP requirement.	To be followed.
15 June 2016	Observation: • Part of the noise barrier was observed to be dismantled. The Contractor should reinstall the temporary noise barrier according to the EP requirement.	To be followed.
21 June 2016	Observation: • Part of the noise barrier was observed to be dismantled. The Contractor should reinstall the temporary noise barrier according to the EP requirement.	To be followed.
28 June 2016	Observation: • Part of the noise barrier was observed to be dismantled. The Contractor should reinstall the temporary noise barrier in order to comply with the EP requirement. • Chemical containers without drip tray was observed. The Contractor should provide drip tray to prevent land contamination. • Tree without tree protection was observed on site. The Contractor should provide proper protection to prevent tree damage by construction work.	To be follow up in next reporting period.

7. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

7.1 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
28 Mar 14 – 31 May 16	0	0	NA
1 – 30 June 16	0	0	NA

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
28 Mar 14 – 31 May 16	0	0	NA
1 – 30 June 16	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
28 Mar 14 – 31 May 16	0	0	NA
1 – 30 June 16	0	0	NA

8. IMPLEMENTATION STATUS OF MITIGATION MEASURES

GENERAL REQUIREMENTS

8.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved EM&A Manual covered the issues of dust, noise, water and waste and they are showed ***Appendix L.***

8.2 CRCPJV had been implementing the required environmental mitigation measures according to the Environmental Monitoring and Audit Manual subject to the site condition. Environmental mitigation measures generally implemented by CRCPJV in this Reporting Month 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.
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.
Noise	• Good site practices to limit noise emissions at the sources; • Use of quite 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.

KEY ISSUES FOR THE COMING MONTH

8.3 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 waterbodies is prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures

9. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

9.1 This is **27th** monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from **1 June 2016** to **30 June 2016**.

9.2 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in the Reporting Period. No NOEs or the associated corrective actions were therefore issued.

9.3 In this Reporting Month, no Action Limit Level exceedances recorded in water quality recorded.

9.4 In this Reporting Month, no de-chlorinated water discharge was undertaken by the main contractor. Hence, in-situ Total residual chlorine measurement is still yet conducted.

9.5 No documented complaint, notification of summons or successful prosecution was received by the Project.

9.6 The ET had carried out site inspection on **1, 7, 15, 21 and 28 June 2016** with the Representatives of the Engineer and the Contractor. Furthermore, joint site inspection with IEC also undertaken on **28 June 2016**. No non-compliance was noted; however minor deficiencies were observed during site inspection. The deficiencies has rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

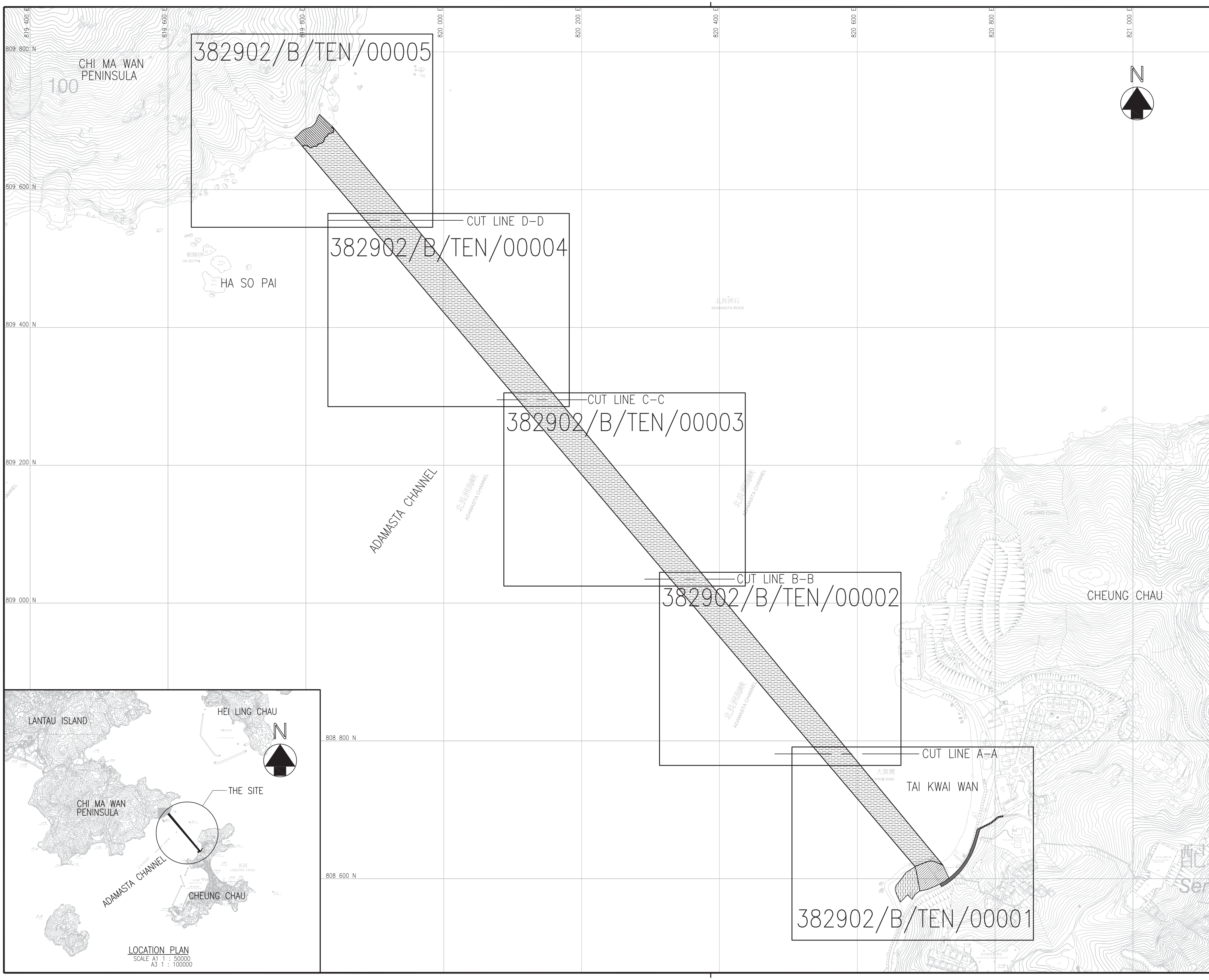
RECOMMENDATIONS

9.7 During wet reason, water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should paid attention. Moreover, noise mitigation measures should be properly maintained to prevent construction noise as impacted surrounding resident.

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

Appendix A

Project Site Layout Plan and location of construction works in the reporting month.



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MAP NOS.

14NW8D, 14NW9C, 14NW13B, 14NW14A, 14NW14B, 14NW14D, 14NW15A & 14NW15C

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING REFERENCE NOS. 382902/B/TEN/00001 TO 00005.
2. REFER TO DRAWING REFERENCE NO. 382902/B/TEN/00001 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.

編號 No.	日期 Date	摘要 Description of revision	設計 Des'd	核對 Chkd	復核 Rd/Vd	核准 Appd
A	04/13	ISSUE FOR TENDER	HL	TL	KIL	WLS

REVISIONS 修訂

	姓名 Name	簽署 Initial	日期 Date
設計 Designed	HL		04/13
繪製 Drawn	SZ		04/13
核對 Checked	TL		04/13
復核 Verified	KIL		04/13
核准 Approved			

合約編號 Contract No.: 1/WSD/13

合約編號 Agreement No.: CE 52/2009 (WS)

合約名稱 Contract title: IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU

圖則名稱 Drawing title: PORTION OF WORKS– CHEUNG CHAU, ADAMASTA CHANNEL, LANTAU ISLAND (KEY PLAN)

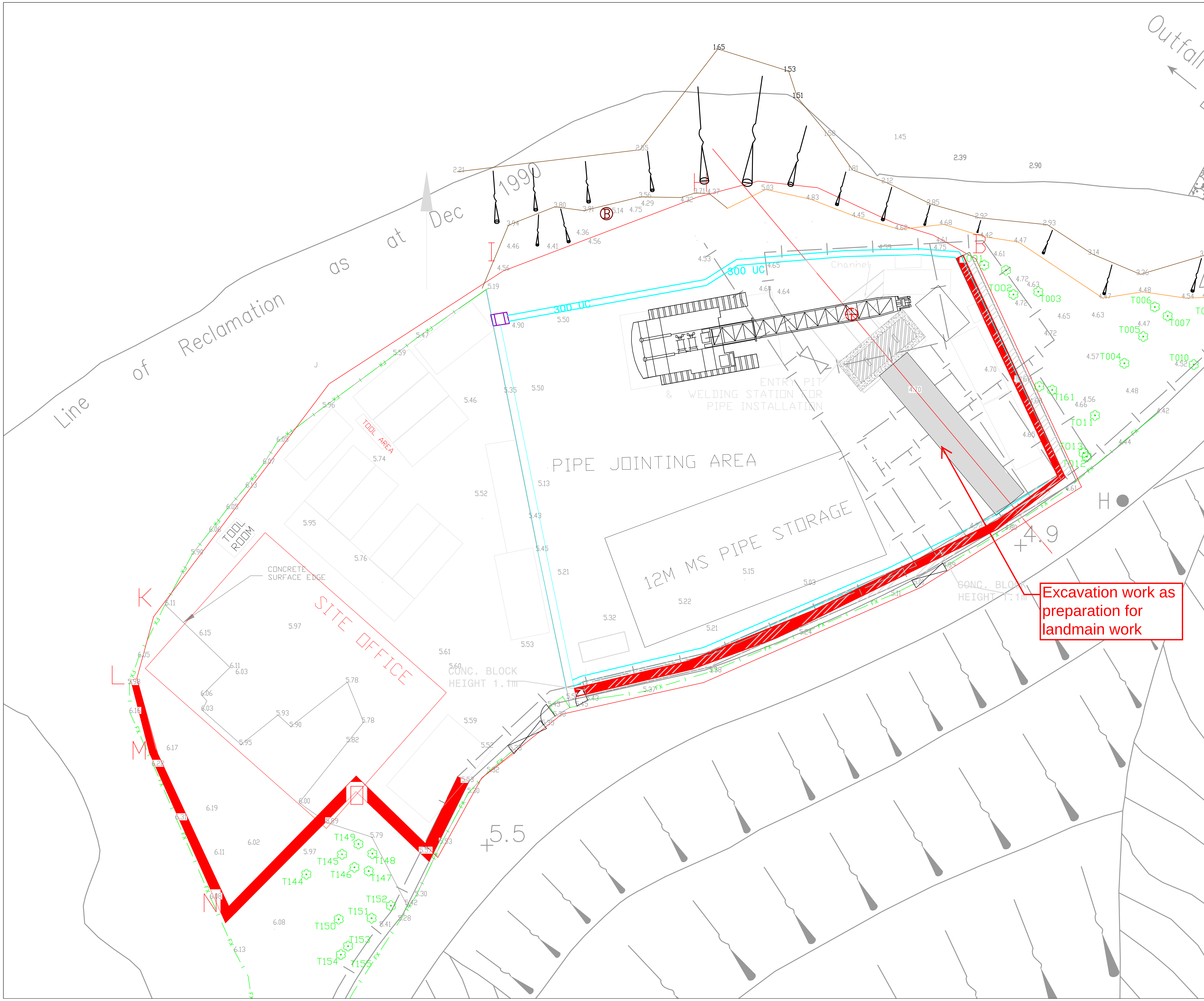
圖則參考編號 Drawing Reference No.: 382902/B/TEN/00001K 修訂 Revision: A

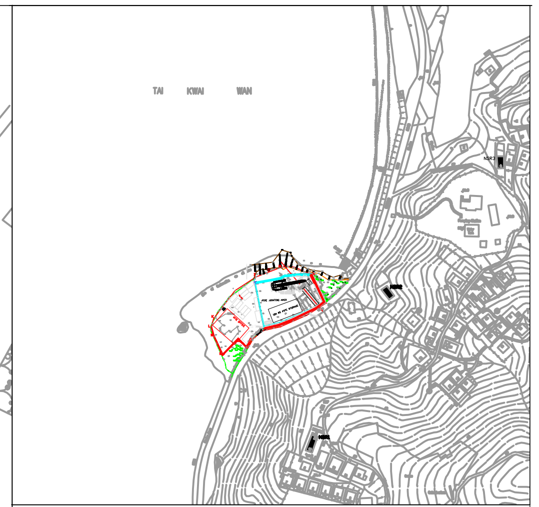
合約圖則編號 Contract Drawing No.: 修訂 Revision:

比例 Scale: A1 1:2500 A3 1:5000

水務署 Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司





Key to symbols:

Given co-ordinates refer to Marine Departement Notice No.169 of 2014

Rev	Date	Drawn	Description	Ch'k'd	App'd

Client

香港特別行政區政府水務署
WATER SUPPLIES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

Main Contractor

中國路橋 CRBC
中国石油天然气管道局
China Road-China Pipeline Joint Venture

Project

CONTRACT NO. 1/WSD/13
IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU

Title

Layout Plan of Works Area at Tai Kwai Wan

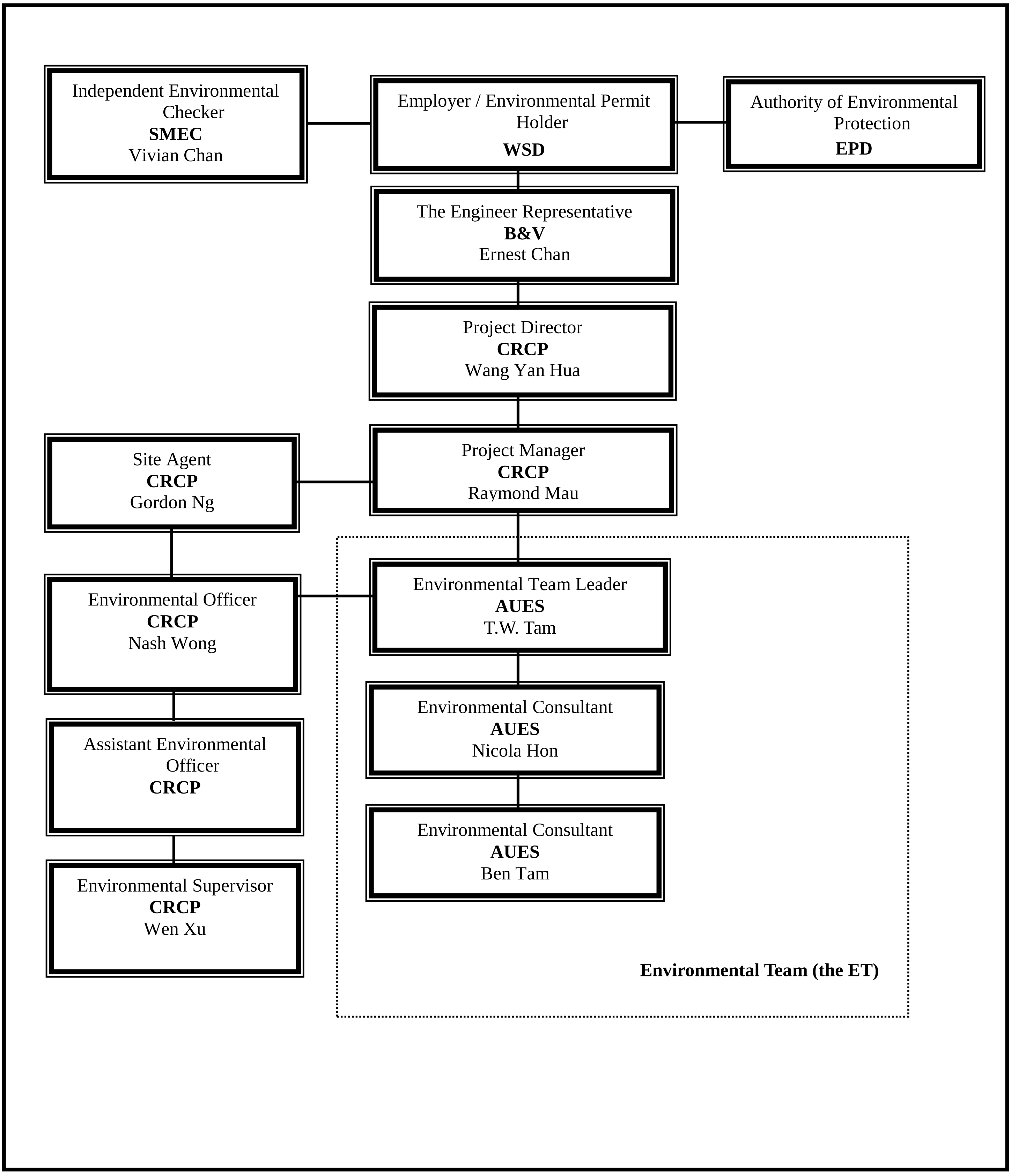
Drawing Number 1/WSD/13/SK051-3

Scale at A3

Status

Appendix B

Organization Structure and Contact Details of Relevant Parties



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
B&V	Engineer's Representative	Ernest Chan	2981 1149	3485 4114
SMEC	Independent Environmental Checker	Vivian Chan	3995 8120	3995 8101
CRCP	Project Director	Wang Yan Hua	2981 1686	2981 1689
CRCP	Site Agent	Gordon Ng	2981 1686	2981 1689
CRCP	Environmental Officer	Nash Wong	2981 1686	2981 1689
CRCP	Environmental Supervisor	Wen Xu	2981 1686	2981 1689
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079
AUES	Assistant Environmental Consultant	Martin Li	2959 6059	2959 6079

Legend:

WSD (Employer) –Water Supplies Department

B&V (Engineer) – Black & Veatch Hong Kong Limited

CRCP (Main Contractor) – China Road – China Pipeline JV

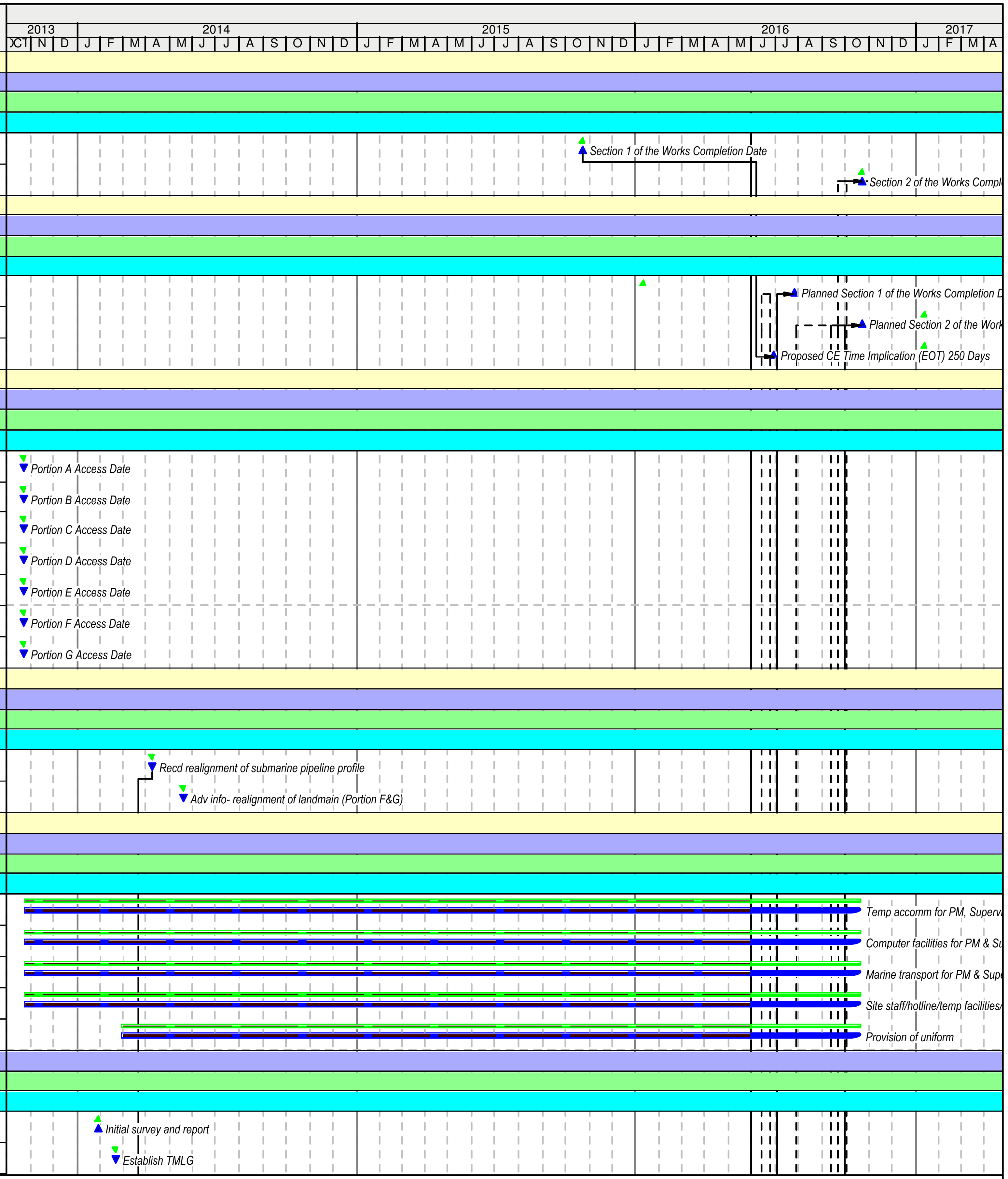
SMEC (IEC) – SMEC Asia Limited

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

Appendix C

Master and Three Months Rolling Construction Programs

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
Contract Dates								
KDC000200	Section 1 of the Works Completion Date	Cal_1			0	23OCT15 A	23OCT15 A	
KDC000300	Section 2 of the Works Completion Date	Cal_1			0	23OCT16 *	23OCT16 *	0
Planned Completion Dates								
KDP000100	Planned Section 1 of the Works Completion Date	Cal_1			0	25JUL16	25JUL16 *	0
KDP000200	Planned Section 2 of the Works Completion Date	Cal_1			0	22OCT16	23OCT16 *	1d
KDP000300	Proposed CE Time Implication (EOT) 250 Days	Cal_1			0	29JUN16	29JUN16 *	0
Access Dates								
KDA000100	Portion A Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
KDA000200	Portion B Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
KDA000300	Portion C Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
KDA000400	Portion D Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
KDA000500	Portion E Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
KDA000600	Portion F Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
KDA000700	Portion G Access Date	Cal_1	24OCT13 A	24OCT13 A	0			
Change of Works Information								
CW00100	Recd realignment of submarine pipeline profile	Cal_1	10APR14 A	10APR14 A	0			
CW00200	Adv info- realignment of landmain (Portion F&G)	Cal_1	20MAY14 A	20MAY14 A	0			
General Provisions								
GEP000300	Temp accomm for PM, Supervisor & Contractor	Cal_1	24OCT13 A	24OCT13 A	1095	23OCT16	23OCT16	0
GEP000400	Computer facilities for PM & Supervisor	Cal_1	24OCT13 A	24OCT13 A	1095	23OCT16	23OCT16	0
GEP000500	Marine transport for PM & Supervisor	Cal_1	24OCT13 A	24OCT13 A	1095	23OCT16	23OCT16	0
GEP000600	Site staff/hotline/temp facilities/site clean	Cal_1	24OCT13 A	24OCT13 A	1095	23OCT16	23OCT16	0
GEP000700	Provision of uniform	Cal_1	28FEB14 A	28FEB14 A	1095	23OCT16	23OCT16	0
General Submissions								
GES000100	Initial survey and report	Cal_1			0	29JAN14 A	29JAN14 A	
GES000200	Establish TMLG	Cal_1	20FEB14 A	20FEB14 A	0			



Start date	**23OCT13**
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c Primavera Systems, Inc.	

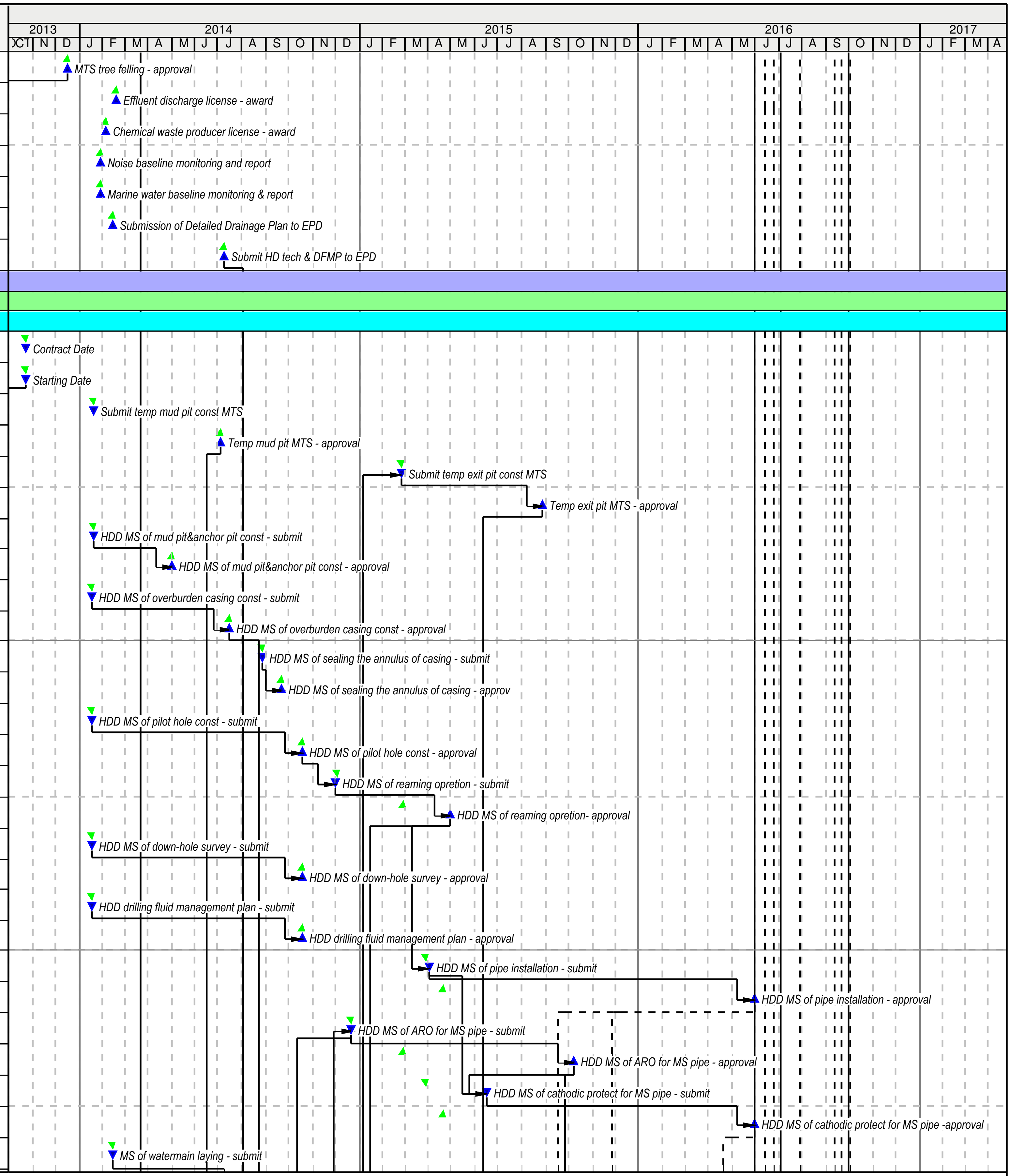
Contract No. 1/WSD/13
Improvement of Fresh Water Supply to Cheung ChauCRBC-CPP JV
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

Early bar
Target bar
Progress bar
Start milestone point
Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
GES000500	MTS tree felling - approval	Cal_1			0	17DEC13 A	17DEC13 A	
GES000700	Effluent discharge license - award	Cal_1			0	18FEB14 A	18FEB14 A	
GES000900	Chemical waste producer license - award	Cal_1			0	05FEB14 A	05FEB14 A	
GES001000	Noise baseline monitoring and report	Cal_1			0	29JAN14 A	29JAN14 A	
GES001100	Marine water baseline monitoring & report	Cal_1			0	29JAN14 A	29JAN14 A	
GES001200	Submission of Detailed Drainage Plan to EPD	Cal_1			0	13FEB14 A	13FEB14 A	
GES001300	Submit HD tech & DFMP to EPD	Cal_1			0	09JUL14 A	09JUL14 A	
Major Submissions								
KDC000050	Contract Date	Cal_1	23OCT13 A	23OCT13 A	0			
KDC000100	Starting Date	Cal_1	24OCT13 A	24OCT13 A	0			
MJS000190	Submit temp mud pit const MTS	Cal_1	20JAN14 A	20JAN14 A	0			
MJS000200	Temp mud pit MTS - approval	Cal_1			0	04JUL14 A	04JUL14 A	
MJS000290	Submit temp exit pit const MTS	Cal_1	25FEB15 A	25FEB15 A	0			
MJS000300	Temp exit pit MTS - approval	Cal_1			0	28AUG15 A	28AUG15 A	
MJS000500	HDD MS of mud pit&anchor pit const - submit	Cal_1	20JAN14 A	20JAN14 A	0			
MJS000510	HDD MS of mud pit&anchor pit const - approval	Cal_1			0	02MAY14 A	02MAY14 A	
MJS000520	HDD MS of overburden casing const - submit	Cal_1	18JAN14 A	18JAN14 A	0			
MJS000530	HDD MS of overburden casing const - approval	Cal_1			0	16JUL14 A	16JUL14 A	
MJS000540	HDD MS of sealing the annulus of casing - submit	Cal_1	29AUG14 A	29AUG14 A	0			
MJS000550	HDD MS of sealing the annulus of casing - approv	Cal_1			0	22SEP14 A	22SEP14 A	
MJS000560	HDD MS of pilot hole const - submit	Cal_1	18JAN14 A	18JAN14 A	0			
MJS000570	HDD MS of pilot hole const - approval	Cal_1			0	18OCT14 A	18OCT14 A	
MJS000580	HDD MS of reaming opretion - submit	Cal_1	01DEC14 A	01DEC14 A	0			
MJS000590	HDD MS of reaming opretion- approval	Cal_1			0	30APR15 A	30APR15 A	
MJS000600	HDD MS of down-hole survey - submit	Cal_1	18JAN14 A	18JAN14 A	0			
MJS000610	HDD MS of down-hole survey - approval	Cal_1			0	18OCT14 A	18OCT14 A	
MJS000620	HDD drilling fluid management plan - submit	Cal_1	18JAN14 A	18JAN14 A	0			
MJS000630	HDD drilling fluid management plan - approval	Cal_1			0	18OCT14 A	18OCT14 A	
MJS000640	HDD MS of pipe installation - submit	Cal_1	02APR15 A	02APR15 A	0			
MJS000650	HDD MS of pipe installation - approval	Cal_1			0	30MAY16	31MAY16	0
MJS000660	HDD MS of ARO for MS pipe - submit	Cal_1	22DEC14 A	22DEC14 A	0			
MJS000670	HDD MS of ARO for MS pipe - approval	Cal_1			0	08OCT15 A	08OCT15 A	
MJS000680	HDD MS of cathodic protect for MS pipe - submit	Cal_1	16JUN15 A	16JUN15 A	0			
MJS000690	HDD MS of cathodic protect for MS pipe -approval	Cal_1			0	30MAY16	13JUN16	13d
MJS000700	MS of watermain laying - submit	Cal_1	14FEB14 A	14FEB14 A	0			



