CONTRACT NO. STW 01/2021

ENVIRONMENTAL TEAM FOR RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS

UNDER ENVIRONMENTAL PERMIT NO. EP-533/2017

MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT

NOVEMBER 2021

CLIENTS:

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DATE:

08 December 2021

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Date: 14 December 2021
Your Ref.:
Our Ref.: PL-202112014

AECOM Asia Limited
c/o Site Office
21 Hang Tai Road,
Ma On Shan, N.T.

Attn: Mr. Simon Leung, CRE

Dear Mr. Leung,

Contract No. DC/2018/05 & DC/2020/05
Relocation of Sha Tin Sewage Treatment Works to Cavern – Site Preparation and Access Tunnel Construction
Verification of Monthly EM&A Report (November 2021)

Reference is made to the Monthly EM&A Report (November 2021) provided by the Environmental Team on 9 December 2021.

Please be informed that we have no adverse comments on the captioned submission. We hereby verify the report in accordance with Condition 1.9 of the Environmental Permit No. EP-533/2017.

Thank you for your attention.

Yours sincerely,
For and on behalf of
Acuity Sustainability Consulting Limited

Dr. C.F. Ng
Independent Environmental Checker

cc.	Drainage Services Department	Attn.: Mr. Stanley Hung	By e-mail
	Lam Environmental Services Limited	Attn.: Mr. Derek Lo	By e-mail
	China State Joint Venture	Attn.: Mr. F. M. Chung	By e-mail

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EXECUTIVE SUMMARY

i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – November 2021 of Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction under Environmental Permit no. EP-533/2017 (Hereafter as "the Project"). This is the 33rd EM&A report presenting the environmental monitoring findings and information recorded during the period of 1 November 2021 to 30 November 2021. The cut-off date of reporting is at the end of each reporting month.

ii. In the reporting month, the principal work activities of individual contracts are included as follow:

Contract no. DC/2018/05 - Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

- Retaining wall construction
- Road construction
- Drainage works
- Watermain installation
- Tunnelling works
- Slope stabilization works
- Landscape works
- Demolition of noise barrier

Contract no. DC/2020/05 - Relocation of Sha Tin Sewage Treatment Works to Caverns – Main Caverns Construction

- The contact was commenced on 5 July 2021
- Boulder survey
- Hoarding erection
- Asbestos removal works
- Tree transplant and felling works
- Demolition of DSD staff quarter
- Condition survey for THEES Tunnel

Air Quality Monitoring

iii. 1-hour Total Suspended Particulates (TSP) monitoring would be conducted at six monitoring stations. The sampling frequency is 3 times in every 6 days.

iv. Air quality monitoring for the stations AM1 and AM2 were commenced on 12 April 2019 while station AM5 was commenced on 18 April 2019. Air quality monitoring for the station AM4 was commenced on 3 May 2019. The proposal for proposed fine adjustment for air and noise monitoring station at Kowloon City Baptist Church Hay Nien Primary School was agreed by EPD on 17 December 2020, therefore, air quality monitoring for the station AM3(B) was

commenced on 18 December 2020. Air quality monitoring for the station AM6 was commenced on 2 November 2021 since the demolition of DSD staff quarter.

No action or limit level exceedance was determined in the reporting period for the stations of AM1, AM2, AM3(B), AM4 and AM5 and AM6.

Noise Monitoring

v. Noise monitoring would be conducted at eight noise monitoring stations once per week.

vi. Noise monitoring for stations CM4 and CM5 were commenced on 13 April 2019 and 18 April 2019 respectively. Noise monitoring for stations CM1 and CM3 were commenced on 2 May 2019. The proposal for proposed fine adjustment for air and noise monitoring station at Kowloon City Baptist Church Hay Nien Primary School was agreed by EPD on 17 December 2020, therefore, noise monitoring for station CM2(B) was commenced on 18 December 2020. Noise monitoring for stations DM1, DM2 and DM3 were commenced on 2 November 2021.

vii. Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 2, 8, 19, 24, and 30 November 2021 with respect to the restricted hour works under CNP GW-RN0510-21, GW-RN0535-21, GW-RN0802-21 and GW-RN0824-21. All the results are within the baseline level range after baseline correction.

viii. Additional weekly night time noise monitoring from 23:00 to 07:00 on next day was carried out at CM4 on 03, 9, 20, 25 November 2021 and 1 December 2021 with respect to the restricted hour works under CNP GW-RN0510-21, GW-RN0535-21, GW-RN0802-21 and GW-RN0824-21. All the results are within the baseline level range after baseline correction.

ix. No action or limit level exceedance was determined in the reporting period for the stations of CM1, CM2(B), CM3, CM4,CM5, DM1, DM2 and DM3.

Water Quality Monitoring

x. Inspection of THEES tunnel was conducted from 30 November 2021 to 1 December 2021, during the inspection of the THEES tunnel, temporary suspension of the normal THEES operation with effluent bypass into the Tolo Harbour to provide a safe and dry zone within the THEES tunnel for the necessary inspection / maintenance works. Marine water quality monitoring programme is recommended for the THEES tunnel suspension of this Project to confirm the water quality impact of the THEES maintenance discharge.

xi. Total 13 monitoring stations within the Tolo Harbour as listed in Table 2.1 below. 12 impact stations are set up at the WSD flushing water intakes at Sha Tin (W1) and Tai Po (W2), cooling water intake at Chinese University of Hong Kong (CUHK) Marine Science Laboratory (C1), Yim Tin Tsai Fish Culture Zone (FCZ) (F1), Yim Tin Tsai East) FCZ (F2), Yung Shue Au FCZ and Important Nursery Area for Commercial Fisheries Resources at Three Fathoms Cove (F3), Lo Fu Wat FCZ (F4), Subzone of Yim Tin Tsai FCZ (G1), corals at Tai Po

Industrial Estate (CR1), Science Park (CR15), Sha Tin Hoi North (CR16) and Sha Tin Hoi South (CR17) respectively as shown in Figure 1 to represent the marine water sensitive receivers, which are likely affected by the Project during the THEES maintenance or emergency discharge.

xii. Water quality monitoring result would be provided in next monthly EM&A report.

Site Inspections and Audit

xiii. The Environmental Team (ET) conducted weekly site inspections for the Contract on 03, 10, 17, and 25 November 2021. IEC attended the joint site inspection on 25 November 2021. No non-compliance was found during the site inspection. Bi-weekly landscape site audits were conducted on 9, and 23 November 2021. Monthly ecology site audits were conducted on 23 November 2021.

Complaints, Notifications of Summons and Successful Prosecutions

xiv. No environmental complaint was received in the reporting period.

xv. No notification of summons and successful prosecutions was received in the reporting month.

Reporting Changes

xvi. The Ecological Monitoring Report is attached in the ***Appendix 1.1***.

Future Key Issues

xvii. In coming reporting months, the scheduled construction activities and the recommended mitigation measures are listed as follows:

Contract No.	Key Construction Works	Recommended Mitigation Measures
DC/2018/05	• Retaining wall construction • Road construction • Drainage works • Watermain installation • Tunnelling works • Slope stabilization works • Landscape works • Demolition of noise	• Dust control during dust generating works; • Implementation of proper noise pollution control; and • Provision of protection to ensure no runoff out of site area or direct discharge into public drainage system. • Direct impact to plant species of conservation importance recorded in the vicinity of the construction sites shall be avoided • Excavation materials shall be well covered • Mitigation measures to dust and noise control should be provided to construction of noise barrier, bored piling, Installation of noise barrier

Contract No.	Key Construction Works	Recommended Mitigation Measures
	barrier	
DC/2020/05	• Boulder survey • Hoarding erection • Asbestos removal works • Tree transplant and felling works • Demolition of DSD staff quarter • Condition survey for THEES Tunnel	• Dust control during dust generating works; • Implementation of proper noise pollution control; • Follow the regulations of The Air Pollution Control Ordinance during the removal of asbestos • Mitigation measures to dust and noise control should be provided to construction of noise barrier, bored piling, Installation of noise barrier

1 Introduction

1.1 Scope of the Report

1.1.1. Lam Environmental Services Limited (LES) has been appointed to work as the Environmental Team (ET) under Environmental Permit (EP) no. EP-533/2017 to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction (Register No.: AEIAR-202/2016).

1.1.2. In accordance with Clause 3.5 stated in EP-533/2017, 4 hard copies and 3 electronic copies of the Monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of each reporting month throughout the entire construction period.

