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 – JULY 2022

PREPARED FOR

CHINA ROAD AND BRIDGE CORPORATION

Date	Reference No.	Prepared By Fai So	Certified By Tam Tak Wing
4 August 2022	TCS01196/22/600/R0027v1		
		Assistant Environmental Consultant	Environmental Team Leader

Version	Date	Remarks
1	4 August 2022	First Submission

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

5 August 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 - JULY 2022

I refer to the Monthly Environmental Monitoring and Audit Report – July 2022 (Report No.: TCS01196/22/600/R0027v2) received on 4 August 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.

Joanne NG
Independent Environmental Checker

JN/tw

c.c. Action-United Environmental Services & Consulting (AUES) Attn: Mr. Ben Tam (By E-mail)
Binnies Hong Kong Limited Attn: Mr. Alex TUNG (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^3 per day to 300,000m^3 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 ***3rd*** Monthly EM&A Report presenting monitoring results and inspection finding for the Project for the reporting period from ***1 to 31 July 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	5
Inspection / Audit	ET Regular Environmental Site Inspection	4
	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 and the Contractor on ***5, 12, 22 and 26 July 2022***. Joint site inspection with RE, ET, IEC and the Contractor was carried out on ***22 July 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. There is no reporting change made for this monthly 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.

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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:-

a. Extension of the existing Siu Ho Wan WTW within the existing Siu Ho Wan WTW compound from a capacity of 150,000 m^3/day to 300,000 m^3/day
b. 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^3/day to 300,000 m^3/day
c. 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 ***3rd*** Monthly EM&A Report presenting monitoring results and inspection finding for the Project for the reporting period from ***1 to 31 July 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***.

- Removal of existing concrete slab prior to the excavation of BPS
- Construction of Wheel Washing Bay in BPS
- Erection of Project Signboard in BPS
- Removal of Existing Storage Room in WTB
- Removal of Existing Car Park Shelter in WTB

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	5213-961-C4701-01	31 May 2022	N/A	--
4	Water Pollution Control Ordinance – Discharge Licence	In Progress (Submitted on 20 May 2022)			
5	Construction Noise Permit	In Progress (Submitted on 22 July 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	• 1-hour TSP by Real-Time Portable Dust Meter(as required in case of complaints); and • 24-hour TSP by High Volume Air Sampler.

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
24-Hr TSP	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170*
Calibration Kit	TISCH Model TE-5025A*
1-Hour TSP	
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^3/min and 1.7m^3/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 ± 2 minutes accuracy for 24 hours operation;
- Equipped with a timing/control device with ± 5 minutes accuracy for 24 hours operation;
- With flow control accuracy for ± 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^3/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 (μg /m^3)		Limit Level (μg/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 ***5*** 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 (μg/m^3)	
Date	**Meas. Result**
5-Jul-22	31
11-Jul-22	19
16-Jul-22	24
22-Jul-22	35
28-Jul-22	48
Average (Range)	**31** **(19 – 48)**

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:

- Insert 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 T)	0	NA
Reused in other Contracts/ Projects (Inert) (in T)	0	NA
Disposal as Public Fill (Inert) (in T)	693.250	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)	5.890	Licensed Collector
Recycled Paper / Cardboard Packing (‘000kg)	0	NA
Recycled Plastic (‘000kg)	0	NA
Chemical Wastes (‘000kg)	0	NA
General Refuses (in T)	9.420	NENT

6 SITE INSPECTIONS

6.1 REQUIREMENTS

6.1.1 According to the EM&A Manual, the programme of environmental site inspection shall be formulation 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 and the Contractor on ***5, 12, 22 and 26 July 2022***. Joint site inspection with RE, ET, IEC and the Contractor was carried out on ***22 July 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
5 July 2022	• No adverse environmental issue was observed during site inspection.	• NA.
12 July 2022	• The Contractor was reminded to spray water regularly at exposed work area. • The Contractor was reminded to dispose of accumulated construction waste regularly at BPS. • The Contractor was reminded to provide sandbags along site boundary at WTB.	• Reminder only. • Reminder only. • Reminder only.
22 July 2022	• No adverse environmental issue was observed during site inspection.	• NA.
26 July 2022	• The Contractor was reminded to spray water regularly at exposed work area.	• Reminder only.

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 30 June 2022	0	0	0
1 to 31 July 2022	0	0	0

Table 7-2 Statistical Summary of Environmental Summons

Reporting Month	Environmental Summons Statistics		
	Frequency	Cumulative	Project related summons
23 to 30 June 2022	0	0	0
1 to 31 July 2022	0	0	0

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Month	Environmental Prosecution Statistics		
	Frequency	Cumulative	Project related prosecution
23 to 30 June 2022	0	0	0
1 to 31 July 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:

- Construction of Project Manager's and Contractor's Site Office
- Removal of existing light posts at WTB
- Tree Felling Works
- Sewer drain and watermain diversion at OLB
- Installation of ELS at WTB
- Installation of ELS and Excavation at BPS
- Installation of ELS at OLB

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 ***3rd*** Monthly EM&A Report presenting monitoring results and inspection finding for the Project for the reporting period from ***1 to 31 July 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 and the Contractor on ***5, 12, 22 and 26 July 2022***. Joint site inspection with RE, ET, IEC and the Contractor was carried out on ***22 July 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

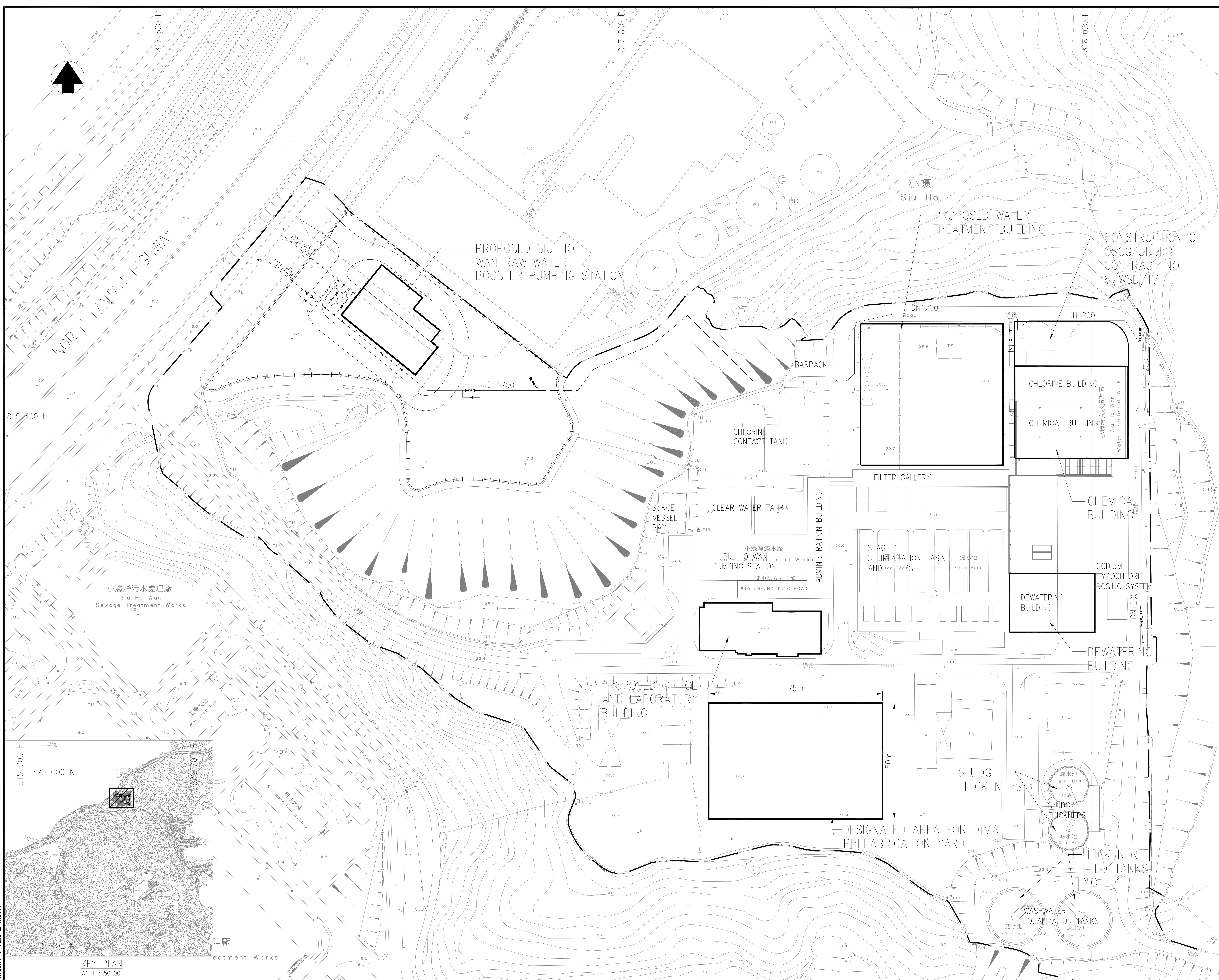
9.2.1 During wet season, the Contractor should fully implement water quality mitigation measures such as prevention of muddy water or other water pollutants flowing from the site to public area. In addition, all effluent discharge shall fulfill the requirement of Discharge Licence under the Water Pollution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