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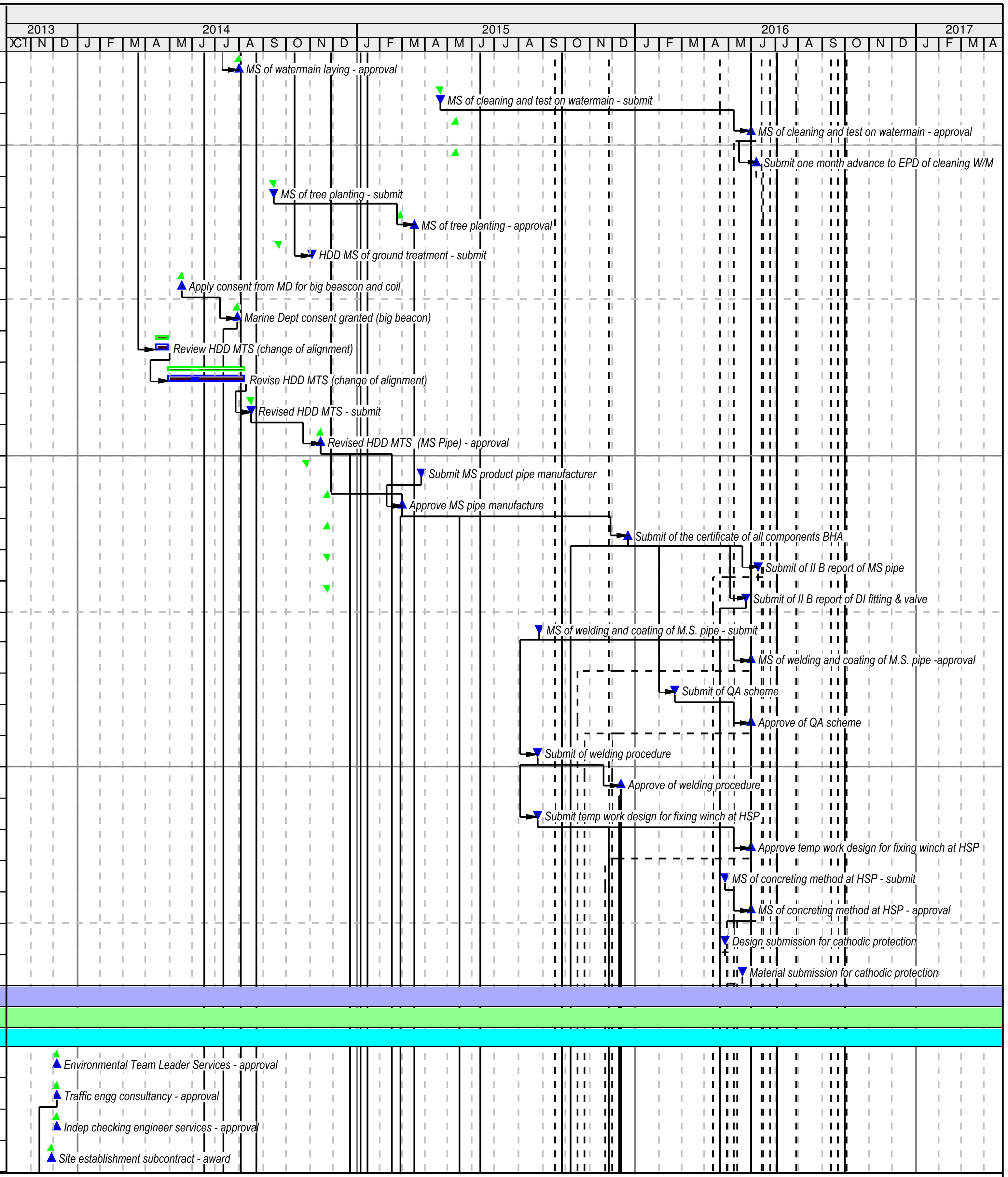
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

Early bar
Target bar
Progress bar
Start milestone point
Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
MJS000710	MS of watermain laying - approval	Cal_1			0	31JUL14 A	31JUL14 A	
MJS000720	MS of cleaning and test on watermain - submit	Cal_1	22APR15 A	22APR15 A	0			
MJS000730	MS of cleaning and test on watermain - approval	Cal_1			0	30MAY16	11JUL16	42d
MJS000735	Submit one month advance to EPD of cleaning W/M	Cal_1			0	06JUN16	18JUL16	42d
MJS000740	MS of tree planting - submit	Cal_1	15SEP14 A	15SEP14 A	0			
MJS000750	MS of tree planting - approval	Cal_1			0	16MAR15 A	16MAR15 A	
MJS000760	HDD MS of ground treatment - submit	Cal_1	03NOV14 A	03NOV14 A	0			
MJS000770	Apply consent from MD for big beascon and coil	Cal_1			0	17MAY14 A	17MAY14 A	
MJS000780	Marine Dept consent granted (big beacon)	Cal_1			0	28JUL14 A	28JUL14 A	
MJS000800	Review HDD MTS (change of alignment)	Cal_2	14APR14 A	14APR14 A	20	30APR14 A	30APR14 A	
MJS000900	Revise HDD MTS (change of alignment)	Cal_2	30APR14 A	30APR14 A	28	08AUG14 A	08AUG14 A	
MJS000910	Revised HDD MTS - submit	Cal_2	18AUG14 A	18AUG14 A	0			
MJS000920	Revised HDD MTS (MS Pipe) - approval	Cal_1			0	15NOV14 A	15NOV14 A	
MJS000950	Submit MS product pipe manufacturer	Cal_1	28MAR15 A	28MAR15 A	0			
MJS000960	Approve MS pipe manufacture	Cal_1			0	02MAR15 A	02MAR15 A	
MJS000964	Submit of the certificate of all components BHA	Cal_1			0	21DEC15 A	21DEC15 A	
MJS000968	Submit of II B report of MS pipe	Cal_1	10JUN16	23JUN16	0			14d
MJS000969	Submit of II B report of DI fitting & valve	Cal_1	25MAY16 A	25MAY16 A	0			
MJS000970	MS of welding and coating of M.S. pipe - submit	Cal_1	28AUG15 A	28AUG15 A	0			
MJS000980	MS of welding and coating of M.S. pipe -approval	Cal_1			0	30MAY16	31MAY16	0
MJS000982	Submit of QA scheme	Cal_1	22FEB16 A	22FEB16 A	0			
MJS000984	Approve of QA scheme	Cal_1			0	30MAY16	31MAY16	0
MJS000986	Submit of welding procedure	Cal_1	25AUG15 A	25AUG15 A	0			
MJS000988	Approve of welding procedure	Cal_1			0	11DEC15 A	11DEC15 A	
MJS000990	Submit temp work design for fixing winch at HSP	Cal_1	26AUG15 A	26AUG15 A	0			
MJS000992	Approve temp work design for fixing winch at HSP	Cal_1			0	30MAY16	31MAY16	0
MJS000994	MS of concreting method at HSP - submit	Cal_1	27APR16 A	27APR16 A	0			
MJS000996	MS of concreting method at HSP - approval	Cal_1			0	30MAY16	08JUN16	8d
MJS000998	Design submission for cathodic protection	Cal_1	27APR16 A	27APR16 A	0			
MJS000999	Material submission for cathodic protection	Cal_1	19MAY16 A	19MAY16 A	0			
Major Subletting								
MSL000100	Environmental Team Leader Services - approval	Cal_1			0	04DEC13 A	04DEC13 A	
MSL000200	Traffic engg consultancy - approval	Cal_1			0	05DEC13 A	05DEC13 A	
MSL000300	Indep checking engineer services - approval	Cal_1			0	05DEC13 A	05DEC13 A	
MSL000900	Site establishment subcontract - award	Cal_1			0	27NOV13 A	27NOV13 A	



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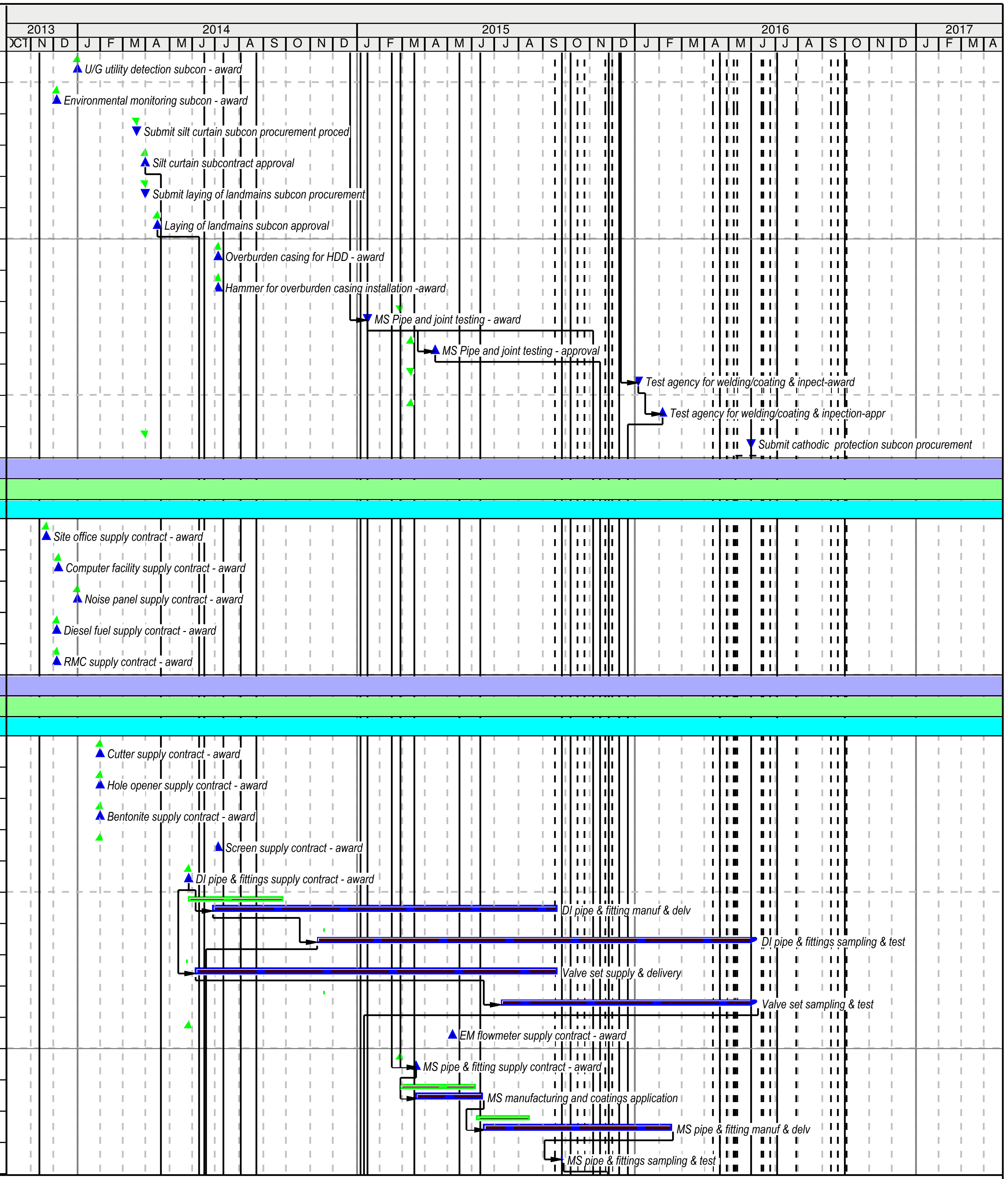
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

Early bar
Target bar
Progress bar
Start milestone point
Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
MSL001000	U/G utility detection subcon - award	Cal_1			0	31DEC13 A	31DEC13 A	
MSL001100	Environmental monitoring subcon - award	Cal_1			0	05DEC13 A	05DEC13 A	
MSL001200	Submit silt curtain subcon procurement proced	Cal_1	19MAR14 A	19MAR14 A	0			
MSL001300	Silt curtain subcontract approval	Cal_1			0	31MAR14 A	31MAR14 A	
MSL001400	Submit laying of landmains subcon procurement	Cal-1	31MAR14 A	31MAR14 A	0			
MSL001500	Laying of landmains subcon approval	Cal_1			0	16APR14 A	16APR14 A	
MSL001600	Overburden casing for HDD - award	Cal_1			0	04JUL14 A	04JUL14 A	
MSL001700	Hammer for overburden casing installation -award	Cal_1			0	04JUL14 A	04JUL14 A	
MSL001800	MS Pipe and joint testing - award	Cal_1	15JAN15 A	15JAN15 A	0			
MSL001900	MS Pipe and joint testing - approval	Cal_1			0	13APR15 A	13APR15 A	
MSL002000	Test agency for welding/coating & inpect-award	Cal_1	04JAN16 A	04JAN16 A	0			
MSL002100	Test agency for welding/coating & inpection-appr	Cal_1			0	04FEB16 A	04FEB16 A	
MSL002200	Submit cathodic protection subcon procurement	Cal-1	31MAY16	23JUN16	0			24d
Major Local Procurement								
MLP000100	Site office supply contract - award	Cal_1			0	21NOV13 A	21NOV13 A	
MLP000200	Computer facility supply contract - award	Cal_1			0	07DEC13 A	07DEC13 A	
MLP000300	Noise panel supply contract - award	Cal_1			0	31DEC13 A	31DEC13 A	
MLP000400	Diesel fuel supply contract - award	Cal_1			0	05DEC13 A	05DEC13 A	
MLP000600	RMC supply contract - award	Cal_1			0	05DEC13 A	05DEC13 A	
Major Overseas Procurement								
MOP000500	Cutter supply contract - award	Cal_1			0	31JAN14 A	31JAN14 A	
MOP000600	Hole opener supply contract - award	Cal_1			0	31JAN14 A	31JAN14 A	
MOP000700	Bentonite supply contract - award	Cal_1			0	31JAN14 A	31JAN14 A	
MOP000800	Screen supply contract - award	Cal_1			0	03JUL14 A	03JUL14 A	
MOP000900	DI pipe & fittings supply contract - award	Cal_1			0	26MAY14 A	26MAY14 A	
MOP000910	DI pipe & fitting manuf & delv	Cal_1	27JUN14 A	27JUN14 A	200	21SEP15 A	21SEP15 A	
MOP001000	DI pipe & fittings sampling & test	Cal_1	11NOV14 A	11NOV14 A	150	09JUN16	30JUN16	21d
MOP001100	Valve set supply & delivery	Cal_1	05JUN14 A	05JUN14 A	200	21SEP15 A	21SEP15 A	
MOP001200	Valve set sampling & test	Cal_1	09JUL15 A	09JUL15 A	60	09JUN16	11JUL16	32d
MOP001300	EM flowmeter supply contract - award	Cal_1			0	05MAY15 A	05MAY15 A	
MOP001400	MS pipe & fitting supply contract - award	Cal_1			0	20MAR15 A	20MAR15 A	
MOP001420	MS manufacturing and coatings application	Cal_1	21MAR15 A	21MAR15 A	100	15JUN15 A	15JUN15 A	
MOP001440	MS pipe & fitting manuf & delv	Cal_1	17JUN15 A	17JUN15 A	70	17FEB16 A	17FEB16 A	
MOP001500	MS pipe & fittings sampling & test	Cal_1	26SEP15 A	26SEP15 A	14	28SEP15 A	28SEP15 A	



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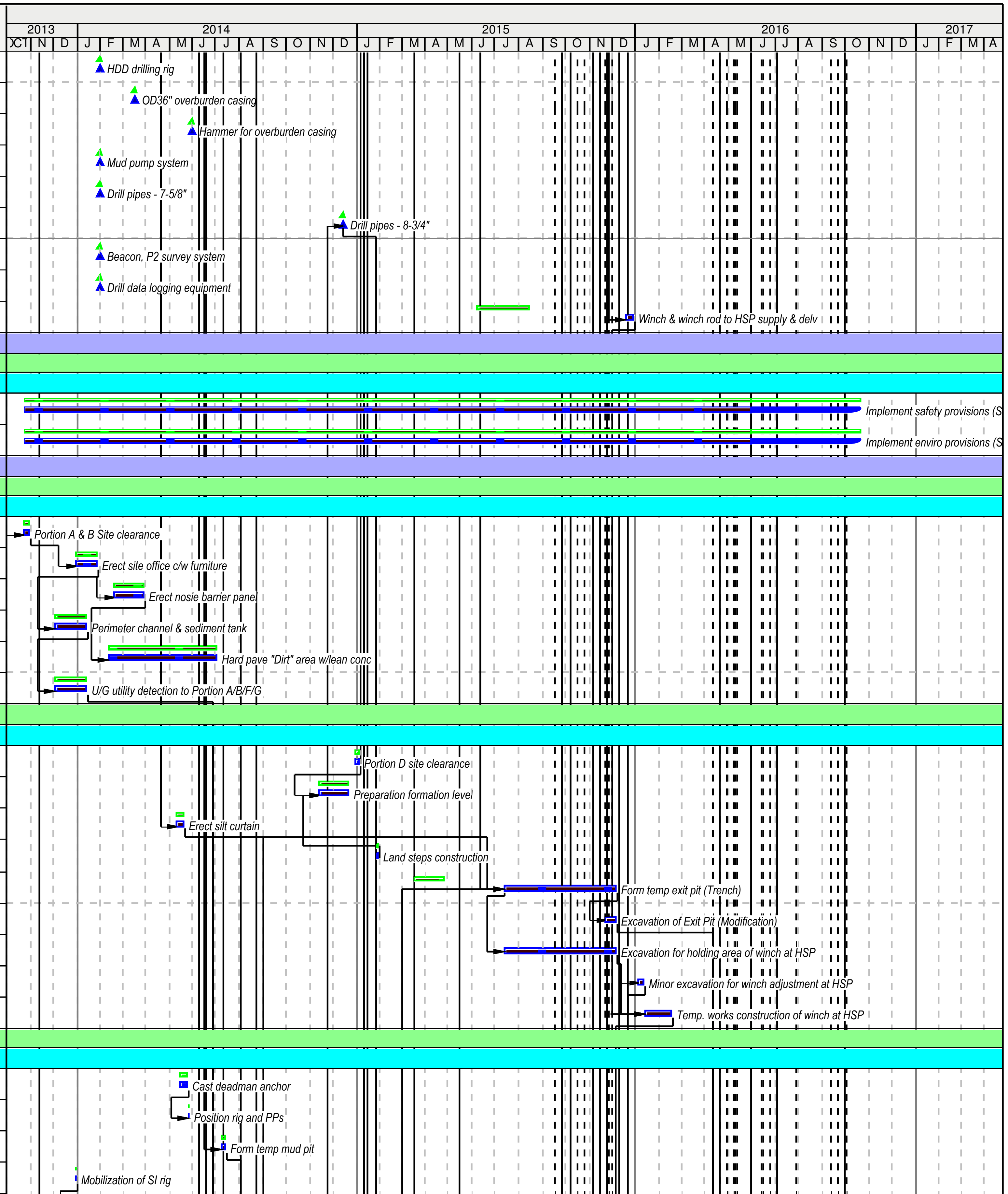
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

Early bar
Target bar
Progress bar
Start milestone point
Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
MOP001600	HDD drilling rig	Cal_1			0	31JAN14 A	31JAN14 A	
MOP001650	OD36" overburden casing	Cal_1			0	17MAR14 A	17MAR14 A	
MOP001700	Hammer for overburden casing	Cal_1			0	31MAY14 A	31MAY14 A	
MOP001750	Mud pump system	Cal_1			0	31JAN14 A	31JAN14 A	
MOP001800	Drill pipes - 7-5/8"	Cal_1			0	31JAN14 A	31JAN14 A	
MOP001810	Drill pipes - 8-3/4"	Cal_1			0	15DEC14 A	15DEC14 A	
MOP001900	Beacon, P2 survey system	Cal_1			0	31JAN14 A	31JAN14 A	
MOP001950	Drill data logging equipment	Cal_1			0	31JAN14 A	31JAN14 A	
MOP002000	Winch & winch rod to HSP supply & delv	Cal_1	19DEC15 A	19DEC15 A	14	29DEC15 A	29DEC15 A	
General Safety & Environmental Provisions								
SSE000100	Implement safety provisions (SSEMC end of @ mth)	Cal_1	24OCT13 A	24OCT13 A	1096	23OCT16	23OCT16	0
SSE000200	Implement enviro provisions (SSEMC end of @ mth)	Cal_1	24OCT13 A	24OCT13 A	1096	23OCT16	23OCT16	0
Sec 1 Portion A & B Site Preparation								
SE1000100	Portion A & B Site clearance	Cal_2	24OCT13 A	24OCT13 A	10	01NOV13 A	01NOV13 A	
SE1000200	Erect site office c/w furniture	Cal_2	31DEC13 A	31DEC13 A	30	29JAN14 A	29JAN14 A	
SE1000300	Erect nosie barrier panel	Cal_2	19FEB14 A	19FEB14 A	15	31MAR14 A	31MAR14 A	
SE1000400	Perimeter channel & sediment tank	Cal_2	03DEC13 A	03DEC13 A	15	15JAN14 A	15JAN14 A	
SE1000500	Hard pave "Dirt" area w/lean conc	Cal_2	11FEB14 A	11FEB14 A	15	04JUL14 A	04JUL14 A	
SE1000600	U/G utility detection to Portion A/B/F/G	Cal_2	03DEC13 A	03DEC13 A	7	15JAN14 A	15JAN14 A	
Sec 1 Portion D Site Preparation								
SE1100100	Portion D site clearance	Cal_2	31DEC14 A	31DEC14 A	5	06JAN15 A	06JAN15 A	
SE1100150	Preparation formation level	Cal_2	14NOV14 A	14NOV14 A	20	23DEC14 A	23DEC14 A	
SE1100400	Erect silt curtain	Cal_2	12MAY14 A	12MAY14 A	10	22MAY14 A	22MAY14 A	
SE1100600	Land steps construction	Cal_2	28JAN15 A	28JAN15 A	45	30JAN15 A	30JAN15 A	
SE1100650	Form temp exit pit (Trench)	Cal_2	14JUL15 A	14JUL15 A	90	08DEC15 A	08DEC15 A	
SE1100700	Excavation of Exit Pit (Modification)	Cal_2	23NOV15 A	23NOV15 A	18	08DEC15 A	08DEC15 A	
SE1100750	Excavation for holding area of winch at HSP	Cal_2	14JUL15 A	14JUL15 A	60	08DEC15 A	08DEC15 A	
SE1100755	Minor excavation for winch adjustment at HSP	Cal_2	05JAN16 A	05JAN16 A	10	12JAN16 A	12JAN16 A	
SE1100800	Temp. works construction of winch at HSP	Cal_2	13JAN16 A	13JAN16 A	20	18FEB16 A	18FEB16 A	
Sec 1 Prep for HDD Works								
SE1000610	Cast deadman anchor	Cal_2	15MAY14 A	15MAY14 A	12	27MAY14 A	27MAY14 A	
SE1000620	Position rig and PPs	Cal_2	27MAY14 A	27MAY14 A	2	29MAY14 A	29MAY14 A	
SE1000700	Form temp mud pit	Cal_2	09JUL14 A	09JUL14 A	3	14JUL14 A	14JUL14 A	
SE1000800	Mobilization of SI rig	Cal_2	30DEC13 A	30DEC13 A	2	31DEC13 A	31DEC13 A	



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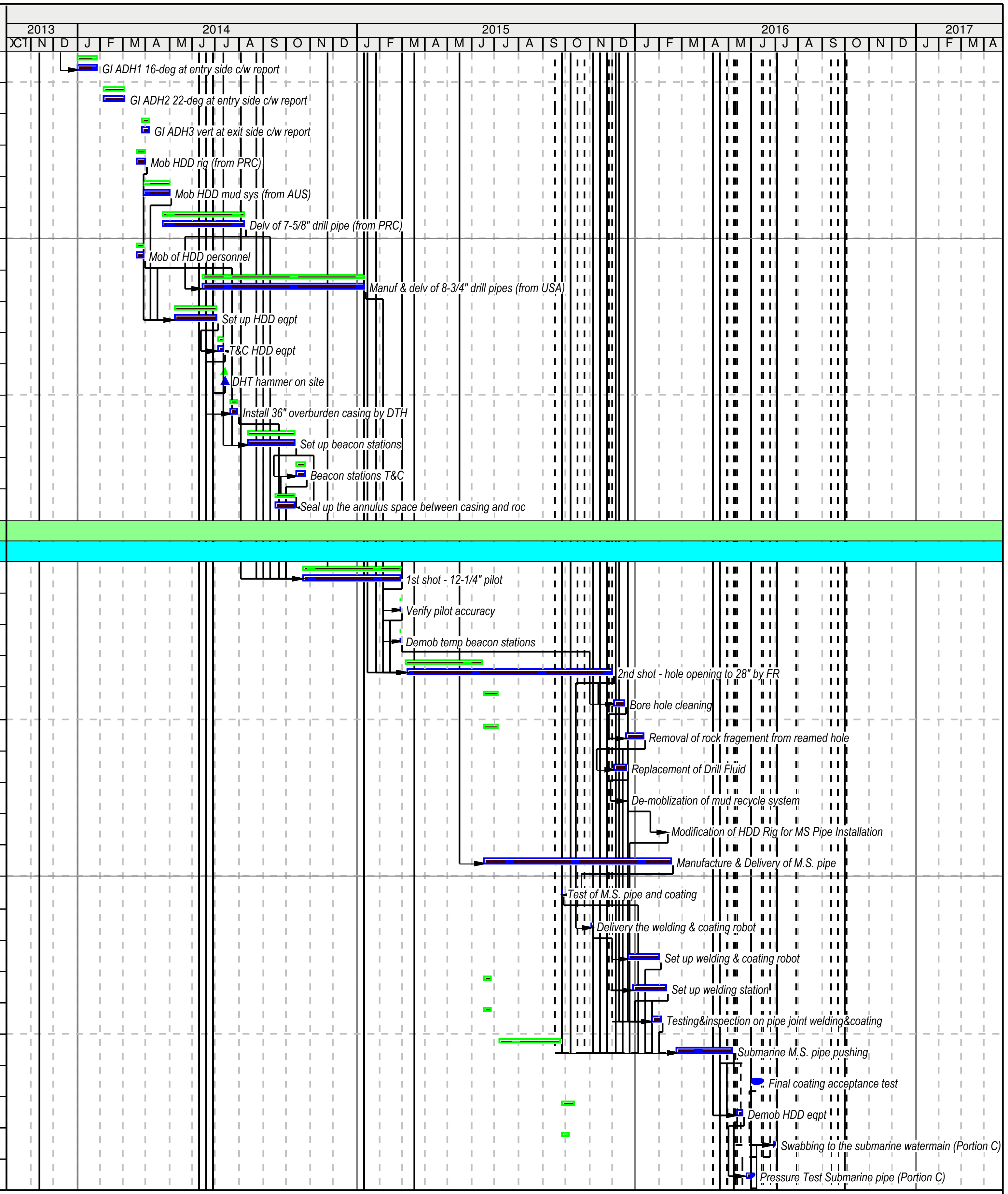
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

- Early bar
- Target bar
- Progress bar
- Start milestone point
- Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
SE1000900	GI ADH1 16-deg at entry side c/w report	Cal_2	02JAN14 A	02JAN14 A	21	29JAN14 A	29JAN14 A	
SE1000910	GI ADH2 22-deg at entry side c/w report	Cal_2	06FEB14 A	06FEB14 A	20	05MAR14 A	05MAR14 A	
SE1000920	GI ADH3 vert at exit side c/w report	Cal_2	27MAR14 A	27MAR14 A	25	07APR14 A	07APR14 A	
SE1200300	Mob HDD rig (from PRC)	Cal_1	21MAR14 A	21MAR14 A	15	01APR14 A	01APR14 A	
SE1200400	Mob HDD mud sys (from AUS)	Cal_1	29MAR14 A	29MAR14 A	30	03MAY14 A	03MAY14 A	
SE1200500	Delv of 7-5/8" drill pipe (from PRC)	Cal_1	23APR14 A	23APR14 A	30	09AUG14 A	09AUG14 A	
SE1200600	Mob of HDD personnel	Cal_1	19MAR14 A	19MAR14 A	3	31MAR14 A	31MAR14 A	
SE1200800	Manuf & delv of 8-3/4" drill pipes (from USA)	Cal_1	14JUN14 A	14JUN14 A	60	13JAN15 A	13JAN15 A	
SE1200900	Set up HDD eqpt	Cal_2	09MAY14 A	09MAY14 A	20	03JUL14 A	03JUL14 A	
SE1201000	T&C HDD eqpt	Cal_2	04JUL14 A	04JUL14 A	4	12JUL14 A	12JUL14 A	
SE1201030	DHT hammer on site	Cal_1			0	12JUL14 A	12JUL14 A	
SE1201050	Install 36" overburden casing by DTH	Cal_2	21JUL14 A	21JUL14 A	10	30JUL14 A	30JUL14 A	
SE1201100	Set up beacon stations	Cal_2	13AUG14 A	13AUG14 A	10	15OCT14 A	15OCT14 A	
SE1201200	Beacon stations T&C	Cal_2	16OCT14 A	16OCT14 A	2	28OCT14 A	28OCT14 A	
SE1201210	Seal up the annulus space between casing and roc	Cal_2	17SEP14 A	17SEP14 A	23	15OCT14 A	15OCT14 A	
Sec 1 HDD Works								
SE1201300	1st shot - 12-1/4" pilot	Cal_2	23OCT14 A	23OCT14 A	60	28FEB15 A	28FEB15 A	
SE1201400	Verify pilot accuracy	Cal_2	28FEB15 A	28FEB15 A	5	28FEB15 A	28FEB15 A	
SE1201450	Demob temp beacon stations	Cal_2	28FEB15 A	28FEB15 A	5	28FEB15 A	28FEB15 A	
SE1201500	2nd shot - hole opening to 28" by FR	Cal_3	09MAR15 A	09MAR15 A	216	02DEC15 A	02DEC15 A	
SE1201700	Bore hole cleaning	Cal_3	05DEC15 A	05DEC15 A	6	18DEC15 A	18DEC15 A	
SE1201701	Removal of rock fragement from reamed hole	Cal_3	19DEC15 A	19DEC15 A	14	12JAN16 A	12JAN16 A	
SE1201702	Replacement of Drill Fluid	Cal_3	04DEC15 A	04DEC15 A	10	21DEC15 A	21DEC15 A	
SE1201704	De-moblization of mud recycle system	Cal_3	21DEC15 A	21DEC15 A	7	22DEC15 A	22DEC15 A	
SE1201706	Modification of HDD Rig for MS Pipe Installation	Cal_3	11FEB16 A	11FEB16 A	2	11FEB16 A	11FEB16 A	
SE1201710	Manufacture & Delivery of M.S. pipe	Cal_3	17JUN15 A	17JUN15 A	90	17FEB16 A	17FEB16 A	
SE1201720	Test of M.S. pipe and coating	Cal_3	26SEP15 A	26SEP15 A	14	28SEP15 A	28SEP15 A	
SE1201790	Delivery the welding & coating robot	Cal_3	05NOV15 A	05NOV15 A	7	06NOV15 A	06NOV15 A	
SE1201795	Set up welding & coating robot	Cal_3	23DEC15 A	23DEC15 A	21	02FEB16 A	02FEB16 A	
SE1201800	Set up welding station	Cal_3	28DEC15 A	28DEC15 A	3	11FEB16 A	11FEB16 A	
SE1201900	Testing&inspection on pipe joint welding&coating	Cal_3	22JAN16 A	22JAN16 A	10	04FEB16 A	04FEB16 A	
SE1202300	Submarine M.S. pipe pushing	Cal_3	24FEB16 A	24FEB16 A	60	07MAY16 A	07MAY16 A	
SE1202310	Final coating acceptance test	Cal_2	31MAY16	11JUL16	14	17JUN16	28JUL16	33d
SE1202500	Demob HDD eqpt	Cal_2	12MAY16 A	12MAY16 A	8	22MAY16 A	22MAY16 A	
SE1202600	Swabbing to the submarine watermain (Portion C)	Cal_2	29JUN16	12JUL16	3	04JUL16	15JUL16	10d
SE1202610	Pressure Test Submarine pipe (Portion C)	Cal_2	24MAY16 A	24MAY16 A	10	06JUN16	11JUL16	28d



Start date	23OCT13
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c Primavera Systems, Inc.