1.1.3. In accordance with Section 13.4.1.1 of the Project EM&A Manual, the Monthly EM&A Report should be prepared and submitted to the Contractor, the IEC, the ER and EPD within 10 working days at the end of each reporting month, with the first report due the month after construction commences.

1.2 Structure of the Report

Section 1 ***Introduction*** – details the scope and structure of the report.

Section 2 ***Project Background*** – summarizes background and scope of the project, site description, project organization and contact details of key personnel during the reporting period.

Section 3 ***Status of Regulatory Compliance*** – summarizes the status of valid Environmental Permits / Licenses during the reporting period.

Section 4 ***Monitoring Requirements*** – summarizes all monitoring parameters, monitoring methodology and equipment, monitoring locations, monitoring frequency, criteria and respective event and action plan and monitoring programmes.

Section 5 ***Monitoring Results*** – summarizes the monitoring results obtained in the reporting period.

Section 6 **Land Decontamination** – summarizes the status of land decontamination works at the VDC site.

Section 7 **C*ompliance Audit*** – summarizes the auditing of monitoring results, all exceedances environmental parameters.

Section 8 **Environmental Site Audit** – summarizes the findings of weekly site inspections undertaken within the reporting period, with a review of any relevant follow-up actions within the reporting period.

Section 9 ***Complaints, Notification of summons and Prosecution*** – summarizes the cumulative statistics on complaints, notification of summons and prosecution

Section 10 ***Conclusion***

2 Project Background

2.1 Background

2.1.1. The Relocation of Sha Tin Sewage Treatment Works (STSTW) to Caverns (the Project) is implemented so as to release the existing site, of a size about 28 hectares, for other uses.

2.1.2. In May 2012, Drainage Services Department (DSD), the Project Proponent commenced a detailed feasibility study on "Relocation of Sha Tin Sewage Treatment Works to Caverns" (the Feasibility Study). The findings of Feasibility Study affirmed that relocating the STSTW to caverns to be constructed at Nui Po Shan of A Kung Kok is technically feasible and financially viable.

2.1.3. The Project is a Designated Project (DP) under the Environmental Impact Assessment Ordinance (EIAO). An application for an Environmental Impact Assessment (EIA) Study Brief under section 5(1)(a) of the EIAO was submitted on 12 May 2014 with a Project Profile (No. PP-508/2014) for the Project. An EIA Study Brief (No. ESB-273/2014) was issued in June 2014. An EIA for the Project was then undertaken, as part of the Assignment, in accordance with this EIA Study Brief and the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). The location of the Project is shown ***Figure 2.1***.

2.2 Scope of the Project and Site Description

2.2.1. The Project covers the following DP elements as specified in Schedule 2 of the EIAO (Cap.499), ***Table 2.1*** summarises the DPs under this Project.

Table 2.1 Schedule 2 Designated Projects under this Project

Item	Designated Project	EIAO Reference
DP1	Sewage treatment works with an installed capacity of more than 15,000 m3 per day under Item F.1	Schedule 2, Part I,
DP2	Sewage treatment works under Item F.2 • With an installed capacity of more than 5,000 m3 per day; and • A boundary of which is less than 200m from the nearest boundary of an existing or planned residential area, educational institution and health care institution.	Schedule 2 Part I
DP3	An activity for the reuse of treated sewage effluent from a treatment plant under Item F.4	Schedule 2 Part I

DP4	Underground rock caverns under Item Q.2	Schedule 2 Part I
DP5	An explosives depot in a stand-alone, purpose built building under Item K.10	Schedule 2 Part I;
DP6	Decommissioning of an explosives depot under Item 11	Schedule 2 Part II

2.3 Project Organization and Contact Personnel

2.3.1 Drainage Services Department is the overall project controllers for the Project. For the construction phase of the Project, Project Engineer, Contractor(s), Environmental Team and Independent Environmental Checker are appointed to manage and control environmental issues.

2.3.2 The proposed project organization and lines of communication with respect to environmental protection works are shown in ***Figure 2.2***. Key personnel and contact particulars is summarized in ***Table 2.2***:

Table 2.2 Contact Details of Key Personnel

Party	Role	Post	Name	Contact No.	Contact Fax
AECOM	Engineer's Representative	Chief Resident Engineer	Mr. Leung Chi Man, Simon	6393 8645	3914 5888
China State Joint Venture (DC/2018/05)	Contractor	Site Agent	Mr. Kenny Poon	9589 8156	2672 2501
		Environmental Officer	Ms. Yeung Ka Ching, Tiffany	6761 8726	
		Environmental Supervisor	TSANG Chiu Fat	9137 8733	
			CHAN Chin Ming	9128 9993	
			IP Tat Hing	9600 8900	
China State – Alchmex Joint Venture (DC/2020/05)	Contractor	Site Agent	Mr. KONG Ming, Elvis	9186 2081	2672 2501
		Environmental Officer	Mr. LAM Moon Lin	9489 4641	
		Environmental Supervisor	TSANG Chiu Fat	9137 8733	

Party	Role	Post	Name	Contact No.	Contact Fax
Acuity Sustainability Consulting Limited	Independent Environmental Checker (IEC)	Independent Environmental Checker (IEC)	Dr. Ng Chung Fai	2698 6833	2698 9383
Lam Environmental Services Limited	Environmental Team (ET)	Environmental Team Leader (ETL)	Mr. Derek Lo	2882 3939	2882 3331

2.4 Construction Activities

2.4.1 In the reporting month, the principal work activities of individual contracts are included as follow:

Contract no. DC/2018/05 - Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

- Retaining wall construction
- Road construction
- Drainage works
- Watermain installation
- Tunnelling works
- Slope stabilization works
- Landscape works
- Demolition of noise barrier

Contract no. DC/2020/05 - Relocation of Sha Tin Sewage Treatment Works to Caverns – Main Caverns Construction

- The contact was commenced on 5 July 2021
  - Boulder survey
  - Hoarding erection
  - Asbestos removal works
  - Tree transplant and felling works
  - Demolition of DSD staff quarter
  - Condition survey for THEES Tunnel

2.4.2 In coming reporting months, the scheduled construction activities of individual contracts are listed as follows:

Contract no. DC/2018/05 - Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction

- Retaining wall construction

- Road construction
- Drainage works
- Watermain installation
- Tunnelling works
- Slope stabilization works
- Landscape works
- Demolition of noise barrier

Contract no. DC/2020/05 - Relocation of Sha Tin Sewage Treatment Works to Caverns – Main Caverns Construction

- Hoarding erection
- Asbestos removal works
- Demolition of DSD staff quarter
- Condition survey for THEES Tunnel
- Tree transplant and felling works
- Site clearance
- Blast door erection
- Site formation works at ventilation shaft
- Construction of temporary drainage system

3 Status of Regulatory Compliance

3.1 Status of Environmental Licensing and Permitting under the Project

3.1.1. A summary of the current status on licences and/or permits on environmental protection pertinent to the Project of Contract no. DC/2018/05 is shown in ***Table 3.1***.

Table 3.1 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project of Contract No. DC/2018/05

Permits and/or Licences	**Reference No.**	**Issued Date**	**Valid Period & Expiry Date** (dd-MM-yyyy to dd-MM-yyyy)	**Status**
Notification of Works Under APCO	442872	7/3/2019	N.A.	Valid
Discharge Licence	WT00034319-2019	3/9/2019	30/9/2024	Valid
Billing account under Waste Disposal Ordinance	7033825	17/4/2019	N/A	Valid
Registration as a Chemical Waste Producer	5117-756-C4363-01	9/5/2019	N/A	Valid
Asbestos Abatement Licence	N/A	N/A	N/A	Nil
Construction Noise Permit	GW-RN0510-21	30/7/2021	(02-08-2021 to 01-11-2022)	Valid
	GW-RN0535-21	03/8/2021	(05-08-2021 to 28-01-2022)	Valid
	GW-RN0824-21	19/11/2021	(21-11-2021 to 14-05-2022)	Valid

3.1.2. A summary of the current status on licences and/or permits on environmental protection pertinent to the Project of Contract no. DC/2020/05 is shown in ***Table 3.2***.