N
NORTH LANTAU HIGHWAY
PROPOSED SIU HO WAN RAW WATER BOOSTER PUMPING STATION
DN1800
DN1600
DN1200
小蠔
Siu Ho
PROPOSED WATER TREATMENT BUILDING
CONSTRUCTION OF OSCG UNDER CONTRACT NO. 6/WSD/17
BARRACK
CHLORINE BUILDING
CHEMICAL BUILDING
CHLORINE CONTACT TANK
FILTER GALLERY
SURGE VESSEL BAY
CLEAR WATER TANK
SIU HO WAN PUMPING STATION
ADMINISTRATION BUILDING
STAGE 1 SEDIMENTATION BASIN AND FILTERS
SODIUM HYPOCHLORITE DOSING SYSTEM
DEWATERING BUILDING
小濠灣污水處理廠
Siu Ho Wan Sewage Treatment Works
PROPOSED OFFICE AND LABORATORY BUILDING
75m
50m
DESIGNATED AREA FOR DfMA PREFABRICATION YARD
SLUDGE THICKENERS
THICKENER FEED TANKS NOTE 1
WASHWATER EQUALIZATION TANKS
819 400 N
817 600 E
817 800 E
818 000 E
KEY PLAN
A1 1 : 50000

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LEGEND:

- SITE BOUNDARY
- PROPOSED RAW WATER MAINS (BURIED)
- PROPOSED RAW WATER MAINS (EXPOSED)
- PROPOSED FENCING
- PROPOSED BUILDING WORKS

NOTE1:

THE EXISTING WASHWATER EQUAULIZATION TANKS TO BE RENAMED AS "THICKENER FEED TANKS"

Revision	Date	Description	Initial
0	05/21	ISSUE FOR TENDER DRAWING	JC

	Designed	Checked	Drawn	Checked
Initial	CT/CCK	YFC/AS	SZ	JC
Date	05/21	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.: 199755A/B&V/GN/00001

Revision: 0

Scale: A1 1 : 750; A3 1 : 1500

水務署
Water Supplies Department

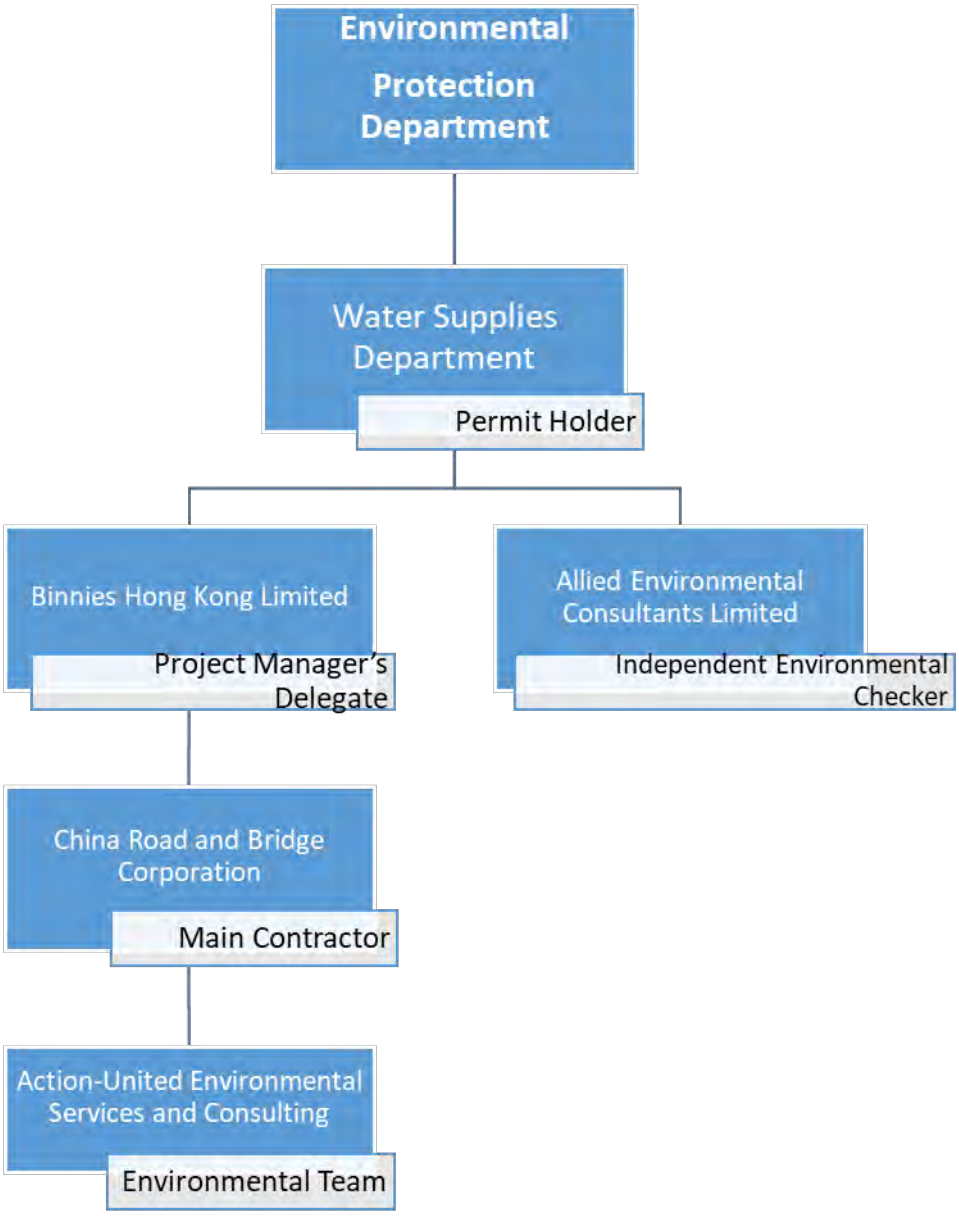
BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date : 5/13/2021 2:49:08 PM

File Name : Y:\Daily Work\02 From other HK Projects\199755 -Tender Drawing\DWG\199755A-B&V-GN-00001

Appendix B

Project Organisation


Environmental Protection Department
Water Supplies Department
Permit Holder
Binnies Hong Kong Limited
Project Manager's Delegate
Allied Environmental Consultants Limited
Independent Environmental Checker
China Road and Bridge Corporation
Main Contractor
Action-United Environmental Services and Consulting
Environmental Team

Contact Details of Key Personnel

Organisation	Project Role	Position	Name	Tel No.
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	Ms. Iris Ho	5611 8325
		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 and Consulting	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