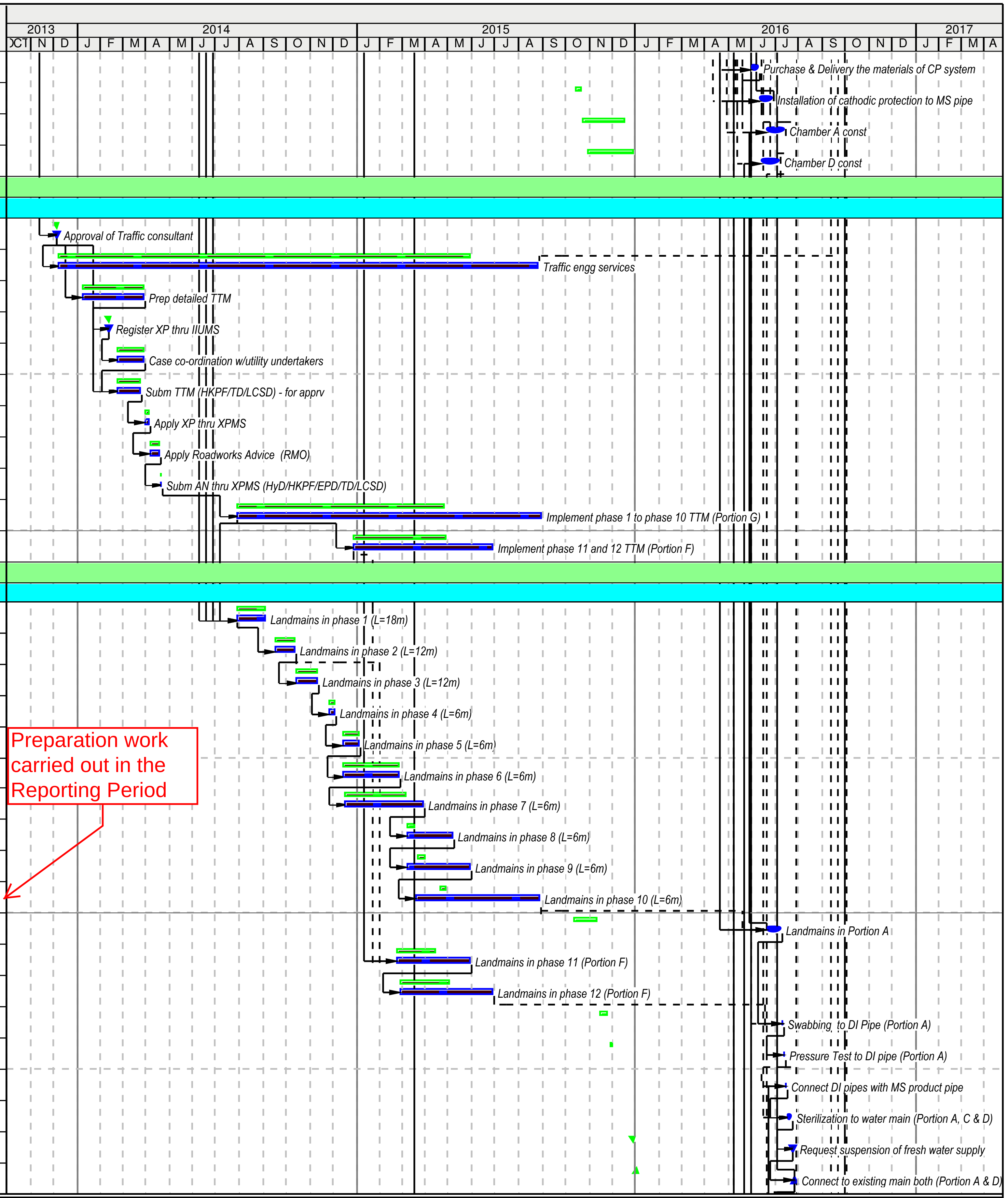
Contract No. 1/WSD/13
Improvement of Fresh Water Supply to Cheung ChauCRBC-CPP JV
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

- Early bar
- Target bar
- Progress bar
- Start milestone point
- Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
SE1202700	Purchase & Delivery the materials of CP system	Cal_2	31MAY16	13JUN16	7	11JUN16	23JUN16	10d
SE1202710	Installation of cathodic protection to MS pipe	Cal_2	11JUN16	23JUN16	15	29JUN16	12JUL16	10d
SE1202900	Chamber A const	Cal_2	20JUN16	30JUN16	20	14JUL16	25JUL16	9d
SE1203000	Chamber D const	Cal_2	13JUN16	30JUN16	20	07JUL16	25JUL16	15d
Sec 1 Excavation Permit & TTA								
SE1300100	Approval of Traffic consultant	Cal_1	06DEC13 A	06DEC13 A	0			
SE1300110	Traffic engg services	Cal_1	09DEC13 A	09DEC13 A	470	28AUG15 A	28AUG15 A	
SE1300200	Prep detailed TTM	Cal_2	08JAN14 A	08JAN14 A	40	31MAR14 A	31MAR14 A	
SE1300300	Register XP thru IIUMS	Cal_1	13FEB14 A	13FEB14 A	0			
SE1300400	Case co-ordination w/utility undertakers	Cal_1	24FEB14 A	24FEB14 A	14	31MAR14 A	31MAR14 A	
SE1300500	Subm TTM (HKPF/TD/LCSD) - for apprv	Cal_1	24FEB14 A	24FEB14 A	30	25MAR14 A	25MAR14 A	
SE1300600	Apply XP thru XPMS	Cal_1	31MAR14 A	31MAR14 A	7	07APR14 A	07APR14 A	
SE1300700	Apply Roadworks Advice (RMO)	Cal_1	07APR14 A	07APR14 A	14	21APR14 A	21APR14 A	
SE1300800	Subm AN thru XPMS (HyD/HKPF/EPD/TD/LCSD)	Cal_2	22APR14 A	22APR14 A	2	23APR14 A	23APR14 A	
SE1300910	Implement phase 1 to phase 10 TTM (Portion G)	Cal_1	30JUL14 A	30JUL14 A	313	31AUG15 A	31AUG15 A	
SE1301910	Implement phase 11 and 12 TTM (Portion F)	Cal_1	29DEC14 A	29DEC14 A	95	30JUN15 A	30JUN15 A	
Sec 1 Main Laying on Cheung Chau								
SE1400100	Landmains in phase 1 (L=18m)	Cal_5	30JUL14 A	30JUL14 A	17	05SEP14 A	05SEP14 A	
SE1400200	Landmains in phase 2 (L=12m)	Cal_5	17SEP14 A	17SEP14 A	17	14OCT14 A	14OCT14 A	
SE1400300	Landmains in phase 3 (L=12m)	Cal_5	15OCT14 A	15OCT14 A	17	13NOV14 A	13NOV14 A	
SE1400400	Landmains in phase 4 (L=6m)	Cal_5	27NOV14 A	27NOV14 A	7	05DEC14 A	05DEC14 A	
SE1400500	Landmains in phase 5 (L=6m)	Cal_5	15DEC14 A	15DEC14 A	7	05JAN15 A	05JAN15 A	
SE1400600	Landmains in phase 6 (L=6m)	Cal_5	16DEC14 A	16DEC14 A	7	26FEB15 A	26FEB15 A	
SE1400700	Landmains in phase 7 (L=6m)	Cal_5	18DEC14 A	18DEC14 A	7	31MAR15 A	31MAR15 A	
SE1400800	Landmains in phase 8 (L=6m)	Cal_5	09MAR15 A	09MAR15 A	7	08MAY15 A	08MAY15 A	
SE1400900	Landmains in phase 9 (L=6m)	Cal_5	09MAR15 A	09MAR15 A	7	30MAY15 A	30MAY15 A	
SE1401000	Landmains in phase 10 (L=6m)	Cal_5	20MAR15 A	20MAR15 A	7	29AUG15 A	29AUG15 A	
SE1401050	Landmains in Portion A	Cal_2	20JUN16	20JUN16	16	09JUL16	09JUL16	1d
SE1401100	Landmains in phase 11 (Portion F)	Cal_2	23FEB15 A	23FEB15 A	25	30MAY15 A	30MAY15 A	
SE1401200	Landmains in phase 12 (Portion F)	Cal_2	27FEB15 A	27FEB15 A	25	29JUN15 A	29JUN15 A	
SE1401302	Swabbing to DI Pipe (Portion A)	Cal_3	11JUL16	12JUL16	2	12JUL16	13JUL16	1d
SE1401402	Pressure Test to DI pipe (Portion A)	Cal_3	13JUL16	14JUL16	2	14JUL16	15JUL16	1d
SE1401410	Connect DI pipes with MS product pipe	Cal_3	15JUL16	16JUL16	2	16JUL16	18JUL16	1d
SE1401420	Sterilization to water main (Portion A, C & D)	Cal_3	18JUL16	19JUL16	7	23JUL16	23JUL16	1d
SE1401600	Request suspension of fresh water supply	Cal_3	25JUL16	26JUL16	0			1d
SE1401800	Connect to existing main both (Portion A & D)	Cal_3			0	25JUL16	25JUL16	1d



Start date	23OCT13
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Data date	31MAY16
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c Primavera Systems, Inc.	

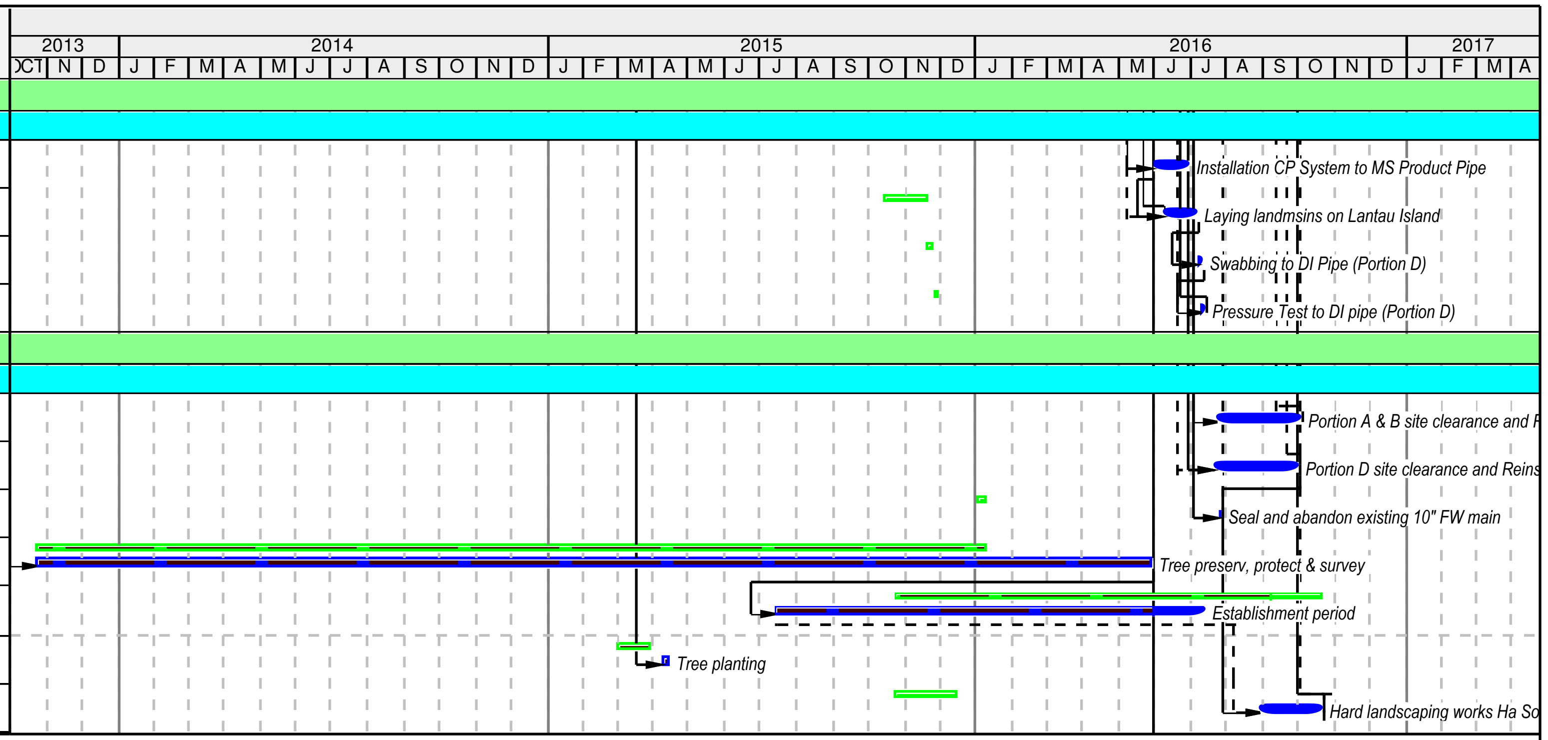
Contract No. 1/WSD/13
Improvement of Fresh Water Supply to Cheung ChauCRBC-CPP JV
CRBC-CPP JV

CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

Early bar
Target bar
Progress bar
Start milestone point
Finish milestone poir

Activity ID	Description	Calendar	Early Start	Late Start	Original Duration	Early Finish	Late Finish	Total Float
Sec 1 Main Laying on Lantau Island								
SE1500000	Installation CP System to MS Product Pipe	Cal_2	31MAY16	31MAY16	25	30JUN16	30JUN16	0
SE1500100	Laying landmsins on Lantau Island	Cal_2	08JUN16	08JUN16	24	08JUL16	08JUL16	0
SE1500202	Swabbing to DI Pipe (Portion D)	Cal_2	08JUL16	08JUL16	3	12JUL16	12JUL16	0
SE1500302	Pressure Test to DI pipe (Portion D)	Cal_2	12JUL16	12JUL16	3	15JUL16	15JUL16	0
Sec 2 Landscaping								
SE1203100	Portion A & B site clearance and Reinstatement	Cal_2	25JUL16	12AUG16	60	05OCT16	22OCT16	16d
SE1203200	Portion D site clearance and Reinstatement	Cal_2	22JUL16	22JUL16	60	01OCT16	01OCT16	0
SE1401900	Seal and abandon existing 10" FW main	Cal_2	26JUL16	20OCT16	3	29JUL16	22OCT16	72d
SE2000050	Tree preserv, protect & survey	Cal_1	24OCT13 A	24OCT13 A	729	31MAY16	31MAY16	
SE2000100	Establishment period	Cal_1	15JUL15 A	15JUL15 A	366	14JUL16	14OCT16	92d
SE2000150	Tree planting	Cal_2	09APR15 A	09APR15 A	25	15APR15 A	15APR15 A	
SE2000200	Hard landscaping works Ha So Pai	Cal_2	30AUG16	31AUG16	45	22OCT16	22OCT16	0



Start date	23OCT13
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Data date	31MAY16
Run date	01JUN16
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c Primavera Systems, Inc.	

Contract No. 1/WSD/13
Improvement of Fresh Water Supply to Cheung ChauCRBC-CPP JV
CRBC-CPP JV

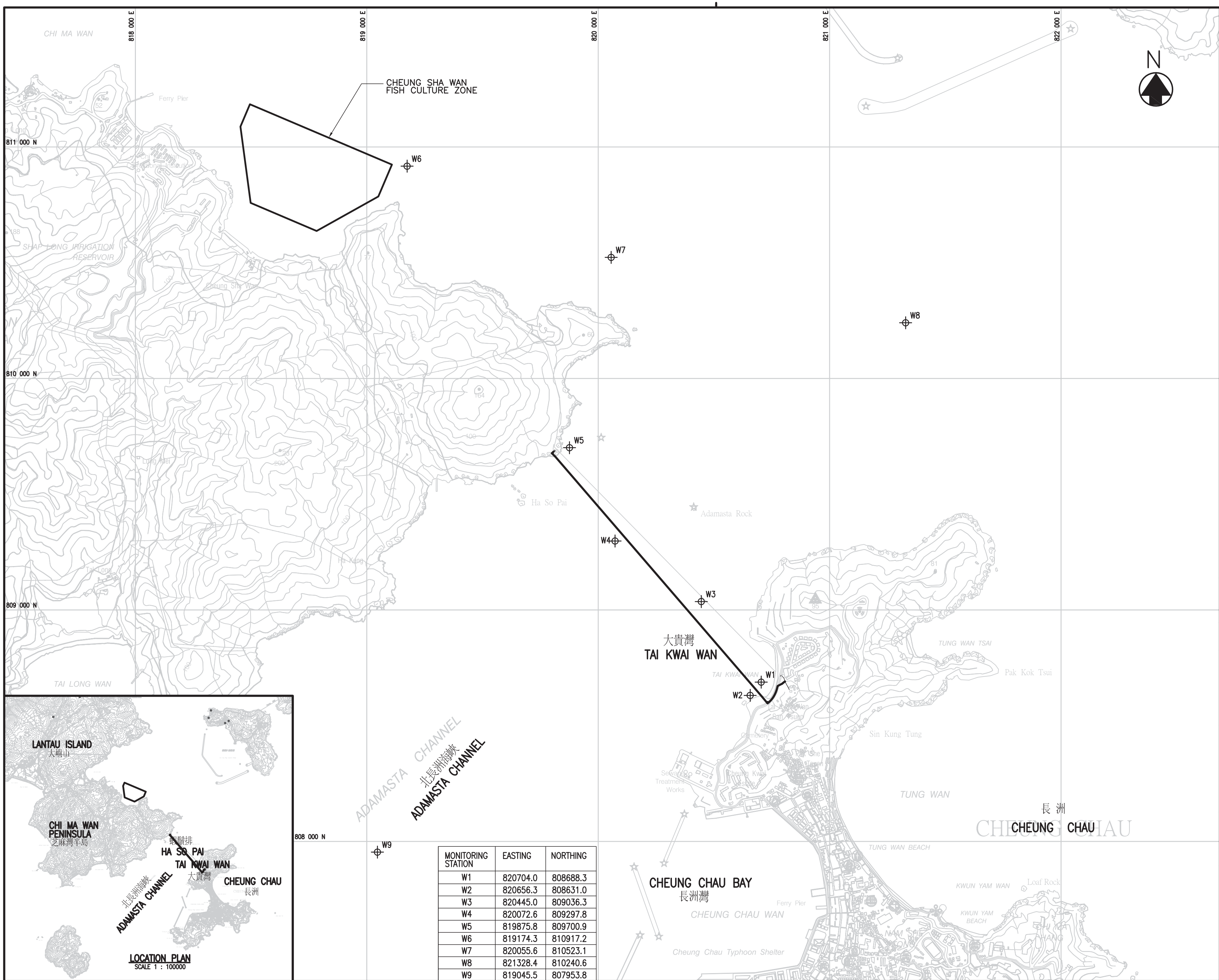
CRBC-CPP JV
Progress Update
<Based on Rev.O; file A076>

File: A077

Early bar
Target bar
Progress bar
Start milestone point
Finish milestone poir

Appendix D

Monitoring Locations Designated in the EM&A Manual



MONITORING STATION	EASTING	NORTHING
W1	820704.0	808688.3
W2	820656.3	808631.0
W3	820445.0	809036.3
W4	820072.6	809297.8
W5	819875.8	809700.9
W6	819174.3	810917.2
W7	820055.6	810523.1
W8	821328.4	810240.6
W9	819045.5	807953.8

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NOTE:

1. THE FINAL LOCATIONS OF THE MONITORING STATIONS SHALL BE PROPOSED BY THE ENVIRONMENTAL TEAM (ET) LEADER AND VERIFIED BY THE INDEPENDENT ENVIRONMENTAL CHECKER (IEC) BEFORE SUBMITTING TO EPD FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY MONITORING.

LEGEND:

PROPOSED SUBMARINE FRESH WATER MAIN

W1 WATER QUALITY MONITORING STATION

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	TL	FD	SZ	WLS	
Date	10/09	10/09	10/09	10/09	

Approved

Agreement No.
CE 1/2008 (WS)

Agreement Title
IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU – INVESTIGATION

Drawing Title
LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

Drawing No.
FIGURE 2.1

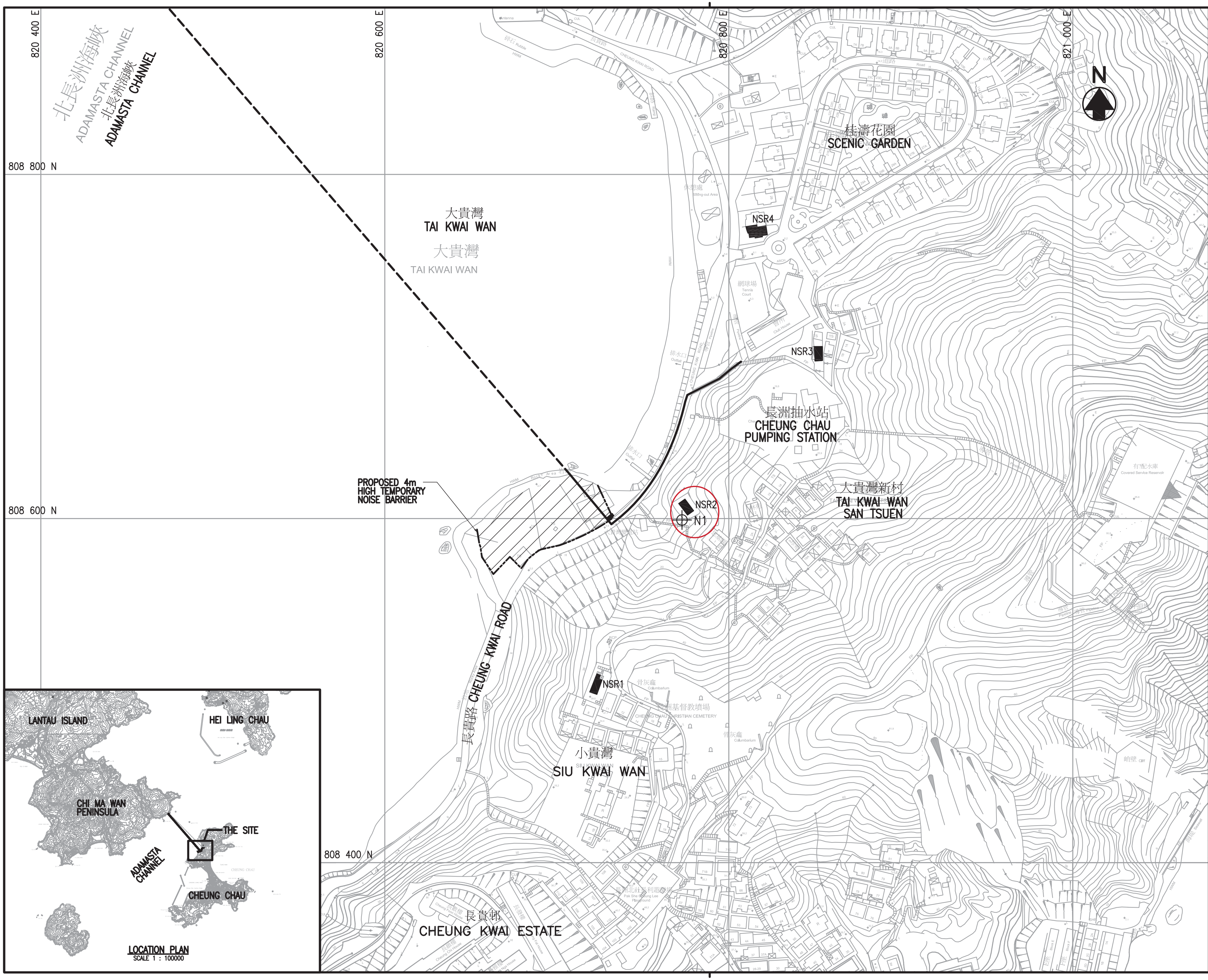
Revision

Scale
A3 1:15000

水務署
Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

C:\Cygnet\Cache\382831\FIGURE 2.1.dwg, 1/29/2010 3:11:01 PM



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LEGEND :

- PROPOSED SUBMARINE FRESH WATER MAIN
- PROPOSED LAND-BASED FRESH WATER MAIN
- NSR1 REPRESENTATIVE NOISE SENSITIVE RECEIVER
- PROPOSED LAUNCHING SITE AND WORKS AREA
- PROPOSED TEMPORARY NOISE BARRIER
- N1 NOISE MONITORING STATION

Revision	Date	Description			Initial
	Designed	Checked	Drawn		Checked
Initial	TL	FD	SZ		WLS
Date	10/09	10/09	10/09		10/09

Approved

Agreement No. CE 1/2008 (WS)

Agreement Title
IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU – INVESTIGATION

Drawing Title
LOCATIONS OF PROPOSED NOISE MONITORING STATION AND NOISE SENSITIVE RECEIVERS

Drawing No. FIGURE 6.1

Revision

Scale A3 1:2000

水務署 Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

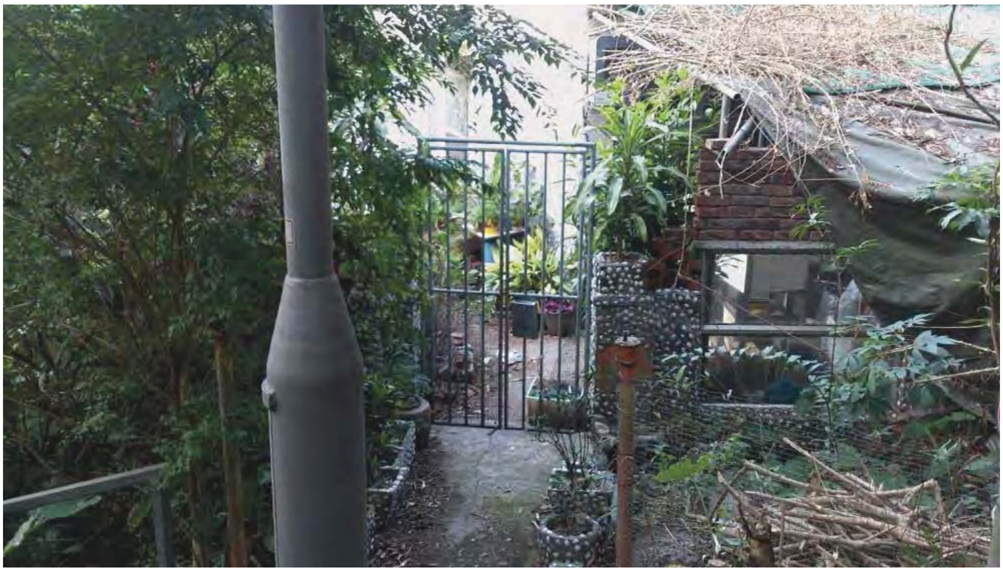

Photo 1: View from the light pole (proposed N1a) to the NSR-N1.

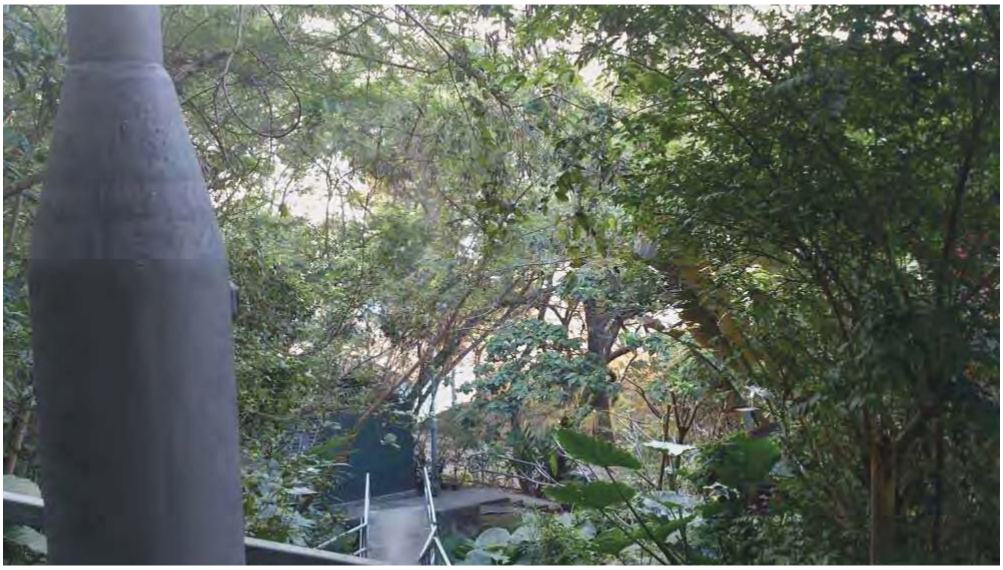

Photo 2: View from the light pole (proposed N1a) to the construction site

Appendix E

Monitoring Equipment Calibrated Certificates and Laboratory Certificates

Certificate of Calibration
校正證書

Certificate No. : C162177
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-0843)   Date of Receipt / 收件日期 : 14 April 2016

Description / 儀器名稱	:	Integrating Sound Level Meter (EQ006)
Manufacturer / 製造商	:	Brüel & Kjær
Model No. / 型號	:	2238
Serial No. / 編號	:	2285762
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C   Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 25 April 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany

Tested By 測試 : H T Wong
Technical Officer

Certified By 核證 : K C Lee
Project Engineer

Date of Issue 簽發日期 : 27 April 2016

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。 局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C162177
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
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	C160077
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.
6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

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	94.2

6.1.1.2 After Self-calibration

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	94.0	± 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	94.0 (Ref.)
				104.00		104.0
				114.00		113.9

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

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c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C162177
證書編號

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	94.0	Ref.
	L_{ASP}		S			94.0	± 0.1
	L_{AIP}		I			94.1	± 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	55.1	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	91.0	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C162177
證書編號

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	91.5	-3.0 ± 1.5
					63 Hz	93.4	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	92.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.9	-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	Integrating Time	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	100.0	± 0.5
						$1/10^2$		90	89.9	± 0.5
			60 sec.			$1/10^3$		80	79.2	± 1.0
			5 min.			$1/10^4$		70	69.2	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812705

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

- Uncertainties of Applied Value :

94 dB	: 31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 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 Certificate 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 Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C162125
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-0843)

Date of Receipt / 收件日期 : 14 April 2016

Description / 儀器名稱 : Acoustical Calibrator (EQ082)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2713428
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 22 April 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : H T Wong
測試 Technical Officer

Certified By : K C Lee
核證 Project Engineer

Date of Issue : 25 April 2016
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。 局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C162125
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 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	C153519
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

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	114.1		

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 Certificate 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 Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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輝創工程有限公司 – 校正及檢測實驗所
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Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1614297
CLIENT:	ACTION UNITED ENVIRO SERVICES	**SUB-BATCH:**	0
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	**LABORATORY:**	HONG KONG
		DATE RECEIVED:	11/04/2016
		DATE OF ISSUE:	18/04/2016

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	Professional DSS
Serial No.:	15H102620/ 15H103928
Equipment No.:	EQW018
Date of Calibration:	18 April, 2016

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.

R. Chee

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

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RIGHT SOLUTIONS | RIGHT PARTNER

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1614297
Sub-Batch: 0
Date of Issue: 18/04/2016
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 18 April, 2016 Date of next Calibration: 18 July, 2016

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	141.3	-3.8
6667	6399	-4.0
12890	12596	-2.3
58670	55890	-4.7
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.00	2.98	-0.02
5.06	4.93	-0.13
9.01	8.93	-0.08
	Tolerance Limit (mg/L)	±0.20

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.08	+0.08
7.0	7.05	+0.05
10.0	10.01	+0.01
	Tolerance Limit (pH unit)	±0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.08	--
10	9.95	-0.5
20	19.80	-1.0
30	29.89	-0.4
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1614297
Sub-Batch: 0
Date of Issue: 18/04/2016
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 18 April, 2016 Date of next Calibration: 18 July, 2016

Parameters:

Temperature

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

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10	10.2	+0.2
20	21.0	+1.0
40	40.1	+0.1
	Tolerance Limit (°C)	±2.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.2	--
4	3.8	-5.0
40	37.0	-7.5
80	78.6	-1.8
400	377.1	-5.7
800	738.3	-7.7
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd
ALS Environmental

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence
此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求，
of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as
獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定
listed in the HOKLAS Directory of Accredited Laboratories within the test category of
測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作
quality management system (see joint IAF-ILAC-ISO Communiqué).
(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : HOKLAS **066**
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L 000552

Appendix F

Event and Action Plan

Table 2.6 Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action Level being exceeded by one sampling day	1. Repeat in-site measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures. submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on the mitigation measures to be implemented. 3. Assess effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER. 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Ensure mitigation measures are implemented. 7. Prepare to increase the monitoring frequency to daily. 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on the mitigation measures to be implemented. 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days. 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC, contractor, AFCD and EPD. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC, ER and Contractor. 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures. 2. Request Contract to critically review the working methods. 3. Make agreement on the mitigation measures to be implemented. 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days. 6. Implement the agreed mitigation measures.

Event	ET Leader	IEC	ER	Contractor
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC, contractor, AFCD and EPD. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC, ER and Contractor. 6. Ensure mitigation measures are implemented. 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures. 2. Request Contractor to critically review the working methods. 3. Make agreement on the mitigation measures to be implemented. 4. Assess the effectiveness of the implemented mitigation measures. 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until no exceedance of Limit Level.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days. 6. Implement the agreed mitigation measures. 7. As directed by the ER, to slow down or to stop all or part of the work or construction activities.