Table 3.2 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project of Contract No. DC/2020/05

Permits and/or Licences	**Reference No.**	**Issued Date**	**Valid Period & Expiry Date** (dd-MM-yyyy to dd-MM-yyyy)	**Status**
Notification of Works Under APCO	469268	8/7/2021	N/A	
Discharge Licence	N/A	N/A	N/A	
Billing account under Waste Disposal Ordinance	7041077	22/7/2021	N/A	

Permits and/or Licences	Reference No.	Issued Date	Valid Period & Expiry Date (dd-MM-yyyy to dd-MM-yyyy)	Status
Registration as a Chemical Waste Producer	5117-756-C4617-01	2/8/2021	N/A	
Asbestos Abatement Licence	5117-756-C4617-01	2/8/2021	N/A	
Construction Noise Permit	GW-RN0802-21	5/11/2021	(09-12-2021 to 31-12-2021)	Valid

3.2 Status of Submission under the EP- 533/2017

3.2.1. A summary of the current status on submission for Contract no. DC/2018/05 under EP-533/2017 is shown in ***Table 3.3***.

Table 3.3 Summary of submission status for Contract no. DC2018/05 under EP-533/2017

EP Condition	Submission	Date of Submission
Condition 1.12	Notification of Commencement Date of Works	18 February 2019
Condition 2.1	Notification of EPD of Community Liaison Group	18 April 2019
Condition 2.12	Management Organization of Main Construction Companies	18 April 2019
Condition 2.14	Submission of Detailed Vegetation Survey Report and Protection and Transplantation Proposal	18 April 2019
Condition 2.15	Woodland Compensation Plan	26 August 2021
Condition 2.18	Submission of Landscape & Visual Mitigation and Tree Preservation Plan(s)	18 April 2019
Condition 2.2	Notification of EPD of telephone hotline	18 April 2019
Condition 2.21	Submission of Supplementary Contamination Assessment Plan (CAP)	10 September 2020
Condition 2.22	Submission of Measures to Mitigate Traffic Noise from Ma On Shan Road	18 April 2019
Condition 3.1	Proposal for Commencement of Construction Phase Air Quality Monitoring in Phases	17 April 2019
Condition 3.1	Proposal for Alternative Sampling Method for Construction Phase Air Quality Monitoring (1-hr TSP)	16 April 2019

EP Condition	Submission	Date of Submission
Condition 3.1	Proposal for Proposed Fine Adjustment for Air and Noise Monitoring Stations at Kowloon City Baptist Church Hay Nien Primary School & Updated EM&A Manual	6 March 2020
Condition 3.1	Temporary suspension of EM&A Programme during 29 Jan 2020 to 2 Feb 2020	28 February 2020
Condition 4.2	Dedicated internet website	22 May 2019
Condition 3.4	Baseline Noise Monitoring Report	11 August 2021

4 Monitoring Requirements

4.1 Air Monitoring

AIR QUALITY MONITORING STATIONS

4.1.1. Air monitoring stations AM1 and AM2 were setup and commencement of monitoring on 12 April 2019 while AM5 was setup and commencement of monitoring on 18 April 2019. Air quality monitoring for the station AM4 was commenced on 3 May 2019. The proposal for proposed fine adjustment for air and noise monitoring station at Kowloon City Baptist Church Hay Nien Primary School was agreed by EPD on 17 December 2020, therefore, air quality monitoring for the station AM3(B) was commenced on 18 December 2020.

4.1.2. Based on the Project baseline report, the air quality monitoring station AM3, Ma On Shan Tsung Tsin Secondary School was relocated to AM3(A), Kowloon City Baptist Church Hay Nien Primary School.

4.1.3. A change of the monitoring location in subsequent impact monitoring for AM3(A) - Kowloon City Baptist Church Hay Nien Primary School was identified necessary as access was not granted for setting up the onsite monitoring station. The new monitoring location AM3(B) – ground level of outside A Kung Kok Street Garden for impact air quality monitoring station was proposed based on the criteria as stated in section 2.2.4.2 and 2.2.4.3 of EM&A Manual by ET and approved by ER and verified by IEC and submitted to EPD for agreement on 5 September 2019. The proposal was agreed by EPD on 17 December 2020.

4.1.4. Air quality monitoring station AM6 was setup and commencement of monitoring on 2 November 2021 since was commenced on 3 November 2021 since the demolition of DSD staff quarter. The proposal was verified by IEC and approved by EPD on 9 May 2019.

4.1.5. The air monitoring stations for the Project are listed and shown in ***Table 4.1*** and ***Figure 4.1***.

Table 4.1 Air Monitoring Station

Monitoring Station ID	Monitoring Location	Level (in terms of no. of floor)
AM1	Ah Kung Kok Fishermen Village	G/F
AM2	Block H, Kam Tai Court	Roof
AM3(B)	Outside A Kung Kok Street Garden	G/F
AM4	Wellborn Kindergarten	G/F
AM5	The Neighbourhood Advice-Action Council Harmony Manor	Roof
AM6	Seaview Villa	Roof

AIR MONITORING PARAMETERS, FREQUENCY AND DURATION

4.1.6. One-hour TSP levels should be measured to indicate the impacts of construction dust on air quality.

4.1.7. The sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs.

4.1.8. Portable direct reading dust meter was proposed to use for 1-hour TSP level instead of HVS to undertaking the air quality monitoring for the project at the stations of AM1, AM2, AM3(A), AM4, AM5 and AM6. The proposal was verified by IEC and submitted to EPD, the proposal has approved by EPD on 28 May 2019.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

4.1.9. Monitoring Procedures

(a) Check the calibration period of portable direct reading dust meter prior to monitoring (The direct reading dust meter was calibrated at 2-years interval and checked with High Volume Sampler (HVS) yearly.)
(b) Record the site condition near / around the monitoring stations.
(c) Install the portable direct reading dust meter to the monitoring location.
(d) Slide the power switch to turn the power on.
(e) Check of portable direct reading dust meter to ensure the equipment operation in normal condition.
(f) Select the period of measurement to 60mins.
(g) Check and set the correct time.
(h) Select the appropriate unit display for the equipment.
(i) Slide the power switch to turn the power off when the monitoring period ended (3 times 1 hour TSP monitoring per day).
(j) Uninstall the portable direct reading dust meter
(k) Collected the sampled data for analysis.
(l) Remark: Procedures (c) to (h) may be different subject to the brands and models of portable direct reading dust meter

4.1.10. Maintenance and Calibration

(a) The direct reading dust meter was calibrated at 2-years interval and checked with High Volume Sampler (HVS) yearly to determine the accuracy and validity of the results measured.
(b) Checking of direct reading dust meter will be carried out in order to determine the conversion factor between the direct reading dust meter and the standard equipment, HVS. The comparison check is to be considered valid based on correlation coefficient checked by HOKLAS laboratory.

4.1.11. The 1-hour TSP air quality monitoring was performed by using portable direct reading dust meters at each designated monitoring station. The brand and model of the equipment are given in ***Table 4.2***.

Table 4.2 Air Quality Monitoring Equipment

Equipment	Brand and model
Portable direct reading dust meter	Met One BT- 645
	Met One Aerocet 831

4.1.12. The calibration certificates of the air quality monitoring equipment are attached in ***Appendix 4.2.*** The calibration dates in the calibration certificates for portable direct reading dust meter models Met One BT-645 and Met One Aerocet 831 are presented in "month/day/year" format.

WIND DATA

4.1.13. The representative wind data from Sha Tin HKO Automatic Weather Station was obtained covering the 1-hr TSP monitoring periods. The wind data were extracted and shown in ***Appendix 4.3***.

EVENT AND ACTION PLAN

4.1.14. The Action and Limit levels for construction air quality are defined in ***Table 4.3*** and ***Appendix 4.1***. Should non-compliance of the air quality criteria occur, action in accordance with the Event and Action Plan in ***Appendix 7.1*** shall be carried out.

Table 4.3 Action and Limit Level for Air Quality Monitoring

Monitoring Locations	1-hour TSP Level in µg/m3	
	Action Level	Limit Level
AM1	294	500
AM2	325	500
AM3(B)	360	500
AM4	297	500
AM5	349	500
AM6	317	500

4.2 Noise Monitoring

NOISE MONITORING STATIONS

4.2.1. Noise monitoring stations CM4 and CM5 were setup and commencement of monitoring on 13 April 2019 and 18 April 2019 respectively. Noise monitoring for stations CM1 and CM3 were commenced on 2 May 2019. The proposal for proposed fine adjustment for air and noise monitoring station at Kowloon City Baptist Church Hay Nien Primary School was agreed by EPD on 17 December 2020, therefore, noise monitoring for station CM2(B) was commenced on 18 December 2020. Noise monitoring for stations DM1, DM2 and DM3 were commenced on 2 November 2021.

4.2.2. Based on the Project baseline report, the noise monitoring station CM2, Ma On Shan Tsung Tsin Secondary School was relocated to CM2(A), Kowloon City Baptist Church Hay Nien Primary School.