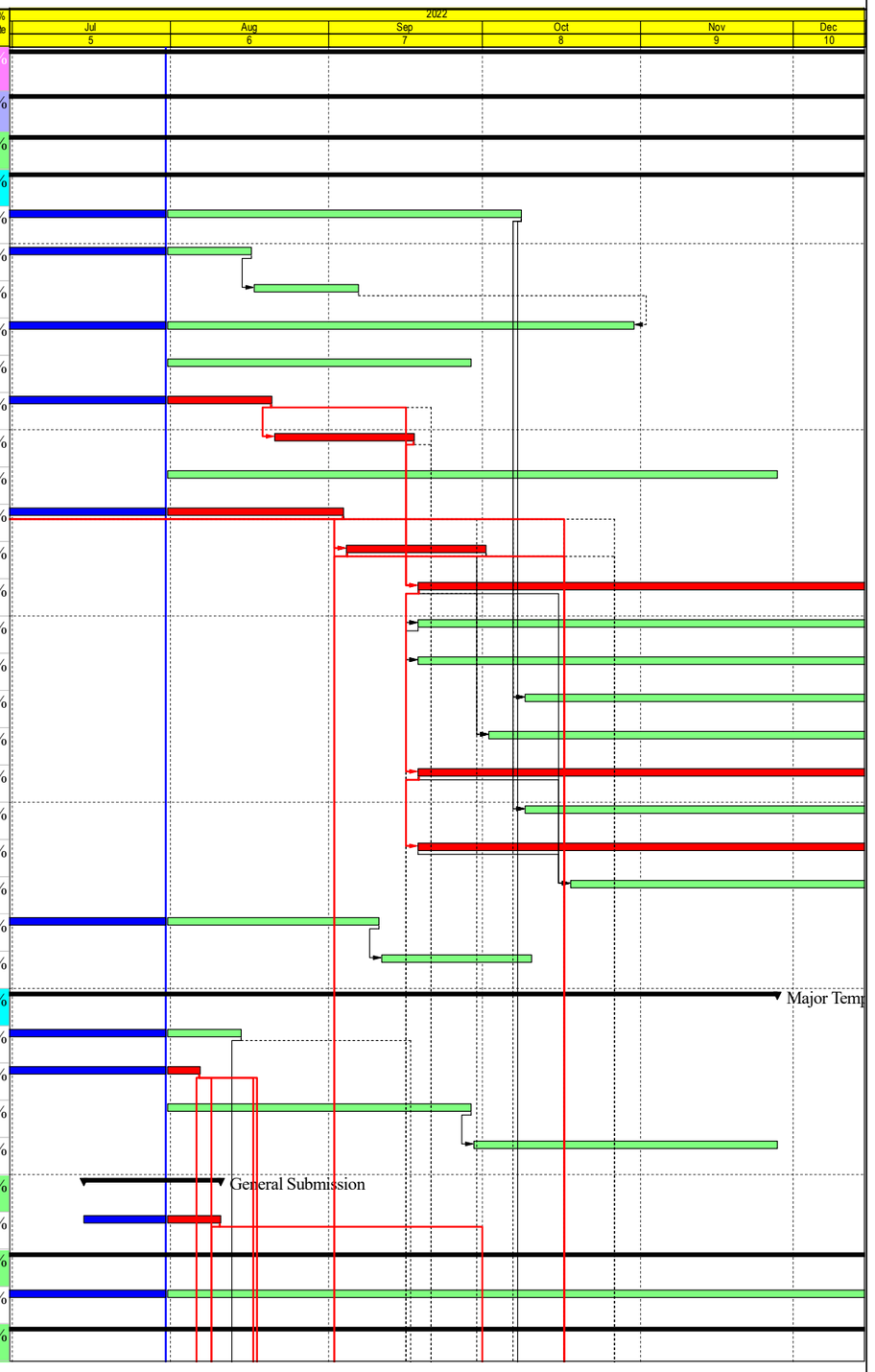
Appendix C

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-Jul-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Actual Start	Actual Finish	Total Float	Duration % Complete
Construction of Siu Ho Wan Water Treatment Works Extension		872	734	28-Mar-22 A	02-Aug-24	28-Mar-22		43	15.83%
Preliminaries, Contractor's Design,Method Statement Submission and		844	635	28-Mar-22 A	25-Apr-24	28-Mar-22		142	24.76%
Contractor's Design Submission and Approval		320	259	28-Mar-22 A	15-Apr-23	28-Mar-22		518	19.06%
Major Permanent Works Design		320	259	28-Mar-22 A	15-Apr-23	28-Mar-22		518	19.06%
MDD3000	Process Design Review	90	70	31-May-22 A	08-Oct-22	31-May-22		39	22.22%
MDD3005	Submission of Process and Instrumentation Diagram (P&ID)	30	17	15-Jun-22 A	16-Aug-22	15-Jun-22		147	43.33%
MDD3006	Comment and approval of P&ID	21	21	17-Aug-22	06-Sep-22			147	0%
MDD3010	Hazard and Operability studies	150	92	24-May-22 A	30-Oct-22	24-May-22		93	38.67%
MDD3015	Design of earth mat	60	60	31-Jul-22	28-Sep-22			70	0%
MDD3020	Design for Ozone Equipment	180	21	28-Mar-22 A	20-Aug-22	28-Mar-22		0	88.33%
MDD3025	Comments and approval of Design for Ozone Equipment	28	28	21-Aug-22	17-Sep-22			0	0%
MDD3040	CFD baffle design for intermediate ozone contact tank	120	120	31-Jul-22	27-Nov-22			178	0%
MDD3050	Design for Manufacture and Assembly(DfMA) works for civil structure works	100	35	16-May-22 A	03-Sep-22	16-May-22		1	65%
MDD3055	Comments and approval of design for Manufacture and Assembly(DfMA) works (civil structure works)	28	28	04-Sep-22	01-Oct-22			1	0%
MDD3080	Design for DAF Equipment	90	90	18-Sep-22	16-Dec-22			0	0%
MDD3090	Major Pumping Design (Raw Water Booster Pumping/Backwash Pumping Design)	90	90	18-Sep-22	16-Dec-22			25	0%
MDD3100	Design for Hydraulics system	120	120	18-Sep-22	15-Jan-23			78	0%
MDD3110	Design for stage 2 architectural works	120	120	09-Oct-22	05-Feb-23			124	0%
MDD3120	Design for building services (including FSD submission)	90	90	02-Oct-22	30-Dec-22			20	0%
MDD3130	Design for SRGF Equipment	90	90	18-Sep-22	16-Dec-22			0	0%
MDD3140	Design for BS Equipment (including emergency genset)	90	90	09-Oct-22	06-Jan-23			39	0%
MDD3180	Design for BACF Equipment	90	90	18-Sep-22	16-Dec-22			0	0%
MDD3200	Design for Chemical Plants Equipment	180	180	18-Oct-22	15-Apr-23			7	0%
MDD3420	Design for near real-time Operation Simulation System (part of existing facilities)	60	42	11-Jun-22 A	10-Sep-22	11-Jun-22		510	30%
MDD3425	Comments and approval of design for near real-time Operation Simulation System (part of existing facilities)	30	30	11-Sep-22	10-Oct-22			705	0%
Major Temporary Works Design		181	120	22-Apr-22 A	27-Nov-22	22-Apr-22		101	33.7%
MTW0010	Design for Tower cranes including foundation works	60	15	22-Apr-22 A	14-Aug-22	22-Apr-22		26	75%
MTW0020	ELS design for foundation excavation works for Office and Laboratory Building	45	7	23-May-22 A	06-Aug-22	23-May-22		1	84.44%
MTW0090	Temporary works design for protection of plant and equipment in Chemical Building	60	60	31-Jul-22	28-Sep-22			101	0%
MTW0095	ELS design for large diameter water pipes and gate valve chambers	60	60	29-Sep-22	27-Nov-22			101	0%
General Submission		30	11	15-Jul-22 A	10-Aug-22	15-Jul-22		0	63.33%
MPW1100	Submission of the drainage management plan	30	11	15-Jul-22 A	10-Aug-22	15-Jul-22		0	63.33%
Material Submission		180	180	05-May-22 A	26-Jan-23	05-May-22		491	0%
MAT1030	Equipment Submission(E&M)	180	180	05-May-22 A	26-Jan-23	05-May-22		491	0%
BIM Deliverables		737	635	20-May-22 A	25-Apr-24	20-May-22		0	13.84%