Table 6.3 Event/Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC, Contractor and ER 2. Carry out investigation and identify source 3. Report the results of investigation to the IEC, Contractor and ER 4. Discuss with the Contractor and formulate remedial measures 5. Increase 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 & ET accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of complaint in writing 2. Notify Contractor 3. Check monitoring data submitted by the ET 4. Require Contractor to propose remedial measures for the analysed noise problem 5. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to ER and IEC within three working days of notification 2. Liaise with the ER to ensure the effectiveness of the agreed mitigation 3. Amend proposal if required 4. 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. Check monitoring data submitted by ET 2. Discuss amongst ER, ET Leader and Contractor on the potential remedial actions 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER & ET accordingly 4. Supervise the implementation of remedial measures	1. Confirm receipt of notification of exceedance 2. Notify Contractor 3. Check monitoring data submitted by the ET 4. Require Contractor to propose remedial measures for the analysed noise problem 5. Discuss with ET, IEC and Contractor on proposed remedial actions to be implemented 6. Ensure remedial measures are properly implemented 7. Assess the effectiveness of the remedial actions and keep the Contractor informed 8. 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 ER within 3 working days of notification 3. Liaise with the ER to ensure the effectiveness of the agreed mitigation 4. Amend proposal if required 5. Implement the agreed proposals 6. Resubmit proposals if problem still not under control 7. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Appendix G

Impact Monitoring Schedule

Monitoring Schedule for the Reporting Period – June 2016

Date		Noise (Leq_{30min})	Water Quality
Wed	1-June-16		
Thu	2-June-16	✓	✓
Fri	3-June-16		
Sat	4-June-16		✓
Sun	5-June-16		
Mon	6-June-16		✓
Tue	7-June-16		
Wed	8-June-16	✓	✓
Thu	9-June-16		
Fri	10-June-16		✓
Sat	11-June-16		
Sun	12-June-16		
Mon	13-June-16		✓
Tue	14-June-16		
Wed	15-June-16	✓	✓
Thu	16-June-16		
Fri	17-June-16		✓
Sat	18-June-16		
Sun	19-June-16		
Mon	20-June-16		✓
Tue	21-June-16		
Wed	22-June-16		✓
Thu	23-June-16		
Fri	24-June-16	✓	✓
Sat	25-June-16		
Sun	26-June-16		
Mon	27-June-16	✓	✓
Tue	28-June-16		
Wed	29-June-16		✓
Thu	30-June-16		

Marine Water Quality Monitoring Schedule for The Reporting Period

Scheduled Monitoring Day		Tides of Cheung Chau		Proposal Sampling Time	
		Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
2-June-16	Thu	10:10	16:22	08:40 – 11:40	14:52 – 17:52
4-June-16	Sat	11:39	18:20*	10:09 – 13:09	16:30 – 19:30
6-June-16	Mon	13:09	06:23*	11:39 – 14:39	08:00 – 11:00
8-June-16	Wed	14:42	07:47*	13:12– 16:12	08:00 – 11:00
10-June-16	Fri	16:12	09:11*	14:42 – 17:42	08:00 – 11:00
13-June-16	Mon	7:26*	12:40	08:00 – 11:00	11:10 – 14:10
15-June-16	Wed	9:40	15:48	08:10 – 11:10	14:18 – 17:18
17-June-16	Fri	10:45	17:23	09:15 – 12:15	15:53 – 18:53
20-June-16	Mon	12:15	05:24*	11:00– 14:00	08:00 – 11:00
22-June-16	Wed	13:29	06:41*	11:59– 14:59	08:00 – 11:00
24-June-16	Fri	14:49	08:06*	13:19 – 16:49	08:00 – 11:00
27-June-16	Mon	17:09	10:38	15:39 – 18:39	09:08 – 12:08
29-June-16	Wed	08:00*	13:51	08:00 – 11:00	12:21 – 15:21

* Due to safety reason, the sampling time will be changed at 08:00 or 16:30

Monitoring Schedule for next Reporting Period – July 2016

Date		Noise (Leq_{30min})	Water Quality
Fri	1-July-16		
Sat	2-July-16		✓
Sun	3-July-16		
Mon	4-July-16		
Tue	5-July-16		✓
Wed	6-July-16		
Thu	7-July-16	✓	✓
Fri	8-July-16		
Sat	9-July-16		✓
Sun	10-July-16		
Mon	11-July-16		
Tue	12-July-16	✓	✓
Wed	13-July-16		
Thu	14-July-16		✓
Fri	15-July-16		
Sat	16-July-16		✓
Sun	17-July-16		
Mon	18-July-16	✓	✓
Tue	19-July-16		
Wed	20-July-16		✓
Thu	21-July-16		
Fri	22-July-16		✓
Sat	23-July-16		
Sun	24-July-16		
Mon	25-July-16		
Tue	26-July-16	✓	✓
Wed	27-July-16		
Thu	28-July-16		✓
Fri	29-July-16		
Sat	30-July-16		✓
Sun	31-July-16		

Marine Water Quality Monitoring Schedule for next Reporting Period

Scheduled Monitoring Day		Tides of Cheung Chau		Proposal Sampling Time	
		Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
2-July-16	Sat	10:40	17:26	09:10 – 12:10	15:56 – 18:56
5-July-16	Tue	12:57	06:04*	11:27 – 14:27	08:00 – 11:00
7-July-16	Thu	14:22	07:31*	12:52 – 15:52	08:00 – 11:00
9-July-16	Sat	15:38	08:53*	14:08– 17:08	08:00 – 11:00
12-July-16	Tue	17:56	11:46	16:26 – 19:26	10:16 – 13:16
14-July-16	Thu	8:57*	15:29	08:00 – 11:00	12:59 – 15:59
16-July-16	Sat	10:10	17:16	08:40 – 11:40	15:46 – 18:46
18-July-16	Mon	18:34	11:18	16:30 – 19:30	09:48 – 12:48
20-July-16	Wed	12:33	05:45*	11:03– 14:03	08:00 – 11:00
22-July-16	Fri	13:54	07:16*	12:24– 15:24	08:00 – 11:00
26-July-16	Tue	16:49	10:39	15:19 – 18:19	09:09 – 12:09
28-July-16	Thu	07:32*	13:46	08:00 – 11:00	12:16 – 15:16
30-July-16	Sat	09:39	16:35	08:09 – 11:09	15:05 – 18:05

* Due to safety reason, the sampling time will be changed at 08:00 or 16:30

Appendix H

Database of Monitoring Results

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **2-Jun-16**

Date / Time	Location	Tide*	Co-ordinates East	Co-ordinates North	Water Depth (m)	Sampling Depth (m)	Temp (℃)	DO Conc (mg/L)	DO Saturation (%)	Turbidity (NTU)	Salinity (ppt)	pH (unit)	SS (mg/l)
15:14	W1	MF	820701	808676	2.7	1.35	26.6	6.16	90.6	2.8	26	8.93	2
							26.6	6.18	90.8	2.6	26	8.93	3
15:13	W2	MF	820656	808634	2.6	1.30	26.6	6.41	94.2	2.5	26.1	8.93	3
							26.6	6.35	93.3	2.4	26	8.93	3
15:16	W3	MF	820447	809040	8.2	1.00	26.2	6.68	99.1	1.5	28.4	8.93	3
							26.1	6.5	96.5	1.6	28.6	8.93	4
						4.10	25.2	6.35	94.7	2.9	30.6	8.87	3
							25.2	6.49	95.9	2.8	30.8	8.88	3
						7.20	25	6.48	96.4	3.2	32	8.93	3
							25	6.5	94.8	3.2	32	8.93	3
15:23	W4	MF	820076	809293	8.4	1.00	27.2	5.93	86.8	1.5	23.7	8.18	3
							27.27	6.08	88.9	1.4	23.6	8.17	4
						4.20	27.39	6.24	92.1	2.9	24.8	8.24	3
							27.41	6.27	92.5	2.8	24.8	8.24	3
						7.40	26.25	5.99	89.8	3.9	30.1	8.11	3
							26.6	6.24	93.5	3.8	28.9	8.15	4
15:31	W5	MF	819866	809709	4.7	1.00	26.6	6.44	94.7	2.4	26.2	8.91	4
							26.57	6.36	93.5	2.4	26.3	8.92	3
						3.70	26.41	6.52	95.9	2.6	26.9	8.92	3
							26.37	6.51	95.9	2.5	27.1	8.91	4
16:09	W6	MF	819177	810911	6.8	1.00	27.04	6.46	94.3	1.2	24	8.19	3
							27	6.4	93.5	1.3	24.3	8.19	4
						3.40	27.05	6.3	92.8	1.8	25.7	8.23	4
							27.06	6.37	94.0	1.7	25.6	8.23	4
						5.80	26.73	6.09	90.6	2.5	27.8	8.2	3
							26.59	5.99	89.2	2.6	28.3	8.18	4
15:56	W7	MF	820054	810510	7.9	1.00	27.05	6.56	95.8	1.5	23.8	8.18	4
							27.01	6.49	94.9	1.6	24.3	8.18	3
						3.95	27.1	6.4	94.2	1.9	25.3	8.23	4
							27.08	6.3	92.9	2	25.5	8.23	3
						6.90	26.88	6.14	91.1	2.5	27	8.22	4
							26.83	6.1	90.5	2.6	27.3	8.21	4
15:44	W8	MF	821320	810246	8.9	1.00	27.21	6.22	90.9	1.8	23.7	8.16	4
							27.21	6.18	90.3	1.7	23.6	8.16	3
						4.45	27.36	6.21	91.8	2.6	25.3	8.22	3
							27.25	6.06	89.4	2.5	25.2	8.19	2
						7.90	26.78	6.04	89.8	3.5	27.6	8.05	3
							26.87	6.12	91	3.6	27.3	8.06	3
15:08	W9	MF	819046	807945	9.0	1.00	26.52	6.18	91.3	1.5	27.3	8.89	3
							26.48	6.18	91.4	1.4	27.3	8.89	4
						4.50	26.19	6.25	92.4	2.6	28	8.9	3
							26.12	6.18	91.3	2.5	28.3	8.9	3
						8.00	25.29	6.18	91.2	3.5	30.4	8.85	3
							25.24	6.2	91.8	3.4	30.6	8.84	3
10:17	W1	ME	820698	808677	2.7	1.35	27.6	6.62	95.9	0.46	21.2	8.19	3
							27.6	6.52	94.5	0.63	21.4	8.18	3
10:18	W2	ME	820651	808633	2.8	1.40	27.5	6.59	95.6	0.52	21.8	8.18	5
							27.5	6.54	95	0.51	21.7	8.18	5
10:09	W3	ME	820445	809041	8.6	1.00	27.6	6.6	95.1	0.72	20.4	8.21	4
							27.6	6.57	94.8	0.65	20.6	8.2	5
						4.30	27.4	6.21	91.4	0.57	24.3	8.15	5
							27.3	5.68	83.7	0.83	24.7	8.14	5
						7.60	26.2	5.47	81.9	4	29.9	8.11	5
							26	5.29	79.7	3.2	31.1	8.13	5
9:57	W4	ME	820079	809290	8.5	1.00	27.6	6.55	94.3	0.57	20.4	8.23	5
							27.6	6.52	94.3	0.53	20.8	8.22	4
						4.25	27.35	5.6	82.3	1.1	24.4	8.15	5
							27.37	5.64	82.8	0.46	24.2	8.16	5
						7.50	26.94	6.08	90.2	1.4	26.7	8.1	5
							26.77	6.02	89.5	1.7	27.7	8.07	5
9:44	W5	ME	819860	809710	4.8	1.00	26.6	6.44	94.7	3.6	26.2	8.91	4
							26.57	6.36	93.5	3.7	26.3	8.92	5
						3.80	26.41	6.52	95.9	3.8	26.9	8.92	3
							26.37	6.51	95.9	4	27.1	8.91	4
9:12	W6	ME	819178	810915	6.7	1.00	27.56	6.45	93.6	0.5	21.7	8.21	4
							27.56	6.48	94.3	0.48	22.3	8.19	5
						3.35	27.11	6.21	92	1.1	25.9	8.11	4
							26.99	6.18	91.8	1.3	26.7	8.1	4
						5.70	26.07	6.08	91.3	5.1	30.8	8.12	4
							25.96	6.04	90.7	5.9	31.5	8.13	4
9:20	W7	ME	820057	810519	7.9	1.00	27.56	6.49	94	0.77	21.6	8.18	4
							27.57	6.43	92.9	1.5	21	8.19	4
						3.95	27	6.34	94	1.3	26.8	8.1	4
							27.2	6.34	93.9	0.83	25.9	8.12	5
						6.90	25.99	6.13	92.3	6.1	31.5	8.12	4
							25.85	6.09	91.8	9	32.3	8.12	3
9:31	W8	ME	821314	810247	8.7	1.00	27.74	6.72	99	0	23.6	8.14	4
							27.74	6.69	98.5	0	23.6	8.14	3
						4.35	27.67	5.87	87	0	24.8	8.13	4
							27.66	5.87	86.9	0.24	24.8	8.13	3
						7.70	26.92	6.14	91.2	5.5	27.1	7.96	4
							26.9	6.03	89.6	5.7	27.1	7.95	4
10:27	W9	ME	819047	807946	8.9	1.00	27.59	6.4	93.5	0.37	22.8	8.17	4
							27.59	6.37	93.1	0.12	22.8	8.17	4
						4.45	27.27	5.92	87.1	0.26	24.7	8.12	5
							27.28	5.84	85.9	0.19	24.6	8.12	4
						7.90	26.31	5.78	86.4	5	29.4	8.05	4
							25.95	5.73	86.2	6	31.5	8.07	4

MF - Middle Flood tida

ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **4-Jun-16**

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
16:48	W1	MF	820704	808680	2.7	1.35	28.6	8.66	125.6	2.6	26.01	8.41	5
							28.6	8.64	125.3	2.6	26.01	8.42	6
16:46	W2	MF	820656	808633	2.6	1.30	28.5	8.87	136.8	2.9	26.05	8.36	5
							28.4	8.87	136.9	2.9	26.05	8.36	5
16:55	W3	MF	820442	809036	8.5	1.00	28.3	8.67	133.5	1.5	26.55	8.28	5
							28.3	8.65	128.6	1.5	26.56	8.28	5
						4.25	27.9	6.44	128.5	1.9	29.42	8.15	4
							27.8	6.42	96.3	1.9	29.42	8.16	4
						7.50	27.2	5.74	86.5	2.3	32.22	8.05	4
							27.2	5.76	86.4	2.3	32.21	8.04	3
17:06	W4	MF	820076	809293	8.6	1.00	28.7	8.57	128.6	1.8	26.77	8.36	4
							28.7	8.56	128.4	1.7	26.78	8.36	5
						4.30	27.8	6.39	94.2	2.5	29.82	8.25	5
							27.8	6.38	94.3	2.6	29.82	8.25	5
						7.60	27.2	6.18	91.6	3.2	32.58	8.15	5
							27.2	6.17	91.7	3.3	32.58	8.15	4
17:17	W5	MF	819864	809709	4.8	1.00	27.8	8.23	119.5	1.1	26.87	8.38	6
							27.8	8.22	119.3	1.2	26.87	8.38	6
						3.80	27.4	6.44	96.5	1.5	29.68	8.19	6
							27.4	6.45	96.7	1.6	29.67	8.18	6
17:48	W6	MF	819173	810920	6.9	1.00	27.6	8.31	122.3	1.7	26.36	8.18	6
							27.6	8.3	122	1.7	26.35	8.18	5
						3.45	27.1	7.69	114.6	2.2	27.88	8.12	6
							27.1	7.68	114.5	2.4	27.87	8.12	5
						5.90	26.8	6.57	98.4	2.7	29.61	8.05	5
							26.8	6.58	98.5	2.8	29.62	8.05	4
17:39	W7	MF	820052	810509	8.1	1.00	27	8.19	117.2	0.9	26.34	8.26	4
							27.1	8.18	117.1	0.8	26.34	8.26	4
						4.05	26.8	7.06	99.5	1.6	27.08	8.09	3
							26.8	7.05	99.6	1.8	27.07	8.09	4
						7.10	26.6	6.15	88.3	2.4	29.86	7.95	4
							26.6	6.16	90	2.4	29.85	7.95	4
17:28	W8	MF	821331	810248	9.0	1.00	28.2	8.75	132.6	1.2	26.51	8.39	4
							28.2	8.76	132.7	1.3	26.51	8.38	5
						4.50	27.5	6.15	92.2	1.6	29.56	8.15	3
							27.5	6.15	92.3	1.7	29.54	8.15	4
						8.00	26.6	5.71	84.5	2.9	33.52	7.92	5
							26.6	5.72	84.6	2.8	33.54	7.92	3
16:41	W9	MF	819046	807945	8.8	1.00	28.3	9.48	130.8	1.4	27.01	8.32	5
							28.3	9.46	130.5	1.5	27.01	8.32	5
						4.40	27.8	6.25	99.9	2.5	29.28	8.12	4
							27.8	6.24	86.4	2.5	29.28	8.11	4
						7.80	26.6	5.32	82.1	3.4	32.46	8.05	4
							26.6	5.3	81.8	3.3	32.45	8.04	5
11:27	W1	ME	820711	808678	2.8	1.40	28.9	8.87	132.9	2.1	26.01	8.37	5
							28.9	8.88	133.2	2.2	26.01	8.37	4
11:29	W2	ME	820654	808639	2.9	1.45	28.9	8.79	131.5	2.3	26.08	8.36	4
							28.9	8.79	131.6	2.3	26.08	8.36	3
11:18	W3	ME	820453	809036	8.5	1.00	28.6	8.89	133.5	1.3	26.66	8.26	4
							28.6	8.88	133.3	1.3	26.67	8.26	3
						4.25	27.5	6.59	98.2	1.5	29.56	8.22	3
							27.4	6.58	98	1.6	29.56	8.22	3
						7.50	26.5	5.88	88.4	2.9	33.83	8.19	6
							26.5	5.87	88.3	3	33.83	8.19	5
11:09	W4	ME	820076	809294	8.4	1.00	28.5	8.84	132.2	1.6	26.54	8.26	4
							28.5	8.83	131.9	1.5	26.55	8.26	3
						4.20	27.6	6.51	97.4	1.7	29.54	8.24	4
							27.5	6.5	97.2	1.7	29.54	8.24	4
						7.40	26.5	5.74	85.1	3.4	33.88	8.22	3
							26.5	5.76	85.4	3.2	33.87	8.21	3
10:58	W5	ME	819863	809706	4.9	1.00	28.4	8.6	128.2	1.6	26.6	8.18	4
							28.4	8.59	128.1	1.6	26.6	8.17	4
						3.90	27.1	6.55	98	1.7	29.37	8.22	4
							27.1	6.55	97.9	1.8	29.37	8.22	3
10:19	W6	ME	819162	810908	6.7	1.00	28.4	8.35	125	1.4	27.22	7.96	5
							28.4	8.34	124.9	1.4	27.22	7.96	5
						3.35	28.3	7.77	116.2	1.6	27.51	8.15	4
							28.3	7.77	116.1	1.7	27.5	8.14	3
						5.70	27.6	6.45	96.3	1.8	29.23	8.15	3
							27.5	6.34	94.6	1.9	29.22	8.15	5
10:31	W7	ME	820057	810524	7.9	1.00	29	8.49	127.7	2.6	26.53	8.19	5
							29	8.48	127.6	2.5	26.52	8.19	5
						3.95	28.3	7.26	108.6	2.2	27.45	8.24	5
							28.3	7.25	108.5	2.3	27.44	8.24	4
						6.90	27.8	6.11	91.4	3.2	29.02	8.19	5
							27.8	6.1	91.2	3.3	29.03	8.19	6
10:46	W8	ME	821331	810246	8.7	1.00	28.4	8.71	130	1.4	26.77	8.3	4
							28.3	8.7	129.8	1.5	26.78	8.3	4
						4.35	27.6	6.04	90.5	1.7	29.87	8.27	4
							27.6	6.05	90.5	1.7	29.87	8.27	5
						7.70	26.4	5.59	83.6	2.8	33.82	8.07	4
							26.4	5.58	83.4	2.9	33.82	8.07	4
11:33	W9	ME	819040	807948	8.9	1.00	28.8	9.76	146	1.99	26.21	8.4	5
							28.8	9.75	145.9	2.01	26.21	8.39	5
						4.45	27.9	6.63	99.9	1.7	29.61	8.41	5
							27.8	6.64	99.5	1.8	29.62	8.42	5
						7.90	26.9	5.33	81.9	1.5	32.78	8.33	5
							26.9	5.32	81.6	1.6	32.77	8.33	4

MF - Middle Flood tida
ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **6-Jun-16**

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
10:11	W1	MF	820705	808690	2.7	1.35	28.3	8.55	118.8	2.2	26.03	8.22	4
							28.3	8.54	118.7	2.3	26.03	8.23	4
10:13	W2	MF	820652	808638	2.6	1.30	28.1	8.57	120.2	2.6	26.11	8.49	3
							28.1	8.57	120.3	2.6	26.11	8.48	4
10:06	W3	MF	820457	809036	8.3	1.00	28.2	8.37	125.6	1.3	26.35	8.36	5
							28.2	8.34	125.6	1.3	26.35	8.36	5
						4.15	27.5	6.55	98.5	1.6	29.42	8.16	4
							27.5	6.54	98.5	1.6	29.42	8.16	4
						7.30	27.1	5.98	88.9	2.8	32.1	8.02	5
							27.1	5.97	88.7	2.8	32.09	8.03	5
9:59	W4	MF	820077	809298	8.2	1.00	28.9	8.35	124.5	1.9	26.58	8.45	3
							28.9	8.34	124.4	1.9	26.58	8.44	2
						4.10	27.6	6.43	95.6	2.5	29.67	8.26	3
							27.6	6.42	95.5	2.4	29.67	8.25	2
						7.20	26.8	5.73	86.5	2.6	32.38	8.05	3
							26.8	5.72	86.5	2.6	32.37	8.05	3
9:50	W5	MF	819885	809707	4.5	1.00	27.6	8.18	112.8	1.3	26.88	8.25	4
							27.6	8.17	112.6	1.4	26.84	8.25	4
						3.50	27.2	6.56	94.2	3.1	29.36	8.15	4
							27.2	6.55	94	3.2	29.35	8.15	4
9:10	W6	MF	819162	810908	6.8	1.00	27.4	8.22	115.6	1.8	26.18	8.09	3
							27.4	8.23	115.6	1.7	26.18	8.09	3
						3.40	27	7.68	106.5	2.6	27.59	7.95	3
							27	7.69	106.4	2.5	27.58	7.95	4
						5.80	26.4	6.43	95.7	2.8	29.51	7.86	4
							26.4	6.42	95.5	2.8	29.51	7.87	4
9:23	W7	MF	820057	810531	8.1	1.00	26.8	8.05	115.4	1.6	26.33	8.36	4
							26.7	8.04	115.3	1.6	26.34	8.34	3
						4.07	26.4	7.12	102.3	1.8	27.59	8.16	6
							26.4	7.13	102.2	1.9	27.59	8.15	5
						7.14	26.2	6.25	86.5	2.6	30.04	7.92	6
							26.2	6.24	86.3	2.6	30.04	7.92	5
9:38	W8	MF	821334	810246	8.6	1.00	28.1	8.89	134.5	1.6	26.26	8.25	4
							28.1	8.87	134.2	1.5	26.26	8.24	4
						4.30	27.6	6.25	93.6	1.9	29.12	8.05	2
							27.6	6.24	93.5	1.9	29.12	8.04	4
						7.60	26.9	5.89	86.5	2.6	32.55	7.82	6
							26.9	5.89	86.4	2.5	32.56	7.81	6
10:17	W9	MF	819048	807960	8.7	1.00	27.4	8.98	138.5	1.6	26.59	8.29	4
							27.4	8.99	138.6	1.5	26.58	8.28	5
						4.35	26.9	7.12	103.2	1.8	29.04	8.06	5
							26.9	7.13	103.4	1.9	29.05	8.05	5
						7.70	26.4	5.84	84.3	2.3	32.06	7.81	5
							26.4	5.84	84.2	2.3	32.05	7.81	5
12:15	W1	ME	820705	808691	2.8	1.40	28.2	8.63	132.9	1.6	26.52	8.19	3
							28.2	8.63	133.2	1.5	26.52	8.18	4
12:14	W2	ME	820652	808638	2.7	1.35	28.4	8.69	131.5	1.2	26.34	8.26	4
							28.4	8.69	131.6	1.3	26.34	8.25	4
12:17	W3	ME	820458	809037	8.6	1.00	28.5	8.79	132.3	1.5	26.18	8.04	4
							28.5	8.78	132.2	1.6	26.18	8.05	5
						4.30	27.6	6.77	96.5	1.8	29.22	7.99	3
							27.6	6.76	96.5	1.9	29.22	7.98	3
						7.60	26.5	5.87	85	2.6	32.18	7.83	6
							26.5	5.86	84.8	2.5	32.18	7.82	6
12:28	W4	ME	820079	809298	8.4	1.00	28.1	8.64	128.5	1.4	26.19	8.29	6
							28.1	8.65	128.4	1.4	26.19	8.28	4
						4.20	27.5	6.52	96.2	1.8	29.67	8.14	6
							27.5	6.51	96.1	1.8	29.68	8.14	6
						7.40	26.3	5.73	83.5	2.2	33.01	7.89	4
							26.3	5.73	83.4	2.3	33.02	7.88	5
12:37	W5	ME	819880	809702	4.8	1.00	27.8	8.39	126.5	1.5	26.53	8.36	5
							27.8	8.38	126.5	1.5	26.53	8.35	5
						3.80	26.8	6.59	96.6	1.8	29.59	8.16	6
							26.8	6.58	96.5	1.9	29.59	8.15	5
13:08	W6	ME	819174	810927	6.7	1.00	27.8	8.31	124.2	1.6	27.01	8.21	3
							27.8	8.3	124.4	1.6	27.02	8.21	5
						3.35	26.5	7.72	115.4	1.8	28.35	8.05	4
							26.5	7.71	115.2	1.8	28.36	8.06	4
						5.70	25.6	6.4	95.7	2.5	29.48	8.01	4
							25.6	6.32	94.3	2.5	29.48	8.01	4
12:55	W7	ME	820056	810538	8.1	1.00	28.2	8.41	126.8	2.3	26.21	8.36	4
							28.1	8.42	126.9	2.3	26.21	8.35	4
						4.05	27.5	7.31	107.6	2.5	27.49	8.18	5
							27.5	7.32	107.5	2.5	27.49	8.19	5
						7.10	26.9	6.25	92.5	3.1	29.05	8.05	6
							26.9	6.26	92.6	3.2	29.04	8.05	5
12:44	W8	ME	821338	810256	9.1	1.00	28.1	8.56	133.5	1.8	27.01	8.35	4
							28.2	8.57	133.6	1.8	27.03	8.34	4
						4.55	27.5	5.89	92.5	2.6	30.16	8.24	4
							27.5	5.88	92.4	2.6	30.14	8.24	5
						8.10	26.5	5.59	86.8	3	32.54	8.02	4
							26.5	5.58	86.8	3.1	32.53	8.02	5
12:09	W9	ME	819047	807970	8.9	1.00	27.5	8.85	132.5	1.5	26.53	8.34	4
							27.5	8.84	132.4	1.6	26.53	8.34	4
						4.45	26.3	6.73	97.6	1.8	29.85	8.21	4
							26.3	6.72	97.8	1.8	29.84	8.21	4
						7.90	25.5	5.44	84.3	2.3	33.54	8.06	5
							25.6	5.43	84.2	2.3	33.53	8.06	4

MF - Middle Flood tida

ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **8-Jun-16**

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
9:51	W1	MF	820706	808680	2.4	1.20	27.1	6.35	90.9	2.4	23.18	8.32	4
							27.1	6.25	89.5	2.5	23.26	8.31	6
9:52	W2	MF	820651	808633	2.5	1.25	27.1	6.11	87.5	2.4	23.58	8.3	6
							27	6.09	87.3	2.3	23.74	8.29	4
9:41	W3	MF	820449	809030	8.4	1.00	27.1	6.3	90.2	1.2	23.01	8.23	3
							27.1	6.23	89.1	1.2	23.07	8.33	3
						4.20	27.1	6.12	87.6	1.7	23.16	8.24	5
							27.1	6.12	87.6	1.8	23.16	8.25	4
						7.40	26.9	6.05	86.9	2.4	24.3	8.27	5
							26.9	6	86.2	2.3	24.35	8.27	6
9:37	W4	MF	820066	809291	8.3	1.00	27	6.64	95	1.3	23.41	8.23	3
							27	6.64	95	1.3	23.39	8.23	3
						4.15	26.8	6.33	90.7	1.7	24.56	8.2	4
							26.8	6.34	91	1.7	24.57	8.21	3
						7.30	26.9	6.11	87.6	2.0	24.4	8.23	4
							26.8	6.09	87.3	2.0	24.44	8.22	3
9:27	W5	MF	819871	809690	4.8	1.00	27.1	6.03	86.2	1.9	23.21	8.21	4
							27.1	6.03	86.2	2.0	23.22	8.21	4
						3.80	26.8	5.97	85.6	2.0	24.48	8.18	3
							26.8	5.92	84.9	2.1	24.49	8.17	4
8:56	W6	MF	819171	810910	6.4	1.00	26.9	6.51	93.5	1.3	24.43	7.89	4
							26.9	6.47	92.9	1.3	24.45	7.89	2
						3.20	26.3	6.24	90.3	1.7	27.41	7.91	4
							26.3	6.24	90.3	1.6	27.41	7.91	3
						5.40	26.3	6.07	87.9	2.1	27.8	7.95	4
							26.3	6.06	87.8	2.0	27.81	7.96	6
9:07	W7	MF	820041	810524	7.9	1.00	26.9	6.57	94.2	0.9	24.17	8.11	4
							26.9	6.55	94	1.0	24.35	8.1	4
						3.95	26.9	6.34	91	1.2	24.39	8.1	3
							26.9	6.35	91.1	1.3	24.44	8.1	4
						6.90	26.8	6.15	88.3	1.5	24.73	8.1	3
							26.8	6.16	88.6	1.6	24.72	8.1	3
9:17	W8	MF	821327	810241	8.7	1.00	27.2	6.3	90.2	0.8	22.83	8.21	4
							27.2	6.29	90	0.8	22.83	8.21	5
						4.35	27	6.19	88.6	1.1	23.77	8.18	4
							26.9	6.13	87.8	1.2	23.91	8.17	5
						7.70	26.8	6.04	86.6	1.2	24.52	8.16	5
							26.8	6.03	86.5	1.2	24.57	8.16	4
10:02	W9	MF	819046	807954	8.8	1.00	27	6.43	92.3	1.1	23.8	8.29	4
							27	6.44	92.4	1.1	23.84	8.3	2
						4.40	27	6.3	90.2	1.3	23.88	8.29	3
							27	6.31	90.4	1.4	23.89	8.29	4
						7.80	27	5.79	83	2.0	23.82	8.3	3
							27	5.96	85.4	2.0	23.81	8.29	3
13:50	W1	ME	820701	808682	2.6	1.30	28.2	6.01	85.7	2.5	19.08	8.4	5
							28.1	5.93	85	2.5	20.35	8.38	6
13:46	W2	ME	820646	808630	2.5	1.25	27.8	6.09	86.9	2.4	20.44	8.38	7
							27.7	6.04	86.2	2.4	20.99	8.35	7
14:00	W3	ME	820439	869031	8.5	1.00	27.1	6.36	92.3	1.2	25.6	8.28	5
							27.1	6.29	91.3	1.2	25.66	8.28	6
						4.25	27.1	6.22	90.3	1.6	25.73	8.28	6
							27.1	6.21	90.1	1.7	25.72	8.28	5
						7.50	27.1	6.12	88.8	1.9	25.77	8.27	5
							27.1	6.09	88.3	1.9	25.77	8.25	5
14:06	W4	ME	820063	809288	8.3	1.00	27.2	6.46	93.8	1.3	25.7	8.17	3
							27.2	6.41	93	1.3	25.71	8.2	3
						4.15	27.1	6.2	90	1.9	25.76	8.34	4
							27.1	6.21	90.2	1.9	25.76	8.33	4
						7.30	27.1	6.06	88	2.4	25.83	8.32	5
							27.1	6.06	88	2.4	25.83	8.32	6
14:17	W5	ME	819870	809686	4.9	1.00	27	6.09	88.1	1.9	25.56	8.32	3
							27	6.1	88.3	1.9	25.56	8.33	4
						3.90	27	5.99	86.6	2.1	25.62	8.32	3
							27	5.98	86.5	2.1	25.62	8.32	3
14:43	W6	ME	819178	810916	6.7	1.00	26.9	6.35	91.9	1.0	25.5	8.29	4
							26.9	6.34	91.5	1.1	25.48	8.37	4
						3.35	26.9	6.22	89.8	1.3	25.46	8.38	2
							26.9	6.23	89.9	1.3	25.48	8.37	3
						5.70	26.9	6.13	88.6	1.9	25.54	8.35	5
							26.9	6.02	87.1	1.9	25.55	8.35	4
14:32	W7	ME	820042	810543	8.0	1.00	27	6.47	93.6	0.9	25.4	8.34	6
							27	6.44	93	1.0	25.39	8.34	7
						4.00	27	6.26	90.5	1.0	25.41	8.34	5
							27	6.28	90.7	1.1	25.42	8.34	5
						7.00	26.9	6.13	88.3	1.4	25	8.25	5
							26.9	6.08	87.7	1.4	25.19	8.25	4
14:25	W8	ME	819328	810243	8.6	1.00	27	6.46	93.5	0.8	25.65	8.33	3
							27	6.43	93	0.9	25.65	8.33	4
						4.30	27	6.25	90.5	1.0	25.57	8.33	3
							27	6.26	90.5	1.0	25.51	8.33	3
						7.60	27	6.13	88.5	1.7	25.42	8.33	8
							27	6.09	88.1	1.7	25.45	8.33	8
13:34	W9	ME	819047	807950	8.7	1.00	27.8	6.5	92.8	1.1	20.76	8.48	4
							27.8	6.56	93.7	1.2	20.77	8.48	4
						4.35	27.8	6.45	92	1.3	20.47	8.45	3
							27.8	6.46	92	1.3	20.29	8.45	3
						7.70	27.7	6.13	87.5	1.5	21.07	8.41	4
							27.7	6.14	87.7	1.5	21.11	8.41	5

