

JOB No.: TCS01196/22

WSD CONTRACT NO.: 7/WSD/21 -  
CONSTRUCTION OF SIU HO WAN WATER TREATMENT  
WORKS EXTENSION AND SIU HO WAN RAW WATER  
BOOSTER PUMPING STATION

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT  
REPORT – MAY 2022

PREPARED FOR  
CHINA ROAD AND BRIDGE CORPORATION (HONG  
KONG)

Date	Reference No.	Prepared By Fai So	Certified By Tam Tak Wing
13 June 2022	TCS01196/22/600/R0022v2	 Assistant Environmental Consultant	 Environmental Team Leader

Version	Date	Remarks
1	8 June 2022	First Submission
2	13 June 2022	Amended As Per IEC's comment

Our Ref. 1988/22-0012



**Water Supplies Department**  
New Works Branch  
Consultants Management Division  
Sha Tin Office - 6/F Sha Tin Government  
Offices, 1 Sheung Wo Che Road, Sha  
Tin, New Territories.

27/F, Overseas Trust Bank Building  
160 Gloucester Road  
Wan Chai  
Hong Kong  
T: +852 2815 7028  
F: +852 2815 5399

[www.asecg.com](http://www.asecg.com)

**Attn: Mr. SY Kin Lik (SE/CM 3)**

13 June 2022

**By E-mail**

Dear Sir,

**RE: CONTRACT NO. 7/WSD/21  
INDEPENDENT ENVIRONMENTAL CHECKER FOR ENVIRONMENTAL MONITORING AND AUDIT FOR  
SIU HO WAN WATER TREATMENT WORKS EXTENSION  
MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT - MAY 2022**

I refer to the Monthly Environmental Monitoring And Audit Report – May 2022 (Report No.: TCS01196/22/600/R0022v2) received on 13 June 2022 by the Environmental Team (ET), Action-United Environmental Services & Consulting (AUES) via email. In accordance with Condition 4.4 of Environmental Permit No.EP-207/2005/A, I hereby verify the captioned report.

Yours faithfully,

For and on behalf of  
**Allied Environmental Consultants Ltd.**

A handwritten signature in black ink, appearing to be 'Joanne NG', written over a horizontal line.

Joanne NG  
Independent Environmental Checker

JN/tw

c.c. Action-United Environmental Services & Consulting (AUES)  
Binnies Hong Kong Limited

Attn: Mr. Ben Tam  
Attn: Mr. Alex TUNG

(By E-mail)  
(By E-mail)

## EXECUTIVE SUMMARY

- ES.01. Water Supplies Department (WSD) is the Proponent of the Works Contract 7/WSD/21 “Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station” (hereinafter named as the “Works Contract”). Under this Works Contracts, the works mainly comprise of increasing the water treatment capacity of Siu Ho Wan water treatment works (SHW WTW) from 150,000m<sup>3</sup> per day to 300,000m<sup>3</sup> per day within the existing water treatment works compound, by constructing new water treatment facilities and a new laboratory building and modifying the existing associated facilities; and constructing a new raw water booster pumping station at Siu Ho Wan to increase the raw water transfer capacity from Tai Lam Chung Reservoir to SHW WTW.
- ES.02. According to the Environmental Impact Assessment Ordinance (EIAO), the proposed Siu Ho Wan Water Treatment Works Extension is a Designated Project under Schedule 2, which shall be implemented under the Environmental Permit EP-207/2005/A (hereinafter called the “EP”). Besides, the works for Siu Ho Wan Raw Water Booster Pumping Station is a non-designated project which mentioned in Section 1.10 of Environmental Monitoring and Audit (EM&A) Manual.
- ES.03. On 20 March 2022, **China Road and Bridge Corporation** (hereinafter called the “Main Contractor”) awarded the **Works Contracts 7/WSD/21**. According to EM&A Manual, only air quality monitoring is required to be conducted which related to the works area under **Contracts 7/WSD/21** during construction phase of the SHW WTW Extension. Moreover, site inspection and audit is required under the EM&A program to ensure the recommended environmental mitigation measures are implemented properly and effective.
- ES.04. The Main-Contractor appointed Action-United Environmental Services & Consulting (AUES) as the Environmental Team of the Project (hereinafter referred as the “ET”) to implement air quality monitoring as well as associated duties in accordance with the EM&A Manual stipulation.
- ES.05. As advised by the Contractor, the major construction works under Works Contract was commenced on 24 May 2022. This is the **1<sup>st</sup>** Monthly EM&A Report presenting monitoring results and inspection finding for the Project for the reporting period from **24<sup>th</sup> to 31<sup>st</sup> May 2022**.

## ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

- ES.06. Environmental monitoring activities under the EM&A programme for the Contract in the Reporting Month are summarized in the following table.

Issues	Environmental Monitoring Parameters / Inspection	Sessions
Air Quality	24-Hour TSP	2
Inspection / Audit	ET Regular Environmental Site Inspection	1
	Joint site audit with Project Consultant and IEC	1

## ACTION AND LIMIT LEVELS EXCEEDANCE

- ES.07. In the Reporting Month, no air quality monitoring exceedance was recorded.

## SITE INSPECTION

- ES.08. In the Reporting Month, joint site inspections to evaluate the site environmental performance had been carried out by the representatives of the RE, ET, IEC and the Contractor on **23<sup>rd</sup> May 2022**. No non-compliance was recorded during the site inspections.

## ENVIRONMENTAL COMPLAINT

- ES.09. In the Reporting Month, no environmental complaint was received.

**NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

ES.010. In the Reporting Month, no prosecution or notification of summons was received.

**REPORTING CHANGE**

ES.011. No reporting of change was made in the 1<sup>st</sup> EM&A Report.

**FUTURE KEY ISSUES**

ES.012. During wet season, the Contractor should fully implement water quality mitigation measures such as prevention of muddy water or other water pollutants flowing from the site to public area. In addition, all effluent discharge shall fulfill the requirement of Discharge Licence under the Water Pollution Control Ordinance.

ES.013. The Contractor should pay attention on the air quality mitigation measures as far as practicable to minimise the dust impact to the resident which are located adjacent to the Project.

ES.014. All other mitigation measures recommended in the Implementation Schedule for Environmental Mitigation Measures of the EM&A Manual should be properly implemented and maintained as far as practicable.

## Table of Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	PROJECT BACKGROUND	1
1.2	REPORT STRUCTURE	2
<b>2</b>	<b>PROJECT ORGANISATION AND CONSTRUCTION PROGRESS</b>	<b>3</b>
2.1	PROJECT ORGANISATION	3
2.2	CONSTRUCTION PROGRESS	4
2.3	SUMMARY OF ENVIRONMENTAL PERMITS AND LICENCES	4
<b>3</b>	<b>SUMMARY OF IMPACT MONITORING REQUIREMENTS</b>	<b>6</b>
3.1	GENERAL	6
3.2	MONITORING PARAMETERS	6
3.3	MONITORING LOCATIONS	6
3.4	MONITORING FREQUENCY AND PERIOD	6
3.5	MONITORING EQUIPMENT	6
3.6	MONITORING PROCEDURES	7
3.7	DERIVATION OF ACTION/LIMIT (A/L) LEVELS	8
3.8	METEOROLOGICAL INFORMATION	8
3.9	DATA MANAGEMENT AND DATA QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)	8
<b>4</b>	<b>AIR QUALITY MONITORING</b>	<b>10</b>
4.1	GENERAL	10
4.2	AIR MONITORING RESULTS	10
<b>5</b>	<b>WASTE MANAGEMENT</b>	<b>11</b>
5.1	GENERAL WASTE MANAGEMENT	11
5.2	RECORDS OF WASTE QUANTITIES	11
<b>6</b>	<b>SITE INSPECTIONS</b>	<b>12</b>
6.1	REQUIREMENTS	12
6.2	FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH	12
<b>7</b>	<b>ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCES</b>	<b>13</b>
7.1	ENVIRONMENTAL COMPLAINTS, SUMMONS AND PROSECUTIONS	13
<b>8</b>	<b>IMPLEMENTATION STATUS OF MITIGATION MEASURES</b>	<b>14</b>
8.1	GENERAL REQUIREMENTS	14
8.2	TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH	14
8.3	KEY ISSUES FOR THE COMING MONTH	14
<b>9</b>	<b>CONCLUSIONS AND RECOMMENDATIONS</b>	<b>15</b>
9.1	CONCLUSIONS	15
9.2	RECOMMENDATIONS	15

## LIST OF TABLES

TABLE 2-1	STATUS OF ENVIRONMENTAL LICENCES AND PERMITS OF THE CONTRACT
TABLE 3-1	SUMMARY OF BASELINE MONITORING PARAMETERS
TABLE 3-2	DESIGNATED AIR QUALITY MONITORING STATIONS
TABLE 3-3	AIR QUALITY MONITORING EQUIPMENT
TABLE 3-4	ACTION AND LIMIT LEVELS OF AIR QUALITY
TABLE 4-1	SUMMARY OF 24-HOUR TSP MONITORING RESULT - SHWAB
TABLE 5-1	SUMMARY OF QUANTITIES OF INERT C&D MATERIALS FOR THE CONTRACT
TABLE 5-2	SUMMARY OF QUANTITIES OF C&D WASTES FOR THE CONTRACT
TABLE 6-1	SITE OBSERVATIONS FOR THE CONTRACT
TABLE 7-1	STATISTICAL SUMMARY OF ENVIRONMENTAL COMPLAINTS
TABLE 7-2	STATISTICAL SUMMARY OF ENVIRONMENTAL SUMMONS
TABLE 7-3	STATISTICAL SUMMARY OF ENVIRONMENTAL PROSECUTION

**LIST OF APPENDICES**

APPENDIX A	LAYOUT PLAN OF THE PROJECT
APPENDIX B	PROJECT ORGANISATION
APPENDIX C	3-MONTH ROLLING CONSTRUCTION PROGRAMME
APPENDIX D	MONITORING LOCATIONS
APPENDIX E	CALIBRATION CERTIFICATES
APPENDIX F	EVENT AND ACTION PLAN
APPENDIX G	MONITORING SCHEDULE
APPENDIX H	DATABASE OF MONITORING RESULT
APPENDIX I	GRAPHICAL PLOTS FOR MONITORING RESULT
APPENDIX J	METEOROLOGICAL DATA
APPENDIX K	WASTE FLOW TABLE
APPENDIX L	ENVIRONMENTAL COMPLAINTS LOG
APPENDIX M	IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES

## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

- 1.1.1 Water Supplies Department (WSD) is the Proponent of the Works Contract 7/WSD/21 – *Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station (hereinafter named as the “Works Contract”)*. The Project works predicted by WSD will be undertaken about 34 months. Layout plan of the Project is shown in [Appendix A](#).
- 1.1.2 According to the Environmental Impact Assessment Ordinance (EIAO), the proposed Siu Ho Wan Water Treatment Works Extension is a Designated Project under Schedule 2, which shall be implemented under the Environmental Permit EP-207/2005/A (*hereinafter called the “EP”*). Besides, the works for Siu Ho Wan Raw Water Booster Pumping Station is a non-designated project which mentioned in Section 1.10 of Environmental Monitoring and Audit (EM&A) Manual.
- 1.1.3 The Works Contract construction activities mainly include:-
- Extension of the existing Siu Ho Wan WTW within the existing Siu Ho Wan WTW compound from a capacity of 150,000 m<sup>3</sup>/day to 300,000 m<sup>3</sup>/day
  - Uprating of the treated/fresh water pumping capacity in the existing Siu Ho Wan Raw Water and Fresh Water Pumping Station within the existing Siu Ho Wan WTW compound from a capacity of 150,000 m<sup>3</sup>/day to 300,000 m<sup>3</sup>/day
  - Construction of the proposed Siu Ho Wan Raw Water Booster Pumping Station and the laying of the associated water mains
- 1.1.4 On 20 March 2022, *China Road and Bridge Corporation* (hereinafter called the “Main Contractor”) awarded the Works Contracts 7/WSD/21. According to EM&A Manual, only air quality monitoring is required to be conducted which related to the works area under Contracts 7/WSD/21 during construction phase of the SHW WTW Extension. Moreover, site inspection and audit is required under the EM&A program to ensure the recommended environmental mitigation measures are implemented properly and effective.
- 1.1.5 The Main-Contractor appointed Action-United Environmental Services & Consulting (AUES) as the Environmental Team of the Project (hereinafter referred as the “ET”) to implement air quality (baseline and impact) monitoring as well as associated duties in accordance with the EM&A Manual stipulation.
- 1.1.6 Some design changes of the Project have been identified after the EIA stage for betterment in the design development. Some of these changes requires supplementary environmental review to address their likely environmental impacts and to identify any additional mitigation measures required for compliance with the EIAO. Supplementary environmental review has been performed for the changes and the review results are presented in the “Review Report on Environmental Impact Assessment (Review Report on EIA)” prepared under “Agreement No. CE 82/2017 (WS)”. Having reviewed the Review Report on EIA, no changes to the environmental monitoring requirement in the EM&A Manual are proposed for the work of SHW WTW Extension.
- 1.1.7 According to the approved EM&A Manual, only air quality is required to be monitored during the construction phase of the Project. As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions. Pursuant to the EM&A Manual, baseline environmental monitoring is required to be conducted prior to commencement of the construction works under the Project. Baseline air quality monitoring was conducted from *8 to 21 April 2022*. During the baseline monitoring period, no major construction activities under the Project was observed.
- 1.1.8 As advised by the Contractor, the major construction works under Works Contract was commenced on 24 May 2022. This is the *1<sup>st</sup>* Monthly EM&A Report presenting monitoring results and inspection finding for the Project for the reporting period from *24<sup>th</sup> to 31<sup>st</sup> May 2022*.

## **1.2 REPORT STRUCTURE**

1.2.1 The Monthly EM&A Report is structured into the following sections:-

*Section 1 Introduction*

*Section 2 Project Organisation and Construction Progress*

*Section 3 Summary of Impact Monitoring Requirements*

*Section 4 Noise Monitoring Result*

*Section 5 Waste Management*

*Section 6 Site Inspections*

*Section 7 Environmental Complaints and Non-Compliances*

*Section 8 Implementation Status of Mitigation Measures*

*Section 9 Conclusions and Recommendations*

## 2 PROJECT ORGANISATION AND CONSTRUCTION PROGRESS

### 2.1 PROJECT ORGANISATION

2.1.1 The project organization is shown in *Appendix B*. The roles and responsibilities of the various parties involved in the EM&A process and the organizational structure of the organizations responsible for implementing the EM&A programme are outlined below.

#### Water Supplies Department (WSD)

2.1.2 WSD is the Project Proponent and the Permit Holder of the EP of the development of the Project and will assume overall responsibility for the project. An Independent Environmental Checker (IEC) shall be employed by WSD to audit the results of the EM&A works carried out by the ET.

#### Environmental Protection Department (EPD)

2.1.3 EPD is the statutory enforcement body for environmental protection matters in Hong Kong.

#### Engineer or Engineer's Representative (ER)

2.1.4 The ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:

- Supervise the Contractor's activities and ensure that the requirements in the EM&A Manual are fully complied with;
- Inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- Comply with the agreed Event Contingency Plan in the event of any exceedance.

#### The Contractor

2.1.5 The Main Contractor is responsible perform construction works and for ensuring that the works are undertaken compliance with the specification and contract requirements. The duties and responsibilities of the Main Contractor with respect to EM&A are:

- Employ an ET to undertake monitoring, laboratory analysis and reporting of environmental monitoring and audit;
- Provide information / advice to the ET regarding works activities which may contribute, or be continuing to the generation of adverse environmental conditions;
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- Implement measures to reduce impact whenever Action and Limit levels are exceeded;
- Implement the corrective actions instructed by the Engineer;
- Accompany joint site audit undertaken by the ET; and
- Adhere to the procedures for carrying out complaint investigation.

#### Environmental Team (ET)

2.1.6 The ET is responsible perform implementation EM&A programmes of the Contract Works as stipulated in the Updated EM&A Manual ensure the works are fully compliance with environmental regulations. The duties and responsibilities of the ET with respect to EM&A are:

- Set up all the required environmental monitoring stations;
- Monitor various environmental parameters as required in the EM&A Manual;
- Analyze the EM&A data and review the success of EM&A programme to cost effectively confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions and to identify any adverse environmental impacts arising;
- Carry out site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and take proactive actions to pre-empt problems;
- Audit and prepare audit reports on the environmental monitoring data and site environmental conditions;

- Report on the EM&A results to the IEC, Contractor, the ER and EPD or its delegated representative;
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans;
- Undertake regular and ad-hoc on-site audits / inspections and report to the Contractor and the ER of any potential non-compliance; and
- Follow up and close out non-compliance actions.

*Independent Environmental Checker (IEC)*

2.1.7 The duties and responsibilities of IEC with respect to EM&A are:

- Review the EM&A works performed by the ET (at not less than monthly intervals);
- Audit the monitoring activities and results (at not less than monthly intervals);
- Report the audit results to the ER and EPD in parallel;
- Review the EM&A reports (monthly summary reports) submitted by the ET;
- Review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures that have been recommended in the EIA and this Manual, and ensure they are properly implemented in a timely manner, when necessary;
- Report the findings of site inspections and other environmental performance reviews to ER and EPD;
- Coordinate the monitoring and auditing works for all the on-going contracts in the area in order to identify possible sources / causes of exceedances and recommend suitable remedial actions where appropriate; and
- Coordinate the assessment and response to complaints / enquires from locals, green groups, district councils or the public at large.

**2.2 CONSTRUCTION PROGRESS**

2.2.1 The major construction activities conducted under the Contract in the Reporting Period are listed below. The 3-month rolling construction programme is shown in [Appendix C](#).

- Excavation of inspection pit
- GI Works
- Condition Survey
- Site Formation
- Tree survey
- UU detection

**2.3 SUMMARY OF ENVIRONMENTAL PERMITS AND LICENCES**

2.3.1 Summary of the relevant permits, licences, and/or notifications on environmental protection for the Project are presented in [Table 2-1](#).

**Table 2-1 Status of Environmental Licences and Permits of the Contract**

Item	Description	Licence/Permit Status			
		Reference No./ License No./ Account No.	Approval Date	Expiry Date	Status
1	Air Pollution Control (Construction Dust) Regulation	Ref: 477913	23 Mar 2022	N/A	Valid
2	Waste Disposal Regulation – Billing Account for Disposal of Construction Waste	EPD Ref. No: RS02509 Acc. No.: 7043631	08 Apr 2022	N/A	Valid

Item	Description	Licence/Permit Status			
		Reference No./ License No./ Account No.	Approval Date	Expiry Date	Status
3	Chemical Waste Producer Registration	In Progress (Submitted on 19 Apr 2022)			
4	Water Pollution Control Ordinance – Discharge Licence	In Progress (Submitted on 20 May 2022)			

### 3 SUMMARY OF IMPACT MONITORING REQUIREMENTS

#### 3.1 GENERAL

- 3.1.1 Only air quality monitoring is required to carry out related to Works contracts *7/WSD/21* during the construction phase to ensure the dust mitigation measures and performance properly implementation.
- 3.1.2 The other environmental monitoring for Works Area of Pui O was related to other Works Contracts and will be implemented by other appointed ET.
- 3.1.3 According to the Review Report on EIA, no changes to the environmental monitoring requirement in the EM&A Manual are proposed for the work of SHW WTW Extension. Air quality monitoring work will be implemented according to the EM&A Manual.

#### 3.2 MONITORING PARAMETERS

- 3.2.1 The EM&A program of construction phase monitoring shall cover the following environmental issues:
- Air quality;
- 3.2.2 A summary of impact monitoring parameters is presented in *Table 3-1*:

**Table 3-1 Summary of Baseline Monitoring Parameters**

Environmental Issue	Parameters
Air Quality	<ul style="list-style-type: none"> <li>• 1-hour TSP by Real-Time Portable Dust Meter( as required in case of complaints); and</li> <li>• 24-hour TSP by High Volume Air Sampler.</li> </ul>

#### 3.3 MONITORING LOCATIONS

- 3.3.1 According to the Review Report on EIA, air quality monitoring work should be implemented according to the EM&A Manual. As stated in Section 4 of EM&A Manual, there was only one air quality monitoring station designated under SHW WTW Extension. The air quality monitoring locations is listed in *Table 3-2*.

**Table 3-2 Designated Air Quality Monitoring Stations**

Monitoring Station Identification No	Location
SHWAB	Siu Ho Wan WTW Administration Building

#### 3.4 MONITORING FREQUENCY AND PERIOD

- 3.4.1 The requirements of impact monitoring are stipulated in *Sections 2.1.9* of the approved EM&A Manual and presented as follows.

*Air Quality Monitoring*

- 3.4.2 Frequency of impact air quality monitoring is as follows:
- 1-hour TSP                      3 times every six days (as required in case of complaints)
  - 24-hour TSP                      Once every 6 days during course of works.

#### 3.5 MONITORING EQUIPMENT

*Air Quality Monitoring*

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

3.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

3.5.3 All equipment to be used for air quality monitoring are listed in below table.

**Table 3-3 Air Quality Monitoring Equipment**

Equipment	Model
<b>24-Hr TSP</b>	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170*
Calibration Kit	TISCH Model TE-5025A*
<b>1-Hour TSP</b>	
Portable Dust Meter	Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter / SidePak™ Personal Aerosol Monitor AM510

\* Instrument was used in the Reporting Period and the calibration certificate could be referred in Appendix E.

### 3.6 MONITORING PROCEDURES

#### 1-hour TSP

3.6.1 Operation of the 1-hour TSP meter will follow manufacturer's Operation and Service Manual.

3.6.2 The 1-hour TSP monitor, brand named "Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter" is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 900 light scattering. The 1-hour TSP monitor consists of the following:

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

3.6.3 The 1-hour TSP meter to be used will be within the valid period, calibrated by the manufacturer prior to purchasing. Span check and BG of the instrument will be performed before each monitoring event. A valid calibration certificate is attached in [Appendix E](#).