水務署
Water Supplies Department

中國路橋 CRBC

Actual Work
Non-Critical Activity
Critical Activity
Milestone
Summary

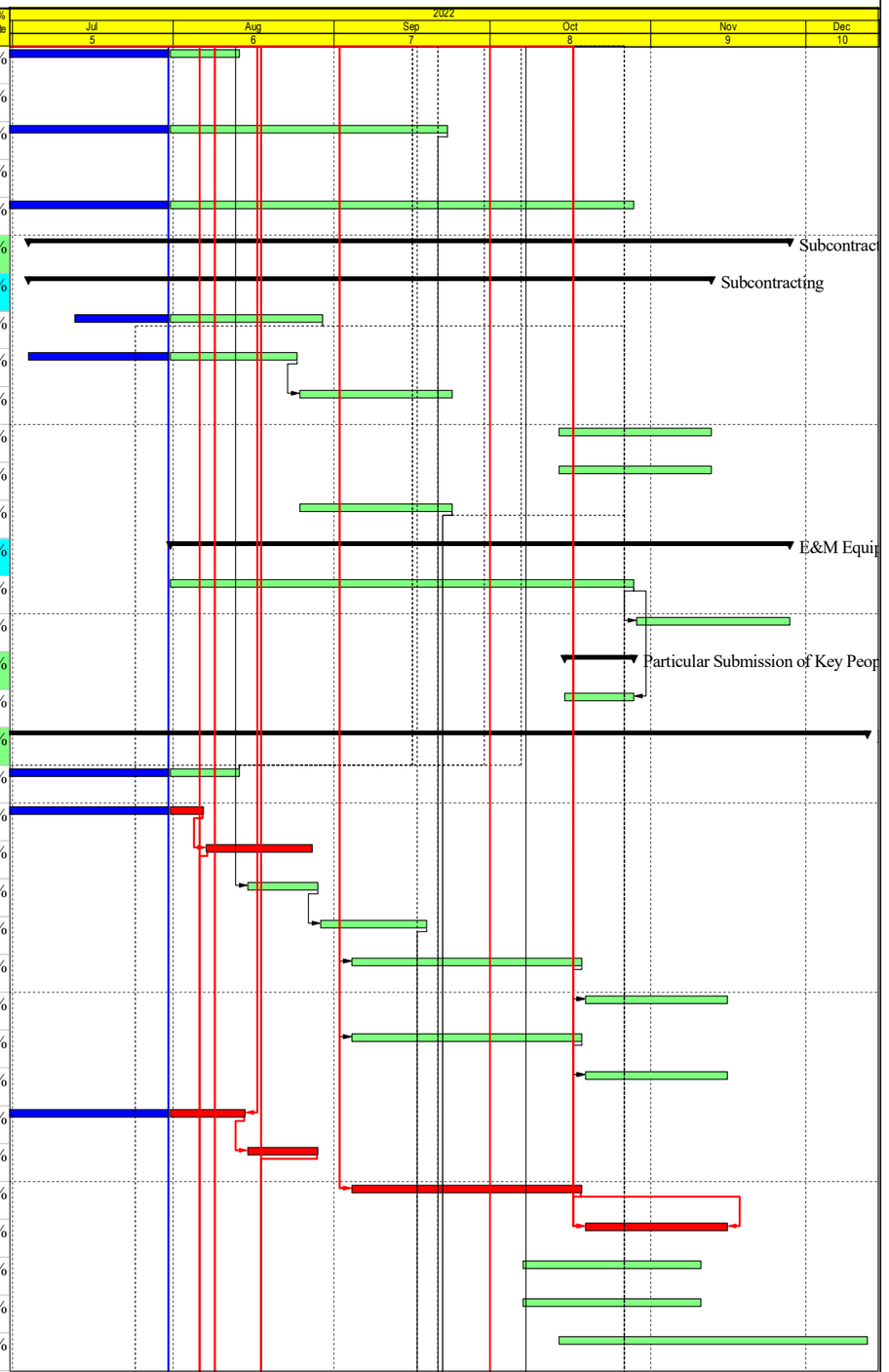
Date	Revision	Checked	Approved
31-Jul-22	1	CLX	WIM

3 Month Rolling Programme - Aug to Oct 2022

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-Jul-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Actual Start	Actual Finish	Total Float	Duration % Complete
BIMD1010	Existing Conditions Modelling	14	14	22-Jun-22 A	13-Aug-22	22-Jun-22		90	0%
BIMD1020	BIM Coordinated Models	447	407	21-Jun-22 A	10-Sep-23	21-Jun-22		35	8.95%
BIMD1040	Combined Service Drawing (CSD) and Combined Builder's Works Drawings (CBWD)	90	54	24-May-22 A	22-Sep-22	24-May-22		13	40%
BIMD1050	4D Modelling	707	635	20-May-22 A	25-Apr-24	20-May-22		0	10.18%
BIMD1060	BIM Model with Point Cloud(s) Integrated	120	90	30-Jun-22 A	28-Oct-22	30-Jun-22		14	25%
Subcontracting and Procurement		121	120	04-Jul-22 A	27-Nov-22	04-Jul-22		164	0.83%
Subcontracting		106	105	04-Jul-22 A	12-Nov-22	04-Jul-22		179	0.94%
MTW1565	Subletting for Precasting works	45	30	13-Jul-22 A	29-Aug-22	13-Jul-22		213	33.33%
MTW1580	Subletting for R.C structure	30	25	04-Jul-22 A	24-Aug-22	04-Jul-22		54	16.67%
MTW1585	Subletting for waterproofing works	30	30	25-Aug-22	23-Sep-22			54	0%
MTW1600	Subletting for ABWF works	30	30	14-Oct-22	12-Nov-22			124	0%
MTW1620	Subletting for Site formation works	30	30	14-Oct-22	12-Nov-22			179	0%
MTW1640	Subletting for Water works	30	30	25-Aug-22	23-Sep-22			23	0%
E&M Equipment Procurement,FAT and Delivery		120	120	31-Jul-22	27-Nov-22			75	0%
MTW1685	Submission of Equipment test plan	90	90	31-Jul-22	28-Oct-22			75	0%
MTW1690	Approval of Equipment test plan	30	30	29-Oct-22	27-Nov-22			75	0%
Particular Submission of Key People and Specially Required Staff		14	14	15-Oct-22	28-Oct-22			105	0%
MTW2160	Appointment of E&M independent inspection body	14	14	15-Oct-22	28-Oct-22			105	0%
Method Statement Submission and Approval for Major Construction Works		252	135	17-May-22 A	12-Dec-22	17-May-22		310	46.43%
MSS2015	Comments and approval of DfMA design plan	28	14	17-May-22 A	13-Aug-22	17-May-22		36	50%
MSS2020	Method statement submission for ELS works for water treatment building	30	7	27-May-22 A	06-Aug-22	27-May-22		1	76.67%
MSS2025	Method statement comments and approval for ELS works for water treatment building	21	21	07-Aug-22	27-Aug-22			1	0%
MSS2028	Method statement submission for erection of tower crane	14	14	15-Aug-22	28-Aug-22			26	0%
MSS2029	Method statement comments and approval for erection of tower crane	21	21	29-Aug-22	18-Sep-22			26	0%
MSS2030	Method statement submission for structural works for Water Treatment Building	45	45	04-Sep-22	18-Oct-22			169	0%
MSS2035	Method statement comments and approval for structural works for Water Treatment Building	28	28	19-Oct-22	15-Nov-22			169	0%
MSS2040	Method statement submission for structural works for Siu Ho Wan Raw Water Booster Pumping Station(SHWRWBPS)	45	45	04-Sep-22	18-Oct-22			22	0%
MSS2045	Method statement comments and approval for structural works for Siu Ho Wan Raw Water Booster Pumping Station(SHWRWBPS)	28	28	19-Oct-22	15-Nov-22			22	0%
MSS2056	Method statement submission for ELS works for Office and Laboratory Building	30	15	27-Jun-22 A	14-Aug-22	27-Jun-22		0	50%
MSS2057	Method statement comments and approval for Office and Laboratory Building	14	14	15-Aug-22	28-Aug-22			0	0%
MSS2060	Method statement submission for structural works for Office and Laboratory Building	45	45	04-Sep-22	18-Oct-22			1	0%
MSS2065	Method statement comments and approval for structural works for Office and Laboratory Building	28	28	19-Oct-22	15-Nov-22			1	0%
MSS2100	Method statement submission for designing and implementing energy efficiency and optimization for BS	35	35	07-Oct-22	10-Nov-22			342	0%
MSS2110	Method statement submission for modification of Chlorination Building	35	35	07-Oct-22	10-Nov-22			323	0%
MSS2120	Method statement submission for designing and implementing the proposed Near-Real-Time operation simulation	60	60	14-Oct-22	12-Dec-22			279	0%