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

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **11-Jun-16**

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
9:10	W1	MF	820706	808676	2.8	1.40	27.2	6.28	88.2	3.2	19.67	8.2	<1
							27.2	6.27	88.2	3.1	19.67	8.25	1
9:11	W2	MF	820659	808630	2.7	1.35	27.2	6.29	88.5	2.5	19.89	8.27	<1
							27.2	6.31	88.8	2.6	19.81	8.26	<1
9:04	W3	MF	820440	809020	8.5	1.00	27.1	6.32	89	1.2	20.44	8.22	2
							27.2	6.28	88.8	1.3	20.61	8.19	1
						4.25	27.2	6.18	87.4	2.8	20.69	8.27	1
							27.2	6.11	86.7	2.9	21.44	8.24	<1
						7.50	27	5.96	84.6	3.1	21.98	8.22	<1
							27	5.95	84.5	3.2	22.01	8.22	2
8:58	W4	MF	820061	809294	8.4	1.00	27.3	6.28	88.2	1.6	19.52	8.23	2
							27.3	6.3	88.5	1.5	19.52	8.21	2
						4.20	27.3	6.13	86.6	2.2	20.36	8.24	1
							27.2	6.19	87.3	2.3	20.38	8.17	1
						7.40	27	5.98	84.8	2.8	21.91	8.22	2
							27	5.97	84.7	2.7	21.99	8.21	2
8:51	W5	MF	819873	809706	4.8	1.00	27.2	6.1	85.9	1.5	20.03	8.14	1
							27.3	6.13	86.5	1.4	20.04	8.3	2
						3.80	27.3	6.06	85.7	2.9	20.27	8.17	<1
							27.3	6.07	85.8	2.8	20.48	8.21	2
8:24	W6	MF	819177	810916	6.5	1.00	27.9	6.2	86.2	2	21.67	8.11	2
							27.9	6.18	85.8	2.1	21.68	8.11	1
						3.25	27.9	6.09	84.8	2.5	21.69	8.13	<1
							27.9	6.08	84.8	2.6	21.67	8.12	2
						5.50	28	6.06	84.4	3.4	21.81	8.22	2
							28	6.03	84	3.5	21.81	8.22	2
8:31	W7	MF	820041	810526	7.9	1.00	27.3	6.25	88.2	1.4	20.18	8.09	1
							27.3	6.24	88	1.5	20.17	8.09	1
						3.95	27.2	6.19	87.4	1.8	20.48	8.08	2
							27.2	6.19	87.4	1.7	20.57	8.08	2
						6.90	27.1	6.11	86.3	2.3	21.01	8.06	2
							27.2	6.09	86.2	2.3	20.88	8.08	<1
8:40	W8	MF	821321	810236	8.7	1.00	27.3	6.31	89.2	0.9	20.49	8.13	2
							27.3	6.3	88.8	0.8	20.1	8.14	1
						4.35	27.1	6.29	89.1	1.3	21.37	8.12	2
							27.1	6.28	88.9	1.2	21.39	8.12	1
						7.70	27.1	6.12	86.7	2.5	21.17	8.13	1
							27.1	6.12	86.72	2.6	21.21	8.13	2
9:20	W9	MF	819041	807950	8.8	1.00	27.2	6.37	89.5	1.3	19.67	8.22	<1
							27.2	6.3	88.6	1.4	19.69	8.29	2
						4.40	27.2	6.25	87.8	2.1	19.66	8.24	<1
							27.2	6.24	87.8	2.2	19.74	8.27	1
						7.80	27.2	6.18	86.4	2.5	18.8	8.3	<1
							27.2	6.14	86.3	2.6	19.73	8.29	2
14:54	W1	ME	820705	808681	2.7	1.35	27.2	5.96	84.3	1.3	20.81	8.28	2
							27.2	5.91	83.7	1.4	21.1	8.22	2
14:53	W2	ME	820657	808634	2.9	1.45	27.2	5.97	84.5	2.3	21	8.23	<1
							27.2	5.88	83.2	2.4	21.04	8.22	2
15:03	W3	ME	820447	809029	8.4	1.00	27.2	6.24	88.1	1.5	20.24	8.24	1
							27.2	6.23	88	1.6	20.26	8.25	2
						4.20	27.2	6.21	87.6	2.5	20.24	8.16	2
							27.2	6.18	87.3	2.6	20.31	8.24	2
						7.40	27.2	5.97	84.3	2.9	20.3	8.19	2
							27.2	5.93	83.8	3	20.34	8.25	2
15:11	W4	ME	820066	809291	8.3	1.00	27.3	6.41	89.8	1.4	19.17	8.3	2
							27.3	6.41	90	1.3	19.21	8.27	2
						4.15	27.3	6.38	89.77	2.1	19.47	8.31	2
							27.3	6.39	89.8	2.2	19.49	8.22	1
						7.30	27.4	6.28	88.6	2.9	19.8	8.66	2
							27.3	6.09	85.9	3	20	8.3	2
15:18	W5	ME	819876	809701	4.7	1.00	27.2	6.14	86.1	2.5	19.21	8.26	2
							27.2	6.04	84.9	2.6	19.64	8.24	1
						3.70	27.2	6	84.6	3.5	20.29	8.29	2
							27.2	5.98	84.4	3.4	20.31	8.32	2
15:45	W6	ME	819176	810912	6.8	1.00	27.2	6.28	88.9	0.8	20.63	8.31	1
							27.2	6.25	88.3	0.9	20.61	8.25	2
						3.40	27.2	6.13	86.5	1.6	20.57	8.27	2
							27.2	6.12	86.5	1.5	20.57	8.28	2
						5.80	27.2	6.07	85.8	1.8	20.72	8.27	2
							27.2	6.06	85.7	1.9	20.74	8.28	2
15:34	W7	ME	820045	810528	8.0	1.00	27.2	6.31	87.4	1.2	17.14	8.27	2
							27.2	6.27	87.8	1.3	18.84	8.32	1
						4.00	27.2	6.19	87.4	1.9	20.71	8.26	1
							27.2	6.11	86.6	2	21.03	8.28	1
						7.00	27.1	6.11	86.4	2.5	21.28	8.28	1
							27.1	6.06	85.9	2.6	21.53	8.27	1
15:26	W8	ME	821320	810241	8.9	1.00	27.2	6.55	91.8	2.4	19.05	8.27	1
							27.2	6.54	81.7	2.3	19.07	8.29	1
						4.45	27.3	6.46	90.7	3.1	19.17	8.29	2
							27.3	6.45	90.5	3.2	19.22	8.28	2
						7.90	27.3	6.23	87.9	3.8	20.18	8.55	1
							27.2	6.1	86.2	3.7	20.51	8.37	1
14:45	W9	ME	819048	807956	9.0	1.00	27.2	6.33	88.9	1.2	19.59	8.14	2
							27.2	6.29	88.4	1.3	19.58	8.16	1
						4.50	27.2	6.36	89.4	1.5	19.58	8.1	2
							27.2	6.31	88.7	1.4	19.71	8.16	2
						8.00	27.2	6.27	88.2	2.5	19.77	8.2	1
							27.3	6.22	87.8	2.6	19.99	8.42	<1

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

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **13-Jun-16**

Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
10:01	W1	MF	820700	808695	2.8	1.40	27.2	6.03	84.7	2.8	19.29	8.44	2
							27.3	5.99	84.1	2.9	19.29	8.43	3
10:03	W2	MF	820655	808644	2.6	1.30	27.4	5.95	83.7	3.2	19.16	8.41	2
							27.4	5.97	84	3.1	19.16	8.41	2
9:22	W3	MF	820453	809037	8.7	1.00	27.2	6.36	89.5	1.5	19.89	8.39	<1
							27.2	6.39	89.9	1.4	19.84	8.4	1
						4.35	27.1	6.21	87.9	2	21.16	8.37	2
							27.1	6.22	88.1	2.1	21.29	8.37	2
						7.70	27	6.07	86.3	3.6	22.54	8.34	2
							27	6.09	86.7	3.5	22.48	8.35	2
9:11	W4	MF	820088	809298	8.6	1.00	27.2	6.35	89.3	2.8	19.89	8.39	1
							27.2	6.32	88.9	2.7	19.84	8.4	1
						4.30	27.1	6.21	87.9	2.9	21.16	8.37	2
							27.1	6.18	87.5	2.8	21.29	8.37	1
						7.60	27	6.09	86.6	3.4	22.54	8.34	4
							27	6.07	86.4	3.2	22.48	8.35	4
9:03	W5	MF	819884	809703	4.9	1.00	27.2	6.14	86.7	1.3	20.47	8.44	2
							27.2	6.1	86.2	1.2	20.48	8.44	4
						3.90	27.1	5.99	85	2.6	21.71	8.4	3
							27	5.91	83.8	2.5	21.83	8.39	3
8:34	W6	MF	819163	810924	6.4	1.00	27.1	6.39	90.7	2.1	21.59	8.43	2
							27.1	6.39	90.7	2.2	21.69	8.43	2
						3.20	27.1	6.27	89.8	2.9	23.39	8.38	2
							27.1	6.24	89.4	2.8	23.32	8.38	2
						5.40	27.1	6.13	87.7	3.7	23.34	8.39	2
							27.1	6.07	87	3.8	23.37	8.38	2
8:45	W7	MF	820067	810538	8.0	1.00	27.1	6.44	91.4	1.2	21.73	8.36	3
							27.1	6.39	90.8	1.1	21.73	8.35	2
						4.00	27	6.21	88.4	1.5	22.55	8.35	2
							27	6.2	88.3	1.6	22.64	8.35	3
						7.00	27	6.11	87.3	2.3	23.01	8.34	4
							27	6.09	87	2.2	22.95	8.34	2
8:52	W8	MF	821331	810249	8.9	1.00	27.2	6.29	89.4	1.4	21.62	8.35	3
							27.2	6.25	88.8	1.3	21.61	8.35	2
						4.45	27	6.12	86.7	2.6	21.79	8.35	3
							27	6.12	86.8	2.5	21.79	8.35	2
						7.90	27	5.97	85.1	2.9	22.84	8.33	3
							27	5.97	85.3	2.8	23.1	8.34	2
9:43	W9	MF	819058	807962	8.7	1.00	27.3	6.04	85	0.6	19.55	8.42	2
							27.3	6.05	85.2	0.5	19.5	8.43	1
						4.35	27.1	5.86	83.1	1.3	21.55	8.37	2
							27.1	5.76	81.7	1.2	21.72	8.37	<1
						7.70	27	5.37	76.5	2.6	22.69	8.35	4
							27	5.39	76.7	2.5	22.69	8.35	3
13:00	W1	ME	820708	808692	2.8	1.40	27.8	6.17	87.4	1.6	19.23	8.37	2
							27.6	6.05	85.4	1.8	19.41	8.37	3
12:58	W2	ME	820652	808630	2.7	1.35	27.4	6.25	88	2.5	19.62	8.45	1
							27.4	6.18	87.1	2.4	19.62	8.45	1
13:05	W3	ME	820451	809033	8.3	1.00	27.6	6.5	92.3	1.8	19.92	8.41	1
							27.6	6.52	92.5	1.9	19.94	8.41	<1
						4.15	27.3	6.24	88.6	2.3	21.09	8.39	<1
							27.3	6.25	88.7	2.5	21.07	8.39	<1
						7.30	27.2	5.92	84.1	3.5	21.53	8.39	<1
							27.2	5.91	83.9	3.5	21.48	8.38	<1
13:18	W4	ME	820088	809291	8.2	1.00	27.8	6.58	93.5	0.9	19.85	8.4	<1
							27.8	6.55	93.1	1.1	19.87	8.4	<1
						4.10	27.3	6.22	88.4	2.4	21.18	8.38	<1
							27.3	6.25	88.8	2.3	21.16	8.37	<1
						7.20	27.1	6.05	86.1	3.2	22.45	8.35	5
							27.1	6.04	86	3.1	22.45	8.35	5
13:25	W5	ME	819882	809706	4.8	1.00	28	6.39	91.3	1.4	19.98	8.41	4
							28	6.33	90.6	1.3	20.13	8.34	2
						3.80	27.1	6.18	88	1.6	22.18	8.36	4
							27.1	6.17	87.8	1.7	22.28	8.36	5
13:50	W6	ME	819172	810928	7.1	1.00	27.8	6.3	90.5	2.3	21.7	8.39	2
							27.6	6.32	90.5	2.3	21.73	8.38	1
						3.55	27.1	6.2	88.5	2.8	22.67	8.36	2
							27.1	6.19	88.4	2.9	22.65	8.37	2
						6.10	27.2	6.07	87.4	3.5	23.96	8.35	3
							27.2	6.07	87.2	3.4	23.98	8.35	4
13:40	W7	ME	820067	810510	8.2	1.00	27.2	6.46	92.1	1.8	22.12	8.39	2
							27.2	6.45	91.8	1.7	22.16	8.38	2
						4.10	27.1	6.38	91.1	2.6	23.01	8.37	3
							27.1	6.34	90.5	2.5	22.92	8.37	2
						7.20	27.1	6.15	88.5	3.6	24.28	8.35	6
							27.1	6.06	87.3	3.5	24.17	8.35	6
13:32	W8	ME	821314	810255	8.9	1.00	27.7	6.44	91.8	1.5	20.57	8.41	1
							27.6	6.43	91.7	1.6	20.97	8.39	2
						4.45	27.2	5.97	85.1	2.4	22.13	8.37	2
							27.2	5.98	85.2	2.3	22.11	8.37	1
						7.90	27	5.69	81.5	3	23.37	8.34	3
							27	5.68	81.3	3.1	23.4	8.34	3
12:46	W9	ME	819062	807940	9.1	1.00	27.5	6.4	90.8	1.2	20.26	8.61	1
							27.5	6.37	90.4	1.1	20.22	8.61	1
						4.55	27.1	5.73	81.7	1.5	22.53	8.5	<1
							27.1	5.65	80.7	1.6	22.74	8.5	2
						8.10	27	5.41	77.4	2.8	23.43	8.42	1
							27	5.4	77.2	2.9	23.16	8.43	1

MF - Middle Flood tida

ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **15-Jun-16**

Date / Time	Location	Tide*	Co-ordinates East	Co-ordinates North	Water Depth (m)	Sampling Depth (m)	Temp (℃)	DO Conc (mg/L)	DO Saturation (%)	Turbidity (NTU)	Salinity (ppt)	pH (unit)	SS (mg/l)
14:33	W1	MF	820789	808671	2.8	1.40	28.7	7.73	109.9	3.5	16.94	8.66	4
							28.7	7.75	110.2	3.4	17.1	8.65	5
14:36	W2	MF	820658	808631	2.6	1.30	28.7	7.64	108.4	2.5	16.7	8.69	4
							28.7	7.62	108.1	2.4	16.68	8.69	4
14:43	W3	MF	820441	809032	8.8	1.00	28.7	7.84	111.5	1.4	17.17	8.64	4
							28.7	7.84	111.5	1.5	17.18	8.64	3
						4.40	28.7	8.08	114.8	1.8	17.02	8.62	4
							28.7	7.95	113	1.7	17.09	8.63	4
						7.80	28.7	7.84	111.4	2.8	17.13	8.64	4
							28.7	7.84	111.5	2.6	17.19	8.64	5
15:00	W4	MF	820071	809288	8.7	1.00	28.7	7.86	111.7	0.8	17	8.63	5
							28.7	7.85	111.5	0.7	16.94	8.63	5
						4.35	28.7	7.81	111.1	1.5	17.16	8.64	6
							28.7	7.84	111.7	1.6	17.46	8.63	4
						7.70	28.6	7.92	112.9	2.6	17.79	8.61	4
							28.6	7.95	113.4	2.5	18.03	8.61	4
15:08	W5	MF	819875	809681	5.6	1.00	28.6	8.06	114.8	2.7	17.65	8.61	4
							28.6	7.99	113.8	2.6	17.53	8.62	4
						4.60	28.6	8.01	114.3	3.2	17.97	8.61	4
							28.6	8.01	114.3	3.3	17.91	8.61	4
15:32	W6	MF	819167	810901	8.6	1.00	28.7	8.14	116.3	2.2	18.23	8.6	4
							28.7	8.14	116.4	2.3	18.24	8.6	3
						4.30	28.7	8.03	114.4	2.8	17.61	8.62	3
							28.7	8.03	114.4	2.9	17.63	8.62	5
						7.60	28.7	7.93	112.9	3.5	17.3	8.64	4
							28.7	7.92	112.8	3.4	17.27	8.63	3
15:22	W7	MF	820059	810513	8.5	1.00	28.7	7.96	113.3	0.8	17.4	8.63	4
							28.7	7.96	113.3	0.7	17.39	8.63	4
						4.25	28.7	8.11	116.2	1.6	18.46	8.59	5
							28.7	8.13	116.4	1.4	18.43	8.59	4
						7.50	28.7	8.14	116.5	3.2	18.34	8.6	4
							28.7	8.15	116.5	3.1	18.27	8.6	5
15:16	W8	MF	821320	810241	8.4	1.00	28.7	7.83	111.3	1.5	16.92	8.65	4
							28.7	7.85	111.5	1.6	16.89	8.64	4
						4.20	28.6	8.05	115	2.9	18.19	8.6	3
							28.6	8.1	115.7	2.8	18.15	8.6	3
						7.40	28.6	8.14	116.4	3.6	18.3	8.6	4
							28.6	8.14	116.3	3.5	18.27	8.6	5
14:22	W9	MF	819046	807949	8.9	1.00	28.8	7.9	112.8	1.5	17.72	8.67	4
							28.8	7.86	112.3	1.4	17.74	8.68	3
						4.45	28.8	7.71	110.2	2.4	17.81	8.87	4
							28.8	7.92	113.2	2.3	17.86	8.73	4
						7.90	28.8	7.95	113.6	2.8	17.8	8.65	3
							28.8	7.93	113.4	2.9	17.84	8.64	3
9:12	W1	ME	820704	808672	2.1	1.05	28.7	8.03	114.9	2.1	18.37	8.61	5
							28.7	8.01	114.6	2.2	18.33	8.61	5
9:23	W2	ME	820659	808634	2.4	1.20	28.8	7.95	113.6	2.8	17.68	8.63	5
							28.8	7.95	113.5	2.9	17.68	8.64	5
9:06	W3	ME	820449	809031	8.2	1.00	28.7	8.07	115.5	2.5	18.25	8.62	3
							28.7	8.06	115.3	2.4	18.3	8.62	4
						4.10	28.7	8.1	115.8	2.9	18.14	8.62	4
							28.7	8.07	115.4	3	18.15	8.62	4
						7.20	28.8	7.78	111	3.8	17.59	8.63	3
							28.8	7.86	112.2	3.7	17.6	8.62	4
8:59	W4	ME	820076	809290	8.2	1.00	28.7	8.04	115.1	2.4	18.39	8.62	4
							28.7	8.06	115.3	2.2	18.32	8.62	4
						4.10	28.7	8.03	114.7	2.6	17.8	8.63	5
							28.7	7.99	114.1	2.6	17.75	8.63	4
						7.20	28.7	7.95	113.6	4.2	17.96	8.63	5
							28.7	7.95	113.7	4.1	18.04	8.63	5
8:50	W5	ME	819877	809688	4.8	1.00	28.7	8	114.2	2.4	17.71	8.64	5
							28.7	7.98	113.8	2.6	17.65	8.64	6
						3.80	28.7	7.92	113.2	3.6	17.91	8.64	4
							28.7	7.96	113.8	3.5	18.03	8.63	5
8:22	W6	ME	819168	810909	6.1	1.00	28.8	7.85	112.1	1.1	17.48	8.88	5
							28.8	7.82	111.7	1.2	17.51	8.84	4
						3.05	28.8	7.87	112.5	1.5	17.97	8.76	5
							28.8	7.88	112.7	1.6	17.92	8.76	5
						5.10	28.8	8.07	115.7	2.2	18.31	8.71	5
							28.8	8	114.7	2.3	18.35	8.71	6
8:33	W7	ME	820058	810516	7.9	1.00	28.7	7.97	113.9	0.8	18.07	8.68	5
							28.7	7.97	114.1	0.9	18.16	8.68	5
						3.95	28.7	8	114.6	1.3	18.39	8.66	4
							28.7	8.07	115.5	1.4	18.44	8.66	5
						6.90	28.7	8.1	115.9	2.1	18.47	8.65	6
							28.7	8.1	115.9	2.2	18.44	8.65	5
8:41	W8	ME	821321	810246	8.4	1.00	28.7	8.1	115.8	1.5	18.16	8.64	5
							28.7	8.09	115.7	1.4	18.26	8.63	4
						4.20	28.6	8.17	117.1	2.3	18.68	8.62	5
							28.6	8.17	117	2.4	18.58	8.62	6
						7.40	28.7	8.06	115.2	2.9	18.01	8.64	6
							28.7	8.07	115.4	3	18.03	8.63	5
9:24	W9	ME	819047	807941	8.6	1.00	28.7	8.04	115.1	1.2	18.28	8.61	4
							28.7	8.05	115.2	1.3	18.3	8.61	4
						4.30	28.7	8.07	115.5	1.7	18.31	8.61	4
							28.7	8.09	115.8	1.8	18.32	8.61	4
						7.60	28.7	8.09	115.7	2.5	17.95	8.62	5
							28.7	8.07	115.3	2.6	17.92	8.62	6

MF - Middle Flood tida

ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **17-Jun-16**

Date / Time	Location	Tide*	Co-ordinates East	Co-ordinates North	Water Depth (m)	Sampling Depth (m)	Temp (℃)	DO Conc (mg/L)	DO Saturation (%)	Turbidity (NTU)	Salinity (ppt)	pH (unit)	SS (mg/l)
16:12	W1	MF	820702	808691	2.8	1.40	28.1	8.79	126.5	2.8	20.34	8.61	5
							28.1	8.75	125.8	2.7	20.27	8.61	5
16:11	W2	MF	820658	808639	2.7	1.35	28.4	11.39	163.9	3.3	19.34	8.62	6
							28.4	11.32	162.8	3.2	19.36	8.62	5
16:19	W3	MF	820461	809046	8.3	1.00	28.2	9.34	134.3	1.5	20.03	8.62	4
							28.2	9.32	134.1	1.4	20.01	8.62	4
						4.15	27.9	7.39	106.4	1.8	20.97	8.6	5
							27.9	7.38	106.1	1.9	20.97	8.6	5
						7.30	27.9	7.19	103.4	2.6	21.08	8.59	4
							27.9	7.18	103.3	2.4	21.08	8.59	4
16:21	W4	MF	820089	809304	8.5	1.00	28.4	11.94	172.1	1.2	19.78	8.63	2
							28.3	11.31	162.9	1.3	19.94	8.63	4
						4.25	28.2	9.65	138.8	2.8	20.15	8.63	4
							28.2	9.56	137.5	2.7	20.13	8.63	4
						7.50	28.1	8.99	129.6	3.6	20.73	8.61	4
							28	8.66	124.7	3.7	20.83	8.61	4
16:32	W5	MF	819882	809709	4.7	1.00	28.3	10.31	148.2	2	19.46	8.63	4
							28.3	10.3	148	2.1	19.47	8.63	4
						3.70	27.9	7.5	108	2.8	21.04	8.6	6
							27.9	7.41	106.7	2.9	21.05	8.6	5
17:02	W6	MF	819184	810933	6.9	1.00	28.3	9.57	137.6	1.4	19.7	8.57	3
							28.3	9.73	140	1.5	19.66	8.57	4
						3.45	27.7	6.58	94.8	1.8	21.59	8.54	4
							27.7	6.55	94.3	1.7	21.57	8.53	4
						5.90	27.7	6.48	93.3	1.6	21.47	8.54	3
							27.8	6.48	93.3	1.8	21.47	8.54	5
16:52	W7	MF	820068	810519	8.2	1.00	28	7.69	110.8	2.2	20.82	8.61	4
							28	7.73	111.3	2.3	20.88	8.6	4
						4.10	27.9	7.67	110.4	2.5	20.9	8.6	5
							27.9	7.71	111.1	2.6	21.1	8.59	4
						7.20	27.9	7.5	107.9	3.6	21.14	8.59	6
							27.9	7.34	105.7	3.5	21.13	8.59	5
16:41	W8	MF	821339	810250	8.8	1.00	28.4	11.46	164.8	1.5	19.34	8.64	5
							28.4	11.46	164.8	1.4	19.33	8.64	5
						4.40	28.3	9.8	140.9	2.6	19.76	8.64	4
							28.3	9.86	141.7	2.4	19.71	8.64	4
						7.80	28	7.74	111.4	3.2	20.75	8.62	4
							28	7.83	112.7	3.1	20.74	8.62	4
16:04	W9	MF	819028	807950	8.7	1.00	28.2	8.89	127.9	0.9	20.09	8.62	4
							28.2	8.93	128.5	1.1	20.05	8.62	3
						4.35	27.9	7.81	112.4	1.8	20.84	8.6	4
							27.9	7.72	111.2	1.7	20.88	8.59	4
						7.70	27.9	7.54	108.5	2.8	20.92	8.59	4
							27.9	7.45	107.2	2.7	20.94	8.59	4
11:00	W1	ME	820708	808690	2.8	1.40	28.2	9.66	138.8	2.4	19.71	8.6	3
							28.3	9.68	139.2	2.3	19.66	8.6	3
11:06	W2	ME	820657	808639	2.7	1.35	28.2	9.66	139.1	2.8	19.98	8.6	3
							28.2	9.55	137.5	2.9	19.98	8.6	3
10:59	W3	ME	820453	809044	8.6	1.00	28.3	10.13	145.5	1.5	19.49	8.61	3
							28.3	10.26	147.4	1.4	19.5	8.61	4
						4.30	28.3	10.33	148.8	1.8	19.93	8.6	3
							28.2	9.83	141.4	1.9	19.99	8.6	3
						7.60	28.2	9.48	136.3	2.5	19.82	8.6	3
							28.2	9.54	137.2	2.4	19.8	8.6	4
10:52	W4	ME	820081	809298	8.4	1.00	28.6	12.79	183.9	1.3	18.77	8.58	4
							28.6	12.75	183.3	1.4	18.75	8.59	5
						4.20	28.3	10.74	154.4	2.6	19.52	8.61	4
							28.3	10.56	151.7	2.5	19.51	8.61	3
						7.40	28.3	10.39	149.4	3.3	19.51	8.61	5
							28.3	10.41	149.6	3.2	19.51	8.61	3
10:45	W5	ME	819884	809706	4.9	1.00	28.5	12.15	174.9	2.2	19.23	8.53	4
							28.5	12.16	175.1	2.1	19.25	8.53	4
						3.90	28.5	12.11	174.3	2.8	19.23	8.53	3
							28.5	12.07	173.8	2.9	19.21	8.54	4
10:22	W6	ME	819188	810928	6.7	1.00	28.5	12.06	173.1	0.5	18.73	8.25	7
							28.5	12.17	174.7	0.6	18.73	8.25	6
						3.35	28.5	12.35	177.3	1.2	18.73	8.26	6
							28.5	12.4	178	1.1	18.73	8.26	7
						5.70	28.6	11.67	167.6	2.2	18.5	7.89	5
							28.6	11.7	168	2.3	18.5	7.9	6
10:33	W7	ME	820067	810511	8.2	1.00	28.5	12.49	179.5	1.3	18.8	8.37	4
							28.6	12.55	180.4	1.2	18.79	8.37	5
						4.10	28.6	12.4	178.6	1.7	19.18	8.4	5
							28.6	12.38	178.4	1.8	19.18	8.4	5
						7.20	28.3	11.5	165.4	2.2	19.48	8.42	6
							28.3	11.09	159.3	2.3	19.5	8.42	7
10:39	W8	ME	821333	810243	8.9	1.00	28.3	10.32	148.4	0.5	19.55	8.45	3
							28.3	10.39	149.4	0.6	19.51	8.45	4
						4.45	28.3	10.41	149.8	1.6	19.49	8.45	3
							28.3	10.29	147.9	1.5	19.51	8.45	4
						7.90	28.4	10.84	156	2.6	19.36	8.47	4
							28.4	11.02	158.6	2.5	19.35	8.47	3
11:11	W9	ME	819027	807948	9.1	1.00	28.7	11.81	169.7	0.4	18.37	8.67	2
							28.7	11.81	169.7	0.5	18.42	8.68	3
						4.55	27.9	7.57	108.9	0.9	20.84	8.62	4
							27.9	7.55	108.7	0.8	20.83	8.62	5
						8.10	27.9	7.45	107.3	1.6	20.86	8.61	8
							27.9	7.44	107.1	1.5	20.89	8.61	7

MF - Middle Flood tida

ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring													
Sampling Date:	20-Jun-16												
Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
10:27	W1	MF	820708	808691	2.6	1.30	30.3	12.52	183	2.8	16.49	8.92	6
							30.3	12.51	182.9	2.9	16.47	8.92	6
10:29	W2	MF	820655	808639	2.5	1.25	30.3	12.98	189.8	3.6	16.53	8.97	7
							30.2	13.1	191.5	3.4	16.54	8.97	6
9:46	W3	MF	820458	809037	8.2	1.00	29.1	12.74	184.4	2.4	18.31	8.87	6
							29	12.73	184.1	2.5	18.33	8.87	6
						4.10	27.1	6.65	95.8	2.9	23.58	8.71	5
							27.1	6.69	96.4	2.8	23.55	8.71	6
						7.20	25.8	6.22	89.2	3.5	26.92	8.63	9
							25.8	6.19	88.8	3.4	26.92	8.62	8
9:36	W4	MF	820084	809301	8.4	1.00	29.3	13.71	198.6	2.5	17.84	8.86	6
							29.3	13.56	196.5	2.6	17.91	8.86	7
						4.20	27.2	6.75	97.3	3.5	23.35	8.71	6
							27.2	6.85	98.7	3.4	23.34	8.71	6
						7.40	26	6.11	87.9	2.9	26.84	8.62	7
							25.9	6.1	87.7	2.8	26.87	8.61	5
9:26	W5	MF	819881	809707	4.6	1.00	29.4	12.86	186.1	1.8	17.3	8.91	6
							29.4	12.84	185.9	1.9	17.43	8.91	6
						3.60	27.2	5.89	85	3.5	23.69	8.76	6
							27.4	6.5	94	3.4	23.2	8.73	6
8:43	W6	MF	819166	810928	6.5	1.00	29.5	15.53	228	2.3	19.71	8.8	7
							29.4	15.4	226.2	2.5	20.17	8.81	7
						3.25	27.6	7.43	107.7	2.8	23.14	8.73	6
							27.7	7.66	111	2.9	22.83	8.73	6
						5.50	26.9	6.34	91.7	3.6	25.02	8.66	9
							26.8	6.19	89.5	3.5	24.99	8.66	10
8:58	W7	MF	820057	810539	8.2	1.00	28.7	13.67	199.4	1.5	21.01	8.84	8
							28.7	13.81	201.5	1.6	20.9	8.85	7
						4.10	27.6	8.11	117.5	2.9	23.13	8.79	8
							27.6	7.91	114.6	2.8	23.19	8.79	8
						7.20	25.9	6.13	87.8	3.6	26.34	8.69	8
							25.9	6.11	87.6	3.8	26.34	8.69	6
9:13	W8	MF	821331	810242	8.6	1.00	29.5	13.26	194.9	2.4	19.94	8.82	7
							29.6	13.52	198.8	2.5	19.92	8.83	7
						4.30	27.5	7.71	111.7	2.9	23.33	8.78	6
							27.5	7.65	110.8	2.8	23.32	8.78	6
						7.60	25.8	6.22	89.4	2.9	27.32	8.67	5
							25.8	6.2	89.3	3.1	27.28	8.67	5
9:56	W9	MF	819046	807951	8.8	1.00	29.5	13.63	197.5	2.2	17.17	8.88	6
							29.5	13.81	200.2	2.3	17.53	8.88	5
						4.40	27.1	7.03	101.5	2.8	24.02	8.74	5
							27.1	6.91	99.4	2.7	23.52	8.74	5
						7.80	26.5	5	71.9	3.1	25.24	8.67	5
							26.5	5.08	73.1	3.2	25.19	8.67	5
12:18	W1	ME	820701	808690	2.5	1.25	30.3	13.58	198.7	1.8	16.56	9.01	6
							30.3	13.56	198.5	1.7	16.58	9.01	7
12:16	W2	ME	820654	808627	2.6	1.30	30.3	13.53	198.3	2.5	16.83	9	6
							30	13.35	194.9	2.6	16.98	8.99	6
12:23	W3	ME	820453	808037	8.4	1.00	29.8	14.02	204.2	1.8	17.23	9.03	7
							29.8	13.99	203.9	1.9	17.2	9.04	6
						4.20	28.1	10.22	147.9	3.6	21.34	8.91	7
							28.1	10.38	150.2	3.5	21.16	8.91	7
						7.40	27.3	7.14	103.1	4.2	23.28	8.79	7
							27.3	7.18	103.8	4.1	23.21	8.8	7
12:32	W4	ME	820088	809304	8.6	1.00	30.1	13.51	197.4	2.4	16.78	8.94	6
							30.2	13.41	196.2	2.5	16.8	8.94	5
						4.30	28.1	10.15	146.9	3.8	21.26	8.85	6
							28.1	10.19	147.5	3.7	21.35	8.85	6
						7.60	26.6	6.69	96.7	4.5	25.46	8.73	5
							26.4	6.5	93.6	4.3	25.5	8.73	6
12:42	W5	ME	819874	809707	4.8	1.00	29.6	13.85	202.2	2.4	18.25	8.91	6
							29.6	13.97	204	2.3	18.27	8.91	6
						3.80	27.5	7.62	110.1	2.8	22.52	8.8	6
							27.6	7.75	112.1	2.7	22.52	8.8	6
13:19	W6	ME	819177	810908	6.9	1.00	29.8	17.09	253.8	2.8	20.53	8.97	8
							29.8	17.16	254.8	2.9	20.51	8.97	9
						3.45	26.9	6.5	93.7	3.4	24.39	8.86	8
							26.9	6.41	92.5	2.3	24.47	8.85	8
						5.90	26.6	6.19	89.3	4.8	25.34	8.78	7
							26.6	6.13	88.7	4.7	25.42	8.77	8
13:00	W7	ME	820057	810533	8.4	1.00	29.9	14.75	216.4	2.5	18.07	8.98	6
							29.9	14.78	216.8	2.4	18.09	8.98	5
						4.20	28.1	12.02	175.1	2.9	22.51	8.89	6
							28.1	12.02	175.2	2.8	22.5	8.89	6
						7.40	28	11.67	169.9	3.6	22.49	8.87	6
							28	11.54	168	3.7	22.54	8.87	6
12:50	W8	ME	821331	810246	8.8	1.00	30.1	14.3	209.8	2.6	17.69	8.94	6
							30.1	14.25	209.1	2.5	17.67	8.94	7
						4.40	28.2	11.15	162.9	3.1	22.51	8.84	6
							28.2	11.18	163.2	3.2	22.43	8.84	6
						7.80	27.8	10.7	155.5	3.6	22.74	8.81	8
							27.8	10.78	156.8	3.5	22.73	8.81	8
12:07	W9	ME	819044	807977	9.1	1.00	30.7	13.59	200.5	2.4	16.89	9.2	5
							30.3	13.89	203.9	2.5	17.01	9.18	6
						4.55	27.8	9.24	133.5	2.8	21.85	9	5
							27.8	9.21	133.2	2.7	21.86	8.99	5
						8.10	26.2	6.55	94.5	3.9	26.19	8.87	6
							26.2	6.55	94.4	3.8	26.15	8.86	5