4.2.3. A change of the monitoring location in subsequent impact monitoring for CM2(A) - Kowloon City Baptist Church Hay Nien Primary School was identified necessary as access was not granted for setting up the onsite monitoring station. The new monitoring location CM2(B) – ground level of outside A Kung Kok Street Garden for impact air quality monitoring station was proposed based on the criteria as stated in section 2.2.4.2 and 2.2.4.3 of EM&A Manual by ET and approved by ER and verified by IEC and submitted to EPD for agreement on 5 September 2019. The proposal was agreed by EPD on 17 December 2020.

4.2.4. The noise monitoring stations for the Project are listed and shown in ***Table 4.4*** and ***Figure 4.2.***

Table 4.4 Noise Monitoring Station

Monitoring Station ID	Monitoring Location	Measurement Type	Level (in terms of no. of floor)
CM1	Wellborn Kindergarten	Free field	G/F
CM2(B)	Outside A Kung Kok Street Garden	Free field	G/F
CM3	S.K.H. Ma On Shan Holy Spirit Primary School	Façade	Roof
CM4	Ah Kung Kok Fishermen Village	Free field	G/F
CM5	The Neighbourhood Advice-Action Council Harmony Manor	Façade	Roof
DM1	Seaview Villa	Free field	G/F
DM2	Racecourse Gardens	Free field	G/F
DM3	S.K.H. Ma On Shan Holy Spirit Primary School	Façade	Roof

NOISE MONITORING PARAMETERS, FREQUENCY AND DURATION

4.2.5. Noise monitoring shall be carried out at all the designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:

- One set of measurements between 0700-1900 hours on normal weekdays;
- One set of measurements between 1900-2300 hours;
- One set of measurements between 2300-0700 hours of next day; and
- One set of measurements between 0700-2300 hours on holidays (six consecutive Leq/5min readings).

4.2.6. If construction works are extended to include works during the hours of 1900-0700, additional weekly impact monitoring shall be carried out during evening and night-time works for the latter 3 sets of measurements specified in Section 4.2.4 above, one set of measurements shall at least include 6 consecutive Leq (5min) results.

4.2.7. Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 02, 8, 19, 24, and 30 November 2021 with respect to the restricted hour works under CNP GW-RN0510-21, GW-RN0535-21, GW-RN0802-21 and GW-RN0824-21. All the results are within the baseline level range after baseline correction.

4.2.8. Additional weekly night time noise monitoring from 23:00 to 07:00 on next day was carried out at CM4 on 03, 9, 20, 25 November 2021 and 1 December 2021 with respect to the restricted hour works under CNP GW-RN0510-21, GW-RN0535-21, GW-RN0802-21 and GW-RN0824-21. All the results are within the baseline level range after baseline correction.

4.2.9. Supplementary information for data auditing, statistical results such as L10 and L90 shall also be obtained for reference.

4.2.10. If a school exists near the construction activity, noise monitoring shall be carried out at the monitoring stations for the schools during the examination periods. The ET leader shall liaise with the school's personnel and the examination authority to ascertain the exact dates and times of all examination periods during the course of the contract.

MONITORING EQUIPMENT

4.2.11. Noise monitoring was performed using sound level meter at the designated monitoring locations. The sound level meters shall comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator shall be deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in ***Table 4.5***.

Table 4.5 Noise Monitoring Equipment

Equipment	Brand and Model
Integrated Sound Level Meter	NTi XL2
Acoustic Calibrator	Larson Davis CAL200

4.2.12. The calibration certificates of the noise monitoring equipment are attached in ***Appendix 4.2***.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

4.2.13. Monitoring Procedure

(a) The monitoring station shall normally be at a point 1m from the exterior of the sensitive receiver's building façade and be at a position 1.2m above the ground.

(b) Façade measurements were made at the monitoring locations. For free-field measurement, a correction factor of +3 dB (A) would be applied.

(c) The battery condition was checked to ensure the correct functioning of the meter.

(d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

(e) Frequency weighting: A, Time weighting: Fast, Measurement time set: continuous 5 mins

(f) Prior and after to the noise measurement, the meter was checked using the acoustic calibrator for 94dB (A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than ±1 dB (A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

(g) Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

4.2.14. Maintenance and Calibration

(a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.

(b) The sound level meter and calibrator were calibrated at yearly intervals.

EVENT AND ACTION PLAN

4.2.15. Noise Standards for Daytime Construction Activities are specified under EIAO-TM. The Action and Limit levels for construction noise are defined in ***Table 4.6*** and ***Appendix 4.1***. Should non-compliance of the criteria occurs, action in accordance with the Event and Action Plan in ***Appendix 7.1*** shall be carried out.

Table 4.6 Action and Limit Level for Noise Monitoring

Monitoring Station	Action Level	Limit Level (dB(A))		
		0700-1900 hrs on normal weekdays	0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days [2]	2300-0700 hrs of all days [2]
CM1	When one documented complaint is received	65 / 70 [1]	60 / 65 / 70 [3]	45 / 50 / 55 [3]
CM2(B)		65 / 70 [1]		
CM3		65 / 70 [1]		
CM4		75		
CM5		75		
DM1		75		
DM2		75		
DM3		65 / 70 [1]		

Remark 1: Limit level of CM1, CM2(B), CM3 and DM3 reduce to 65 dB (A) during examination periods if any.

Remark 2: Construction noise during restricted hours is under the control of Noise Control Ordinance Limit Level to be selected based on Area Sensitivity Rating.

Remark 3: Limit Level for restricted hour monitoring shall act as reference level only. Investigation would be conducted on CNP compliance if exceedance recorded during restricted hour noise monitoring period.

4.3 Marine Water Quality Monitoring

MARINE WATER MONITORING STATIONS

4.2.1. Under THEES maintenance or emergency discharge events, effluent would be discharged into the Tolo Harbour from the existing emergency outfalls of STSTW and TPSTW.

4.2.2. THEES tunnel was suspended on 30 November 2021 and resumed on 1 December 2021. A marine water quality monitoring programme is recommended for the THEES tunnel maintenance during both construction and operational phases of this Project to confirm the water quality impact of the THEES maintenance discharge.

4.2.3. It is recommended to set up 13 monitoring stations within the Tolo Harbour as listed in Table 2.1 below. 12 impact stations are set up at the WSD flushing water intakes at Sha Tin (W1) and Tai Po (W2), cooling water intake at Chinese University of Hong Kong (CUHK) Marine Science Laboratory (C1), Yim Tin Tsai Fish Culture Zone (FCZ) (F1), Yim Tin Tsai East) FCZ (F2), Yung Shue Au FCZ and Important Nursery Area for Commercial Fisheries Resources at Three Fathoms Cove (F3), Lo Fu Wat FCZ (F4), Subzone of Yim Tin Tsai FCZ (G1), corals at Tai Po Industrial Estate (CR1), Science Park (CR15), Sha Tin Hoi North (CR16) and Sha Tin Hoi South (CR17) respectively as shown in **Figure 4.3** to represent the marine water sensitive

receivers, which are likely affected by the Project during the THEES maintenance or emergency discharge.

4.2.4. Station G1 (Subzone of Yim Tin Tsai Fish Culture Zone) is also proposed as a gradient station to assist in the identification of the source of any impact at monitoring station F1. Station CR9 is far away from the Project discharge points and would unlikely be affected by the Project and will therefore serve as a control station.

4.2.5. The coordinates of the proposed monitoring stations are listed in **Table 4.7** and ***Figure 4.3.***

Table 4.7 Proposed Marine Water Quality Monitoring Stations

No.	Station	Description	Easting	Northing
1	W1	WSD Seawater Intake at Sha Tin	840238	830127
2	W2	WSD Seawater Intake at Tai Po	837753	834606
3	C1	Cooling Water Intake at CUHK Marine Science Laboratory	840142	831908
4	F1	Yim Tin Tsai Fish Culture Zone	839387	834907
5	F2	Yim Tin Tsai (East) Fish Culture Zone	840885	835077
6	F3	Yung Shue Au Fish Culture Zone / Important Nursery Area for Commercial Fisheries Resources at Three Fathoms Cove	846778	832054
7	F4	Lo Fu Wat Fish Culture Zone	846364	836709
8	CR1	Corals at Tai Po Industrial Estate	837888	834489
9	CR15	Corals at Science Park	839193	832710
10	CR16	Corals at Sha Tin Hoi North	840310	831665
11	CR17	Corals at Sha Tin Hoi South	840224	830692
12	G1	Potential Subzone of Yim Tin Tsai Fish Culture Zone / Gradient Station	840521	833311
13	CR9	Gruff Head Corals (Control Station)	850995	838008

MARINE WATER QUALITY MONITORING PARAMETERS, FREQUENCY AND DURATION

Monitoring Parameters

4.2.6. **Table 4.8** summarizes the monitoring parameters of the water quality monitoring.