水務署
Water Supplies Department

中國路橋 CRBC

Actual Work
Non-Critical Activity
Critical Activity
Milestone
Summary

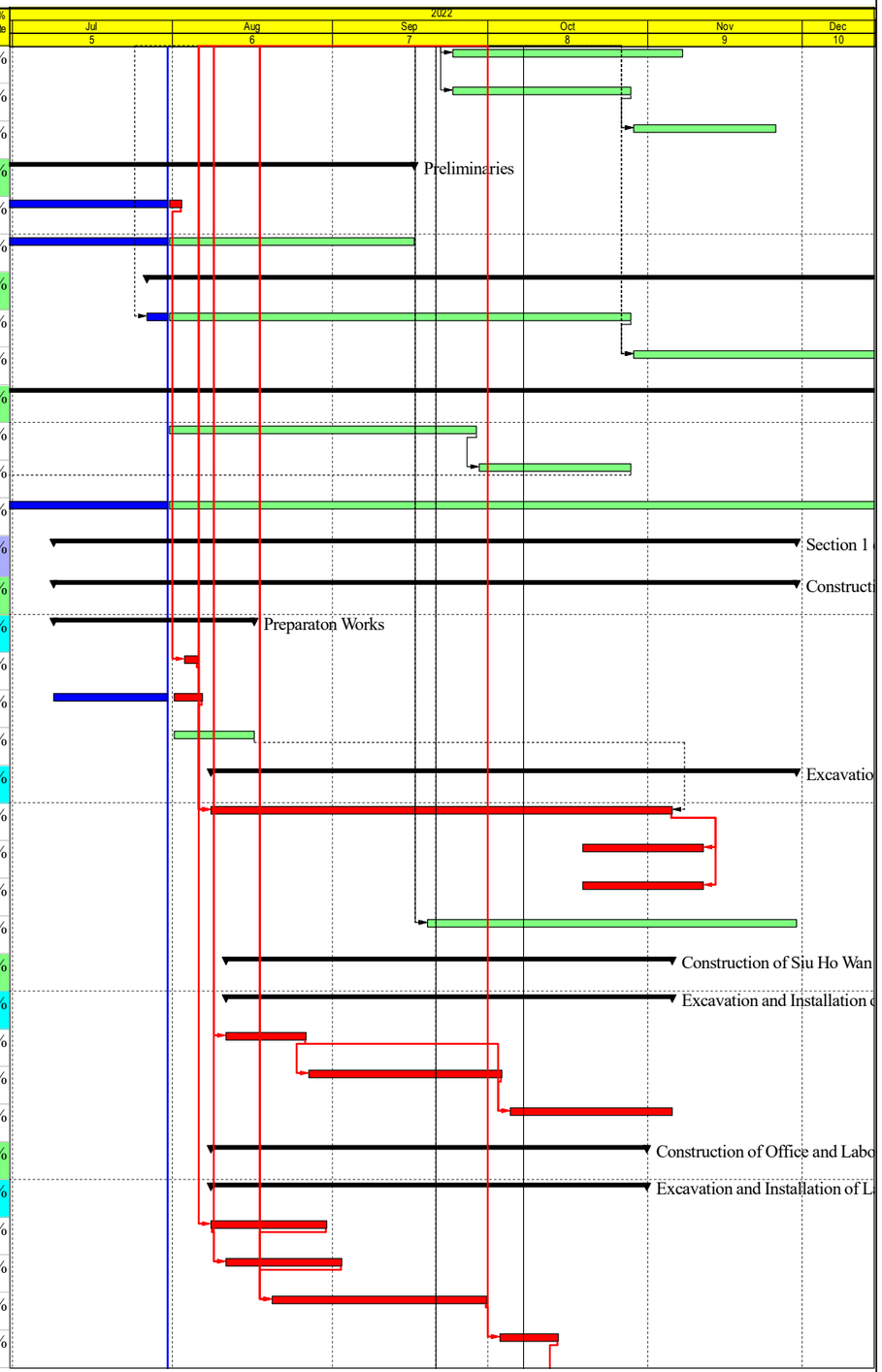
Date	Revision	Checked	Approved
31-Jul-22	1	CLX	WIM

3 Month Rolling Programme - Aug to Oct 2022

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-Jul-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Actual Start	Actual Finish	Total Float	Duration % Complete
MSS2130	Method statement submission for pipe modification works	45	45	24-Sep-22	07-Nov-22			93	0%
MSS2270	Method statement submission for modification of Washwater System	35	35	24-Sep-22	28-Oct-22			23	0%
MSS2275	Method statement comments and approval for modification of Washwater System	28	28	29-Oct-22	25-Nov-22			23	0%
Preliminaries		163	48	29-Apr-22 A	16-Sep-22	29-Apr-22		256	70.55%
PRE2025	Prepare submit and approve TTA scheme	50	3	29-Apr-22 A	02-Aug-22	29-Apr-22		1	94%
PRE2080	Erection of contractor's site office and PM's site accommodation	56	48	25-Jun-22 A	16-Sep-22	25-Jun-22		256	14.29%
Precasting and Fabrication Works		271	300	27-Jul-22 A	26-May-23	27-Jul-22		153	0%
PRE2100	Establishment of Design for Manufacture and Assembly (DfMA)prefabrication yard	90	90	27-Jul-22 A	28-Oct-22	27-Jul-22		93	0%
PRE2120	Fabrication of DfMA units for structural elements	210	210	29-Oct-22	26-May-23			153	0%
Interfacing Issues		209	150	05-May-22 A	27-Dec-22	05-May-22		146	28.23%
PRE2150	Submission of interface management plan	60	60	31-Jul-22	28-Sep-22			64	0%
PRE2160	Establish interface management liaison groups and site liaison group	30	30	29-Sep-22	28-Oct-22			64	0%
PRE2170	Establish interface meeting and conformation of interface schedule	150	150	05-May-22 A	27-Dec-22	05-May-22		146	0%
Section 1 of the Works		127	101	09-Jul-22 A	29-Nov-22	09-Jul-22		21	20.47%
Construction of Water Treatment Building		127	101	09-Jul-22 A	29-Nov-22	09-Jul-22		21	20.47%
Preparaton Works		40	14	09-Jul-22 A	16-Aug-22	09-Jul-22		42	65%
S110015	Implementation of TTA scheme	3	3	03-Aug-22	05-Aug-22			1	0%
S110020	Demolition of existing structure	14	6	09-Jul-22 A	06-Aug-22	09-Jul-22		0	57.14%
S110025	Demolition of existing lamppost	14	14	01-Aug-22	16-Aug-22			42	0%
Excavation and Installation of Lateral Support		95	95	08-Aug-22	29-Nov-22			21	0%
S110060	Installation of pre-bored sheet pile wall and king post	75	75	08-Aug-22	05-Nov-22			0	0%
S110065	Grouting works	21	21	19-Oct-22	11-Nov-22			0	0%
S110080	Installation of dewatering system	21	21	19-Oct-22	11-Nov-22			0	0%
S110115	Erection of tower crane including testing	60	60	19-Sep-22	29-Nov-22			21	0%
Construction of Siu Ho Wan Raw Water Booster Pumping Station and Pipev		72	72	11-Aug-22	05-Nov-22			0	0%
Excavation and Installation of Lateral Support		72	72	11-Aug-22	05-Nov-22			0	0%
S110940	Excavation to +4.9mPD	14	14	11-Aug-22	26-Aug-22			0	0%
S110950	Installation of sheetpile wall	30	30	27-Aug-22	03-Oct-22			0	0%
S110960	Excavation to the strut level	28	28	05-Oct-22	05-Nov-22			0	0%
Construction of Office and Laboratory Building		70	70	08-Aug-22	31-Oct-22			0	0%
Excavation and Installation of Lateral Support		70	70	08-Aug-22	31-Oct-22			0	0%
S120040	Demolition of existing ground slab	20	20	08-Aug-22	30-Aug-22			0	0%
S120045	Diversion of DN50 cable	20	20	11-Aug-22	02-Sep-22			0	0%
S120050	Installation of sheetpile wall	35	35	20-Aug-22	30-Sep-22			0	0%
S120060	Excavation to the strut level	10	10	03-Oct-22	14-Oct-22			0	0%