#### 24-hour TSP

3.6.4 The equipment used for 24-hour TSP measurement is the High Volume Sampler (hereinafter the "HVS") brand named TISCH, Model TE-5170 TSP High Volume Air Sampler, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The HVS consists of the following:

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

3.6.5 For HVS for 24-hour TSP monitoring, the HVS is mounted in a metallic cage with a top for protection and also it is sat on the existing ground or the roof of building. The flow rate of the HVS between 0.6m<sup>3</sup>/min and 1.7m<sup>3</sup>/min will be properly set in accordance with the manufacturer's instruction to within the range recommended in *EPA Code of Federal Regulation, Appendix B to Part 50*. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-Hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-

- A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;
- Installed with elapsed-time meter with  $\pm 2$  minutes accuracy for 24 hours operation;
- Equipped with a timing/control device with  $\pm 5$  minutes accuracy for 24 hours operation;
- With flow control accuracy for  $\pm 2.5\%$  deviation over 24-hour sampling period;
- No two samplers should be placed less than 2 meters apart;
- The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
- A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
- Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
- The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
- The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper ID with the initial weight;
- After sampling, the filter paper will be collected and transfer from the filter holder of the HVS to a sealed envelope and sent to a local HOKLAS accredited laboratory for quantifying.

3.6.6 All the sampled 24-hour TSP filters will be kept in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.

3.6.7 The HVS used for 24-hour TSP monitoring will be calibrated before the commencement for sampling, and after in two months interval with the manufacturer’s instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A) to establish a relationship between the follow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, Qstd, in m<sup>3</sup>/min. Motor brushes of HVS will be regularly replaced of about five hundred hours per time. Valid certificates of the calibration kit and HVS are attached in [Appendix E](#).

### 3.7 DERIVATION OF ACTION/LIMIT (A/L) LEVELS

3.7.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. According to the approved Environmental Monitoring and Audit Manual, the air quality criteria were set up, namely Action and Limit levels are listed in [Tables 3-4](#).

**Table 3-4 Action and Limit Levels of Air Quality**

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
SHWAB	291	170	500	260

### 3.8 METEOROLOGICAL INFORMATION

3.8.1 The meteorological information including wind direction, wind speed, humidity, rainfall, air pressure and temperature is extracted from the Chek Lap Kok Station. Meteorological data are attached in [Appendix J](#).

### 3.9 DATA MANAGEMENT AND DATA QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

3.9.1 All monitoring data were handled by the ET’s in-house data recording and management system.

3.9.2 The monitoring data recorded in the equipment were downloaded directly from the equipment at each monitoring day or after completion of baseline measurement. The downloaded monitoring data were input into a computerized database properly maintained by the ET. The laboratory

results were input directly into the computerized database and checked by personnel other than those who input the data.

- 3.9.3 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

## 4 AIR QUALITY MONITORING

### 4.1 GENERAL

4.1.1 The air quality monitoring schedule is presented in [Appendix G](#) and the monitoring results are summarised in the following sub-sections.

4.1.2 In the reporting Period, no air quality complaint was received, thus no 1-hour TSP monitoring required to conduct according to [Section 2.19](#) of the approved EM&A Manual.

### 4.2 AIR MONITORING RESULTS

4.2.1 In the Reporting Period, a total of 2 events 24-hour TSP monitoring were carried out and the monitoring results are summarized in [Table 4-1](#). The detailed 24-hour monitoring data are presented in [Appendix H](#) and the relevant graphical plots are shown in [Appendix I](#).

**Table 4-1 Summary of 24-hour TSP Monitoring Result – SHWAB**

24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	
Date	Meas. Result
25-May-22	22
31-May-22	20
Average (Range)	<b>21</b> <b>( 20 – 22)</b>

4.2.2 As shown in [Tables 4-1](#), all the 24-hour TSP monitoring results were below the Action/Limit Levels. No Notification of Exceedance (NOE) was issued in this Reporting Period.

4.2.3 The meteorological data during the impact monitoring days are summarized in [Appendix J](#).

## 5 WASTE MANAGEMENT

### 5.1 GENERAL WASTE MANAGEMENT

5.1.1 Waste management was carried out in accordance with the Waste Management Plan (WMP) for the Contract.

### 5.2 RECORDS OF WASTE QUANTITIES

5.2.1 All types of waste arising from the construction works are broadly classified into the following:

- Inert construction and demolition (C&D) material; and
- C&D waste.

5.2.2 The quantities of waste for disposal in this Reporting Month under the Contract are summarised in *Tables 5-1* and *5-2* and the Waste Flow Table as 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 for the Contract**

Type	Quantity in Reporting Month	Disposal / Dumping Ground
Reused in this Contract (Inert) (in '000T)	0	NA
Reused in other Contracts/ Projects (Inert) (in '000T)	0	NA
Disposal as Public Fill (Inert) (in '000T)	0	NA

**Table 5-2 Summary of Quantities of C&D Wastes for the Contract**

Type	Quantity in Reporting Month	Disposal / Dumping Ground
Recycled Metal ('000kg)	0	NA
Recycled Paper / Cardboard Packing ('000kg)	0	NA
Recycled Plastic ('000kg)	0	NA
Chemical Wastes ('000kg)	0	NA
General Refuses ('000T)	1.160	NENT

## 6 SITE INSPECTIONS

### 6.1 REQUIREMENTS

6.1.1 According to the EM&A Manual, the programme of environmental site inspection shall be formulated by ET Leader. Weekly environmental site inspections were carried out to confirm the environmental performance.

### 6.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

6.2.1 In the Reporting Month, joint site inspections to evaluate the site environmental performance were carried out by the representatives of the ER, ET, IEC and the Contractor on **23 May 2022**. No non-compliance was recorded.

6.2.2 The findings / deficiencies observed during the weekly site inspections are listed in **Table 6-1**.

**Table 6-1 Site Observations for the Contract**

Date	Findings / Deficiencies	Follow-Up Status
23 May 2022	<ul style="list-style-type: none"><li>The Contractor was reminded to implement water quality mitigation measures during wet season.</li></ul>	<ul style="list-style-type: none"><li>Reminder only</li></ul>

## 7 ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCES

### 7.1 ENVIRONMENTAL COMPLAINTS, SUMMONS AND PROSECUTIONS

- 7.1.1 There was no environmental complaint, prosecution or notification of summons received in the Reporting Month.
- 7.1.2 The statistical summary table of the environmental complaints, summons and prosecution are presented in *Tables 7-1, 7-2 and 7-3*. Detailed complaint log for the Contract is presented in *Appendix L*.

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

Reporting Month	Environmental Complaint Statistics		
	Frequency	Cumulative	Project related complaint
23 to 31 May 2022	0	0	0

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

Reporting Month	Environmental Summons Statistics		
	Frequency	Cumulative	Project related summons
23 to 31 May 2022	0	0	0

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

Reporting Month	Environmental Prosecution Statistics		
	Frequency	Cumulative	Project related prosecution
23 to 31 May 2022	0	0	0

## **8 IMPLEMENTATION STATUS OF MITIGATION MEASURES**

### **8.1 GENERAL REQUIREMENTS**

- 8.1.1 The environmental mitigation measures recommended in the ISEMM in the EM&A Manual covered the issues of dust, noise, water, waste, land contamination and ecology and they are summarised and presented in *Appendix M*.
- 8.1.2 The Contract works under the Project shall be implementing the required environmental mitigation measures according to the EM&A Manual as subject to the site conditions. Environmental mitigation measures generally implemented by the Contract and the implementation status are shown in *Appendix M*.

### **8.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH**

- 8.2.1 According to the information provided by the Contractor, the major construction activities under the Contract in the coming month are listed below:
- Excavation of inspection pit
  - GI works
  - Condition survey
  - Tree felling
  - Site formation

### **8.3 KEY ISSUES FOR THE COMING MONTH**

- 8.3.1 During wet season, the Contractor should fully implement water quality mitigation measures such as prevention of muddy water or other water pollutants flowing from the site to public area. In addition, all effluent discharge shall fulfill the requirement of Discharge Licence under the Water Pollution Control Ordinance.
- 8.3.2 The Contractor should pay attention on the air quality mitigation measures as far as practicable to minimise the dust impact to the resident which are located adjacent to the Project.
- 8.3.3 All other mitigation measures recommended in the Implementation Schedule for Environmental Mitigation Measures of the EM&A Manual should be properly implemented and maintained as far as practicable.

## **9 CONCLUSIONS AND RECOMMENDATIONS**

### **9.1 CONCLUSIONS**

- 9.1.1 As advised by the Contractor, the major construction works under Works Contract was commenced on 24 May 2022. This is the *1<sup>st</sup>* Monthly EM&A Report presenting monitoring results and inspection finding for the Project for the reporting period from *24<sup>th</sup> to 31<sup>st</sup> May 2022*.
- 9.1.2 In the Reporting Period, no 24-hour TSP monitoring results triggered the Action/Limit level was recorded. No NOE or the associated corrective actions were therefore issued.
- 9.1.3 In the Reporting Month, joint site inspections to evaluate the site environmental performance had been carried out by the representatives of the ER, ET, IEC and the Contractor on *23 May 2022*. No non-compliance was recorded during the site inspections.
- 9.1.4 In the Reporting Month, no environmental complaint, prosecution or notification of summons was received. In addition, no emergency event related to violation of environmental legislation for illegal dumping and landfilling was received.