Table 4.8 Water Quality Monitoring Parameters

In-situ Measurement	Laboratory Measurement
Dissolved Oxygen	Suspended Solids (SS)
pH	5-day Biochemical Oxygen Demand (BOD5)
Temperature	Total Inorganic Nitrogen (TIN)
Salinity	Ammonia Nitrogen (NH3-N)
Turbidity	Nitrate-nitrogen (NO3-N)
	Nitrite-nitrogen (NO2-N)
	Unionized Ammonia (UIA)

	Chlorophyll-a
	E. coli

4.2.7. Monitoring location/position, time, water depth, sampling depth, tidal stages, weather conditions and any special phenomena or work underway nearby were also be recorded.

Monitoring Frequency

4.2.8. For THEES maintenance, marine water quality data shall be collected throughout the whole discharge period at a frequency of 3 times per week until the baseline water quality is restored or at least 4 weeks after the end of maintenance period. During each monitoring event, water samples shall be collected at both mid-flood and mid-ebb tides and the interval between 2 monitoring events should not be less than 36 hours.

4.2.9. In view of marine safety concern due to limited visibility for safe navigation during night-time, the monitoring time at the mid-flood and mid-ebb will be shifted to the available flood/ebb tide during daytime.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

Sampling Procedure

4.2.10. Measurements shall be taken at three water depths, namely, 1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth is less than 6 m, in which case the mid-depth station may be omitted. Shall the water depth be less than 3 m, only the mid-depth station will be monitored. The in-situ measurements at predetermined depths was carried out in duplicate. In case the difference in the duplicate in-situ measurement results was larger than 25%, the third set of in-situ measurement would be carried out for result confirmation purpose.

4.2.11. Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples for required laboratory tests at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4℃ but without frozen according to **Table 4.8** and sent to the laboratory as soon as possible.

Monitoring Equipment

DISSOLVED OXYGEN (DO) AND TEMPERATURE MEASURING EQUIPMENT

4.2.12. The nstrument shall be a portable and weatherproof DO measuring instrument complete with

cable and sensor, and use a direct current (DC) power source. The equipment shall be capable of measuring:

- a DO level in the range of 0 - 20 mg L-1 and 0 - 200% saturation; and
- a temperature of 0-45 degree Celsius.

4.2.13. It has a membrane electrode with automatic temperature compensation complete with a cable.

4.2.14. Sufficient stocks of spare electrodes and cables were available for replacement where necessary.

4.2.15. Salinity compensation was built-in in the DO equipment, in-situ salinity was measured to calibrate the DO equipment prior to each DO measurement.

Turbidity

4.2.16. Turbidity was measured in situ by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity between 0-1000 NTU. The probe cable was not less than 25m in length. The meter was calibrated in order to establish the relationship between NTU units and the levels of suspended solids.

Sampler

4.2.17. A water sampler, consisting of a transparent Polyvinyl Chloride (PVC) or glass cylinder of a capacity of not less than two litres which can be effectively sealed with cups at both ends was used. The water sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

Water Depth Detector

4.2.18. A portable, battery-operated and hand held echo sounder was used for the determination of water depth at each designated monitoring station.

pH

4.2.19. The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

Salinity

4.2.20. A portable salinometer capable of recording salinity within the range of 0-40 parts per thousand (ppt) was provided for measuring salinity of the water at each monitoring location.

Monitoring Position Equipment

4.2.21. A hand held differential Global Positioning System (dGPS) was used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Sample Container and Storage

4.2.22. Following collection, water samples for laboratory analysis were stored in high density polythene bottles with preservatives added according to **Table 4.8** packed in ice (cooled to 4 ℃ without being frozen), delivered to the laboratory and analysed as soon as possible. Sufficient volume of samples were collected to achieve the detection limit.

4.2.23. For the sample containers for E. coli, the water samples were collected in sterile bottles with leakproof lids.

4.2.24. Sufficient volume of samples were collected for proper analysis of all testing parameters. **Table 4.9** also summarizes the size of samples for respective tests.

Table 4.9 Types of Sampling Bottles, Sample Size and Preservation Methods

Label Colour	Container Type (preservation noted if required)	Test Parameter(s)
Green	1 x 1L Clear Plastic Bottle - Unpreserved	Biochemical Oxygen Demand (BOD), Suspended Solids, Nitrate, Nitrite
Purple	1 x 250mL Clear Plastic Bottle - H2SO4 Preserved (pH<2)	Ammonia, Total Inorganic Nitrogen, Unionized Ammonia
Green	1 x 250L Brown Plastic Bottle - Unpreserved	Chlorophyll a
Grey	1 x 125mL Plastic Bottle - Sterile; Sodium Thiosulphate	E. coli

Calibration of In Situ Instruments

4.2.25. All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout the baseline water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.

4.2.26. Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also made available so that monitoring could proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

4.2.27. Calibration certifications of the water monitoring equipment are attached in **Appendix 4.2**.

Laboratory Measurement / Analysis

4.2.28. Analysis of SS, BOD, TIN, NH3-N, NO3-N, UIA, chlorophyll-a and E. coli levels shall be carried out by ALS Technichem (HK) Pty Ltd (HOKLAS Registration No.066). Sufficient water samples shall be collected at the monitoring stations for carrying out the necessary laboratory analysis. The analysis shall commence within 24 hours after collection of the water samples. The analyses shall follow the standard methods described in APHA Standard Methods for the

Examination of Water and Wastewater, 19th edition or other approved methods. Detailed testing methods, pre-treatment procedures, instrument use, Quality Assurance (QA) /Quality Control (QC) details (such as blank, spike recovery, number of duplicate samples per batch, etc.), detection limits and accuracy shall be submitted to EPD for approval prior to the commencement of monitoring programme. EPD may also request the laboratory to carry out analysis of known standards provided by EPD for quality assurance. Additional duplicate samples may be required by EPD for inter laboratory calibration. Remaining samples after analysis shall be kept by the laboratory for 3 months in case repeat analysis is required. If in-house or non-standard methods are proposed, details of the method verification may also be required to submit to EPD. In any circumstance, the sample testing shall have comprehensive quality assurance and quality control programmes. The laboratory shall prepare to demonstrate the programmes to EPD or his representatives when requested. The testing method, reporting limit and detection limit are provided in **Table 4.10**.

Table 4.10 Methods for Laboratory Analysis for Water Samples

Analyte Description	Method Reference	Limit of Reporting (LOR)
Suspended Solids	APHA 2540 D	2 mg/L
Biochemical Oxygen Demand (BOD)	APHA 5210 B	2 mg/L
Total Inorganic Nitrogen	APHA 4500NH3: G APHA 4500NO3: I	0.02 mg/L
Ammonia as N	APHA 4500 NH3 G	0.01 mg/L
Unionized Ammonia	By calculation	0.001 mg/L
Chlorophyll a	APHA 10200 H2, H3	0.1 mg/m³
E. coli	TM09/EC/10/98 Issue 3, HKEPD	1 CFU/100mL
Nitrite as N	APHA 4500-NO3 I	0.01 mg/L
Nitrate as N	APHA 4500 NO3 I	0.01 mg/L

SUMMARY OF MITIGATION MEASURES AND MARINE WATER QUALITY MONITORING FOR THEES MAINTENANCE AND EMERGENCY DISCHARGE

4.2.29. It is recommended that the THEES maintenance event shall be scheduled outside the period from January to May (the algae blooming season). It is also recommended that relevant government departments including EPD, WSD, AFCD and stakeholders for mariculture and fisheries shall be informed of the THEES maintenance or emergency discharge events. The DSD / Plant operators shall maintain good communications with various concerned parties. A list of address, email address, phone and fax number of key persons in various departments responsible for action shall be made available to the Plant operators. A summary of the mitigation measures and monitoring requirements for the THEES maintenance or emergency

discharge is provided in **Table 4.11**.