水務署
Water Supplies Department

中國路橋 CRBC

Actual Work
Non-Critical Activity
Critical Activity
Milestone
Summary

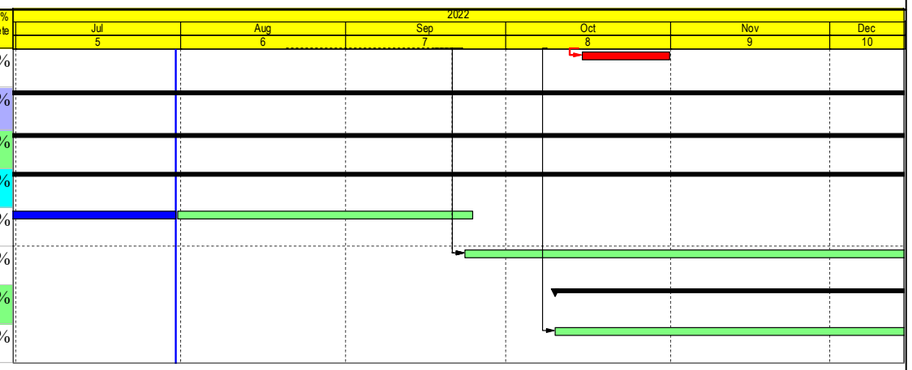
Date	Revision	Checked	Approved
31-Jul-22	1	CLX	WIM

3 Month Rolling Programme - Aug to Oct 2022

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-Jul-22

Activity ID	Activity Name	Duration	Remaining Duration	Start	Finish	Actual Start	Actual Finish	Total Float	Duration % Complete
S120065	Installation of waling and strut	14	14	15-Oct-22	31-Oct-22			0	0%
Section 2 of the Works		765	734	15-Jun-22 A	02-Aug-24	15-Jun-22		13	4.05%
Water Treatment Building		765	734	15-Jun-22 A	02-Aug-24	15-Jun-22		13	4.05%
Statutory Submission schedule		765	734	15-Jun-22 A	02-Aug-24	15-Jun-22		13	4.05%
S210050	Revised GBP Submission (WTB / O&LB)	90	56	15-Jun-22 A	24-Sep-22	15-Jun-22		691	37.78%
S210060	DG (Ozone) installation approval - dwg & layout by FSD for WTB	680	680	23-Sep-22	02-Aug-24			13	0%
Siu Ho Wan Pumping Station		180	180	10-Oct-22	19-May-23			289	0%
S224050	Modification of backwash pump to stream IIA SRGF	180	180	10-Oct-22	19-May-23			289	0%



水務署
Water Supplies Department

中國路橋
CRBC

Actual Work
Non-Critical Activity
Critical Activity
Milestone
Summary

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

3 Month Rolling Programme - Aug to Oct 2022

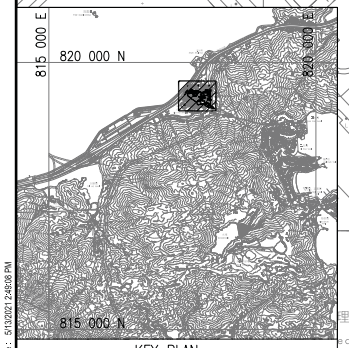
Appendix D

Monitoring Locations

LEGEND:

- SITE BOUNDARY
- PROPOSED RAW WATER MAINS (BURIED)
- PROPOSED RAW WATER MAINS (EXPOSED)
- PROPOSED FENCING
- PROPOSED BUILDING WORKS

NOTE1:
THE EXISTING WASHWATER EQUALIZATION TANKS TO BE RENAMED AS "THICKENER FEED TANKS"



KEY PLAN
A1 1 : 50000

Revision	Date	Description	Initial
0	05/21	ISSUE FOR TENDER DRAWING	JC

	Designed	Checked	Drawn	Checked
Initial	CT/CCK	YFC/AS	SZ	JC
Date	05/21	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.
199755A/B&V/GN/00001

Revision
0

Scale
A1 1 : 750
A3 1 : 1500

水務署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼新工程顧問有限公司

Plot Date : 5/13/2021 12:45:05 PM

File Name : Y:\Daily Work\02 From other HK Projects\199755 -Tender Drawing\DWG\199755A-B&V-GN-00001

Appendix E

Calibration Certificates

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Siu Ho Wan WTW Administration
Location ID : SHWAB
Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 24-May-22
Next Calibration Date: 24-Jul-22
Technician: Fai So

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.	H20 (L) (in)	H2O (R) (in)	H20 (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
13	4.40	4.40	8.8	1.487	51	51.00	Intercept = 6.0139
10	3.40	3.40	6.8	1.308	46	46.00	Corr. coeff. = 0.9982
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 :

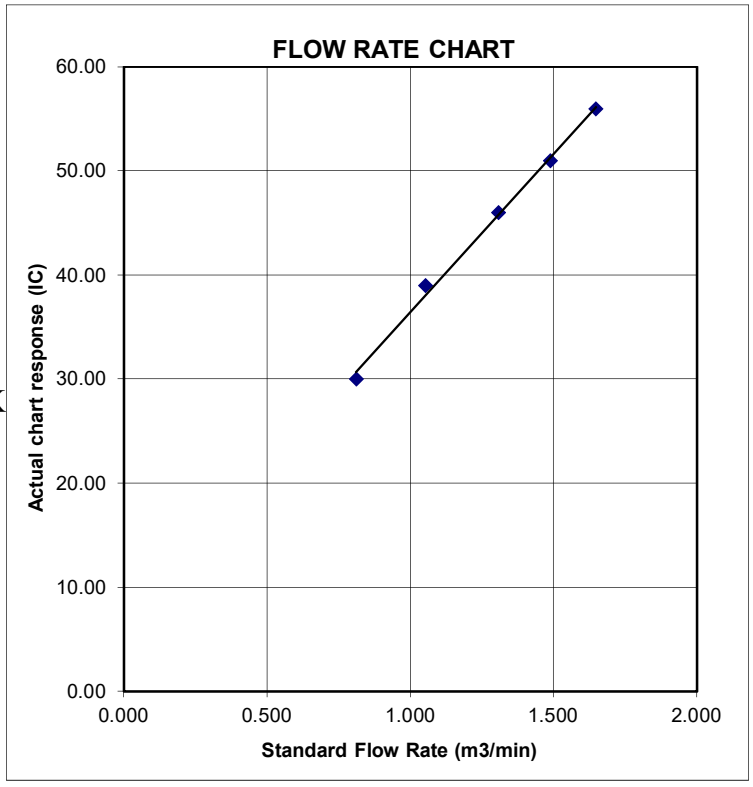
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Siu Ho Wan WTW Administration
Location ID : SHWAB
Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 27-Jul-22
Next Calibration Date: 27-Sep-22
Technician: Eric

CONDITIONS

Sea Level Pressure (hPa)	1007.1	Corrected Pressure (mm Hg)	755.325
Temperature (°C)	31.0	Temperature (K)	304

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.50	5.50	11.0	1.643	56	54.73	Slope = 30.5540
13	4.40	4.40	8.8	1.470	51	49.84	Intercept = 5.1523
10	3.30	3.30	6.6	1.273	46	44.95	Corr. coeff. = 0.9949
7	2.20	2.20	4.4	1.041	39	38.11	
5	1.40	1.40	2.8	0.831	30	29.32	

Calculations :