### **9.2 RECOMMENDATIONS**

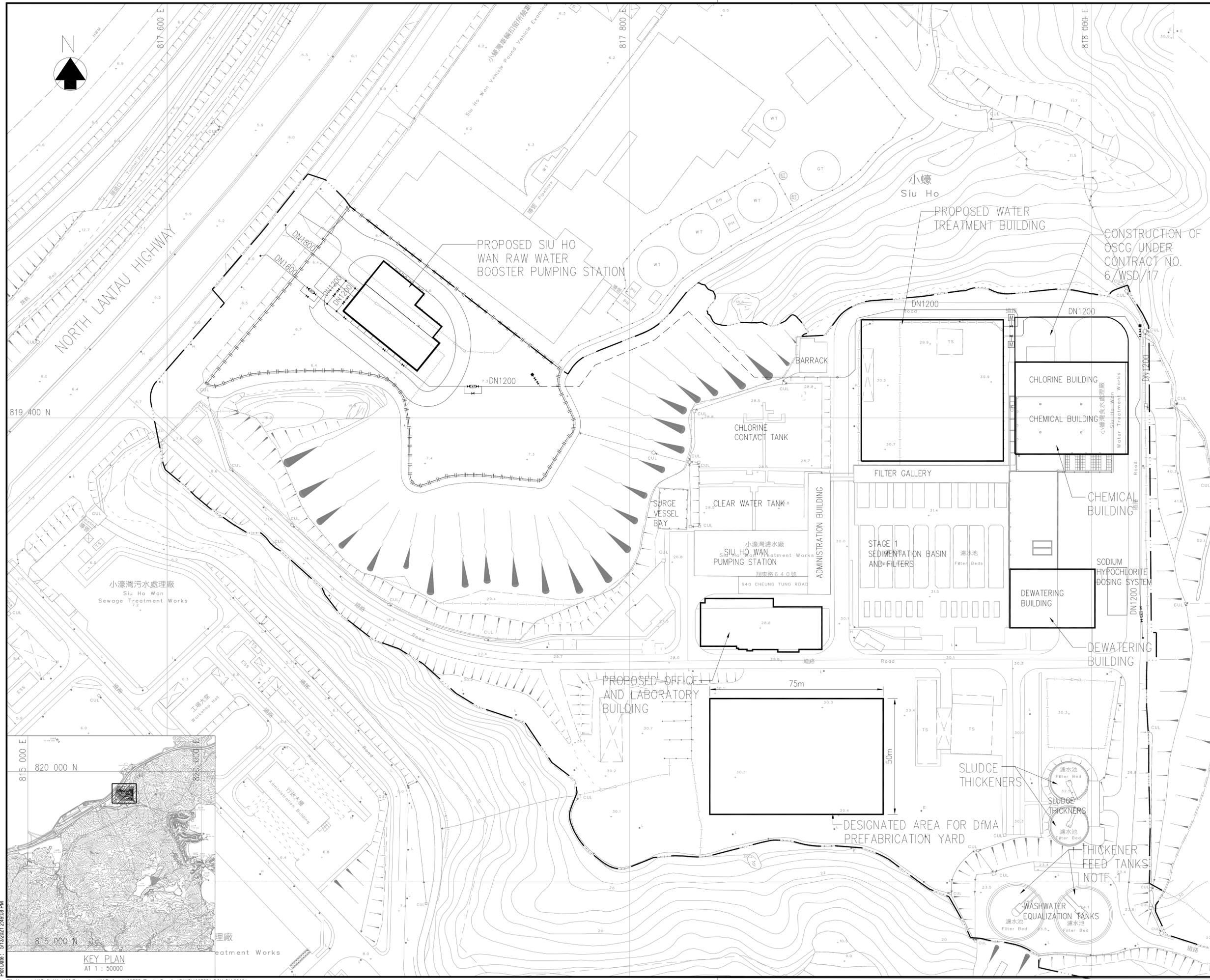
- 9.2.1 During wet season, the Contractor should fully implement water quality mitigation measures such as prevention of muddy water or other water pollutants flowing from the site to public area. In addition, all effluent discharge shall fulfill the requirement of Discharge Licence under the Water Pollution Control Ordinance.
- 9.2.2 The Contractor should pay attention on the air quality mitigation measures as far as practicable to minimise the dust impact to the resident which are located adjacent to the Project.
- 9.2.3 All other mitigation measures recommended in the Implementation Schedule for Environmental Mitigation Measures of the EM&A Manual should be properly implemented and maintained as far as practicable.

# **Appendix A**

## **Layout Plan of the Project**

- LEGEND:**
- SITE BOUNDARY
  - - - PROPOSED RAW WATER MAINS (BURIED)
  - - - PROPOSED RAW WATER MAINS (EXPOSED)
  - |-|-| PROPOSED FENCING
  - ▭ PROPOSED BUILDING WORKS

**NOTE 1:**  
THE EXISTING WASHWATER EQUALIZATION TANKS TO BE RENAMED AS THICKENER FEED TANKS



CONSTRUCTION OF OSCG UNDER CONTRACT NO. 6/WSD/17

Revision	Date	Issue For Tender Drawing	Initial
0	05/21	ISSUE FOR TENDER DRAWING	JC
		Designed	Checked
Initial		CT/CCK	YFC/AS
Date	05/21	05/21	05/21

Approved  
*James Chan*

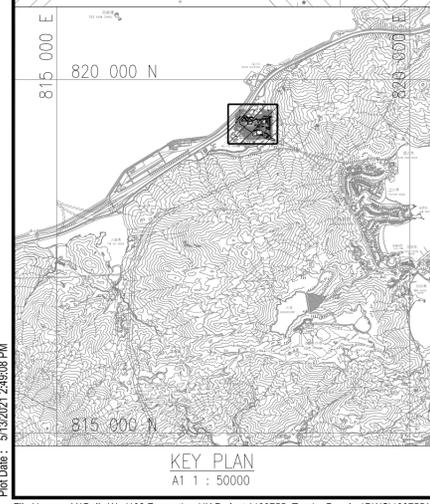
Contract No. 7/WSD/21

Contract Title  
CONSTRUCTION OF SIU HO WAN WATER TREATMENT WORKS EXTENSION AND SIU HO WAN RAW WATER BOOSTER PUMPING STATION

Drawing Title  
SITE LOCATION

Drawing No.	Revision
199755A/B&V/GN/00001	0

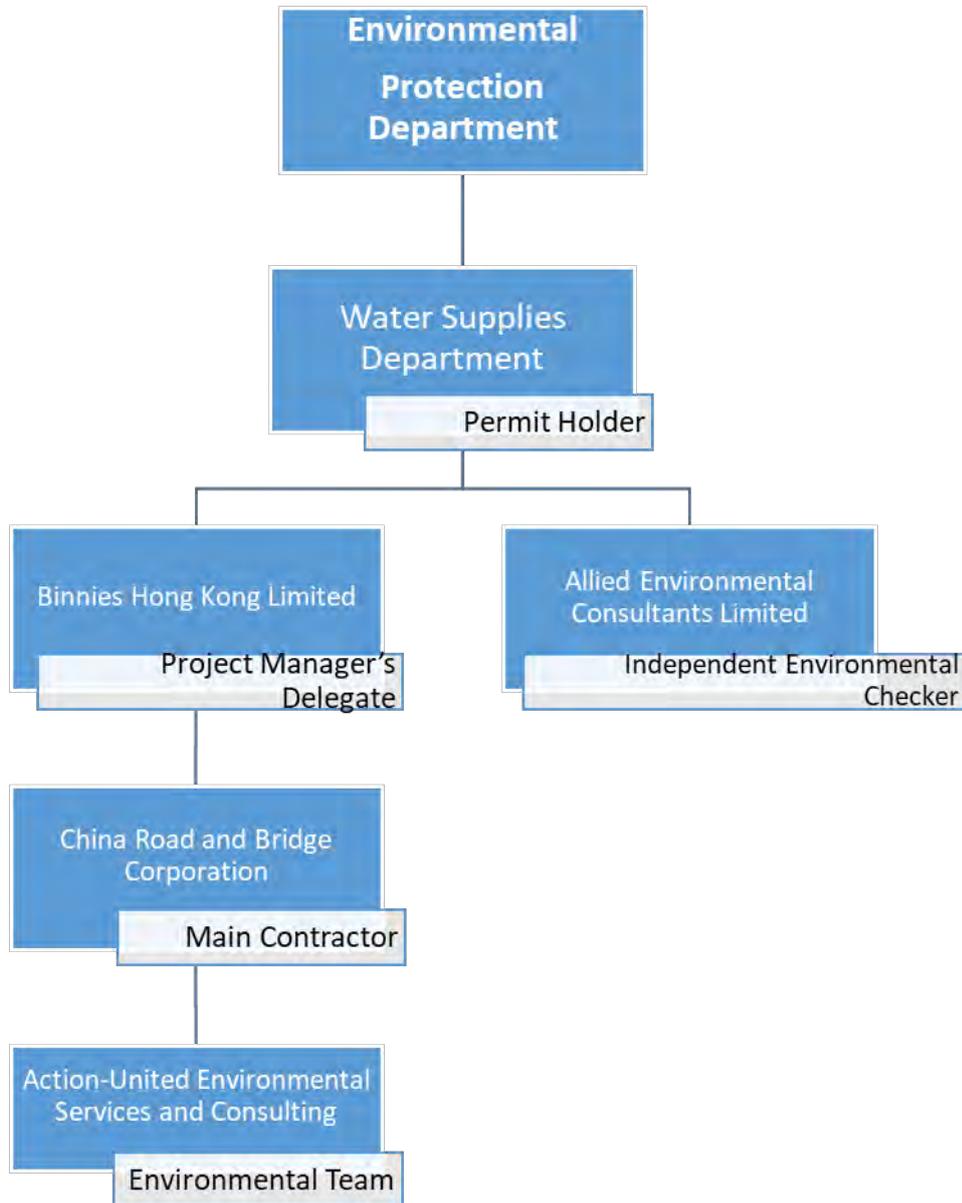
Scale A1 1 : 750  
A3 1 : 1500



Plotted Date: 5/13/2021 2:40:08 PM

## **Appendix B**

### **Project Organisation**



Contact Details of Key Personnel

<b>Organisation</b>	<b>Project Role</b>	<b>Position</b>	<b>Name</b>	<b>Tel No.</b>
Binnies	Representative Engineer	Chief Resident Engineer	Mr. Gilbert Ying	6343 1027
		Senior Resident Engineer	Mr. Alex Tung	9080 0079
		Resident Engineer	Ms. Jenny Ng	9267 8638
		Assistant Resident Engineer	Mr. Warren Yeung	6343 1010
China Road and Bridge Corporation	Contractor	Site Agent	Mr. Raymond Mau	5335 9571
		Works Manager	Mr. Chan Ming Tai	9358 7007
		Environmental Officer	Mr. Dennis Ho	5645 0563
		Environmental Supervisor	Ms. Alice Ngai	9148 5688
Allied Environmental Consultants Limited	Independent Environmental Checker	Principle Consultant	Ms. Joanne Ng	2815 7028
Action-United Environmental Services Consulting and	Environmental Team	Environmental Team Leader	Mr. Tam Tak Wing	2959 6059
		Environmental Consultant	Ms. Nicola Hon	2959 6059
		Environmental consultant	Mr. Ben Tam	2959 6059