Table 4.11 Mitigation Measures and Monitoring Requirement for THEES Maintenance / Emergency Discharge at Tolo Harbour

Event	Mitigation Measures and Monitoring Requirement
THEES Maintenance Discharge during construction and operation of this Project	1. Schedule the THEES maintenance event outside algae blooming season (January – May). 2. Inform EPD, WSD, AFCD and stakeholders for mariculture and fisheries of the THEES maintenance event before any discharge. 3. Conduct marine water quality impact monitoring at a frequency of 3 times per week as proposed in Section 2.5, 2.6, 2.11 and 2.12 until the baseline water quality is restored or at least 1 months after termination of the THEES maintenance discharge (whichever is longer). 4. If considered necessary, install silt curtains / silt screens at WI and W2 during the discharge until the baseline water quality levels are restored. 5. The monitoring data collected in Item 3 above shall be compared with the baseline data collected under normal THEES operation to identify the degree of impact caused by the maintenance discharge.

5. Monitoring Results

5.0.1 The environmental monitoring will be implemented based on the division of works areas of each designed projects. Overall layout showing work areas and monitoring stations is shown in ***Figure 2.1*** and ***Figure 4.1 – 4.2*** respectively**.**

5.0.2 The environment monitoring schedules for reporting month and coming month are presented in ***Appendix 5.1*****.**

5.1 Air Monitoring Results

7.3.1 1-hour TSP monitoring was conducted at AM1, AM2, AM3(B), AM4, AM5 and AM6 in the reporting month.

7.3.1 No action or limit level exceedance was determined in the reporting period at stations of AM1, AM2, AM3(B), AM4, AM5 and AM6.

7.3.1 Air quality monitoring results measured in this reporting period for AM1, AM2, AM3(B), AM4, AM5 and AM6 are reviewed and summarized. Details of air monitoring results and graphical presentation can be referred in ***Appendix 5.2.***

5.2 Noise Monitoring Results

5.2.1 Noise monitoring was conducted at CM1, CM2(B), CM3, CM4,CM5, DM1, DM2 and DM3 in the reporting month.

5.2.2 Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 02, 8, 19, 24, and 30 November 2021 with respect to the restricted hour works under CNP GW-RN0510-21, GW-RN0535-21, GW-RN0802-21 and GW-RN0824-21. All the results are within the baseline level range after baseline correction.

5.2.3 Additional weekly night time noise monitoring from 23:00 to 07:00 on next day was carried out at CM4 on 03, 9, 20, 25 November 2021 and 1 December 2021 with respect to the restricted hour works under CNP GW-RN0510-21, GW-RN0535-21, GW-RN0802-21 and GW-RN0824-21. All the results are within the baseline level range after baseline correction.

5.2.4 No action or limit level exceedance was determined in the reporting period for the stations of CM1, CM2(B), CM3, CM4,CM5, DM1, DM2 and DM3.

5.2.5 Noise monitoring results measured in this reporting period for CM1, CM2(B), CM3, CM4, CM5, DM1, DM2 and DM3 are reviewed and summarized. Details of noise monitoring results and graphical presentation can be referred in ***Appendix 5.3***.

5.3 Water Quality Monitoring Results

7.3.1 Water quality monitoring result would be provided in next monthly EM&A report.

5.4 Waste Management

5.4.1 The quantities of waste for disposal for the Contract no. DC/2018/05 in the Reporting Period are summarized in ***Table 5.1***. The quantities of waste for disposal for the Contract no. DC2020/05 in the Reporting Period are summarized in ***Table 5.2***. The Monthly Summary Waste Flow Table for the Contract no. DC/2018/05 and DC/2020/05 are shown in ***Appendix 5.4***. Whenever possible, materials were reused on-site as far as practicable.

Table 5.1 Details of Waste Disposal for Contract no. DC/2018/05

Waste Type	**Quantity this month**	**Cumulative Quantity-to-Date**	**Disposal / Dumping Grounds**
Inert C&D materials disposed**, m^3**	2,160	11,842	Fill Bank at Tuen Mun Area 38
	7,224	209,975	Tailor Recycled Aggregated Ltd. & Lam Tei Quarry (Alternative Disposal Ground)
Inert C&D materials recycled**, m^3**	87	1,768	Fill Bank at Tuen Mun Area 38 (Broken concrete)
Non-inert C&D materials disposed**, tonne**	26.86	1334.56	NENT
Non-inert C&D materials recycled**, kg**	0	1,891	Golden Sino Management Limited (Waste paper)
	0	14	Golden Sino Management Limited (Plactic)
	0	19,803	Golden Sino Management Limited (Metals)
Chemical waste disposed, **L**	0	840	Collected by licensed chemical waste collector_ Ecospace Limited (Spent Lube Oil)
Asbestos waste disposed, **Kg**	0	300	WENT

Table 5.2 Details of Waste Disposal for Contract no. DC/2020/05

Waste Type	**Quantity this month**	**Cumulative Quantity-to-Date**	**Disposal / Dumping Grounds**
Inert C&D materials disposed**, m^3**	567	593	Fill Bank at Tuen Mun Area 38
Inert C&D materials recycled**, m^3**	164	164	Fill Bank at Tuen Mun Area 38 (Broken concrete)
Non-inert C&D materials disposed**, tonne**	0	1192	SENT
Non-inert C&D materials recycled**, kg**	0	0	Golden Sino Management Limited (Waste Paper)

Waste Type	Quantity this month	Cumulative Quantity-to-Date	Disposal / Dumping Grounds
	0	0	Golden Sino Management Limited (Plastic)
	75270	75270	Golden Sino Management Limited (Metals)
Chemical waste disposed, **L**	0	0	Collected by licensed chemical collector: Ecospace Limited (Spent Lube Oil)
Asbestos waste disposed, **Kg**	560	560	WENT

6. Land Contamination

6.1 Remediation report (RR) for Ex-Sha Tin Vehicle Detention Centre (VDC) was accepted by EPD on 23 April 2021 and placed in the EIAO Register Office for public information.

6.2 The confirmatory sampling for DSD staff quarter at existing STSTW was completed.

6.3 Land decontamination work for the DSD staff quarter at existing STSTW started on 16 June 2021, the Remediation Report was submitted to EPD for approval on 9 September 2021.

6.4 The Remediation Report was accepted by EPD on 8 November 2021.

7. Compliance Audit

7.0.1. The Event Action Plan for construction noise, air quality are presented in ***Appendix 7.1***.

7.0.2. The summary of exceedance is presented in ***Appendix 7.2***.

7.1 Air Monitoring

7.1.1 No action or limit level exceedance was determined in the reporting period at stations of AM1, AM2, AM3(B), and AM5 and AM6.

7.2 Noise Monitoring

7.2.1 Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 02, 8, 19, 24, and 30 November 2021 with respect to the restricted hour works under CNP GW-RN0510-21 and GW-RN0535-21. All the results are within the baseline level range after baseline correction.

7.2.2 Additional weekly night time noise monitoring from 23:00 to 07:00 on next day was carried out at CM4 on 03, 9, 20, 25 November 2021 and 1 December 2021 with respect to the restricted hour works under CNP GW-RN0510-21 and GW-RN0535-21. All the results are within the baseline level range after baseline correction.

7.2.3 No action or limit level exceedance was determined in the reporting period for the stations of CM1, CM2(B), CM3, CM4,CM5, DM1, DM2 and DM3.

7.3 Marine Water Quality Monitoring

7.3.1 Water quality monitoring result would be provided in next monthly EM&A report.

7.4 Review of the Reasons for and the Implications of Non-compliance

7.4.1 No environmental non-compliance was recorded in the reporting month.

7.5 Summary of action taken in the event of and follow-up on non-compliance

7.5.1 There was no particular action taken since no non-compliance was recorded in the reporting period.

8. Environmental Site Audit

8.0.1. Within this reporting month, weekly environmental site audits were conducted on 03, 10, 17, and 25 November 2021. IEC attended the joint site inspection on 25 November 2021.

Table 8.1 Summary of Environmental Inspections for Contract no. STW 01/2021

Item	Date	Reminders/Observations	Action taken by Contractor	Outcome
NIL	03-11-2021	NIL	NIL	NIL
NIL	10-11-2021	NIL	NIL	NIL
NIL	17-11-2021	NIL	NIL	NIL
20211125_01Env_C1	25-11-2021	Portion 6: Drip tray should be provided for chemical container.	Rectified.	Completion as observed on 1December 2021 during site inspection.
20211125_02Env_C1	25-11-2021	Portion 6: Rubbish storage area and u channel should be cleaned regularly.	Rectified.	Completion as observed on 1December 2021 during site inspection.