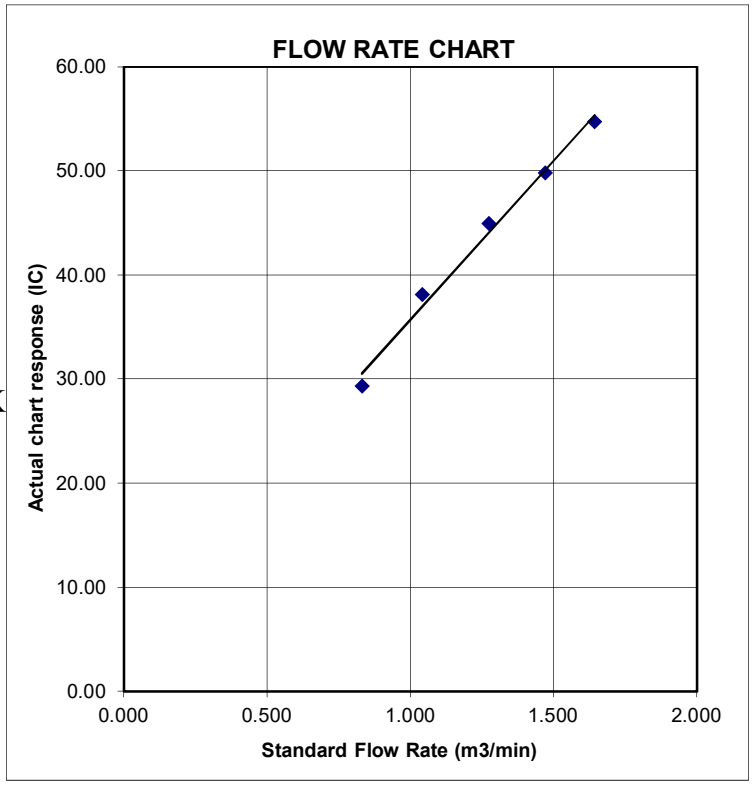
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

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:** **1612**		

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)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (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
QSTD	**m=**	**1.99838**	**QA**	**m=**	**1.25135**
	b=	**-0.00903**		**b=**	**-0.00574**
	r=	**0.99999**		**r=**	**0.99999**

Calculations			
Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
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= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

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

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Appendix F

Event and Action Plan

Event Action Plan for Air Quality

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER and Contractor; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Notify Contractor.	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Rectify any unacceptable practice and implement remedial measures; and 3. Amend working methods agreed with ER if appropriate.
Action Level exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER and Contractor; 3. Advise the ER and Contractor on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC, ER and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; and 3. Supervise and ensure remedial measures properly implemented.	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal if appropriate.
Limit Level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor, IEC and EPD; 3. Repeat	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ER and	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; and 3. Supervise and ensure remedial measures properly implemented.	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Take immediate action to avoid further exceedance; 3. Submit proposals

	measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	ET on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.		for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit Level exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise and ensure remedial measures properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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

✓	Monitoring Day
	Sunday or Public Holiday

Impact Air Quality Monitoring Schedule for next Reporting Period

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

✓	Monitoring Day
	Sunday or Public Holiday

Appendix H

Database of Monitoring Result

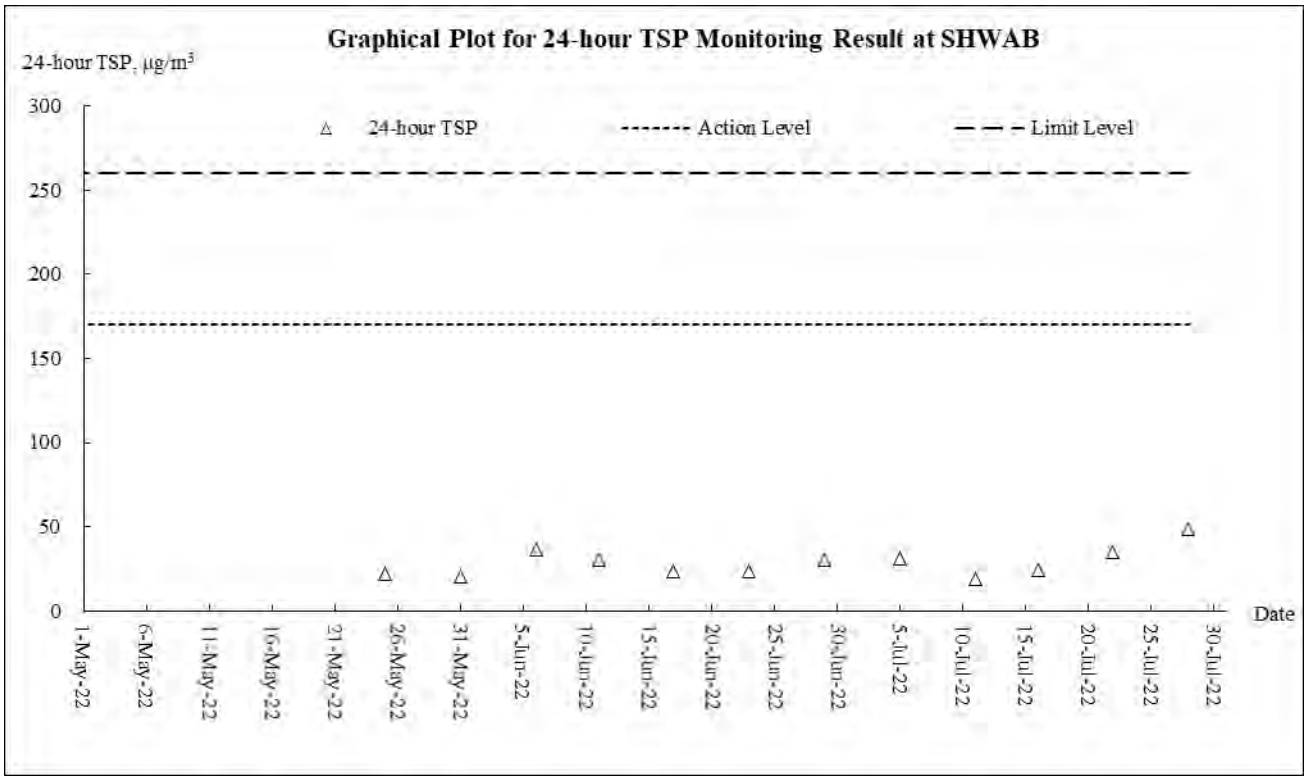
Impact Monitoring Results for 24-hour TSP at SHWAB

DATE	SAMPLE NUMBER	ELAPSED TIME		ACTUAL (min)	CHART READING			AVG TEMP (℃)	STANDARD			FILTER WEIGHT (g)		WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
		INITIAL	FINAL		MIN	MAX	AVG		AVG PRESS (hPa)	FLOW RATE (m^3/min)	AIR VOLUME (std m^3)	INITIAL	FINAL		
5-Jul-22	28465	18263.09	18287.09	1440.00	37	37	37.0	29.0	1004.2	1.00	1447	2.6247	2.6701	0.0454	31
11-Jul-22	28484	18287.09	18311.09	1440.00	38	38	38.0	30.9	1007.3	1.04	1491	2.6086	2.6368	0.0282	19
16-Jul-22	28501	18311.09	18335.09	1440.00	38	38	38.0	30.5	1006	1.04	1491	2.6307	2.6663	0.0356	24
22-Jul-22	28524	18335.09	18359.09	1440.00	38	38	38.0	31.2	1010.8	1.04	1493	2.6552	2.7069	0.0517	35
28-Jul-22	28551	18359.09	18383.09	1440.00	38	38	38.0	31.2	1006.2	1.06	1524	2.7364	2.8102	0.0738	48

Appendix I

Graphical Plots for Monitoring Result

24-Hour TSP


Graphical Plot for 24-hour TSP Monitoring Result at SHWAB
24-hour TSP, μg/m³
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
Date
1-May-22
6-May-22
11-May-22
16-May-22
21-May-22
26-May-22
31-May-22
5-Jun-22
10-Jun-22
15-Jun-22
20-Jun-22
25-Jun-22
30-Jun-22
5-Jul-22
10-Jul-22
15-Jul-22
20-Jul-22
25-Jul-22
30-Jul-22