## **Appendix C**

### **3-month Rolling Construction Programme**

# Contract No. 7/WSD/21 Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping

Data Date: 31-May-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Total Float	Time Risk Allowance	2022			
								Jun 4	Jul 5	Aug 6	Sep 7
<b>Construction of Siu Ho Wan Water Treatment Works Extension &amp; Raw Water</b>											
<b>Compensation Event (CE)</b>											
CE1020	CE no 003 - Provision of the Project Manager's Temporary Site Accommodation	0	0	31-May-22 A	31-May-22 A						
<b>Preliminaries, Contractor's Design, Method Statement Submission and Approval</b>											
<b>Contractor's Design Submission and Approval</b>											
<b>Major Permanent Works Design</b>											
MDD3000	Process Design Review	90	80	13-May-22 A	18-Aug-22	90	7				
MDD3010	Hazard and Operability studies	75	47	24-May-22 A	16-Jul-22	0	0				
MDD3015	Design of earth mat	60	60	10-Jun-22	08-Aug-22	120	0				
MDD3020	Design for Ozone Equipment	90	19	28-Mar-22 A	18-Jun-22	0	1				
MDD3025	Comments and approval of Design for Ozone Equipment	28	28	19-Jun-22	16-Jul-22	0	1				
MDD3040	CFD baffle design for intermediate ozone contact tank	120	120	31-May-22	27-Sep-22	236	7				
MDD3050	Design for Manufacture and Assembly(DfMA) works for civil structure works	100	85	16-May-22 A	23-Aug-22	11	7				
MDD3055	Comments and approval of design for Manufacture and Assembly(DfMA) works (civil structure works)	28	28	24-Aug-22	20-Sep-22	11	2				
MDD3080	Design for DAF Equipment	90	90	17-Jul-22	14-Oct-22	35	2				
MDD3090	Major Pumping Design (Raw Water Booster Pumping/Backwash Pumping Design)	90	90	17-Jul-22	14-Oct-22	55	7				
MDD3100	Design for Hydraulics system	120	120	17-Jul-22	13-Nov-22	139	7				
MDD3130	Design for SRGF Equipment	90	90	17-Jul-22	14-Oct-22	35	7				
MDD3180	Design for BACF Equipment	90	90	06-Aug-22	03-Nov-22	35	7				
<b>Major Temporary Works Design</b>											
MTW0010	Design for Tower cranes including foundation works	60	15	22-Apr-22 A	14-Jun-22	20	0				
MTW0015	ELS design for foundation excavation works for Siu Ho Wan Raw Water Booster Pumping Station	45	40	26-May-22 A	09-Jul-22	12	4				
MTW0020	ELS design for foundation excavation works for Office and Laboratory Building	45	31	23-May-22 A	30-Jun-22	20	0				
MTW0090	Temporary works design for protection of plant and equipment in Chemical Building	60	60	09-Aug-22	07-Oct-22	92	6				
<b>General Submission</b>											
MPW1100	Submission of the drainage management plan	60	60	31-May-22	29-Jul-22	11	6				
<b>Subcontracting and Procurement</b>											
<b>Subcontracting</b>											
MTW1100	Subletting for earth work	14	14	21-Apr-22 A	13-Jun-22	139	0				
MTW1105	Subletting for ELS works	20	10	04-May-22 A	09-Jun-22	38	0				
MTW1565	Subletting for Precasting works	45	45	31-May-22	14-Jul-22	106	4				
MTW1580	Subletting for R.C structure	30	30	31-May-22	29-Jun-22	109	3				
MTW1585	Subletting for waterproofing works	30	30	30-Jun-22	29-Jul-22	109	3				
MTW1640	Subletting for Water works	30	30	25-Aug-22	23-Sep-22	20	3				
<b>E&amp;M Equipment Procurement, FAT and Delivery</b>											
MTW1685	Submission of Equipment test plan	90	90	31-May-22	28-Aug-22	132	6				
MTW1690	Approval of Equipment test plan	30	30	29-Aug-22	27-Sep-22	132	3				
<b>Particular Submission of Key People and Specially Required Staff</b>											
MTW2160	Appointment of E&M independent inspection body	14	14	15-Aug-22	28-Aug-22	162	1				
<b>Method Statement Submission and Approval for Major Construction Works</b>											
MSS2015	Comments and approval of DfMA design plan	28	14	17-May-22 A	13-Jun-22	88	2				
MSS2020	Method statement submission for ELS works for water treatment building	30	27	27-May-22 A	26-Jun-22	0	1				
MSS2025	Method statement comments and approval for ELS works for water treatment building	21	21	27-Jun-22	17-Jul-22	0	1				
MSS2028	Method statement submission for erection of tower crane	30	30	15-Jun-22	14-Jul-22	20	4				
MSS2029	Method statement comments and approval for erection of tower crane	21	21	15-Jul-22	04-Aug-22	20	4				
MSS2030	Method statement submission for structural works for Water Treatment Building	45	45	24-Aug-22	07-Oct-22	178	4				
MSS2036	Method statement submission for ELS works for SHWRWBPS	42	42	05-Jun-22	16-Jul-22	12	4				



- █ Non-Critical Activity
- █ Critical Activity
- ◆ Milestone
- ▬ Summary

Date	Revision	Checked	Approved
31-May-22	1	CLX	WIM

**3 Month Rolling Programme  
(Jun - Aug 2022)**

(sheet 1 of 3)

# Contract No. 7/WSD/21 Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping

Data Date: 31-May-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Total Float	Time Risk Allowance	2022					
								Jun 4	Jul 5	Aug 6	Sep 7		
MSS2037	Method statement comments and approval for ELS works for SHWRWBPS	28	28	17-Jul-22	13-Aug-22	12	1						
MSS2040	Method statement submission for structural works for Siu Ho Wan Raw Water Booster Pumping Station(SHWRWB)	45	45	24-Aug-22	07-Oct-22	32	4						
MSS2056	Method statement submission for ELS works for Office and Laboratory Building	45	45	31-May-22	14-Jul-22	14	1						
MSS2057	Method statement comments and approval for Office and Laboratory Building	21	21	15-Jul-22	04-Aug-22	14	1						
MSS2060	Method statement submission for structural works for Office and Laboratory Building	45	45	24-Aug-22	07-Oct-22	11	4						
<b>Preliminaries</b>		177	100	08-Apr-22 A	07-Sep-22	265							
PRE2020	Pre-condition survey (PS3 6.22)	30	15	30-May-22 A	14-Jun-22	5	1						
PRE2025	Prepare, submit and approve TTA scheme	50	15	29-Apr-22 A	14-Jun-22	2	1						
PRE2040	Tree survey and tree assessment	45	0	08-Apr-22 A	31-May-22 A	1							
PRE2060	Installation and initial reading of geotechnical instrumentations	28	28	15-Jun-22	12-Jul-22	5	2						
PRE2065	Building Information Modelling(BIM)	50	50	31-May-22	19-Jul-22	101	2						
PRE2070	Utilities & Associated Civil Works Modelling	50	50	20-Jul-22	07-Sep-22	151	2						
PRE2080	Erection of contractor's site office and PM's site accommodation	56	56	31-May-22	25-Jul-22	309	7						
<b>Precasting and Fabrication Works</b>		90	90	20-Jul-22	17-Oct-22	101							
PRE2100	Establishment of Design for Manufacture and Assembly (DfMA) prefabrication yard	90	90	20-Jul-22	17-Oct-22	101	7						
<b>Interfacing Issues</b>		240	240	31-May-22	25-Jan-23	114							
PRE2150	Submission of interface management plan	60	60	31-May-22	29-Jul-22	114	6						
PRE2160	Establish interface management liaison groups and site liaison group	30	30	30-Jul-22	28-Aug-22	114	3						
PRE2170	Establish interface meeting and conformation of interface schedule	150	150	29-Aug-22	25-Jan-23	114	7						
<b>Section 1 of the Works</b>		115	115	31-May-22	17-Oct-22	17							
<b>Construction of Water Treatment Building</b>		115	115	31-May-22	17-Oct-22	17							
<b>Preparaton Works</b>		37	37	31-May-22	14-Jul-22	2							
S110015	Implementation of TTA scheme	3	3	15-Jun-22	17-Jun-22	24	1						
S110020	Demolition of existing structure	25	25	15-Jun-22	14-Jul-22	2	1						
S110025	Demolition of existing lamppost	20	20	15-Jun-22	08-Jul-22	7	1						
S110040	Ground investigation	10	10	31-May-22	11-Jun-22	18	0						
<b>Excavation and Installation of Lateral Support</b>		76	76	18-Jul-22	17-Oct-22	17							
S110060	Installation of pre-bored sheet pile wall and king post	75	75	18-Jul-22	15-Oct-22	0	1						
S110115	Erection of tower crane including testing	60	60	05-Aug-22	17-Oct-22	17	6						
<b>Construction of Siu Ho Wan Raw Water Booster Pumping Station and Pipework Modification</b>		94	94	31-May-22	20-Sep-22	9							
<b>Preparaton Works</b>		32	32	31-May-22	08-Jul-22	27							
S110900	Site clearance and tree felling works	20	20	31-May-22	23-Jun-22	27	1						
S110905	Utility detection	14	14	31-May-22	16-Jun-22	33	0						
S110920	Ground investigation	12	12	24-Jun-22	08-Jul-22	27	1						
<b>Excavation and Installation of Lateral Support</b>		44	44	30-Jul-22	20-Sep-22	9							
S110940	Excavation to +4.9mPD	14	14	30-Jul-22	15-Aug-22	9	1						
S110950	Installation of sheetpile wall	30	30	16-Aug-22	20-Sep-22	9	1						
<b>Construction of Office and Laboratory Building</b>		99	99	31-May-22	26-Sep-22	3							
<b>Preparation Works</b>		21	21	31-May-22	24-Jun-22	21							
S120000	Site clearance	7	7	31-May-22	08-Jun-22	21	0						
S120010	Utility detection	7	7	09-Jun-22	16-Jun-22	28	0						
S120020	Ground investigation	14	14	09-Jun-22	24-Jun-22	21	0						
<b>Excavation and Installation of Lateral Support</b>		60	60	18-Jul-22	26-Sep-22	3							
S120040	Demolition of existing ground slab	20	20	18-Jul-22	09-Aug-22	3	1						
S120045	Diversion of DN50 cable	20	20	23-Jul-22	15-Aug-22	3	1						
S120050	Installation of sheetpile wall	35	35	16-Aug-22	26-Sep-22	3	1						
<b>Section 2 of the Works</b>		733	733	17-Jul-22	18-Jul-24	0							



- Non-Critical Activity
- Critical Activity
- ◆ Milestone
- ▶ Summary

Date	Revision	Checked	Approved
31-May-22	1	CLX	WIM

**3 Month Rolling Programme  
(Jun - Aug 2022)**

(sheet 2 of 3)

# Contract No. 7/WSD/21 Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping

Data Date: 31-May-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Total Float	Time Risk Allowance	2022			
								Jun 4	Jul 5	Aug 6	Sep 7
<b>Water Treatment Building</b>		733	733	17-Jul-22	18-Jul-24	0					
<b>Statutory Submission schedule</b>		733	733	17-Jul-22	18-Jul-24	0					
S210050	Revised GBP Submission (WTB / O&LB)	90	90	24-Jul-22	21-Oct-22	636	1				
S210060	DG (Ozone) installation approval - dwg & layout by FSD for WTB	733	733	17-Jul-22	18-Jul-24	0	1				
<b>Siu Ho Wan Pumping Station</b>		180	180	19-Aug-22	27-Mar-23	330					
S224050	Modification of backwash pump to stream IIA SRGF	180	180	19-Aug-22	27-Mar-23	330	7				