Remark: C1 refers to contract No. DC/2018/05

C2 refers to contract No. DC/2020/05

8.0.2. Within this reporting month, bi-weekly landscape site audits were conducted on 9 and 23 November 2021.

Table 8.2 Summary of Landscape Inspections for Contract no. STW 01/2021

Item	Date	Reminders/Observations	Action taken by Contractor	Outcome
20211109_01Land	9-11-2021	Reminder Portion12: Fallen –tagged tree needs to retag.	On going	On going
NIL	23-11-2021	NIL	NIL	NIL

8.0.3. Within this reporting month, monthly ecology site audits were conducted on 23 November 2021.

Table 8.3 Summary of Ecology Inspections for Contract no. STW 01/2021

Item	Date	Reminders/Observations	Action taken by Contractor	Outcome
20211123_01Eco	23-11-2021	銀合歡 have been accumulated at the lower portion of the DV	On going	On going

Item	Date	Reminders/Observations	Action taken by Contractor	Outcome
		planting Site. They should be removed including roots.		
20211123_02Eco	23-11-2021	Lost tags shall be put back on corresponding DV	On going	On going

9. Complaints, Notification of Summons and Prosecution

9.0.1. No environmental complaint was received in the reporting period.

9.0.2. No notification of summons and successful prosecutions was received in the reporting month.

9.0.3. The details of cumulative complaint log and updated summary of complaints are presented in ***Appendix 9.1***.

9.0.4. Cumulative statistic on complaints and successful prosecutions are summarized in ***Table 9.1*** and ***Table 9.2*** respectively.

Table 9.1 Cumulative Statistics on Complaints

Reporting Period	No. of Complaints
November 2021	0
Total	**3**

Table 9.2 Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative No. Project-to-Date
Air	-	0	0
Noise	-	0	0
Waste	-	0	0
Total	**-**	**0**	**0**

10. Conclusion

10.0.1. The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed were made in response to changing circumstances.

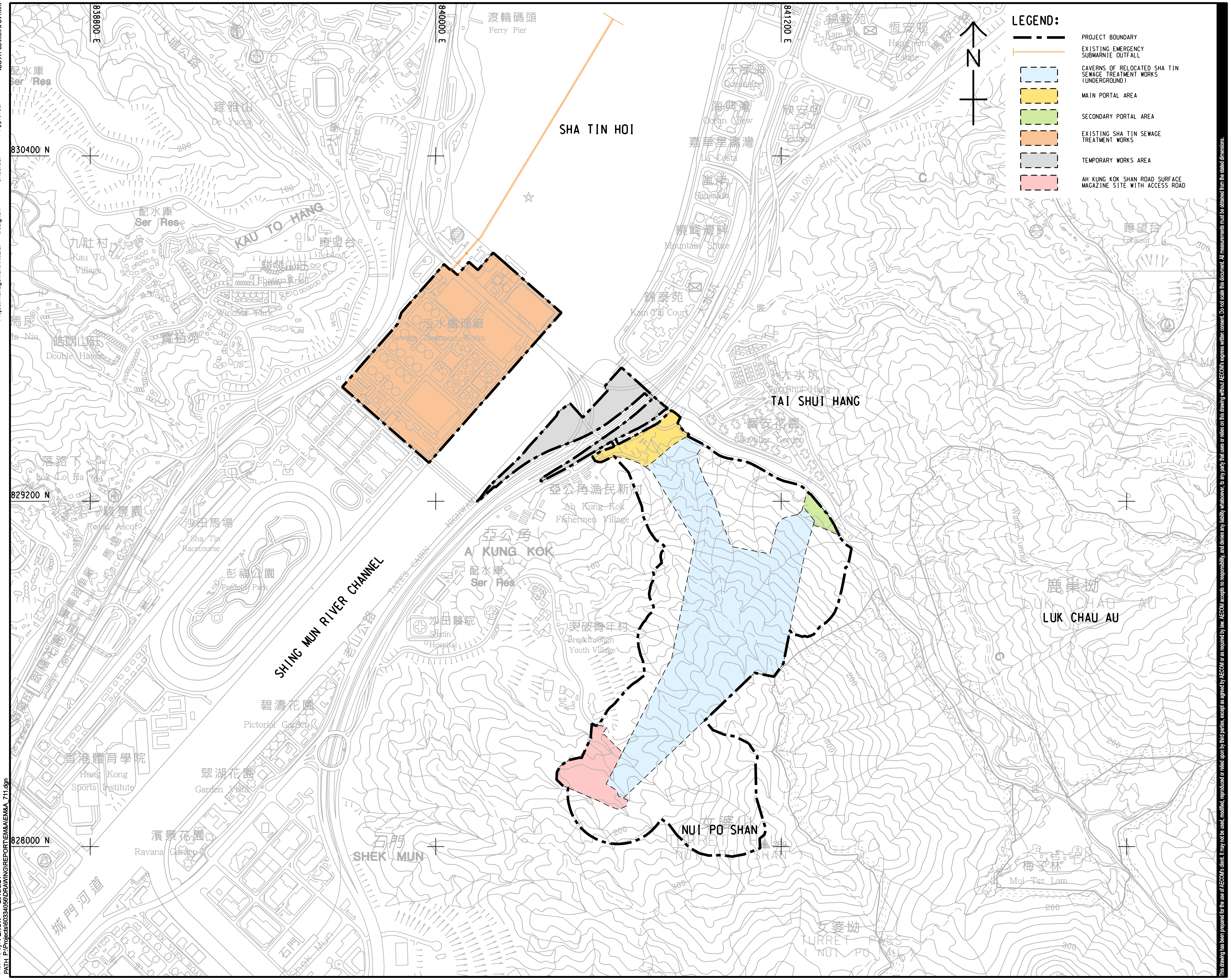
10.0.2. The scheduled construction activities and the recommended mitigation measures for the coming month are listed in ***Table 10.1***. The construction programmes of the Project are provided in ***Appendix 10.1***.

Table 10.1 Construction Activities and Recommended Mitigation Measures in Coming Reporting Month

Contract No.	Key Construction Works	Recommended Mitigation Measures
DC/2018/05	• Retaining wall construction • Road construction • Drainage works • Watermain installation • Tunnelling works • Slope stabilization works • Landscape works • Demolition of noise barrier	• Dust control during dust generating works; • Implementation of proper noise pollution control; and • Provision of protection to ensure no runoff out of site area or direct discharge into public drainage system. • Direct impact to plant species of conservation importance recorded in the vicinity of the construction sites shall be avoided • Excavation materials shall be well covered • Mitigation measures to dust and noise control should be provided to construction of noise barrier, bored piling, Installation of noise barrier
DC/2020/05	• Boulder survey • Hoarding erection • Asbestos removal works • Tree transplant and felling works • Demolition of DSD staff quarter • Condition survey for THEES Tunnel	• Dust control during dust generating works; • Implementation of proper noise pollution control; • Follow the regulations of The Air Pollution Control Ordinance during the removal of asbestos • Mitigation measures to dust and noise control should be provided to construction of noise barrier, bored piling, Installation of noise barrier

Figure 2.1

Project Layout


LEGEND:
PROJECT BOUNDARY
EXISTING EMERGENCY SUBMARNIE OUTFALL
CAVERNS OF RELOCATED SHA TIN SEWAGE TREATMENT WORKS (UNDERGROUND)
MAIN PORTAL AREA
SECONDARY PORTAL AREA
EXISTING SHA TIN SEWAGE TREATMENT WORKS
TEMPORARY WORKS AREA
AH KUNG KOK SHAN ROAD SURFACE MAGAZINE SITE WITH ACCESS ROAD
N
838800 E
840000 E
841200 E
830400 N
829200 N
828000 N
SHA TIN HOI
SHING MUN RIVER CHANNEL
TAI SHUI HANG
A KUNG KOK
LUK CHAU AU
NUI PO SHAN
SHEK MUN
KAU TO HANG
渡輪碼頭
Ferry Pier
沙田馬場
Sha Tin Racecourse
沙田醫院
Shatin Hospital
突破青年村
Breakthrough Youth Village
亞公角漁民新村
Ah Kung Kok Fishermen Village
香港體育學院
Hong Kong Sports Institute
碧濤花園
Pictorial Garden
翠湖花園
Garden Vista
濱景花園
Ravana Garden
鹿巢坳
梅子林
Mui Tsz Lam
女婆坳

AECOM

PROJECT

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT

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Drainage Services Department

CONSULTANT

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ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE A3 1 : 12000

DIMENSION UNIT METRES

KEY PLAN A3 1 : 500000

PROJECT NO. 60334056

CONTRACT NO. CE 30/2014 (DS)