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-Jul-22	Fri	Moderate to fresh easterly winds, strong offshore and on high ground tonight.	63.0	27.2	13.2	85	S/SW	1000.7
2-Jul-22	Sat	Moderate to fresh easterly winds, strong offshore and on high ground tonight.	72.4	26.9	16.7	89	S/SW	999.1
3-Jul-22	Sun	Isolated thunderstorms in the afternoon.	0	29	17.7	82	S/SW	1001.5
4-Jul-22	Mon	Mainly cloudy with a few showers.	0.4	28.8	23.7	83	S/SW	1002.2
5-Jul-22	Tue	Moderate to fresh southwesterly winds.	0.2	29	24	82	S/SW	1004.2
6-Jul-22	Wed	Moderate south to southeasterly winds.	0.5	28.8	30	81	SW	1005.7
7-Jul-22	Thu	Sunny intervals and a few showers	13.1	28.7	30	86	SW	1007.3
8-Jul-22	Fri	Hot with sunny periods and isolated showers.	Trace	30	19.5	79	E/NE	1007.4
9-Jul-22	Sat	Moderate east to southeasterly winds.	Trace	29.9	17.7	81	S/SW	1005.7
10-Jul-22	Sun	t will be fine. Very hot in the afternoon.	Trace	30.5	17	77	S/SW	1006.5
11-Jul-22	Mon	Very hot in the afternoon. Light to moderate easterly winds.	0	30.9	15.2	73	S/SW	1007.3
12-Jul-22	Tue	Mainly fine and very hot.	0	31.1	23.2	72	S/SW	1006.9
13-Jul-22	Wed	Light winds, moderate southerlies later.	0	31	24.0	71	S/SW	1005.9
14-Jul-22	Thu	Hot apart from a few showers.	0	30.4	20.0	75	SW	1005.6
15-Jul-22	Fri	Sunny periods in the afternoon.	0.2	30.4	11.7	77	W/SW	1006.5
16-Jul-22	Sat	Light to moderate southwesterly winds.	1.5	30.5	18.5	77	SW	1006.0
17-Jul-22	Sun	Very hot. Sunny in the afternoon.	1.2	30.5	23.7	76	S/SW	1005.7
18-Jul-22	Mon	Fine tonight. Moderate southwesterly winds.	2.7	30.4	19.5	78	S/SW	1004.9
19-Jul-22	Tue	Mainly fine and very hot apart from isolated showers.	Trace	30.8	21	75	S/SW	1006.6
20-Jul-22	Wed	Moderate southerly winds.	0.6	30.8	22.2	76	S/SW	1009.8
21-Jul-22	Thu	Fine and very hot.	0.3	30.9	21.5	74	S/SW	1012.0
22-Jul-22	Fri	Light to moderate south to southeasterly winds.	0	31.2	15	72	S/SW	1010.8
23-Jul-22	Sat	Sunny and very hot in the afternoon.	0	31.4		74		1008.7
24-Jul-22	Sun	Clear tonight. Light to moderate southwesterly winds.	0	32	13.2	72	W/SW	1007.1
25-Jul-22	Mon	Light to moderate southwesterly winds.	0	32	14.2	74	W/SW	1007.6
26-Jul-22	Tue	Very hot and sunny during the day	0	31.2	14.1	71	S/SW	1007.7
27-Jul-22	Wed	Fine and very hot.	0	31	13.7	69	S/SE	1007.1
28-Jul-22	Thu	Light to moderate southwesterly winds.	0	31.2	6.7	73	S/SW	1006.2
29-Jul-22	Fri	Mainly fine apart from isolated showers and squally thunderstorms.	0	31.7	12.5	74	W	1004.7
30-Jul-22	Sat	Sunny and very hot in the afternoon.	2.4	29.5	15	81	N/NW	1004.3
31-Jul-22	Sun	Very hot and sunny during the day	0	30.8	9	76	N/NE	1004.3

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)

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 Tonne)	(in Tonne)	(in Tonne)	(in Tonne)	(in Tonne)	(in Tonne)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in Tonne)
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	94.000	0.000	0.000	0.000	94.000	0.000	0.000	0.000	0.000	0.000	207.370
Sub-total	94.000	0.000	0.000	0.000	94.000	0.000	0.000	0.000	0.000	0.000	208.530
Jul	693.250	0.000	0.000	0.000	693.250	0.000	5.890	0.000	0.000	0.000	9.420
Aug											
Sep											
Oct											
Nov											
Dec											
Total	787.250	0.000	0.000	0.000	787.250	0.000	5.890	0.000	0.000	0.000	217.950

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 Gernerated = a+b+c+d.

Appendix L

Environmental Complaints Log

Environmental Complaints Log

Log ref.	Date of complaint	Complaint route	Reference no.	Complaint nature	Investigation fining	Status
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	
Construction Phase (Air Quality Control)							
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: • watering on the work sites at Siu Ho Wan WTW twice a day; • skip hoist for material transport shall be totally enclosed by impervious sheeting; • vehicle washing facilities shall be provided at every vehicle exit point; • 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; • every main haul road shall be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet; • 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; • all dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet; • every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the construction sites; • the dusty materials stockpiled on site shall be covered; and • 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.	Work site / during construction period.	Contractor		√		Air Pollution Control (Construction Dust) Regulation
Operation Phase(Air Quality)							
NA	NA	NA	NA	NA	NA	NA	NA
Construction Phase (Noise Control)							
S4.8.1	Use of silenced PME	Work site close to all NSRs	Contractor		√		NCO, EIAO-TM
S4.8.6	Good Site Practices: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. • Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme.	Work site close to all NSRs / throughout the construction period.	Contractor		√		NCO, EIAO-TM

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
Operation Phase(Noise Control)							
NA	NA	NA	NA	NA	NA	NA	NA
Construction Phase (Water Quality Control)							
S5.7.2	*Construction Site Runoff and Drainage* • 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. • 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. • Water pumped out from foundation excavations shall be discharged into silt removal facilities. • Exposed soil surfaces shall be protected by paving or fill material as soon as possible to reduce the potential of soil erosion. • Open stockpiles of construction materials or construction wastes on-site of more than 50m3 shall be covered with tarpaulin or similar fabric during rainstorms.	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO
S5.7.3	*General Construction Activities* • 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.	Work site / During the construction period	Contractor		√		ProPECC PN 1/94; WPCO
S5.7.4	• 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.	Work site / During the construction period	Contractor		√		
S5.7.5	*Sewage from Construction Workforce* • 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.	Work site / During the construction period	Contractor		√		WPCO
Operation Phase(Water Quality Control)							
NA	NA	NA	NA	NA	NA	NA	NA
Construction Phase (Ecology)							
S.6.9.3	*Mitigation to minimise impacts on vegetation in woodland* • 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	Work site particularly woodland / During design phase and construction period	WSD/ Contractor	√	√		EIAO

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	*Mitigation to minimise impacts on aquatic ecology* • 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	*Mitigation to minimise general disturbance to wildlife* • 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	*General good site practice* • 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.	*Re-vegetation to reinstate works areas* • 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
Operation Phase(Ecology)							
NA	NA	NA	NA	NA	NA	NA	NA
Construction Phase (Landscape and Visual Impact)							
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. • Chromatic colour scheme with appropriate texture should be considered while 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.	During construction phase	Contractor		√		EIAO-TM
Operation Phase(Landscape and Visual Impact)							

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
S7.9	• 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. • 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.	During operation phase	Contractor			√	EIAO-TM
S7.9	• 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. • 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. • The newly planted trees, shrubs and grassed areas are maintained throughout the first 12 months of the operation stage.	During operation phase	Contractor			√	EIAO-TM
Waste Management							
S10.5.1 - S10.5.3	*Good Site Practices* Good site practices during the construction activities include: • 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. • Training of site personnel in proper waste management and chemical waste handling procedures. • Provision of sufficient waste disposal points and regular collection for disposal. • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • 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. • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) shall be proposed. • In order to monitor the disposal of C&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.	Work site / During the construction period	Contractor		√		Waste Disposal Ordinance (Cap.54) WBTC No.21/2002, ETWB TCW No. 15/2003
S10.5.4	*Waste Reduction Measures* 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	Work site / During planning & design stage, and construction	WSD/Contractor	√	√		WBTC No.4/98, ETWB TCW No. 15/2003

EIA Ref	Environmental Protection Measures	Location/Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines
				D	C	O	
	include: • 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. • 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. • Any unused chemicals or those with remaining functional capacity shall be recycled. • Maximising the use of reusable steel formwork to reduce the amount of C&D material. • Proper storage and site practices to minimise the potential for damage or contamination of construction materials. • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	stage					
S10.5.9	*General Refuse* General refuse shall be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material.	Work site / During the construction period	Contractor		√		Public Health and Municipal Services Ordinance (Cap. 132)
S10.5.7	*Construction & Demolition (C&D) Material* When disposing C&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.	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	*Chemical Wastes* 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. All chemical wastes shall be removed from the waterworks installations at the first instance.	Work site / During the construction period	Contractor		√		

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