- █ Non-Critical Activity
- █ Critical Activity
- ◆ Milestone
- ▶ Summary

Date	Revision	Checked	Approved
31-May-22	1	CLX	WIM

**3 Month Rolling Programme  
(Jun - Aug 2022)**

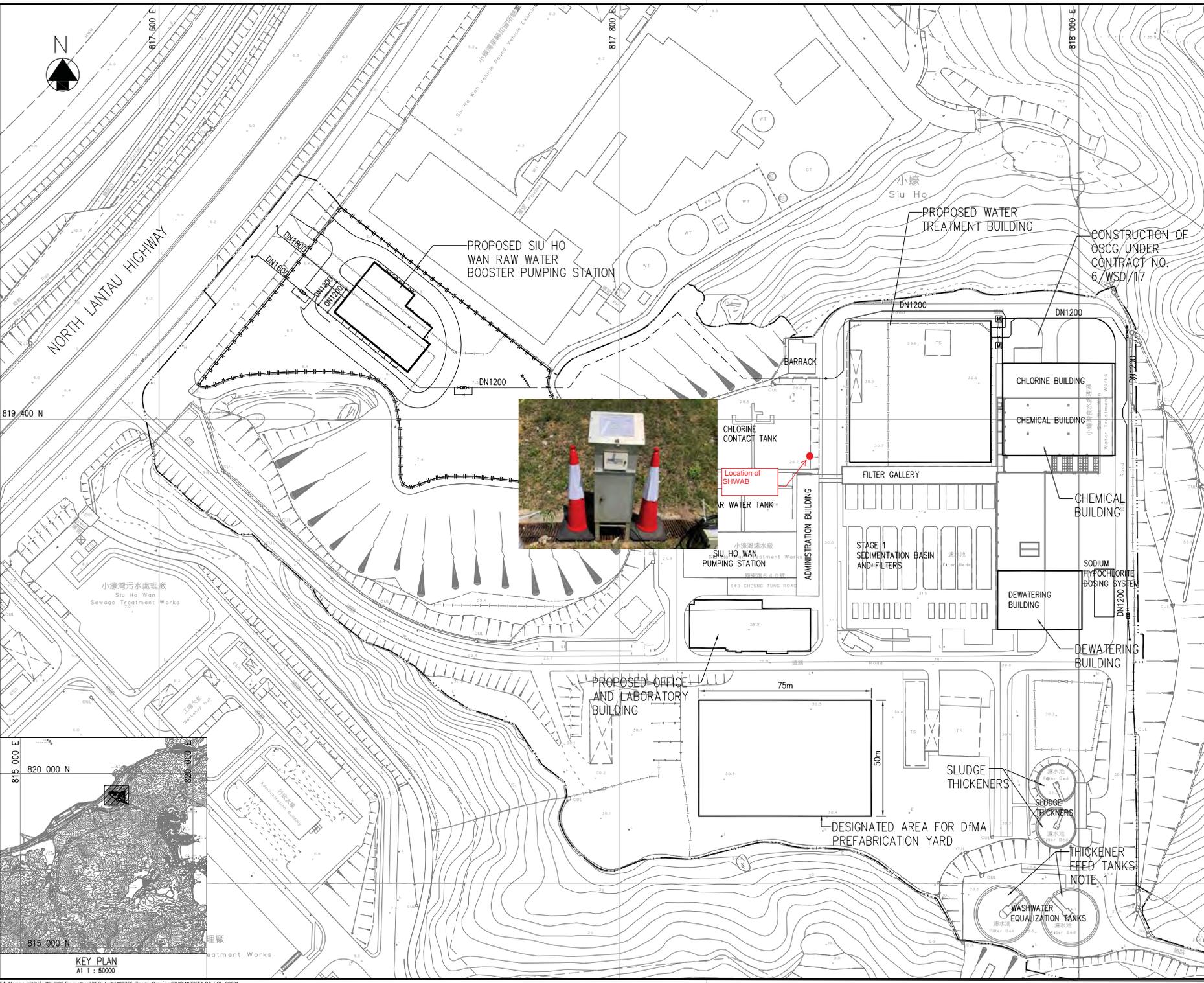
(sheet 3 of 3)

## **Appendix D**

### **Monitoring Locations**

- LEGEND:**
- SITE BOUNDARY
  - - - - PROPOSED RAW WATER MAINS (BURIED)
  - - - - PROPOSED RAW WATER MAINS (EXPOSED)
  - |-|-| PROPOSED FENCING
  - PROPOSED BUILDING WORKS

**NOTE:**  
THE EXISTING WASHWATER EQUALIZATION TANKS TO BE RENAMED AS "THICKENER FEED TANKS"



Revision	Date	Description	Drawn	Checked	Initial
0	05/21	ISSUE FOR TENDER DRAWING	JC		
Initial		Designed	YFC/AS	Drawn	Checked
Initial	05/21	05/21	SZ	05/21	JC
Initial	05/21	05/21	SZ	05/21	JC

Approved  
*James Chan*

Contract No. 7/WSD/21

Contract Title  
CONSTRUCTION OF SIU HO WAN WATER TREATMENT WORKS EXTENSION AND SIU HO WAN RAW WATER BOOSTER PUMPING STATION

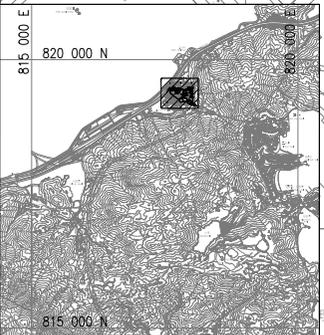
Drawing Title  
SITE LOCATION

Drawing No. 199755A/B&V/GN/00001  
Revision 0

Scale A1 1 : 750  
A3 1 : 1500

水務署  
Water Supplies Department

**binnies**  
BINNIES HONG KONG LIMITED  
寶尼新工程顧問有限公司



## **Appendix E**

### **Calibration Certificates**

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Near Lohas Park Phase 6	Date of Calibration: 24-May-22
Location ID : AM2a	Next Calibration Date: 24-Jul-22
Name and Model: TISCH HVS Model TE-5170	Technician: Eric

### CONDITIONS

Sea Level Pressure (hPa)	1009.2	Corrected Pressure (mm Hg)	756.9
Temperature (°C)	24.4	Temperature (K)	297

### CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 1.99838
Model-> 5025A	Qstd Intercept -> -0.00903
Serial # -> 1612	

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.40	5.40	10.8	1.647	56	56.00	Slope = 30.4329 Intercept = 6.0139 Corr. coeff. = 0.9982
13	4.40	4.40	8.8	1.487	51	51.00	
10	3.40	3.40	6.8	1.308	46	46.00	
7	2.20	2.20	4.4	1.053	39	39.00	
5	1.30	1.30	2.6	0.811	30	30.00	

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))]-b$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

**For subsequent calculation of sampler flow:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

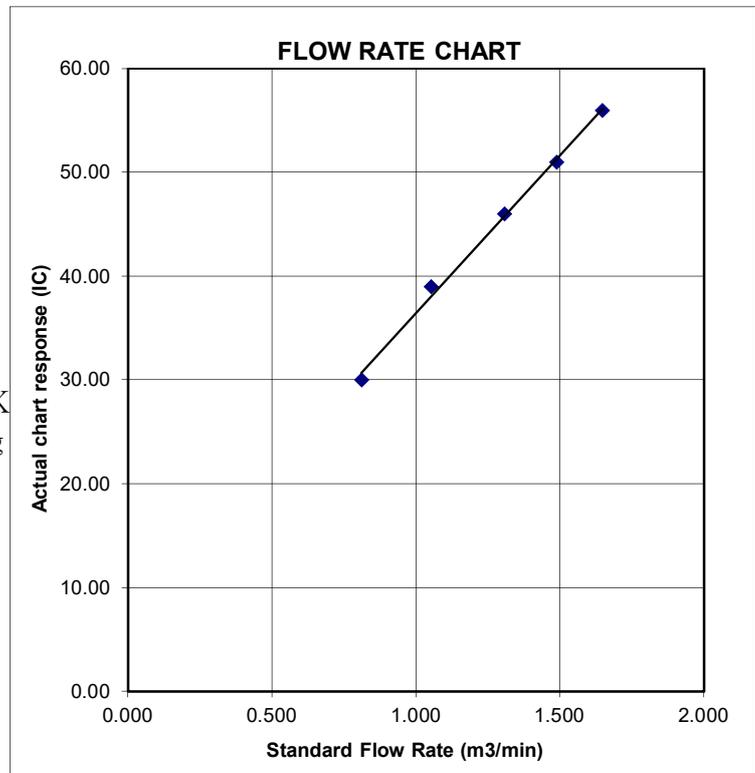
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





# Certificate of Calibration

Calibration Certification Information			
Cal. Date: December 27, 2021	Rootsmeter S/N: 438320	Ta: 295	°K
Operator: Jim Tisch		Pa: 740.4	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: <b>1612</b>		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3890	3.2	2.00
2	3	4	1	0.9760	6.4	4.00
3	5	6	1	0.8740	7.9	5.00
4	7	8	1	0.8320	8.8	5.50
5	9	10	1	0.6870	12.7	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
0.9799	0.7055	1.4029	0.9957	0.7168	0.8927
0.9756	0.9996	1.9841	0.9914	1.0157	1.2624
0.9736	1.1140	2.2183	0.9893	1.1320	1.4114
0.9724	1.1688	2.3265	0.9881	1.1876	1.4803
0.9673	1.4079	2.8059	0.9828	1.4306	1.7853
<b>QSTD</b>	m=	<b>1.99838</b>	<b>QA</b>	m=	<b>1.25135</b>
	b=	<b>-0.00903</b>		b=	<b>-0.00574</b>
	r=	<b>0.99999</b>		r=	<b>0.99999</b>

Calculations			
Vstd=	$\Delta Vol \left( \frac{Pa - \Delta P}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left( \frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

## **Appendix F**

### **Event and Action Plan**

### Event Action Plan for Air Quality

Event	Action			
	ET	IEC	ER	Contractor
Action Level exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform IEC, ER and Contractor;</li> <li>3. Repeat measurement to confirm finding; and</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures</li> <li>2. Rectify any unacceptable practice and implement remedial measures; and</li> <li>3. Amend working methods agreed with ER if appropriate.</li> </ol>
Action Level exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform IEC, ER and Contractor;</li> <li>3. Advise the ER and Contractor on the effectiveness of the proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase monitoring frequency to daily;</li> <li>6. Discuss with IEC, ER and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and ER; and</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and</li> <li>5. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor; and</li> <li>3. Supervise and ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures</li> <li>2. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals; and</li> <li>4. Amend proposal if appropriate.</li> </ol>
Limit Level exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform ER, Contractor, IEC and EPD;</li> <li>3. Repeat</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET, ER and Contractor on possible remedial measures;</li> <li>4. Advise the ER and</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor; and</li> <li>3. Supervise and ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals</li> </ol>

	<p>measurement to confirm finding;</p> <ol style="list-style-type: none"> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<p>ET on the effectiveness of the proposed remedial measures;</p> <ol style="list-style-type: none"> <li>5. Supervise implementation of remedial measures.</li> </ol>		<p>for remedial actions to ER with a copy to ET and IEC within 3 working days of notification;</p> <ol style="list-style-type: none"> <li>4. Implement the agreed proposals; and</li> <li>5. Amend proposal if appropriate.</li> </ol>
<p>Limit Level exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> <li>1. Notify IEC, ER, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and</li> <li>5. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise and ensure remedial measures properly implemented; and</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

**Note:**

ET – Environmental Team  
IEC – Independent Environmental Checker  
ER – Engineer's Representative

## **Appendix G**

### **Monitoring Schedule**

**Impact Air Quality Monitoring Schedule for the Reporting Period**

Date		Air Quality Monitoring (24-Hour TSP)
Sun	1-May-22	
Mon	2-May-22	
Tue	3-May-22	
Wed	4-May-22	
Thu	5-May-22	
Fri	6-May-22	
Sat	7-May-22	
Sun	8-May-22	
Mon	9-May-22	
Tue	10-May-22	
Wed	11-May-22	
Thu	12-May-22	
Fri	13-May-22	
Sat	14-May-22	
Sun	15-May-22	
Mon	16-May-22	
Tue	17-May-22	
Wed	18-May-22	
Thu	19-May-22	
Fri	20-May-22	
Sat	21-May-22	
Sun	22-May-22	
Mon	23-May-22	
Tue	24-May-22	
Wed	25-May-22	✓
Thu	26-May-22	
Fri	27-May-22	
Sat	28-May-22	
Sun	29-May-22	
Mon	30-May-22	
Tue	31-May-22	✓