MF - Middle Flood tida

ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring														
Sampling Date:	22-Jun-16													
Date / Time	Location	Tide*	Co-ordinates		Water Depth	Sampling Depth	Temp	DO Conc	DO Saturation	Turbidity	Salinity	pH	SS
			East	North	m	m	℃	mg/L	%	NTU	ppt	unit	mg/l
9:33	W1	MF	820700	808689	2.6	1.30	25.8	6.23	88.5	2.6	25.9	8.51	3
							25.8	6.17	87.7	2.5	25.97	8.51	4
9:30	W2	MF	820667	808634	2.8	1.40	25.9	6.53	92.8	3.5	25.55	8.56	4
							25.9	6.42	91.3	3.4	25.7	8.54	4
9:21	W3	MF	820451	809034	8.7	1.00	26.2	6.8	84.7	0.8	21.06	8.58	6
							26.1	6.63	93.2	0.7	23.42	8.53	6
						4.35	25.9	6.45	91.6	2.6	25.23	8.79	6
							25.8	6.32	89.6	2.4	25.64	8.61	6
						7.70	25.6	6.09	86.6	3.5	26.55	8.53	5
							25.6	6.06	86.1	3.4	26.58	8.53	7
9:12	W4	MF	820087	809301	8.5	1.00	26	6.48	92.1	1.5	25.41	8.42	6
							26	6.46	91.8	1.6	25.41	8.43	5
						4.25	26	6.35	90.2	2.8	25.43	8.44	4
							26	6.35	90.2	2.9	25.42	8.45	4
						7.50	25.9	6.06	86.1	3.8	25.51	8.45	6
							25.9	6.02	85.6	3.7	25.57	8.45	5
9:09	W5	MF	819884	809691	3.8	1.00	25.9	6.4	90.9	2.5	25.59	8.47	6
							25.9	6.42	91.2	2.6	25.59	8.47	6
						2.80	25.7	6.13	87.1	3.9	26.28	8.56	6
							25.7	6.07	86.2	3.8	26.28	8.55	5
8:46	W6	MF	819160	810936	7.6	1.00	25.9	6.41	90.9	2.5	25.42	8.56	5
							25.9	6.41	90.9	2.4	25.44	8.56	5
						3.80	25.8	6.3	89.4	2.8	25.63	8.55	5
							25.8	6.28	89	2.9	25.64	8.55	6
						6.60	25.6	6.06	86	3.6	26.51	8.54	6
							25.6	6.03	85.7	3.5	26.51	8.54	6
8:52	W7	MF	820068	810532	8.6	1.00	25.9	6.36	90.4	2.1	25.56	8.47	4
							25.9	6.36	90.4	2.2	25.56	8.46	4
						4.30	25.6	6.15	87.3	2.8	26.3	8.56	5
							25.6	6.13	87.4	2.7	26.32	8.56	5
						7.60	25.6	6.09	86.5	3.6	26.33	8.55	6
							25.6	6.06	86	3.4	26.38	8.55	4
8:59	W8	MF	821336	810239	8.8	1.00	26.2	6.52	83	1.2	5.2	8.6	4
							26	6.35	85.3	1.3	15.23	8.58	4
						4.40	25.8	6.29	86.8	2.9	20.64	8.56	5
							25.7	6.23	87.9	2.8	24.79	8.55	5
						7.80	25.7	6.18	87.5	3.5	25.49	8.55	6
							25.7	6.09	86.3	3.4	25.97	8.54	6
9:39	W9	MF	819047	807948	8.9	1.00	25.9	5.47	77.6	2.5	25.02	8.55	8
							25.9	5.4	76.7	2.4	25.4	8.54	8
						4.45	25.7	5.25	74.7	2.8	26.1	8.52	8
							25.7	5.23	74.4	2.9	26.16	8.51	8
						7.90	25.6	5.09	72.4	3.6	26.33	8.51	8
							25.6	5.09	72.3	3.5	26.36	8.51	7
13:31	W1	ME	820709	808681	2.2	1.10	28.1	5.89	82.8	1.5	16.98	8.77	4
							28.1	5.89	82.8	1.4	16.99	8.78	5
13:33	W2	ME	820652	808631	2.4	1.20	28.1	6.02	84.6	1.9	16.82	8.94	5
							28.1	5.91	83.1	1.8	16.96	8.73	4
13:39	W3	ME	820454	809039	8.2	1.00	27.9	6.47	90.9	2.5	17.59	8.7	4
							27.9	6.45	90.7	2.4	17.59	8.69	4
						4.10	27.8	6.29	88.4	2.9	17.68	8.67	6
							27.8	6.23	87.5	2.8	17.7	8.67	6
						7.20	27.7	6.06	85.1	3.8	18	8.63	4
							27.7	6.03	84.8	3.7	17.99	8.63	4
13:47	W4	ME	820086	809306	8.3	1.00	27.8	5.83	81.9	2.4	17.71	8.61	4
							27.8	5.82	81.8	2.5	17.71	8.61	4
						4.15	27.8	6	84.4	3.4	17.66	8.61	6
							27.8	6.2	87.1	3.2	17.68	8.6	5
						7.30	27.8	5.81	81.6	4.2	17.73	8.59	7
							27.8	5.81	81.6	4.1	17.78	8.59	8
13:56	W5	ME	819881	809693	4.9	1.00	27.7	5.94	83.3	2.4	17.62	8.57	6
							27.8	5.93	83.3	2.6	17.61	8.57	6
						3.90	27.8	5.94	83.4	3.1	17.52	8.55	6
							27.8	5.94	83.5	3.3	17.51	8.55	5
14:25	W6	ME	819164	810925	7.0	1.00	27.9	6.34	88.9	1.4	17.13	8.48	5
							27.9	6.32	88.7	1.5	17.14	8.48	6
						3.50	28.3	6.18	86.6	2.5	15.64	8.52	5
							28.3	6.17	86.2	2.4	15.58	8.52	6
						6.00	28.1	6.11	85.6	2.6	16.4	8.48	5
							28.1	6.01	84.3	2.5	16.45	8.47	6
14:14	W7	ME	820066	810531	8.1	1.00	28.2	6.67	88.7	0.7	16.92	8.46	5
							28.3	6.48	88.4	0.8	16.96	8.43	5
						4.05	28.5	6.25	87.7	1.5	15.27	8.59	5
							28.6	6.21	87.2	1.6	15.23	8.59	5
						7.10	27.9	6.12	85.9	2.3	17	8.48	5
							27.9	6.07	85.1	2.2	17.11	8.48	5
14:02	W8	ME	821331	810246	8.0	1.00	28.1	5.87	82.2	2.1	16.32	8.55	5
							28.1	5.86	82.1	2	16.34	8.55	5
						4.00	27.9	5.77	81	1.8	17.03	8.52	6
							27.9	5.75	80.7	1.7	17.03	8.52	6
						7.00	27.8	6	84.2	2.8	17.67	8.49	5
							27.8	6	84.4	2.9	17.74	8.49	7
13:22	W9	ME	819046	807946	8.3	1.00	28	6.18	86.8	1.5	17.06	9	4
							28	6.15	86.3	1.4	17.14	8.99	5
						4.15	27.9	5.93	83.3	2.8	17.5	8.94	5
							27.9	5.98	84	2.7	17.45	8.93	4
						7.30	27.8	5.94	83.4	3.9	17.63	8.87	6
							27.8	5.92	83.1	4.1	17.65	8.87	5

MF - Middle Flood tida
ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **24-Jun-16**

Date / Time	Location	Tide*	Co-ordinates East	Co-ordinates North	Water Depth (m)	Sampling Depth (m)	Temp (℃)	DO Conc (mg/L)	DO Saturation (%)	Turbidity (NTU)	Salinity (ppt)	pH (unit)	SS (mg/l)
9:40	W1	MF	820700	808689	2.4	1.20	26.7	8.94	128.9	2.4	25.66	8.6	5
							26.7	8.87	127.8	2.5	25.66	8.6	5
9:43	W2	MF	820651	808639	2.5	1.25	26.7	8.88	128.1	2.8	25.67	8.6	5
							26.7	8.9	128.3	2.7	25.65	8.6	5
9:32	W3	MF	820440	809029	8.4	1.00	26.7	8.8	126.8	2.4	25.63	8.62	7
							26.7	8.8	126.8	2.5	25.63	8.62	7
						4.20	26.2	6.89	99.7	2.8	26.85	8.6	7
							26	6.83	98.2	2.9	27.15	8.6	7
						7.40	25.8	5.69	81.6	3.6	27.5	8.59	7
							25.8	5.68	81.4	3.4	27.5	8.59	7
9:26	W4	MF	820075	809290	8.5	1.00	26.6	8.43	121.4	2.2	25.87	8.64	4
							26.6	8.47	121.9	2.3	25.87	8.63	5
						4.25	26	6.66	95.9	2.8	27.85	8.61	6
							25.7	6.61	94.8	2.9	28.06	8.6	6
						7.50	25.5	6.32	90.6	3.8	28.4	8.59	8
							25.4	6.22	89.2	3.7	28.52	8.59	8
9:17	W5	MF	819861	809720	4.7	1.00	26.8	9.49	136.9	2.8	25.56	8.64	5
							26.7	9.35	134.8	2.7	25.56	8.64	4
						3.70	26.7	9.27	133.6	3.6	25.67	8.64	6
							26.7	9.02	129.9	3.7	25.72	8.64	7
8:57	W6	MF	819176	810912	6.9	1.00	27.1	10.97	158.5	2.3	25.01	8.75	8
							27	11.1	160.3	2.4	25.03	8.74	8
						3.45	26.8	9.66	139.3	2.8	25.45	8.73	6
							26.8	9.61	138.6	2.9	25.46	8.73	6
						5.90	25.9	6.47	92.9	3.5	27.2	8.69	10
							25.8	6.22	89.2	3.4	27.26	8.69	9
9:03	W7	MF	820048	810524	8.2	1.00	26.8	9.38	135.3	3.1	25.48	8.7	6
							26.8	9.34	134.7	3.2	25.47	8.7	6
						4.10	26.3	7.71	111	4.2	26.62	8.68	6
							26.2	7.58	109	4.1	26.73	8.68	6
						7.20	25.9	6.59	94.6	4.5	27.14	8.67	6
							25.9	6.41	91.9	4.6	27.28	8.67	7
9:09	W8	MF	821321	810243	8.7	1.00	26.7	8.51	122.7	2.1	25.6	8.67	6
							26.7	8.48	122.2	2.2	25.6	8.67	6
						4.35	25.9	6.37	91.4	2.8	27.32	8.65	5
							25.8	6.19	88.7	2.9	27.37	8.65	5
						7.70	25.8	5.9	84.6	3.8	27.41	8.64	6
							25.8	5.93	85	3.7	27.42	8.64	6
9:49	W9	MF	819041	807954	8.8	1.00	26.7	8.86	127.8	2.1	25.67	8.6	5
							26.7	8.82	127.2	2.2	25.67	8.6	5
						4.40	26	6.95	99.9	3.6	27.07	8.58	6
							26	6.7	96.2	3.5	27.18	8.58	5
						7.80	25.9	5.99	85.9	3.8	27.33	8.58	10
							25.8	5.89	84.4	3.9	27.36	8.57	8
13:36	W1	ME	820702	808680	2.8	1.40	26.6	8.34	120.2	3.9	25.79	8.58	5
							26.6	8.36	120.4	3.7	25.79	8.58	5
13:35	W2	ME	820654	808631	2.7	1.35	26.6	8.57	123.5	2.6	25.8	8.58	6
							26.6	8.67	124.8	2.5	25.79	8.58	6
13:43	W3	ME	820442	809024	8.6	1.00	26.7	8.59	123.8	2.4	25.71	8.58	7
							26.7	8.61	124.2	2.5	25.69	8.58	7
						4.30	25.8	6.7	96.4	3.1	28.02	8.54	8
							25.6	6.32	90.7	3.2	28.53	8.54	8
						7.60	25.3	6.21	89.1	2.6	28.91	8.53	6
							25.1	6.12	87.6	2.7	29.4	8.52	7
13:51	W4	ME	820076	809291	8.5	1.00	26.5	8.15	117.3	1.5	25.99	8.56	4
							26.5	8.09	116.5	1.6	26	8.55	4
						4.25	26.2	7.52	108.3	2.4	26.88	8.54	4
							26.1	6.85	98.6	2.5	27.07	8.54	5
						7.50	25.9	6.24	89.6	2.8	27.26	8.53	5
							25.9	5.97	85.7	2.7	27.32	8.53	6
13:59	W5	ME	819866	809711	4.7	1.00	26.6	8.15	117.4	1.6	25.85	8.54	5
							26.6	8.2	118.1	1.8	25.85	8.55	6
						3.70	26	6.55	94.1	2.9	27.07	8.53	6
							26	6.27	90	2.8	27.14	8.53	7
14:50	W6	ME	819170	810913	6.7	1.00	26.6	8.43	121.5	2.2	25.84	8.54	8
							26.6	8.45	121.7	2.3	25.83	8.54	8
						3.35	26.1	7.02	100.9	2.8	26.97	8.53	8
							26	6.36	91.3	2.9	27.12	8.53	7
						5.70	25.9	6.18	88.7	3.5	27.22	8.53	6
							25.9	6.12	87.8	3.3	27.23	8.52	8
14:12	W7	ME	820041	810525	8.1	1.00	26.5	8.11	116.8	2.8	25.92	8.54	6
							26.5	8.29	119.4	2.7	25.91	8.54	6
						4.05	26	6.59	94.7	3.9	27.01	8.53	5
							26	6.39	91.7	3.8	27.06	8.52	5
						7.10	26	6.19	88.8	4.5	27.09	8.52	5
							25.9	6	86.1	4.6	27.13	8.52	6
14:06	W8	ME	821341	810240	9.0	1.00	26.6	8.93	128.6	1.4	25.79	8.54	4
							26.6	8.88	127.9	1.3	25.79	8.54	4
						4.50	26.4	7.87	113.4	2.9	26.66	8.54	3
							26.2	7.66	110.4	2.8	26.85	8.53	4
						8.00	25.9	6.36	91.3	3.5	27.22	8.53	4
							25.8	5.82	83.9	3.4	28.27	8.52	5
13:34	W9	ME	819046	807955	9.2	1.00	26.9	9.44	136.3	2.6	25.46	8.59	5
							26.9	9.41	135.8	2.5	25.44	8.59	5
						4.60	26.7	8.85	127.6	3.7	25.75	8.59	6
							26.7	8.67	124.9	3.6	25.75	8.59	5
						8.20	26	6.45	92.5	4.8	27.1	8.57	7
							25.9	6.48	93.1	4.7	27.3	8.56	7

MF - Middle Flood tida
ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **27-Jun-16**

Date / Time	Location	Tide*	Co-ordinates East	Co-ordinates North	Water Depth (m)	Sampling Depth (m)	Temp (℃)	DO Conc (mg/L)	DO Saturation (%)	Turbidity (NTU)	Salinity (ppt)	pH (unit)	SS (mg/l)
17:30	W1	MF	820707	808690	2.9	1.45	30.6	16.21	240.1	3.9	17.58	8.93	3
							30.7	16.02	237.3	3.8	17.54	9.09	3
17:27	W2	MF	820655	808637	2.7	1.35	30.6	12.83	190.7	2.7	18.4	8.95	3
							30.6	12.86	191.2	2.8	18.42	8.95	3
17:34	W3	MF	820457	809026	8.2	1.00	30.4	14.77	216.2	2.3	16.3	9.07	4
							30.4	14.59	213.7	2.4	16.29	9.06	4
						4.10	27.9	12.05	176.3	2.9	23.52	8.87	5
							27.9	11.95	174.7	2.8	23.41	8.86	4
						7.20	27.4	9.09	132.5	3.7	24.52	8.83	4
							27.4	9.07	132.2	3.6	24.52	8.82	4
17:45	W4	MF	820079	809304	8.3	1.00	30.4	14.45	211.6	2.1	16.25	9	4
							30.4	14.4	210.9	2.2	16.23	9	3
						4.15	28.5	14.89	218.1	2.9	22	8.86	4
							28.4	14.85	217.6	3.1	22.13	8.86	4
						7.30	27.6	9.8	142.9	3.8	23.9	8.8	4
							27.6	9.66	140.8	3.9	23.93	8.8	6
17:57	W5	MF	81981	809707	4.8	1.00	31.2	13.41	198.9	1.4	16.12	8.93	3
							31.1	13.37	198.2	1.5	16.15	8.93	3
						3.80	27.5	9.71	141.9	2.6	24.5	8.74	4
							27.5	9.66	141.2	2.5	24.49	8.74	4
18:29	W6	MF	819170	810924	6.8	1.00	31.1	17.31	264.2	2.5	21.42	8.78	4
							31.1	17.29	264.1	2.6	21.56	8.82	4
						3.40	29.6	15.52	235.8	2.9	22.47	8.93	4
							29.6	15.51	235.6	2.8	22.45	8.93	4
						5.80	28.3	14.88	219.4	3.4	23.69	8.91	5
							28.2	14.77	217.6	3.5	23.69	8.91	4
18:17	W7	MF	820052	810537	7.9	1.00	30.7	14.43	213.3	2.1	16.81	8.97	4
							30.4	14.72	216.9	2.2	17.15	8.96	5
						3.95	27.6	10.71	156.7	1.9	24.4	8.79	5
							27.6	10.67	156.2	1.8	24.41	8.78	5
						6.90	27.5	10.24	149.8	3.2	24.66	8.76	4
							27.4	10.08	147.3	3.1	24.85	8.76	4
18:08	W8	MF	821339	810258	8.9	1.00	30.7	14.43	213.3	2.1	16.81	8.97	5
							30.4	14.72	216.9	2.2	17.15	8.96	5
						4.45	27.6	10.71	156.7	1.9	24.4	8.79	6
							27.6	10.67	156.2	1.8	24.41	8.78	5
						7.90	27.5	10.24	149.8	3.2	24.66	8.76	6
							27.4	10.08	147.3	3.1	24.85	8.76	4
17:18	W9	MF	819037	809977	8.8	1.00	29.9	16.81	244.2	2.6	16.13	9.15	5
							29.9	16.87	245	2.4	16.13	9.14	4
						4.40	27.1	9.03	131.2	3.6	25	8.87	4
							27.1	9.11	132.5	3.5	24.93	8.87	5
						7.80	26.6	7.48	108.4	4.6	25.83	8.84	4
							26.6	7.5	108.7	4.5	25.8	8.84	3
11:50	W1	ME	820703	808692	2.8	1.40	30.5	16.22	239.3	2.8	17.34	8.9	4
							30.4	16.26	239.7	2.9	17.33	8.96	4
11:54	W2	ME	820658	808639	2.7	1.35	30.3	15.42	226.9	3.9	17.45	8.96	7
							30.3	15.32	225.4	4.1	17.46	8.96	6
11:37	W3	ME	820453	809037	8.4	1.00	30.3	14.53	213	2.1	16.85	8.94	4
							30.2	14.45	211.6	2.2	16.83	8.94	3
						4.20	28.6	13.61	199.9	2.9	22.23	8.82	3
							28.6	13.6	199.8	2.8	22.33	8.82	4
						7.40	27.7	11.01	161.1	3.7	24.45	8.75	3
							27.8	11.23	164.5	3.8	24.25	8.75	4
11:22	W4	ME	820079	809296	8.5	1.00	30.3	15.24	223.5	2.5	16.87	8.98	2
							30.3	15.27	223.9	2.4	16.86	8.9	3
						4.25	29.2	14.62	213.9	2.8	19.76	8.9	3
							29.2	14.68	214.7	2.9	19.82	8.9	3
						7.50	27.1	8.95	130.2	3.6	25.28	8.77	4
							27	8.97	130.5	3.5	25.31	8.77	4
11:08	W5	ME	819881	809707	4.5	1.00	30.4	15.68	230.6	2.2	17.08	9.01	3
							30.3	15.56	228.6	2.3	17.23	9	2
						3.50	27.7	10.47	153.3	2.8	24.43	8.82	4
							27.7	10.54	154.4	2.7	24.46	8.82	3
10:27	W6	ME	819177	810904	6.5	1.00	29.4	16.94	251.1	2.1	21.77	8.74	4
							29.4	16.8	249.2	2.2	21.76	8.75	5
						3.25	28.6	16.86	249.7	2.9	23.88	8.77	3
							28.6	17.05	252.6	2.8	23.87	8.77	4
						5.50	28	11.84	174.6	3.6	24.86	8.75	4
							28	11.88	175.1	3.8	24.83	8.75	4
10:41	W7	ME	820058	810539	8.2	1.00	29.7	15.69	230	3.1	18.65	9.01	3
							29.7	15.68	229.9	3.2	18.78	9.01	3
						4.10	28.1	12.78	187.3	3.8	23.68	8.88	3
							28.2	12.82	188.1	3.7	23.5	8.88	3
						7.20	27.2	9.36	136.2	4.5	24.88	8.84	4
							27.2	9.53	138.8	4.6	24.88	8.83	3
10:54	W8	ME	821334	810246	8.8	1.00	29.6	15.51	227.5	2.8	19.16	8.93	3
							29.6	15.62	229.2	2.7	19.17	8.93	4
						4.40	27.7	11.57	169.2	3.9	24.24	8.81	4
							27.7	11.35	165.8	3.8	24.19	8.81	3
						7.80	26.9	8.36	121.3	4.8	25.06	8.78	4
							27	8.42	122.1	4.7	25.02	8.78	4
12:01	W9	ME	819046	807962	8.7	1.00	30.1	16.82	244.6	2.1	15.94	9.03	3
							30.1	16.82	244.5	2.2	16.01	9.02	4
						4.35	28.6	14.44	211.8	2.6	21.81	8.86	4
							28.6	14.37	210.7	2.5	21.96	8.86	3
						7.70	27.6	10.13	148.2	3.2	24.61	8.79	3
							27.6	10	146.3	3.3	24.67	8.78	4

MF - Middle Flood tida
ME - Middle Ebb tida

Contract No. 1/WSD/13 -
Improvement of Fresh Water Supply to Cheung Chau

Impact Marine Water Quality Monitoring

Sampling Date: **29-Jun-16**

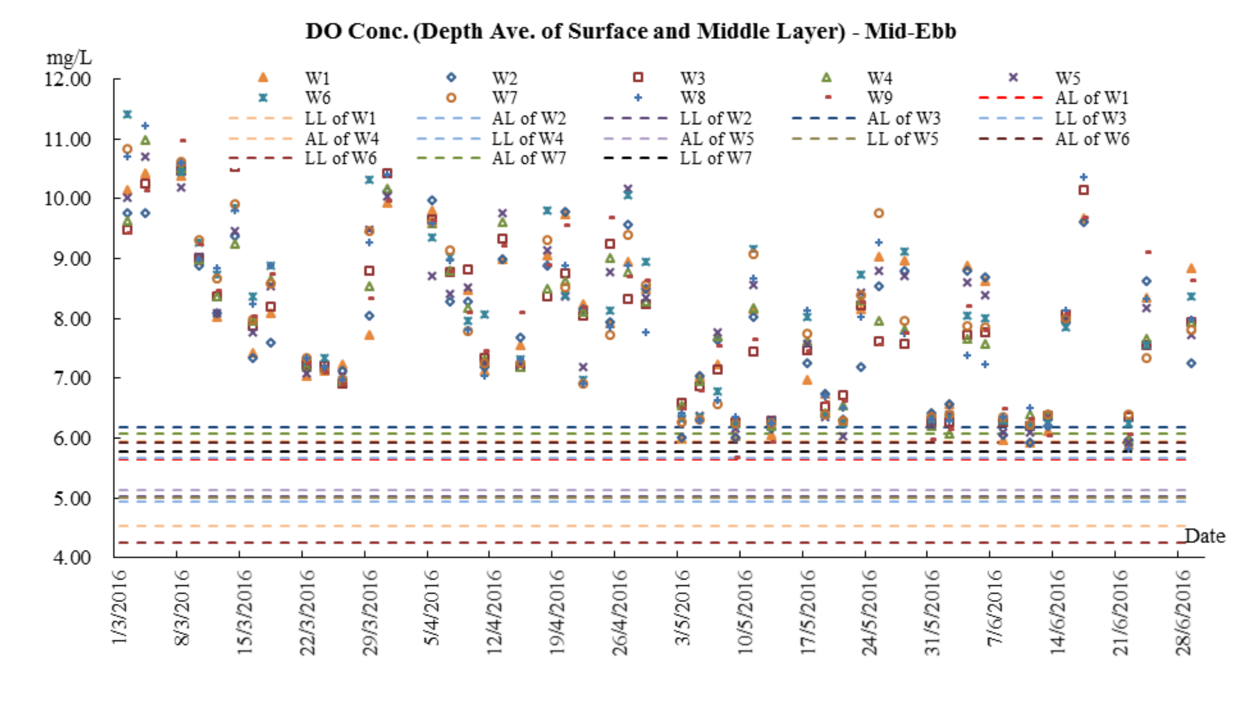
Date / Time	Location	Tide*	Co-ordinates East	Co-ordinates North	Water Depth m	Sampling Depth m	Temp ℃	DO Conc mg/L	DO Saturation %	Turbidity NTU	Salinity ppt	pH unit	SS mg/l
12:46	W1	MF	820700	808670	2.7	1.35	26.4	7.01	100.6	3.2	25.44	8.59	4
							26.4	7.02	100.8	3.1	25.43	8.59	6
12:50	W2	MF	820648	808630	2.8	1.40	26.4	7.09	101.8	2.6	25.41	8.59	6
							26.4	7.13	102.4	2.5	25.38	8.59	6
13:11	W3	MF	820446	809032	8.7	1.00	27.4	8.93	129.4	2.4	24.12	8.58	6
							27.4	8.9	129	2.5	24.16	8.59	8
						4.35	27.1	8.42	121.8	3	24.6	8.58	7
							27	8.32	120.2	2.9	24.67	8.58	7
						7.70	26.6	7.66	110.3	3.8	25.26	8.57	6
							27	8.4	121.3	3.7	24.55	8.58	7
13:04	W4	MF	820070	809291	8.5	1.00	26.6	7.54	108.5	2	25.1	8.58	7
							26.7	7.56	108.9	2.1	25.08	8.58	6
						4.25	26.4	7.22	103.8	2.8	25.52	8.57	7
							26.3	7.04	101.1	3	25.59	8.57	7
						7.50	26.2	6.85	98.2	3.7	25.65	8.57	7
							26.2	6.82	97.8	3.8	25.66	8.57	6
13:18	W5	MF	819871	809686	5.7	1.00	27.4	8.93	129.4	1.3	24.12	8.58	5
							27.4	8.9	129	1.4	24.16	8.59	5
						4.70	27.1	8.42	121.8	2.5	24.6	8.58	5
							27	8.32	120.2	2.4	24.67	8.58	4
13:43	W6	MF	819171	810909	8.8	1.00	27.2	8.86	128.2	2.5	24.4	8.57	6
							27.1	8.71	126	2.5	24.42	8.57	6
						4.40	27	8.5	122.8	2.4	24.6	8.57	5
							27	8.45	122.1	3	24.62	8.57	6
						7.80	26.1	6.62	94.9	2.4	25.87	8.56	6
							26.1	6.53	93.4	3.1	25.91	8.56	7
13:33	W7	MF	820041	810521	8.6	1.00	27.1	8.53	123.4	1.7	24.45	8.58	6
							27.1	8.6	124.4	1.5	24.44	8.58	7
						4.30	26.4	7.35	105.8	1.4	25.61	8.56	7
							26.3	7.06	101.4	2.8	25.73	8.56	7
						7.60	26.2	6.81	97.7	1.7	25.69	8.57	6
							26.1	6.72	96.3	2.7	25.88	8.56	5
13:26	W8	MF	821322	810240	8.7	1.00	27	8.4	121.3	1.8	24.55	8.58	7
							27	8.4	121.4	1.4	24.55	8.58	7
						4.35	26.4	7.37	105.9	1.3	25.54	8.57	6
							26.3	7.18	103.2	2.7	25.59	8.57	7
						7.70	26.6	7.66	110.3	1.7	25.26	8.57	6
							26.2	6.85	98.2	2.6	25.69	8.56	7
12:46	W9	MF	819031	807951	8.6	1.00	27.8	9.6	139.7	2.5	23.38	8.65	6
							27.9	10.42	151.6	2.4	23.26	8.72	6
						4.30	26.6	7.62	109.7	3.6	25.26	8.61	7
							26.5	7.34	105.6	3.5	25.35	8.61	7
						7.60	26.4	7.2	103.5	4.2	25.41	8.6	7
							26.4	7.17	103	4.1	25.43	8.6	8
9:17	W1	ME	820706	808680	2.0	1.00	27.6	8.55	123.8	2.5	23.33	8.62	5
							27.6	9.13	132.2	2.6	23.27	8.58	5
9:19	W2	ME	820651	808634	2.2	1.10	26.4	7.25	104.3	3.6	25.17	8.59	8
							26.4	7.27	104.3	3.8	25.17	8.59	6
9:09	W3	ME	820441	809031	8.4	1.00	27.4	8.7	125.7	1.9	23.41	8.59	6
							27.4	8.63	124.8	2	23.41	8.59	6
						4.20	26.5	7.23	103.7	2.8	25.06	8.58	7
							26.4	7.22	103.6	2.7	25.08	8.58	7
						7.40	26.3	6.9	99.1	3.6	25.66	8.56	7
							26.3	6.83	98	3.7	25.53	8.57	8
9:03	W4	ME	820076	809290	8.0	1.00	27.2	8.6	124	2.4	23.7	8.6	6
							27.2	8.53	123	2.4	23.72	8.6	6
						4.00	26.5	7.3	104.7	2.8	25	8.59	6
							26.5	7.29	104.6	2.9	25	8.59	7
						7.00	26	6.29	90.3	3.4	26.43	8.56	9
							26.1	6.2	89	3.3	26.3	8.56	9
8:55	W5	ME	819870	809691	4.6	1.00	26.7	7.76	111.5	2.1	24.42	8.59	6
							26.7	7.68	110.4	1.9	24.46	8.59	6
						3.60	26.4	7.24	103.9	2.5	25.06	8.59	6
							26.4	7.2	103.2	2.4	25.05	8.59	5
8:33	W6	ME	819170	810908	8.2	1.00	27.3	8.78	126.4	1.8	23.16	8.7	7
							27.3	8.63	124.4	1.9	23.31	8.7	7
						4.10	26.8	8.08	116	2.6	24.1	8.65	7
							26.8	8.01	115	2.5	24.16	8.65	8
						7.20	26.5	7.46	107	3.3	25.07	8.63	10
							26.4	7.36	105.5	3.5	25.1	8.62	9
8:40	W7	ME	820049	810520	8.0	1.00	27	8.3	119.4	2.8	23.79	8.64	7
							27	8.34	119.8	2.9	23.78	8.63	7
						4.00	26.5	7.31	104.9	3.5	25.01	8.61	7
							26.5	7.3	104.7	3.4	25.03	8.61	7
						7.00	26.4	7.06	101.2	3.9	25.22	8.6	9
							26.4	7.06	101.2	4	25.22	8.6	9
8:46	W8	ME	821320	810241	8.1	1.00	27.2	8.46	121.9	2.2	23.56	8.61	6
							27.2	8.51	122.6	2.3	23.56	8.61	5
						4.05	26.6	7.51	107.9	3.5	24.86	8.6	5
							26.5	7.44	106.8	3.4	24.96	8.6	7
						7.10	26.5	7.36	105.6	4.4	24.99	8.6	6
							26.4	7.28	104.4	4.3	25.07	8.59	5
9:23	W9	ME	819035	807950	7.9	1.00	27.8	8.63	145.6	1.7	23.19	8.63	4
							27.8	8.63	145.6	1.8	23.2	8.63	4
						3.95	27	8.61	122.5	2.2	24.41	8.61	5
							26.9	8.61	117.1	2.1	24.43	8.61	5
						6.90	26.8	8.61	116.2	2.8	24.69	8.61	6
							26.6	8.61	108.8	3	24.99	8.61	6

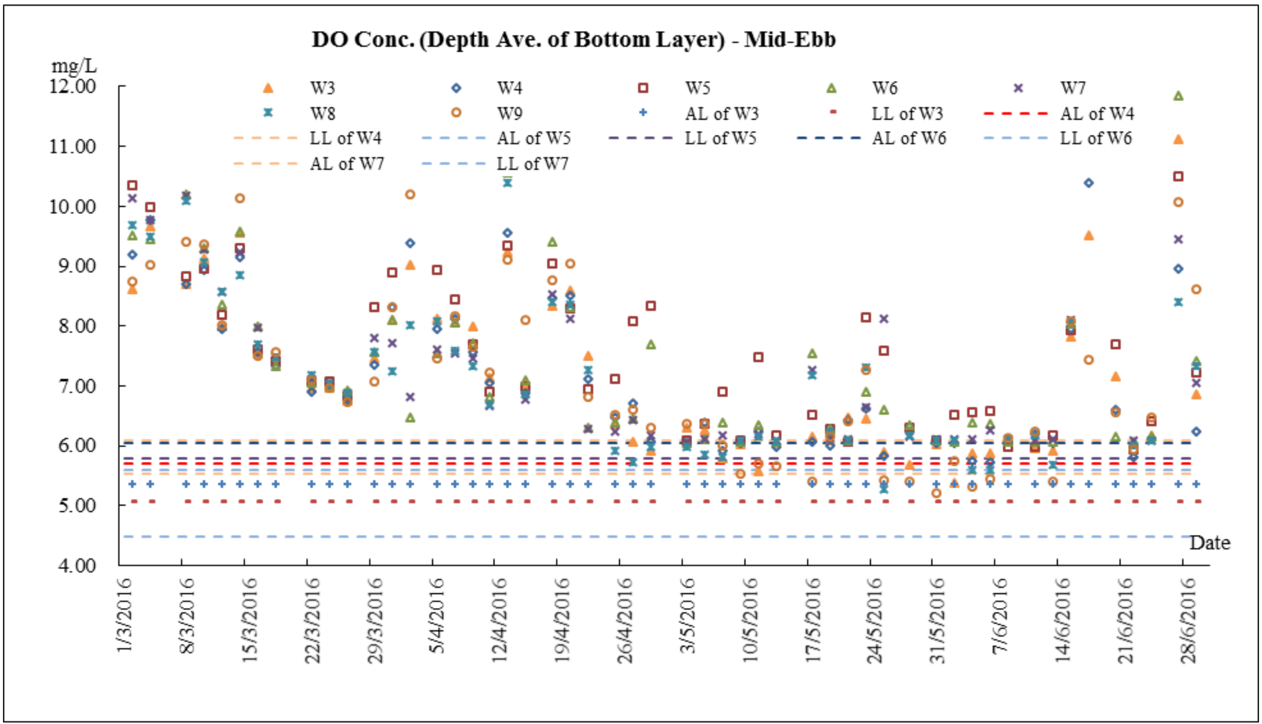
MF - Middle Flood tida
ME - Middle Ebb tida

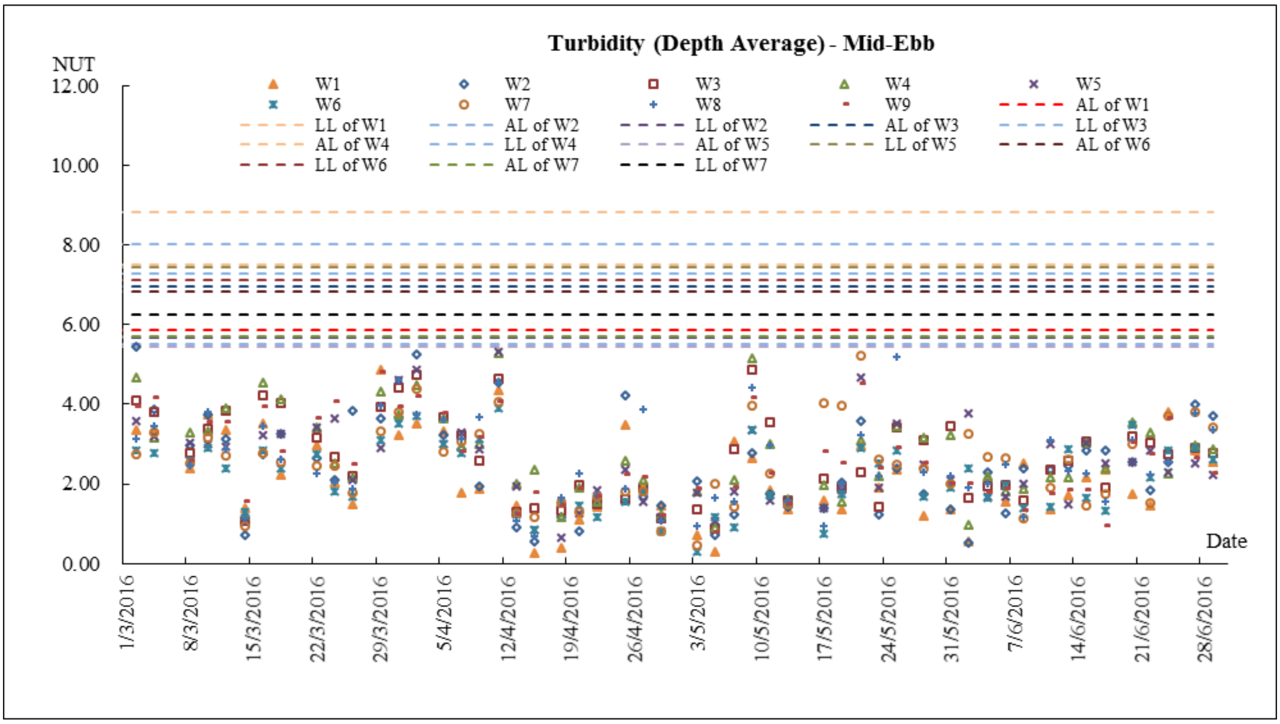
Appendix I

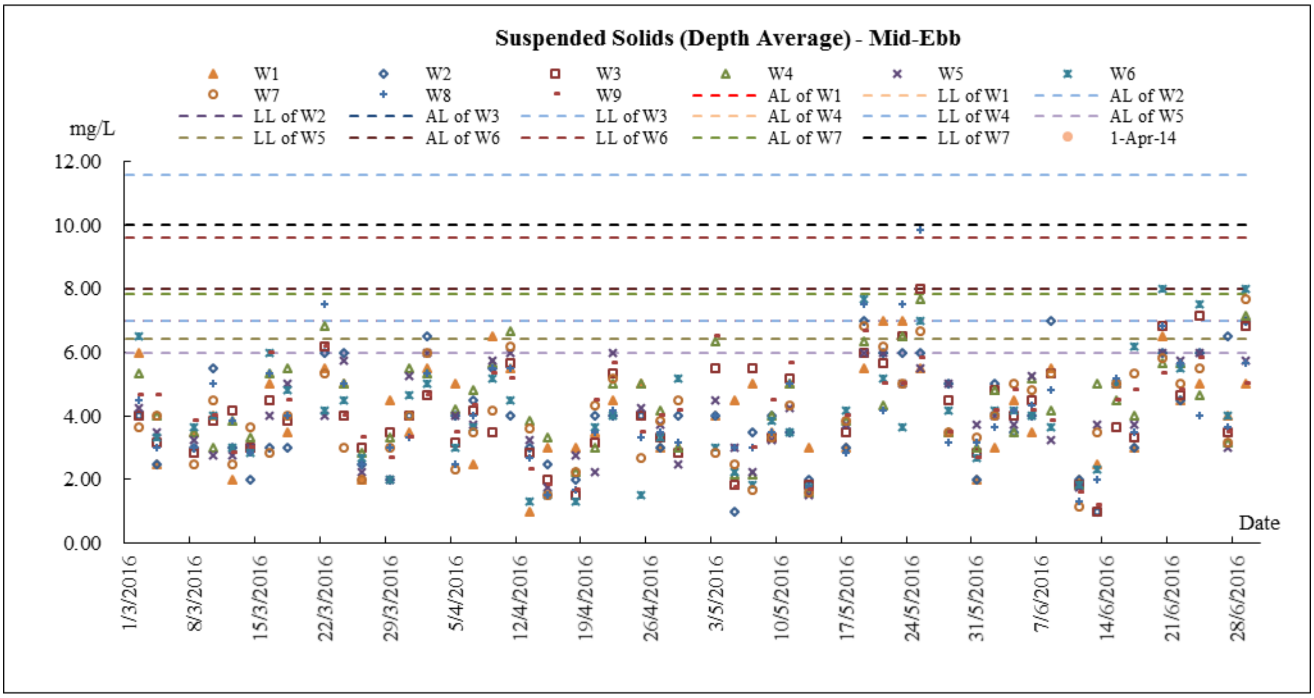
Graphical Plots of Impact Monitoring

Marine Water Quality – Mid-ebb

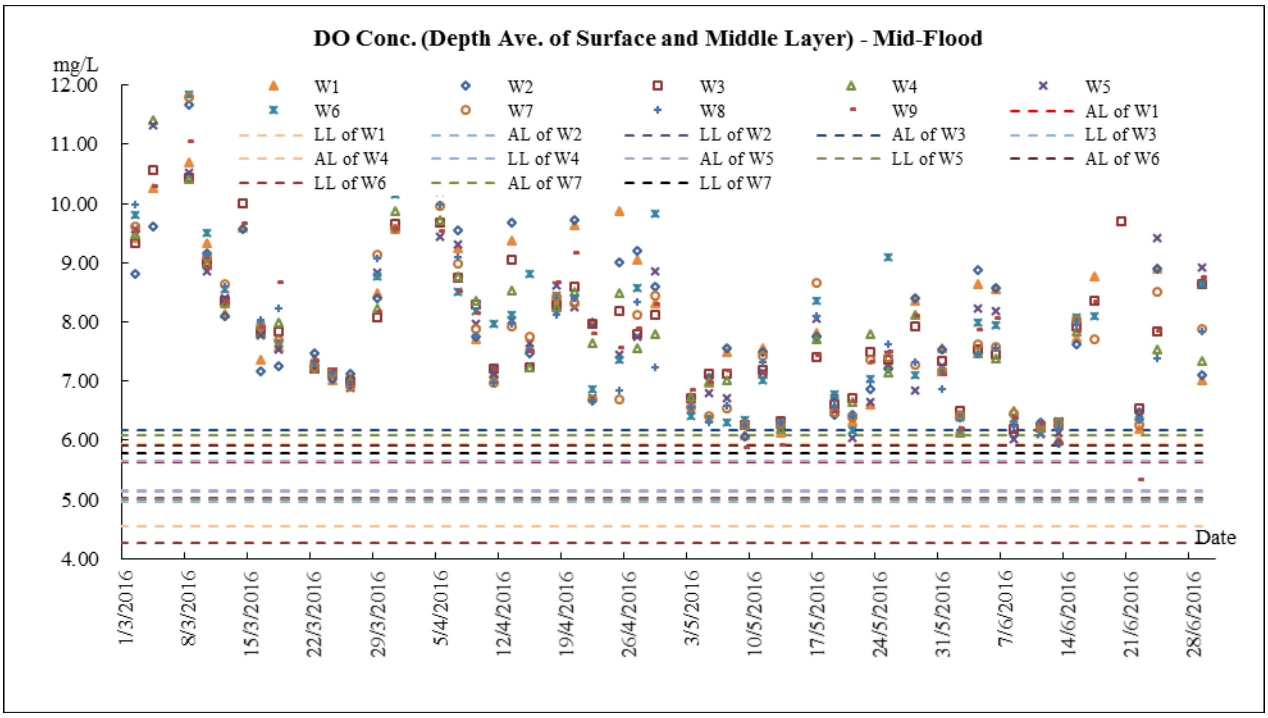


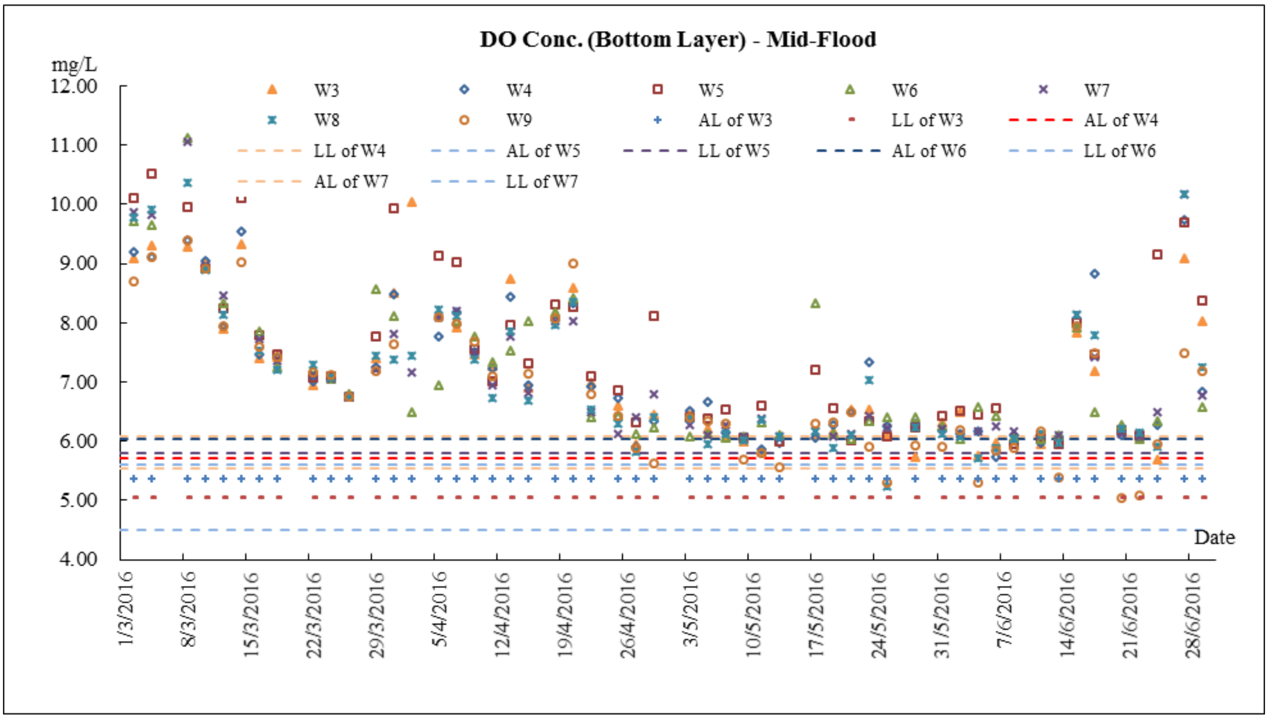


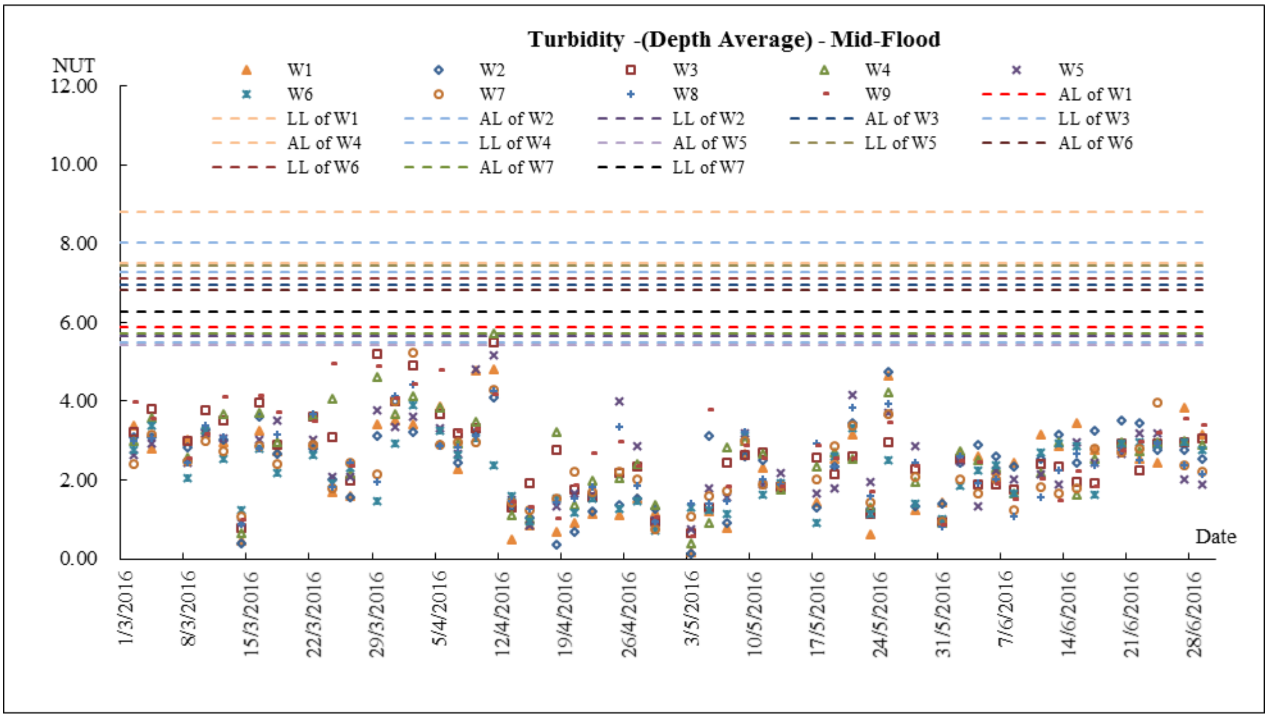

Turbidity (Depth Average) - Mid-Ebb
NUT
W1 W2 W3 W4 W5
W6 W7 W8 W9 AL of W1
LL of W1 AL of W2 LL of W2 AL of W3 LL of W3
AL of W4 LL of W4 AL of W5 LL of W5 AL of W6
LL of W6 AL of W7 LL of W7
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1/3/2016
8/3/2016
15/3/2016
22/3/2016
29/3/2016
5/4/2016
12/4/2016
19/4/2016
26/4/2016
3/5/2016
10/5/2016
17/5/2016
24/5/2016
31/5/2016
7/6/2016
14/6/2016
21/6/2016
28/6/2016

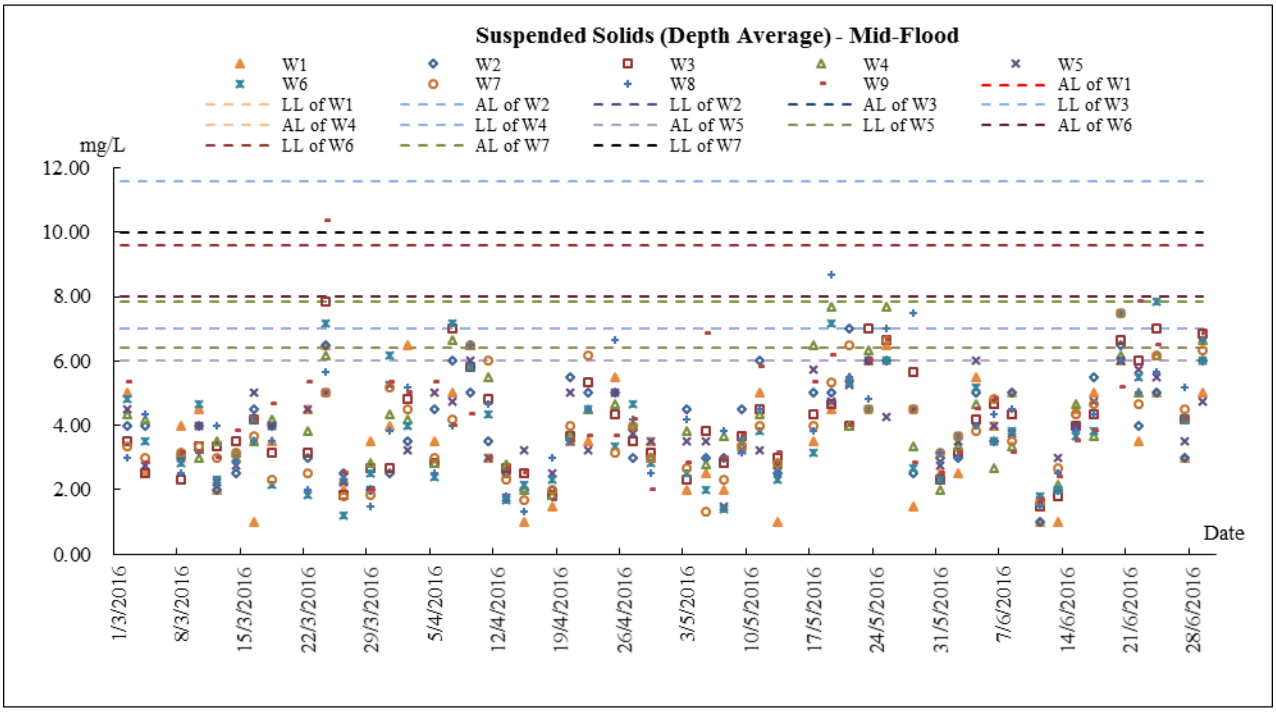

Suspended Solids (Depth Average) - Mid-Ebb
mg/L
W1 W2 W3 W4 W5 W6
W7 W8 W9 AL of W1 LL of W1 AL of W2
LL of W2 AL of W3 LL of W3 AL of W4 LL of W4 AL of W5
LL of W5 AL of W6 LL of W6 AL of W7 LL of W7 1-Apr-14
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1/3/2016
8/3/2016
15/3/2016
22/3/2016
29/3/2016
5/4/2016
12/4/2016
19/4/2016
26/4/2016
3/5/2016
10/5/2016
17/5/2016
24/5/2016
31/5/2016
7/6/2016
14/6/2016
21/6/2016
28/6/2016

Marine Water Quality – Mid-flood

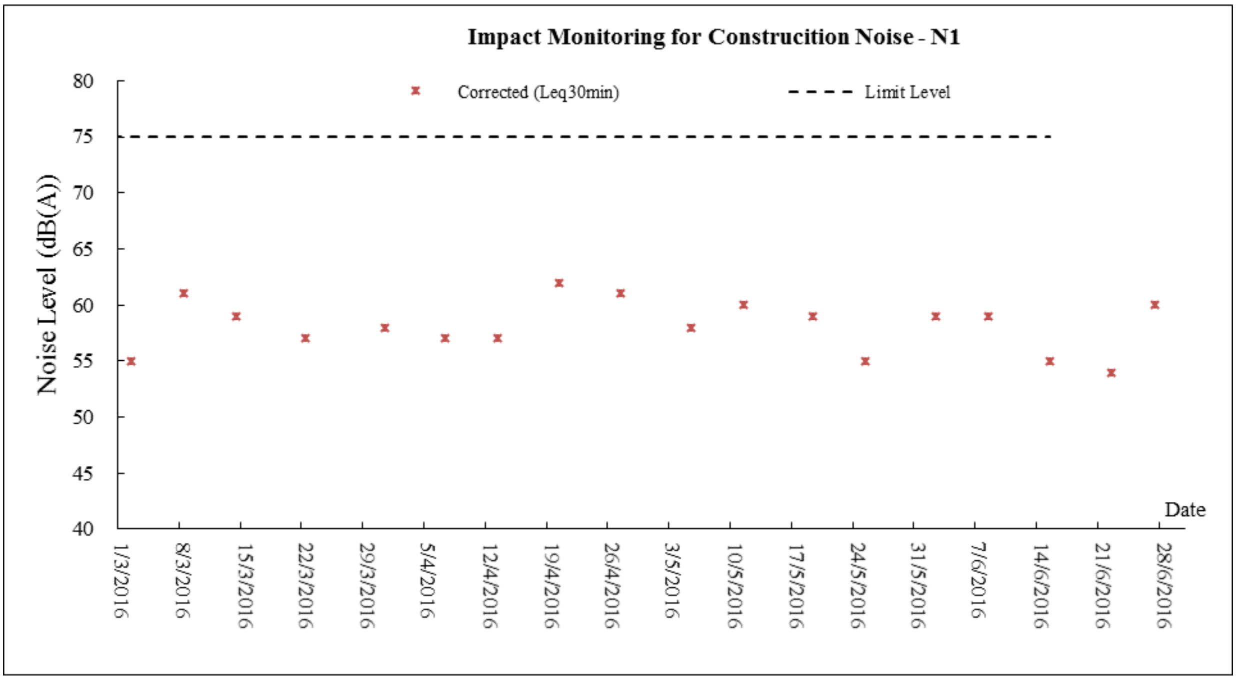





Turbidity -(Depth Average) - Mid-Flood
NUT
W1
W2
W3
W4
W5
W6
W7
W8
W9
AL of W1
LL of W1
AL of W2
LL of W2
AL of W3
LL of W3
AL of W4
LL of W4
AL of W5
LL of W5
AL of W6
LL of W6
AL of W7
LL of W7
Date


Suspended Solids (Depth Average) - Mid-Flood
mg/L
W1
W2
W3
W4
W5
W6
W7
W8
W9
AL of W1
LL of W1
AL of W2
LL of W2
AL of W3
LL of W3
AL of W4
LL of W4
AL of W5
LL of W5
AL of W6
LL of W6
AL of W7
LL of W7
Date

Noise


Impact Monitoring for Construcition Noise - N1
Corrected (Leq30min)
Limit Level
Noise Level (dB(A))
80
75
70
65
60
55
50
45
40
Date
1/3/2016
8/3/2016
15/3/2016
22/3/2016
29/3/2016
5/4/2016
12/4/2016
19/4/2016
26/4/2016
3/5/2016
10/5/2016
17/5/2016
24/5/2016
31/5/2016
7/6/2016
14/6/2016
21/6/2016
28/6/2016

Appendix J

Meteorological Data

Date		Weather	Total Rainfall (mm)	Cheung Chau Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction (degree)
1-Jun-16	Wed	Hot with sunny periods and a few showers	0	29.4	19.9	88	S/SW
2-Jun-16	Thu	Moderate southeasterly winds	0	30.3	21.4	85.5	W/SW
3-Jun-16	Fri	Moderate south to southwesterly winds	Trace	30.2	19.3	87.2	S/SW
4-Jun-16	Sat	Hot with sunny periods and a few showers	12.4	28.1	15.3	86.3	N/NW
5-Jun-16	Sun	Moderate southeasterly winds	7.6	26.5	20.5	87.2	N/NW
6-Jun-16	Mon	Moderate south to southwesterly winds	77.6	25.9	11.1	91.2	N/NE
7-Jun-16	Tue	Mainly cloudy with isolated heavy showers and squally thunderstorms.	0.4	27.5	14.1	89.2	SE
8-Jun-16	Wed	Cloudy with showers and a few squally thunderstorms.	46.5	25.9	15.5	92.5	S/SW
9-Jun-16	Thu	Moderate south to southwesterly winds	Trace	27.8	18.2	87.5	E/SE
10-Jun-16	Fri	Hot with sunny periods and a few showers	9.1	27.9	12.1	87.5	SE
11-Jun-16	Sat	Moderate southeasterly winds	85.5	25.7	13.5	89	S/SW
12-Jun-16	Sun	Moderate south to southwesterly winds	28.2	26	22.5	99	S/SW
13-Jun-16	Mon	Hot with sunny periods and a few showers	0.1	28.5	13.8	93.7	S/SW
14-Jun-16	Tue	Moderate southeasterly winds	Trace	29.1	20.3	91.2	S/SW
15-Jun-16	Wed	Moderate south to southwesterly winds	0.6	29.1	20	91.5	S/SW
16-Jun-16	Thu	Mainly cloudy with isolated heavy showers and squally thunderstorms.	2.8	28.3	20	91.5	S/SW
17-Jun-16	Fri	Cloudy with showers and a few squally thunderstorms.	2.5	28.6	12.4	87	S/SW
18-Jun-16	Sat	Moderate south to southwesterly winds	13.1	28.3	15.1	84	E/SE
19-Jun-16	Sun	Hot with sunny periods and a few showers	0	28.9	17.5	83.5	E/SE
20-Jun-16	Mon	Moderate southeasterly winds	Trace	30.3	6.7	83.5	S
21-Jun-16	Tue	Moderate south to southwesterly winds	0	30.1	9.7	83	S/SW
22-Jun-16	Wed	Hot with sunny periods and a few showers	0	30.4	6.5	83	S/SW
23-Jun-16	Thu	Moderate southeasterly winds	0	29.6	6	79.7	S
24-Jun-16	Fri	Moderate south to southwesterly winds	0	29.9	7.6	80.5	S
25-Jun-16	Sat	Mainly cloudy with isolated heavy showers and squally thunderstorms.	0	30.1	9.2	79	SE
26-Jun-16	Sun	Cloudy with showers and a few squally thunderstorms.	Trace	30.6	14.5	78.7	SE
27-Jun-16	Mon	Moderate south to southwesterly winds	1.7	30.5	14.8	80.5	E/SE
28-Jun-16	Tue	Hot with sunny periods and a few showers	37.1	28.3	16.3	86.7	W/SW
29-Jun-16	Wed	Hot with sunny periods and a few showers	20.4	28.2	28	89.7	SE
30-Jun-16	Thu	Hot with sunny periods and a few showers	1.8	28.6	20.5	88.7	S

Remark: “Maintenance” means the Cheung Chau weather station of the corresponding weather parameter from the Hong Kong Observatory was under maintenance and the data is not available

Appendix K

Monthly Summary Waste Flow Table

Name of Department: WSD Contract No.: 1/WSD/13

MONTHLY SUMMARY WASTE FLOW TABLE FOR 2016 (YEAR)

QUARTER ENDING	ACTUAL QUANTITIES OF INERT C&D MATERIALS GENERATED MONTHLY						ACTUAL QUANTITIES OF C&D WASTES GENERATED MONTHLY				
	TOTAL QUANTITY GENERATED	BROKEN CONCRETE (SEE NOTE 3)	REUSED IN THE CONTRACT	REUSED IN OTHER PROJECTS	DISPOSED AS PUBLIC FILL	IMPORTED FILL	METALS	PAPER/ CARDBOARD PACKAGING	PLASTICS (SEE NOTE 2)	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 '000 KG)	(IN '000KG)	(IN '000KG)	(IN '000KG)	(IN '000M^3)
JAN	-	-	-	-	0.17	-	-	-	-	-	0.07
FEB	-	-	-	-	0	-	-	-	-	-	0.04
MAR	-	-	-	-	0	-	-	-	-	-	0.02
APR	-	-	-	-	0	-	-	-	-	-	0.06
MAY	-	-	-	-	0.70	-	-	-	-	-	0.02
JUNE	-	-	-	-	2.00	-	-	-	-	-	0.02
SUB-TOTAL	0	0	0	0	2.87	0	0	0	0	0	0.23
JULY	-	-	-	-		-	-	-	-	-	
AUG	-	-	-	-		-	-	-	-	-	
SEPT	-	-	-	-		-	-	-	-	-	
OCT	-	-	-	-		-	-	-	-	-	
NOV	-	-	-	-		-	-	-	-	-	
DEC	-	-	-	-		-	-	-	-	-	
TOTAL	0	0	0	0	2.87	0	0	0	0	0	0.23

Appendix L

Implementation Schedule for Environmental Mitigation Measures (ISEMM)