✓	Monitoring Day
	Sunday or Public Holiday

**Impact Air Quality Monitoring Schedule for next Reporting Period**

Date		Air Quality Monitoring (24-Hour TSP)
Wed	1-Jun-22	
Thu	2-Jun-22	
Fri	3-Jun-22	
Sat	4-Jun-22	
Sun	5-Jun-22	
Mon	6-Jun-22	✓
Tue	7-Jun-22	
Wed	8-Jun-22	
Thu	9-Jun-22	
Fri	10-Jun-22	
Sat	11-Jun-22	✓
Sun	12-Jun-22	
Mon	13-Jun-22	
Tue	14-Jun-22	
Wed	15-Jun-22	
Thu	16-Jun-22	
Fri	17-Jun-22	✓
Sat	18-Jun-22	
Sun	19-Jun-22	
Mon	20-Jun-22	
Tue	21-Jun-22	
Wed	22-Jun-22	
Thu	23-Jun-22	✓
Fri	24-Jun-22	
Sat	25-Jun-22	
Sun	26-Jun-22	
Mon	27-Jun-22	
Tue	28-Jun-22	
Wed	29-Jun-22	✓
Thu	30-Jun-22	

✓	Monitoring Day
	Sunday or Public Holiday

## **Appendix H**

### **Database of Monitoring Result**

WSD Contract No.: 7/WSD/21 - Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station  
 Monthly Environmental Impact Monitoring and Audit Report (May 2022)

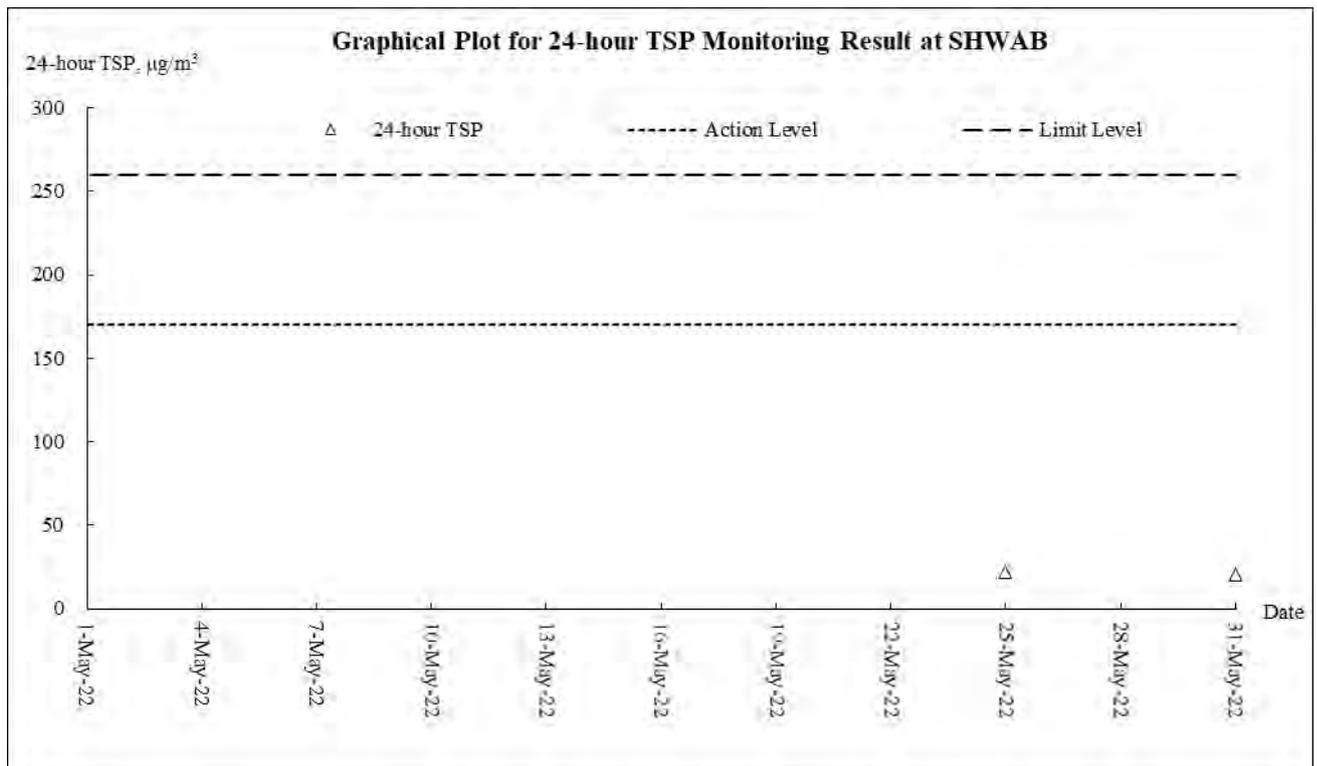


Impact Monitoring Results for 24-hour TSP at SHWAB										Date of Calibration: 24-May-22		Slope = 30.4329			
										Next Calibration Date: 24-July-22		Intercept = 6.0139			
DATE	SAMPL E NUMB ER	ELAPSED TIME		ACTUAL (min)	CHART READING			AVG TEMP (°C)	STANDARD			FILTER WEIGHT (g)		WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m <sup>3</sup> )
		INITIAL	FINAL		MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	INITIAL	FINAL		
25-May-22	28300	18097.39	18121.00	1416.60	38	38	38.0	25.3	1007.7	1.05	1483	2.7830	2.8160	0.0330	22
31-May-22	28324	18121.00	18144.57	1414.20	38	38	38.0	28.2	1006.8	1.04	1471	2.7565	2.7863	0.0298	20

# **Appendix I**

## **Graphical Plots for Monitoring Result**

**24-Hour TSP**



## **Appendix J**

### **Meteorological Data**

Date		Weather	Total Rainfall (mm)	Chek Lap Kok				
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction	Mean Press. (hPa)
1-May-22	Sun	Mainly fine. Hot during the day.	32.4	21.1	10.7	69.5	N/NE	1012.6
2-May-22	Mon	Moderate south to southeasterly winds.	23.4	19.0	12.5	70.0	N/NE	1014.6
3-May-22	Tue	Moderate easterly winds.	0	22.6	15	56.5	NE	1015.8
4-May-22	Wed	Mainly fine. Hot during the day.	0	25.0	9.7	59.7	NE	1014.3
5-May-22	Thu	Hot during the day. Moderate easterly winds.	0	26.3	16.2	62.0	E	1012.6
6-May-22	Fri	Mainly fine. Hot during the day.	0	26.4	6.7	77.0	NE	1012.4
7-May-22	Sat	Becoming cloudy. Moderate easterly winds	0.8	26.4	10.7	72.0	E	1013.0
8-May-22	Sun	Bright periods tomorrow with one or two showers later.	Trace	26.2	15	69.0	E	1013.2
9-May-22	Mon	Mainly cloudy with a few showers.	Trace	27.1	16.7	68.7	E	1012.3
10-May-22	Tue	Showers will be more frequent with a few thunderstorms in the afternoon.	1.4	27.2	16.2	77.7	E/SE	1009.7
11-May-22	Wed	Moderate to fresh south to southwesterly winds	61.4	25.1	23.5	88.5	E	1007.8
12-May-22	Thu	Cloudy to overcast with showers and squally thunderstorms.	123.5	25.8	25.0	82.5	S/SW	1006.0
13-May-22	Fri	Mainly cloudy with occasional showers.	107.1	26.4	17.0	86.0	W/SW	1005.2
14-May-22	Sat	A few squally thunderstorms.	5	25.3	14.2	89.2	E	1008.2
15-May-22	Sun	Moderate to fresh southwesterly winds.	26.4	23.9	9.2	92.0	N/NE	1009.8
16-May-22	Mon	Mainly cloudy with occasional showers.	4.7	28.4	16.2	83.2	NE	1012.4
17-May-22	Tue	Moderate to fresh easterly winds	0	23.0	11.2	64.7	NE	1013.6
18-May-22	Wed	Mainly fine. Very dry during the day.	0	25.7	15.7	39.5	E/SE	1013.8
19-May-22	Thu	Mainly fine. Hot during the day.	0	26.9	12.5	52.2	W/SW	1011.9
20-May-22	Fri	Moderate south to southeasterly winds.	0	27.9	10.7	66.0	W	1009.2
21-May-22	Sat	Moderate to fresh easterly winds	0	28.0	11.5	71.0	E/SE	1007.8
22-May-22	Sun	Cloudy with a few showers.	0.6	26.9	8.2	83.7	E/NE	1007.3
23-May-22	Mon	occasionally strong offshore and on high ground	11.2	25.3	25.5	82.5	E	1007.6
24-May-22	Tue	Cloudy with occasional showers and isolated thunderstorms.	10.3	26.3	18.7	82.5	E	1009.2
25-May-22	Wed	Moderate to fresh easterly winds.	1.3	26.9	16	82.5	E	1007.7
26-May-22	Thu	Sunny periods and a few showers.	2.4	28.4	16.7	78.5	E	1004.7
27-May-22	Fri	Mist patches at first. Hot during the day.	24.7	27.2	13.2	87.0	SW	1004.3
28-May-22	Sat	Light to moderate southeasterly winds.	Trace	29.6	15	77.0	SW	1005.5
29-May-22	Sun	Hot with sunny intervals during the day tomorrow	Trace	30.3	18.7	70.2	S/SE	1005.8
30-May-22	Mon	Moderate to fresh southwesterly winds	Trace	30.1	12.5	72	S/SE	1005.9
31-May-22	Tue	Mainly cloudy with a few showers and thunderstorms.	0.1	28.7	15.5	77	S/SE	1006.8

Remark: The above information was extracted from the Hong Kong Observatory station of Chek Lap Kok of below link: <https://www.hko.gov.hk/en/index.html>

## **Appendix K**

### **Waste Flow Table**

## Monthly Summary Waste Flow Table for 2022 (year)

Name of Person completing the record:

Project : Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station

Contract No.: 7/WSD/21

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete (a) (see Note 3)	Reused in the Contract (b)	Reused in other Projects (c)	Disposed as Public Fill (d)	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000T)	(in '000T)	(in '000T)	(in '000T)	(in '000T)	(in '000T)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 T)
Jan											
Feb											
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Apr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.160
Jun											
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.160
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.160

- Notes:
- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
  - (2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.
  - (3) Broken concrete for recycling into aggregates.
  - (4) Total Quantity Generated = a+b+c+d..