Table A.2 Implementation Schedule of Water Quality Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Water Quality - Construction Phase									
		General							
3.7.2	2.9.2	The Contractor shall observe and comply with the Water Pollution Control Ordinance (WPCO) and its subsidiary regulations. The Contractor shall carry out the works in such a manner as to minimise adverse impacts on the water quality during execution of the works. In particular the Contractor shall arrange his method of working to minimise the effects on the water quality within and outside the site and on the transport routes.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.3	2.9.3	The Contractor shall follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures below and as specified in ProPECC PN 1/94 - Construction Site Drainage. The design of the mitigation measures shall be submitted by the Contractor to the Engineer for approval. All discharge from the construction works should meet the discharge standards stipulated under the WPCO "Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters".	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		Site Preparation / Clearance							
3.7.4	2.9.4	Proper construction site drainage management measures should be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching nearby water bodies. Site runoff and wastewater should not be discharged into nearby water bodies without proper treatment.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
3.7.5	2.9.5	Turbid water from construction sites must be treated to minimise the solids content before being discharged. Advice on the handling and disposal of site discharge is given in the ProPECC Note PN 1/94 – "Construction Site Drainage".	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
3.7.6	2.9.6	In general, surface runoff from construction sites should be discharged into water bodies via adequately designed silt removal facilities such as sand traps, silt traps and sedimentation tanks. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Sufficient numbers of pumps and tanks of adequate capacity should be provided on-site. Perimeter channels at site boundaries should be provided to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		constructed in advance of earthworks.							
3.7.7	2.9.7	Silt removal facilities and diversion channels should be maintained and the deposited silt and grit should be removed regularly, especially at the onset of and after each rainstorm to ensure proper functioning of these facilities at all times.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
3.7.8	2.9.8	Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into the nearby water bodies. Open stockpiles susceptible to erosion should be covered with tarpaulin or similar fabric and provided with containment such as bunds, sand bag barriers or equivalent measures, especially during the wet season (April – September) or when heavy rainstorm is predicted. Runoff to watercourses should be intercepted by minimising flat exposed areas of permeable soil, and by forming pits or diversion channels into which runoff can flow to suitable treatment facilities before discharge.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94
3.7.9	2.9.9	*Drilling Works* *Launching site at Cheung Chau* The proposed launching site at Cheung Chau should be paved with a slight fall towards land to prevent site runoff from directly flowing to the	To minimize adverse water quality impact from	Proposed launching site at Cheung Chau /	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		sea. The launching site should be provided with an adequately designed site drainage system to contain and treat polluted site runoff and wastewater. Adequate numbers of tank with sufficient capacity should be provided on-site to collect, store and treat drilling fluids, cuttings and/or chemicals. These tanks should be surrounded by bunds and regularly inspected and maintained to avoid leakage.	drilling works	during construction					
3.7.10	2.9.10	During directional drilling, excavated spoil (cuttings) will be carried as a slurry with the drilling fluid to emerge at Cheung Chau. The slurry should be treated to remove the cuttings and recycled as drilling fluid. Cuttings should be stored in containers prior to removal and disposal as construction & demolition material to public fill reception facilities.	To minimize adverse water quality impact from drilling works	Proposed launching site at Cheung Chau / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.11	2.9.11	If temporary storage of cuttings is required for later reuse, this should be undertaken in Cheung Chau. Care should be taken in the storage of cuttings especially during the wet season and the storage area should be covered and bunded to prevent silty runoff entering water bodies.	To minimize adverse water quality impact from drilling works	Proposed launching site at Cheung Chau / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
3.7.12	2.9.12	A schematic layout plan of the proposed launching site and drainage measures at Cheung Chau is shown in ***Figure 3.3*** to demonstrate the launching site has adequate land area to setup the necessary construction equipment, auxiliary equipment, site offices and drilling fluid containment, recovery and treatment systems. In general, the site will be divided into clean area and dirty area. The clean area will be used to house the site offices, storage area and other non-polluting uses. The dirty area will be the main drilling works site consisting of the drilling rig, entry pit, mud tank, drilling pipes storage, drilling fluid recycling and treatment systems, stockpiling area and wastewater treatment systems.	To minimize adverse water quality impact from drilling works	Proposed launching site at Cheung Chau / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.13	2.9.13	The entire dirty area should be surrounded by a 0.5 m tall concrete bund to fully contain and prevent site runoff from discharging into the marine waters untreated as well as to prevent surface runoff from entering the site. The entry pit should be further surrounded by a 0.3 m tall concrete bund for added protection to contain and avoid spillage of drilling fluid. All site runoff should be diverted to an adequately designed wastewater treatment system for treatment before discharge.	To minimize adverse water quality impact from drilling works	Proposed launching site at Cheung Chau / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
3.7.14	2.9.14	The perimeter of the clean area should be surrounded with 300 mm u-channel to collect and divert all site runoff for treatment before discharge. Bund should be provided to prevent surrounding surface runoff from entering the site.	To minimize adverse water quality impact from drilling works	Proposed launching site at Cheung Chau / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.15	2.9.15	After separating the cuttings, bentonite slurry should be re-circulated for reuse in the drilling works. By adopting a forward reaming approach all slurry treatment and drilling fluid recycling systems should be located and managed on Cheung Chau.	To minimize adverse water quality impact from drilling works	Proposed launching site at Cheung Chau / during construction	Construction Contractor		√		Water Pollution Control Ordinance
		Reception Site at Lantau							
3.7.16	2.9.16	The pilot hole and reaming should be stopped approximately 50 m short of the final exit point at Chi Ma Wan in order to prevent any release of slurry in to the marine environment. Prior to drilling the final 50 m, the reamed hole should be thoroughly cleaned with water to remove all cuttings and drilling fluid. The final 50 m of drilling should be completed using water instead of bentonite in order to prevent the release of bentonite at the exit pit. Approximately 0.3 m high concrete bund should be constructed around the exit pit to contain the drilling fluid, which is mainly silty water and generated when the drill head bores through the rock at Lantau during the	To minimize adverse water quality impact from drilling works	Proposed reception site at Lantau / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		final drilling process. The exact level of the concrete bund should be determined on site to ensure that it will not be lower than the ground level of the launching site at Cheung Chau.							
3.7.17	2.9.17	The use of containment structure such as earth bund, sand bag barriers wrapped with geotextile fabric or similar material, diversion channels or other similar techniques should be installed surrounding the site boundary at Lantau during the wet season to intercept storm runoff from outside the site so that it will not wash across the site (or into the exit pit).	To minimize adverse water quality impact from drilling works	Proposed reception site at Lantau / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.18	2.9.18	To provide further protection, silt curtain should be installed before commencement of works at Lantau to minimize the water quality impact. The design and installation should be certified by the Environmental Team (ET), verified by the Independent Environmental Checker (IEC) and approved by the Engineer to ensure the intended protection can be achieved. The Contractor should regularly inspect and maintain the silt curtain to ensure its effectiveness.	To minimize adverse water quality impact from drilling works	Proposed reception site at Lantau / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.20	2.9.20	*Management Plans and Monitoring* The Contractor should submit a Drainage	To minimize adverse	All works site /	Construction		√		Water Pollution

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		Management Plan detailing the temporary drainage measures along with the proposed measures to ameliorate the potential water quality impacts to the Environmental Team (ET) for certification, the Independent Environmental Checker (IEC) for verification and to the Engineer for approval before commencement of the construction works.	water quality impact during construction	during construction	Contractor				Control Ordinance
3.7.21	2.9.21	The Contractor should also submit a Drilling Fluid Management Plan outlining expected volume of water, the type of soil and an estimated quantity of bentonite, full details of plans for monitoring drilling fluid flow (out and return) and pressure, wastewater discharge, slurry containment, treatment, recycling and transport, and the approved disposal site. The plan should also contain details of contingency plans for dealing with frac-out or other inadvertent release of slurry. Contingency plans should include the provision of standby pumps, containment booms, vacuum unit and tanks on site to contain and remove turbid, muddy water should incidental frac-outs occur.	To minimize adverse water quality impact during construction in particular during drilling works	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.22	2.9.22	Regular monitoring of suspended solids and turbidity should be conducted during construction works. Any exceedance of water quality in the nearby water bodies caused by site runoff should be rectified in accordance with EM&A programme	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		for this Project.							
		Concreting Work							
3.7.23	2.9.23	Runoff should be carefully channelled and treated to prevent concrete-contaminated water from entering water bodies. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge.	To minimize adverse water quality impact during construction (in particular concreting works)	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.24	2.9.24	Any exceedance of the acceptable range of pH levels in nearby water bodies caused by site runoff containing concrete should be monitored and rectified under the EM&A programme for this Project.	To minimize adverse water quality impact during construction (in particular concreting works)	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
		Site Workshop or Depot							
		General Construction Works							
3.7.25	2.9.25	Site workshop or depot including storage of chemicals and chemical waste should be located at the proposed launching site in Cheung Chau only. No workshop or depot should be located at the proposed reception site in Lantau.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance
3.7.26	2.9.26	Any Contractor generating waste oil or other chemicals as a result of his activities should	To minimize adverse water quality impact	All works site / during	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		register as a chemical waste producer and provide a safe designated storage area for chemicals on site. The storage site should be located away from existing water bodies.	during construction	construction					
3.7.27	2.9.27	All compounds in works areas should be located on areas of hard standing surface with provision of diversion channels and settlement ponds where necessary to allow interception and controlled release of settled / treated water. Hard standing compounds should drain via an oil interceptor. The oil interceptor should be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity. To prevent spillage of fuels or other chemicals to water bodies, all fuel tanks and storage areas should be sited on sealed areas within a bund of a capacity equal to 110% of the storage capacity of the largest tank. Where temporary storage of chemicals or fuel drums outside the storage area is necessary, drip tray should be provided. Disposal of the waste oil should be carried out by a licensed collector. Good housekeeping practices should be implemented to minimise careless spillage and to keep the storage and the work space in a tidy and clean condition. Appropriate training including safety codes and relevant manuals should be given to the personnel who regularly handle the chemicals on site.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
3.7.28	2.9.28	*Emergency Contingency Plan* The Contractor should prepare an Emergency Contingency Plan (spill response plan) for the Project to contain and remove accidental spillage of drilling fluids, chemicals and all hazardous materials on-site including fuels at short notice and to prevent or to minimize the quantities of contaminants from entering the nearby water bodies and affecting the sensitive habitats. The Contractor should submit the Emergency Contingency Plan to the ET for review & comment and to the Engineer for approval. The Plan should include, but not limited to, the following: (i) potential emergency situations (ii) chemicals or hazardous materials used on-site (and their location) (iii) emergency response team (iv) emergency action plans and procedures (v) list of emergency telephone hotlines (vi) locations and types of emergency response equipment (vii) training plan and emergency drill (viii) schedules for review and audit.	To prevent or minimize the quantities of contaminants entering the nearby water bodies and affecting the habitats in case of accidental spillage of chemicals and hazardous materials	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages* D	C	O	Relevant Legislation & Guidelines
		General Guidance for Handling Spillage / Leakage							
3.7.29	2.9.29	In the event that accidental spillage or leakage of hazardous substances / chemical wastes takes place, the response procedures as listed below should be followed. It should be noted that the procedures below are not exhaustive. The Contractor should propose other response procedures in the emergency contingency plan based on actual site conditions as well as the particular types and quantities of chemicals or hazardous substances used, handled and stored on-site. • Contact person in charge or nominated person immediately and initiate action plans based on the emergency contingency plan. • Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance. • Instruct untrained personnel to keep at a safe distance well away from the spillage area. • If the spillage / leakage is severe or is causing hazard to life, initiate emergency evacuation and call the emergency services. • Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the waste	To prevent or minimize the quantities of contaminants entering the nearby water bodies and affecting the habitats in case of accidental spillage of chemicals and hazardous materials	All works site / during construction	Construction Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		spillage / leakage area. • Where the spillage / leakage is contained in the enclosed storage area, the waste can be transferred back into suitable containers by suitable handheld equipment, such as hand operated pumps, scoops or shovels. If the spillage / leakage quantity is small, it can be covered and mixed with suitable absorbing materials such as absorbent tissue paper, pads, dry soft sand or vermiculite. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • For spillage / leakage into nearby water bodies, immediate action is required to contain the spillage / leakage. Appropriate structural, physical barrier or secondary containment (e.g. containment booms) should be deployed to contain the spill and if possible to prevent contaminated water from dispersing away from the source. Suitable liquid absorbing materials such as absorbent tissue paper, pads or rolls should be used to recover the spilt substances. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • For spillage / leakage in other areas, immediate action is required to contain the spillage / leakage. Suitable liquid absorbing materials such as absorbent tissue paper, pads, dry soft sand or vermiculite should be used to cover the spill. The resultant slurry should be							

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		treated as chemical waste and transferred to suitable containers for disposal. • Areas that have been contaminated by chemical waste spillage / leakage should be cleaned. While water is a soluble solvent for aqueous chemical wastes and water soluble organic waste, kerosene or turpentine should be used for organic chemical wastes that are not soluble in water. The waste from the cleanup operation should be treated and disposed of as chemical waste. • In incidents where the spillage / leakage may result in significant contamination of an area or risk of pollution, the Environmental Protection Department and other relevant departments should be informed immediately.							
		Presence of Additional Population (Workers)							
3.7.30	2.9.30	Sewage arising from the additional construction workers on site should be collected in a suitable storage facility, such as portable chemical toilets. An adequate number of portable toilets should be provided for the construction workforce. The portable toilets should be maintained in a state that will not deter the workers from using them. Wastewater collected should be discharged into foul sewers and collected by licensed collectors.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance
3.7.31	2.9.31	The collected wastewater from sewage facilities and also from eating areas or washing facilities of site offices should be disposed to foul sewer. If	To minimize adverse water quality impact	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		there is no foul sewer in the vicinity, a septic tank and soakaway system or for larger flow, a sewage treatment plant should be provided. All domestic sewage discharges (except into foul sewer) are controlled under the WPCO. The Contractor must apply for a discharge licence from EPD and must comply with the terms and conditions of a valid WPCO licence.	during construction						Water Pollution Control Ordinance
3.7.32	2.9.32	*Sterilization of Water Main Prior to Commissioning* Effluent from the sterilization of water main should be treated including dechlorination by physical process e.g. adsorption by activated carbon filter, or chemical process e.g. neutralisation by dechlorination agent dosing to ensure compliance with the discharge requirements stipulated in the TM-DSS. Adequate tanks with sufficient capacity should be provided to allow proper treatment of the effluent prior to discharge.	To minimize adverse water quality impact during construction in particular during sterilization of the completed water main	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance
3.7.33	2.9.33	The sterilization of the water main and the dechlorination process should be conducted at the launching site at Cheung Chau. As the site at Cheung Chau is designated for secondary recreational contact, the sterilization of the main should be scheduled during the dry season. The	To minimize adverse water quality impact during construction in particular during sterilization of the completed water main	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		Contractor should submit for the Engineer approval, details of the dechlorination process and any chemicals including dosage to be used.							
3.7.34	2.9.34	The Contractor should provide a dechlorination plant of sufficient capacity to contain and treat the sterilising water with high chlorine concentration before discharge. Details of the specification of the dechlorination plant should be submitted to the Engineer for approval. They should include but not limited to the following: • the nominal flow rate shall not be less than 36 cubic meter per hour; • the plant shall be capable of dechlorinating water with chlorine level up to 40 mg/litre; • the maximum chlorine level of dechlorinated water shall be <0.2 mg/litre; • the recommended contact time if dechlorination by adsorption with activated carbon filter is proposed; • a water meter or other measuring device shall be installed at the inlet pipe of the dechlorination plant to measure the amount of water treated, in cubic metres; and • sensors and data loggers for continuous measurement and record of chlorine level shall be installed at the inlet and outlet pipe of the dechlorination plant.	To minimize adverse water quality impact during construction in particular during sterilization of the completed water main	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
3.7.35	2.9.35	*In-situ* testing of total residual chlorine should be conducted every hour at the discharge point to ensure the chlorine concentration does not exceed the stipulated maximum level when dechlorinated water is being discharged.	To minimize adverse water quality impact during construction in particular during sterilization of the completed water main	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance
3.7.36	2.9.36	If the dechlorinated water exceed the allowed concentration, discharge must be suspended and the water should be circulated to a standby tank for further dechlorination and testing. The location of the sampling point will depends on the discharge point to be proposed by the Contractor. The Contractor should submit details of the proposed sampling location, frequency and equipment for verification by the ET Leader and approval by the Engineer before commencement of the sterilization work of the completed water main. The proposed sampling location(s) should be submitted to EPD for reference.	To minimize adverse water quality impact during construction in particular during sterilization of the completed water main	All works site / during construction	Construction Contractor		√		ProPECC PN 1/94 Water Pollution Control Ordinance
Water Quality - Operational Phase									
		Nil							

* D=Design, C=Construction, O=Operation
N/A Not applicable

Table A.4 Implementation Schedule of Waste Management Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Waste - Construction Phase									
		General							
7.6.1	5.1.1	The HKSAR Government's construction and demolition waste management policy follows the same hierarchy as for other wastes, i.e. in order of desirability: avoidance, minimisation, recycling, treatment and safe disposal of waste. During the construction period the Contractor, Engineer and environmental specialists (Environmental Team, Independent Environmental Check) should work closely together with a view to reduce the volumes of materials requiring removal and final disposal.	To reduce the volumes of materials requiring removal and final disposal	All works site / during construction	Construction Contractor, Engineer, Environmental Team and Independent Environmental Check		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process
7.6.2	5.1.2	Upon appointment, the main Contractor of each construction contract should prepare and implement an Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 – "Environmental Management on Construction Sites" which should describe the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. The EMP should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The waste management plan now becomes part of the EMP. The EMP should be submitted to the Engineer for approval. The	Waste reduction, reuse, recycling and proper disposal of waste	All works site / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated (preferably monthly) by the Contractor. The EMP should take into account the recommended mitigation measures in the approved EIA Report.							
7.6.3	5.1.3	The Contractor should refer to the Construction and Demolition Material Management Plan (C&DMMP) to be conducted during the design stage of this Project to facilitate him in the preparation of the EMP. The C&DMMP should be endorsed by WSD's Vetting Committee and approved by the Public Fill Committee (PFC). WSD's Vetting Committee will monitor the implementation of the C&DMMP and report to Public Fill Committee in accordance with ETWB TCW No. 33/2002 during construction.	Waste reduction, reuse, recycling and proper disposal of waste	All works site / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.4	5.1.4	The Contractor should nominate an appropriate person, such as site agent or environmental officer, to be responsible for good site practices, arrangement for collection and effective disposal of all wastes generated at the site to an approved facility. Training of construction staff should be undertaken by the Contractor about the concept of site cleanliness and appropriate waste management procedures. The Contractor should develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		materials. Requirements for staff training should be included in the EMP.							
7.6.5	5.1.5	Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimise the damage or contamination of construction materials. Regular cleaning and maintenance of the waste storage area should be provided.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.6	5.1.6	Where waste generation is unavoidable, the potential for recycling or reuse should be rigorously explored. If wastes cannot be recycled, disposal routes described in the EMP should be followed. A recoding system for the amount of waste generated, recycled and disposed (including the disposal sites) should be implemented. In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No. 31/2004 for details.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004
7.6.7	5.1.7	Imported soft fill and rocks, if required, should be source from CEDD's fill bank, other projects or other approved sources instead of using new materials. Approval from the Engineer and all other relevant parties should be obtained by the Contractor before importation of the fill materials.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
7.6.8	5.1.8	The main staging area of the works should be located at the proposed launching site in Cheung Chau. Storage of equipment, materials, chemical waste and general refuse as well as the drilling fluid recycling system should also be located in Cheung Chau.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.9	5.1.9	*On-site Sorting, Reuse and Recycling* All waste materials should be segregated into categories covering: • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • spent bentonite for public filling facilities • chemical waste; and • general refuse for landfill.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.10	5.1.10	Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
7.6.11	5.1.11	The reuse of excavated materials within this Project should be adopted as far as practicable. The opportunity of reusing the material in other projects in Cheung Chau should also be explored.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during detailed design and construction	Detailed Design Engineer / Construction Contractor	√	√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.12	5.1.12	Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials such as metals, concrete, timber, plastics, glass, excavated spoils, bricks / tiles and waste papers. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert component. Non-inert materials (C&D waste) such as bamboo, timber, vegetation, packaging waste and other organic materials should be reused and recycled wherever possible and disposed of to designated landfill only as a last resort. Inert materials (public fill) such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reuse in this or other projects (subject to approval by the relevant parties in accordance with the ETWB TCW No. 31/2004) before disposed of at a public filling facility operated by Civil Engineering and Development Department (CEDD). Steel and other metals should be recovered from demolition waste stream and recycled.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
7.6.13	5.1.13	The reuse of inert materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials. With the use of a crusher coarse material can be crushed to make it suitable for use as fill material where fill is required in the works. This minimises the use of imported material and maximises use of the C&D material produced.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.14	5.1.14	Prior to export of material from the site, the potential for it to be reused should be assessed. Most C&D material can easily be reused with minimum processing. Waste separation methods should be followed to ensure that C&D waste is separated at source. Suitable soft materials should be used for landscaping and grading of embankments. Fine material should be separated out and used as topsoil.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.15	5.1.15	The feasibility of using recycled aggregates in lieu of virgin materials should be rigorously considered during the detailed design and construction stages as stipulated in WBTC No. 12/2002 and ETWB TCW No. 24/2004. In general, recycled aggregates are suitable for use as fill materials in earthworks, road sub-base formation, and drainage works. Recycled aggregates can also be used in concrete (up to Grade 35) for mass concrete walls and other minor structures such as planter boxes, toe wall	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 24/2004 WBTC No. 12/2002

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		planters and pavement, etc.							
7.6.16	5.1.16	*Site Clearance / Demolition Materials* *Excavated Materials* All C&D materials should be sorted on-site into inert and non-inert components by the Contractor. Non inert materials (C&D waste) such as wood, glass and plastic should be reused and recycled before disposal to a designated landfill as a last resort (currently assume to be the WENT Landfill) via the Cheung Chau Refuse Transfer Station. Inert materials (public fill) should be reused on-site or in other projects approved by relevant parties in accordance with the ETWB TCW No. 31/2004 before disposed of at public fill reception facilities. Steel and other metals if any should be recovered from C&D materials and recycled.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004
7.6.17	5.1.17	Good quality reusable topsoil should be stockpiled for later landscaping works. Stockpiles should be less than 2 m in height, formed to a safe angle of repose and hydroseeded or covered with tarpaulin to prevent erosion during the rainy season and to minimise dust generation.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.18	5.1.18	Control measures for temporary stockpiles on-site should be taken in order to minimize the noise,	Waste reduction, reuse, recycling and proper	All work sites / during	Construction Contractor		√		Waste Disposal Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		generation of dust, pollution of water and visual impact. These measures include: • surface of stockpiled soil should be regularly wetted with water especially during dry season; • disturbance of stockpiled soil should be minimized; • stockpiled soil should be properly covered with tarpaulin especially when heavy rain storms are predicted; • stockpiling areas should be enclosed where space is available; • stockpiling location should be away from the water bodies; and • an independent surface water drainage system equipped with silt traps should be installed at the stockpiling area.	disposal of waste	construction					ETWB TCW No. 19/2005
7.6.19	5.1.19	The identification of final disposal sites for C&D materials generated by the construction works will be considered during the detailed design stage of the Project when the volume and types of C&D materials can be more accurately estimated. The Public Fill Committee of CEDD should be consulted on designated outlets (e.g. public fill reception facility) for public fill, whilst EPD should	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 34/2002 WBTC No. 12/2000

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		be consulted on landfills for C&D waste. The public fill to be disposed to public fill reception facilities must consist entirely of inert construction materials. Disposal of C&D waste to landfill must not have more than 50% by weight of inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.							
7.6.20	5.1.20	In order to avoid dust or odour impacts, any vehicle leaving a works area carrying C&D waste or public fill should have their load covered before leaving the construction site.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005 WBTC No. 19/2001
7.6.21	5.1.21	C&D materials should be disposed of at designated public fill reception facilities or landfills. Reuse of public fill materials at other construction projects is subject to the approval of the relevant project proponents, Engineer and/or other relevant authorities, such as LandsD, PlanD, etc. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The Contractor shall refer and strictly follow the trip-ticket system for the disposal of C&D materials as stipulated in	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		the ETWB TCW No. 31/2004.							
		Bentonite							
7.6.22	5.1.22	Bentonite slurry used in the drilling works should be treated and recycled at the works area in Cheung Chau. Any bentonite that is not suitable for recycling should be suitably dewatered before disposed of at public fill reception facilities.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005 WBTC No. 19/2001
		Chemical Waste							
7.6.23	5.1.23	Where the construction processes produce chemical waste, the Contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD. An updated list of licensed chemical waste collector can be obtained from EPD.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste
7.6.24	5.1.24	Storage, handling, transport and disposal of chemical	Waste reduction, reuse,	All work sites / during	Construction		√		Waste Disposal (Chemical Waste)

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.	recycling and proper disposal of chemical waste	construction	Contractor				(General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste
7.6.25	5.1.25	Suitable containers should be used for specific types of chemical wastes, containers should be properly labelled (English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, stored safely and closely secure. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste
7.6.26	5.1.26	Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed	Waste reduction, reuse, recycling and proper disposal of chemical waste	Work sites / During construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
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		on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.							Chemical Waste
7.6.27	5.1.27	Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste
7.6.28	5.1.28	The registered chemical waste producer (i.e. the contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste

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7.6.29	5.1.29	No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.	Waste reduction, reuse, recycling and proper disposal of chemical waste	All work sites / during construction	Construction Contractor		√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste
7.6.30	5.1.30	Chemical waste should be stored in the works compound at Cheung Chau, no chemical waste should be stored in the works site at Lantau.	To minimize impacts on Lantau South Country Park	The work site at Lantau / during construction	Construction Contractor		√		EIAO-TM
7.6.31	5.1.31	The Contractor should prepare an Emergency Contingency Plan (spill response plan) for the Project to contain and remove accidental spillage of drilling fluids, chemicals and all hazardous materials on-site including fuels at short notice and to prevent or to minimize the quantities of contaminants from entering the nearby water bodies and affecting the sensitive habitats. Details of the requirements are presented in ***Chapter 3*** of the EIA.	To minimize impacts from accidental spillage of drilling fluids and chemicals on-site	All work sites / during construction	Construction Contractor		√		EIAO-TM
		General Works Waste							

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		Concrete Waste							
7.6.32	5.1.32	Dry concrete waste (considered as public fill) should be sorted out from the other wastes and recycled for reuse or sorted out for disposal at designated public filling facilities.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002
		Wooden Materials							
7.6.33	5.1.33	All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being disposed of to landfill.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002
7.6.34	5.1.34	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
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7.6.35	5.1.35	Only waste material need be taken to a landfill. It should be separated from recyclable wood and steel materials. As for all waste types these materials should be reused on-site or other approved sites before disposal is considered as an option. Disposal to landfill should only be considered as a final option. Contractors are responsible for storage of re-useable materials on-site.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002
		Municipal Waste							
7.6.36	5.1.36	General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the contractor to facilitate the collection of refuse by licensed contractors. The removal of waste from the site should be arranged on a daily or at least on every second day by the Contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.37	5.1.37	For the works within Lantau South Country Park, the Contractor should ensure that all general refuse including food scraps and packaging materials generated by the workers are properly packed and removed from site daily at the end of each work shift.	To minimize impacts on Lantau South Country Park	The work site at Lantau / during construction	Construction Contractor		√		EIAO-TM

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		No refuse should be left in the works area at Lantau.							
7.6.38	5.1.38	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The contractor should also be responsible for arranging recycling companies to collect these materials.	Waste reduction, reuse, recycling and proper disposal of waste	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005
7.6.39	5.1.39	The burning of refuse on-site is prohibited under the Air Pollution Control Ordinance (APCO) (Cap.311).	Waste reduction, reuse, recycling and proper disposal of waste as well as air pollution control	All work sites / during construction	Construction Contractor		√		Waste Disposal Ordinance ETWB TCW No. 19/2005 Air Pollution Control Ordinance
Waste – Operation Phase									
		Nil							

* D=Design, C=Construction, O=Operation
N/A Not applicable

Table A.5 Implementation Schedule of Construction Noise Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
Noise - Construction Phase									
		Level 1 Mitigation – Use of Quiet Plant							
8.6.2	6.8.2	The quiet plant used in the construction noise calculation is shown in **Table 8.4** and **Appendix 8.1** of the EIA. The Contractor can propose other suitable alternative equipment with similar or lower sound power level.	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process
8.6.3	6.8.3	The use of quiet plant is considered to be the most effective ways of alleviating construction noise impact. The Contractor should use quiet plant with sound power level lower than that stipulated in the TM-GW as the Level 1 mitigation for construction noise.	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process
8.6.4	6.8.4	The use of mini or lower power rating equipment (e.g. mini excavator) should also be considered where practical. This technique would be feasible and practical at some locations given the limited space available for using large size construction equipment and the small scale works involved such as the land-based water main in Cheung Chau.	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
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8.6.5	6.8.5	The Contractor should take note of ETWB TCW No. 19/2005 – Environmental Management on Construction Sites which sets out the policy and procedures requiring contractors to, among others, adopt Quality Powered Mechanical Equipment (QPME).	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 19/2005
8.6.6 Table 8.4	6.8.6 Table 6.4	A list of quiet powered mechanical equipment (PME) recommended for use during construction phase is tabulated in **Table 8.4** of the EIA.	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 19/2005
		Level 2 Mitigation - Use of Temporary Noise Barriers							
8.6.8	6.8.8	Since NSR 2 (as with most of the NSRs within the Project area) are typically low-rise village houses	To protect NSRs from noise during construction	The proposed launching site at Cheung Chau as	Construction Contractor		√		Environmental Impact Assessment Ordinance

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
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		of not more than 3 storeys (NSR 1 is one storey), it would be effective to have noise screening structures or temporary noise barriers purposely-built along the site boundary to provide additional protection to NSRs close to the construction site boundary. This could be in the form of purposely-built site hoarding constructed from appropriate materials with a minimum superficial density of 7 kg/m^2. The noise barrier should have a vertical height of at least 4 m with a small cantilevered upper portion if necessary ensuring that the operating equipment can be shielded from the view of the NSRs. The temporary noise barrier should have no gaps or opening at joints. The Contractor should regularly inspect and maintain the noise barrier to ensure its effectiveness.		shown in Figure 8.2 of the EIA / during construction					Technical Memorandum on EIA Process
8.6.9	6.8.9	For the construction works which have the potential to exceed the noise standards on nearby NSR and whose line of sight cannot be effectively blocked by the temporary noise barrier, movable (mobile) barriers should be provided. Movable barriers of at least 2.5 m height with a small cantilevered upper portion and skid footing can be located within a few meters of stationary plant (e.g. generator) and within about 5 m or more of a mobile equipment (e.g. excavator), such that the line of sight to the NSR is blocked by the barriers.	To protect NSRs from noise during construction	All works site for NSRs whose line of sight cannot be effectively blocked by the temporary noise barriers / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
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		Good Site Practices							
8.6.13	6.8.13	In general, potential construction noise impact can be minimised or avoided by imposing a combination of the following good site practices as mitigation measures: (a) Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction period. (b) Construction plant should be sited away from NSRs. (c) Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. (d) Equipment known to emit sound strongly in one direction should be orientated such that the noise is directed away from nearby NSRs. (e) Material stockpiles and other structures (such as site offices) should be effectively utilised to shield on-site construction activities. (f) The Contractor shall devise, arrange methods of working and carrying out the works in such manner as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these measures are implemented properly. (g) In the event that new schools are built near	To protect NSRs from noise during construction	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
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		the works area, the Contractor should minimize construction noise exposure to the schools (especially during examination periods). 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.							
		Public Relations Strategy							
8.6.16	6.8.16	To maintain an effective communication channel with the public, a 24-hour hotline system should be established by the project office for the Contractor to receive any enquiry and complaint lodged by the public in respect of the Project. Upon receipt of enquiry / complaint, the Contractor (or its Environmental Team) should investigate the causes of the incident and take the appropriate action to rectify the situation. Periodic newsletters, information leaflets, notices or other means of communication should be provided to the affected villages, communities, and residents advising them the current progress, the schedule of works in future, the potential environmental impacts arising from the works and the corresponding mitigation measures. It is considered that such a close relation between the local communities and the project site office could ensure speedy resolution of any	To promote good public relation and maintain effective communication during construction	All works site / during construction	Project Office (Engineer) & Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures and Main Concerns to addressed	Location / Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
						D	C	O	
		environmental non-compliance and maintain an environmental standard acceptable to the local communities during construction.							
8.6.19	6.8.17	All the above construction noise mitigation measures should be implemented by the Contractor during the construction phase of the works. The location of the temporary noise barriers (including any mobile barriers) should be further reviewed by the Contractor during the construction stage based on the latest construction programme and contemporary conditions, including any changes with respect to NSRs. The Contractor should design, construct, operate and maintain the mitigation measures throughout the construction stage and as required by the Engineer. Before commencement of the works, the Contractor should submit to the Engineer for approval (as part of their method statement) details of the mitigation measures to be employed under the works. The Contractor's proposed mitigation measures should also be certified by the ET Leader and verified by the IEC to ensure the intended noise reduction effectiveness can be achieved.	To protect NSRs from noise during construction and to ensure the Contractor will properly implement the mitigation measures	All works site / during construction	Construction Contractor		√		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process

* D=Design, C=Construction, O=Operation
N/A Not applicable