## **Appendix L**

### **Environmental Complaints Log**

**Environmental Complaints Log**

<b>Log ref.</b>	<b>Date of complaint</b>	<b>Complaint route</b>	<b>Reference no.</b>	<b>Complaint nature</b>	<b>Investigation fining</b>	<b>Status</b>
1						
2						
3						
4						

**Appendix M**

**Implementation Schedule for  
Environmental Mitigation Measures**

### Environmental Mitigation Implementation Schedule for Air Quality Control

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
<b>Construction Phase (Air Quality Control)</b>							
S3.8	Dust mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation shall be incorporated to control dust emission. Notice shall be given to authority prior to commencing of work. Relevant control measures include: <ul style="list-style-type: none"> <li>watering on the work sites at Siu Ho Wan WTW twice a day;</li> <li>skip hoist for material transport shall be totally enclosed by impervious sheeting;</li> <li>vehicle washing facilities shall be provided at every vehicle exit point;</li> <li>the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcores;</li> <li>every main haul road shall be sealed with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet;</li> <li>every stock of more than 20 bags of cement shall be covered entirely by impervious sheeting placed in an area sheltered on the top and the three sides;</li> <li>all dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet;</li> <li>every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the construction sites;</li> <li>the dusty materials stockpiled on site shall be covered; and</li> <li>the load of dusty materials carried by vehicle leaving a construction site shall be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle.</li> </ul>	Work site / during construction period.	Contractor		√		Air Pollution Control (Construction Dust) Regulation
<b>Operation Phase (Air Quality)</b>							
NA	NA	NA	NA	NA	NA	NA	NA
<b>Construction Phase (Noise Control)</b>							
S4.8.1	Use of silenced PME	Work site close to all NSRs	Contractor		√		NCO, EIAO-TM
S4.8.6	Good Site Practices: <ul style="list-style-type: none"> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.</li> <li>Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> <li>Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.</li> <li>Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.</li> <li>Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme.</li> </ul>	Work site close to all NSRs / throughout the construction period.	Contractor		√		NCO, EIAO-TM

WSD Contract No.: 7/WSD/21 - Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station  
 Monthly Environmental Impact Monitoring and Audit Report (May 2022)

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
<b>Operation Phase(Noise Control)</b>							
NA	NA	NA	NA	NA	NA	NA	NA
<b>Construction Phase (Water Quality Control)</b>							
S5.7.2	<p><i>Construction Site Runoff and Drainage</i></p> <ul style="list-style-type: none"> <li>Before commencing any site formation work, all sewer and drainage connections shall be sealed to prevent debris, soil, sand etc. from entering public sewers/drains.</li> <li>Sand/silt removal facilities such as sand traps, silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the Technical Memorandum standard under the Water Pollution Control Ordinance. The design of silt removal facilities shall be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures shall be inspected monthly and maintained to ensure proper and efficient operation at all times and particularly during rainstorms.</li> <li>Water pumped out from foundation excavations shall be discharged into silt removal facilities.</li> <li>Exposed soil surfaces shall be protected by paving or fill material as soon as possible to reduce the potential of soil erosion.</li> <li>Open stockpiles of construction materials or construction wastes on-site of more than 50m<sup>3</sup> shall be covered with tarpaulin or similar fabric during rainstorms.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO
S5.7.3	<p><i>General Construction Activities</i></p> <ul style="list-style-type: none"> <li>Debris and rubbish generated on-site shall be collected, handled and disposed of properly to avoid entering the nearby watercourses and storm water drains. Stockpiles of cement and other construction materials shall be kept covered when not being used.</li> </ul>	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO
S5.7.4	<ul style="list-style-type: none"> <li>Oils and fuels shall only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund shall be drained of rainwater after a rain event.</li> </ul>	Work site / During the construction period	Contractor		√		
S5.7.5	<p><i>Sewage from Construction Workforce</i></p> <ul style="list-style-type: none"> <li>Temporary sanitary facilities, such as portable chemical toilets, shall be employed on-site. A licensed contractor shall be responsible for appropriate disposal and maintenance of these facilities.</li> </ul>	Work site / During the construction period	Contractor		√		WPCO
<b>Operation Phase(Water Quality Control)</b>							
NA	NA	NA	NA	NA	NA	NA	NA
<b>Construction Phase (Ecology)</b>							
S.6.9.3	<p><i>Mitigation to minimise impacts on vegetation in woodland</i></p> <ul style="list-style-type: none"> <li>All trees shall be preserved as far as possible, especially species of high conservation or amenity value. Recommendations to be provided in the Tree Survey Report to mitigate impacts on trees shall be followed. Where trees are to be preserved in-situ, but are likely to be disturbed from works activities, protective fencing/hoarding shall be carefully set up around the affected trees (refer to</li> </ul>	Work site / particularly woodland / During design and construction period	WSD/ Contractor	√	√		EIAO

WSD Contract No.: 7/WSD/21 - Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station  
 Monthly Environmental Impact Monitoring and Audit Report (May 2022)

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
S.6.9.4/ S.6.11.2	Landscape and Visual). • Disturbance of individuals of the shrub/tree species Pavetta hongkongensis and tree Aquilaria sinensis of conservation interest should be avoided. A buffer to the dripline of each plant of at least 1m radius should be demarcated to prohibit disturbance. Where loss of this species would be unavoidable, it is recommended that these plants may be transplanted to safe locations within the same habitat. Following transplantation, regular monitoring of the trees and seedlings should be conducted by a suitably qualified botanist/horticulturist over a 12-month period.						
S.6.9.5	<i>Mitigation to minimise impacts on aquatic ecology</i> • Trench excavation works for the raw water mains near the stream courses should be carried out in the dry season as far as practicable.	Work site / During construction period	WSD/ Contractor	√	√		
S.6.9.6	<i>Mitigation to minimise general disturbance to wildlife</i> • Noise mitigation measures through the use of quiet construction plant shall be implemented to minimise disturbance to habitats adjacent to the works areas.	Work site / During construction period	Contractor		√		EIAO
S.6.9.7	<i>General good site practice</i> • Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. • Construction activities shall be restricted to works areas that shall be clearly demarcated. The works areas shall be reinstated after completion of the works. • Waste skips shall be provided to collect general refuse and construction wastes. The wastes shall be disposed of timely and properly off-site. • General drainage arrangements shall include sediment and oil traps to collect and control construction site run-off. • Open burning on works sites is illegal, and shall be strictly prohibited. Stove fires on works sites shall also not be allowed. Temporary fire fighting equipment shall be provided particularly in woodland areas.	Work site / During construction period	Contractor		√		EIAO
S.6.9.8.	<i>Re-vegetation to reinstate works areas</i> • As far as possible compensatory planting shall use native plants of the same species that occur in the adjacent woodland habitat and have flowers/fruits attractive to wildlife. On-site compensatory planting should be conducted on at least a one to one basis.	Work site in woodland / Immediately following works	Contractor		√		EIAO
<b>Operation Phase(Ecology)</b>							
NA	NA	NA	NA	NA	NA	NA	NA
<b>Construction Phase (Landscape and Visual Impact)</b>							
S7.9	• All existing top-soil shall be conserved and reused • Temporary hoarding barriers shall be of a recessive visual appearance in both colour and form. • Compatible design and construction materials and surface finishes of the proposed Pui O Raw Water Pumping Station shall match with the nearby existing external appearance of Pui O No. 2 Raw Water Pumping Station for achieving visual uniformity. • Chromatic colour scheme with appropriate texture should be considered while	During construction phase	Contractor		√		EIAO-TM

**WSD Contract No.: 7/WSD/21 - Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station**  
**Monthly Environmental Impact Monitoring and Audit Report (May 2022)**

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
	designing the external surface of the proposed SHW Raw Water Booster Pumping Station in order to visually merge the proposed structures into the surrounding landscape.						
<b>Operation Phase(Landscape and Visual Impact)</b>							
S7.9	<ul style="list-style-type: none"> <li>New compensatory planting works shall be carried out as early as possible in the construction period which allow maximum time for establishment and more mature trees when the works completed.</li> <li>Landscape or compensatory planting shall be provided where appropriate for enhancing greening and achieving visual screening. In this aspect, compensatory tree planting shall be considered. Selection of plant species shall match with the surrounding vegetation type and form for consistency of landscape resources and visual comfort, for matching with the local habitat. Tree planting shall be firstly considered when the amenity area or slope is feasible for planting trees so as to provide visual screening.</li> </ul>	During operation phase	Contractor			√	EIAO-TM
S7.9	<ul style="list-style-type: none"> <li>Planting area of approximately 2000 to 3000mm wide where fast growing tall trees with dense foliage shall be provided along the site boundary of Siu Ho Wan Raw Water Booster Pumping Station for visual screening.</li> <li>For planting close to or surrounded by natural terrain, compensatory planting should be arranged in a semi natural manner where feasible in order to blend the new planting into natural environment.</li> <li>The newly planted trees, shrubs and grassed areas are maintained throughout the first 12 months of the operation stage.</li> </ul>	During operation phase	Contractor			√	EIAO-TM
<b>Waste Management</b>							
S10.5.1 - S10.5.3	<p><i>Good Site Practices</i></p> <p>Good site practices during the construction activities include:</p> <ul style="list-style-type: none"> <li>Nomination of approved personnel, such as a site manager, to be responsible for good site practices and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility.</li> <li>Training of site personnel in proper waste management and chemical waste handling procedures.</li> <li>Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>A Waste Management Plan shall be prepared and submitted to the Engineer for approval. One may make reference to ETWB TCW No. 15/2003 for details.</li> <li>A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) shall be proposed.</li> <li>In order to monitor the disposal of C&amp;D material at public filling areas and to control fly tipping, a trip-ticket system shall be included as one of the contractual requirements to be implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. One may make reference to WBTC No. 21/2002 for details.</li> </ul>	Work site / During the construction period	Contractor			√	Waste Disposal Ordinance (Cap.54)  WBTC No.21/2002, ETWB TCW No. 15/2003

**WSD Contract No.: 7/WSD/21 - Construction of Siu Ho Wan Water Treatment Works Extension and Siu Ho Wan Raw Water Booster Pumping Station**  
**Monthly Environmental Impact Monitoring and Audit Report (May 2022)**

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
S10.5.4	<p><i>Waste Reduction Measures</i></p> <p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> <li>• Separate labelled bins shall be provided to segregate aluminium cans from other general refuse generated by the work force, and to encourage collection of by individual collectors.</li> <li>• Any unused chemicals or those with remaining functional capacity shall be recycled.</li> <li>• Maximising the use of reusable steel formwork to reduce the amount of C&amp;D material.</li> <li>• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> <li>• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	Work site / During planning & design stage, and construction stage	WSD/Contractor	√	√		WBTC No.4/98, ETWB TCW No. 15/2003
S10.5.9	<p><i>General Refuse</i></p> <p>General refuse shall be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&amp;D material.</p>	Work site / During the construction period	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
S10.5.7	<p><i>Construction &amp; Demolition (C&amp;D) Material</i></p> <p>When disposing C&amp;D material at a public filling area, it shall be noted that the material shall only consist of soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt. The material shall be free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered to be unsuitable by the Filling Supervisor.</p>	Work site / During the construction period	Contractor		√		WBTC No. 4/98, 21/2002, 25/99, 12/2000 ETWB TCW No. 15/2003
S10.5.8	<p><i>Chemical Wastes</i></p> <p>If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes shall be used. Appropriate labels shall be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes generated at the Chemical Waste Treatment Centre at Tsing Yi, or other licenced facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. No chemical waste shall be allowed to be stored within the site of the waterworks installations of the Pui O Raw Water Pumping Station and Pui O No. 2 Raw Water Pumping Station. All chemical wastes shall be removed from the waterworks installations at the first instance.</p>	Work site / During the construction period	Contractor		√		

Note: N/A Not applicable  
 \*D – Design; C – Construction; O – Operation