SHEET TITLE

LOCATION PLAN OF THE PROJECT

SHEET NUMBER

60334056/EM&A/1.01

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ISO A1 594mm x 841mm

Approved: RCYK

Checked: EPCY

Designer: JCWL

Project Management Initials:

25-January-2021

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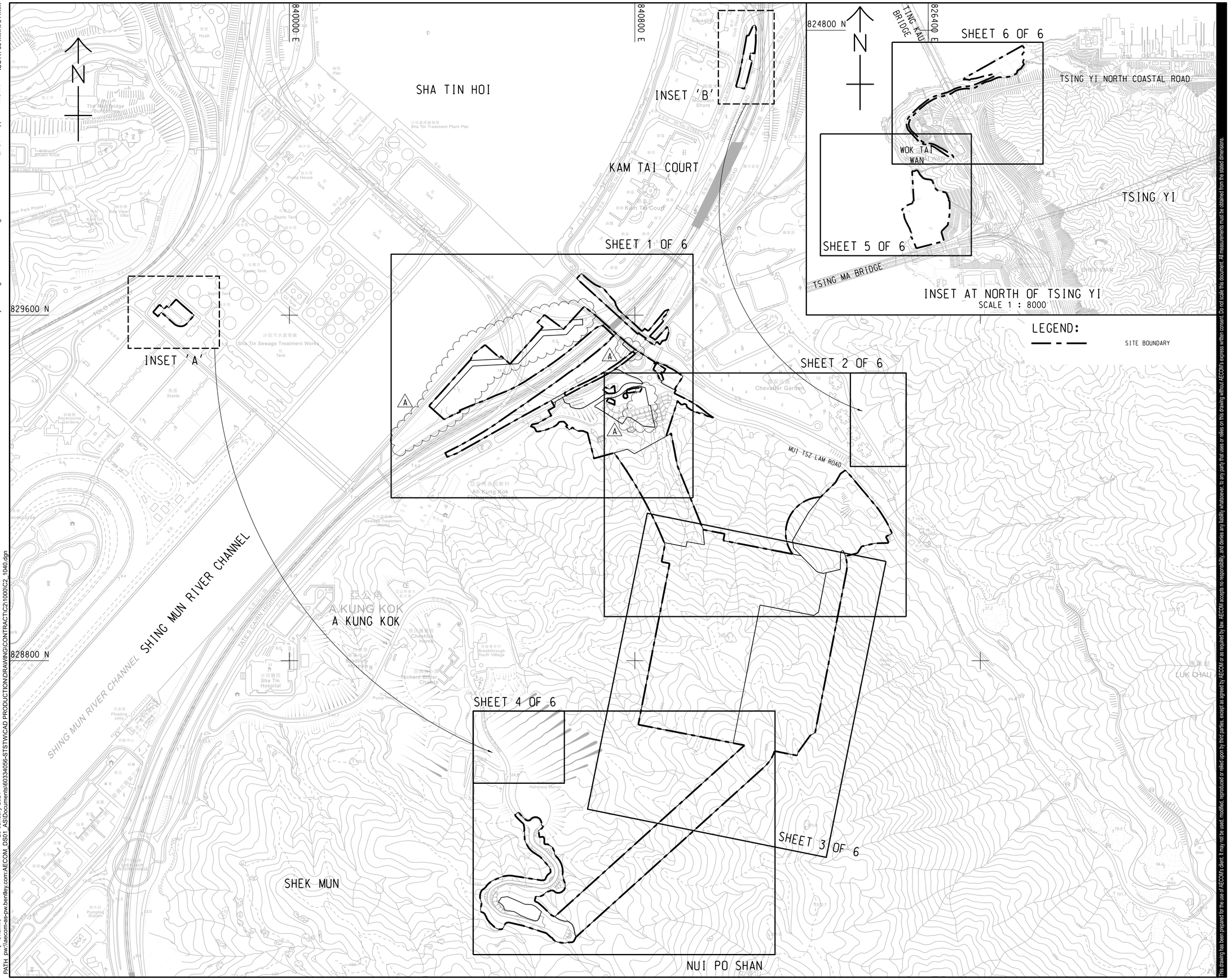

AECOM

PROJECT
項目

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS

CONTRACT TITLE
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS - MAIN CAVERNS CONSTRUCTION

CLIENT
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I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核
			EP
A	JAN. 21	TENDER ADDENDUM NO. 3	EPCY
-	NOV. 20	TENDER DRAWING	EPCY

STATUS
階段

SCALE 比例
A1 1 : 4000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60334056

CONTRACT NO. 合約編號
DC/2020/05

SHEET TITLE
圖紙名稱

PORTION OF SITE
- KEY PLAN

SHEET NUMBER
圖紙編號

60334056/C2/1040A

Figure 2.2

Project Organization Chart

Project Organization Chart

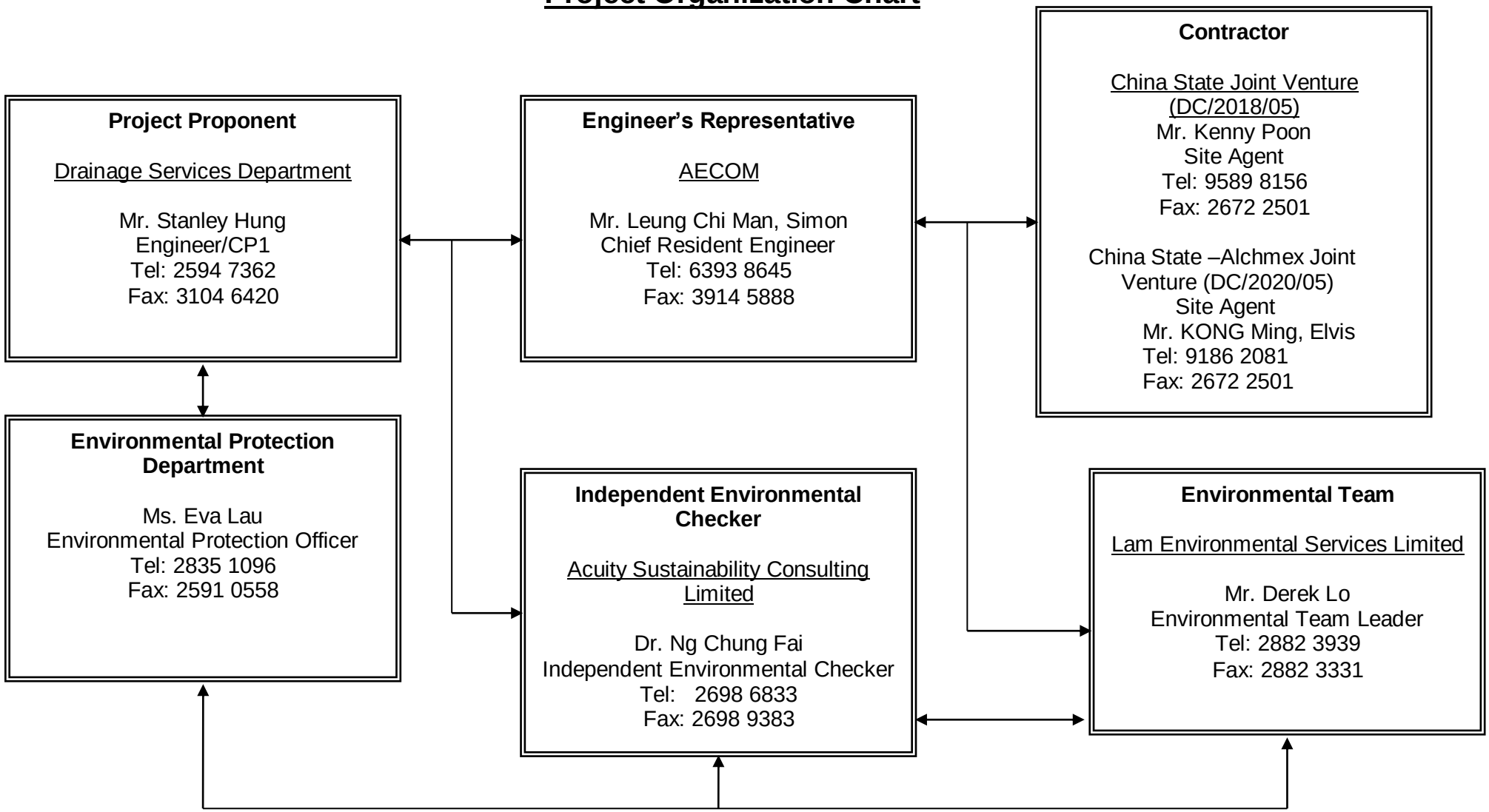


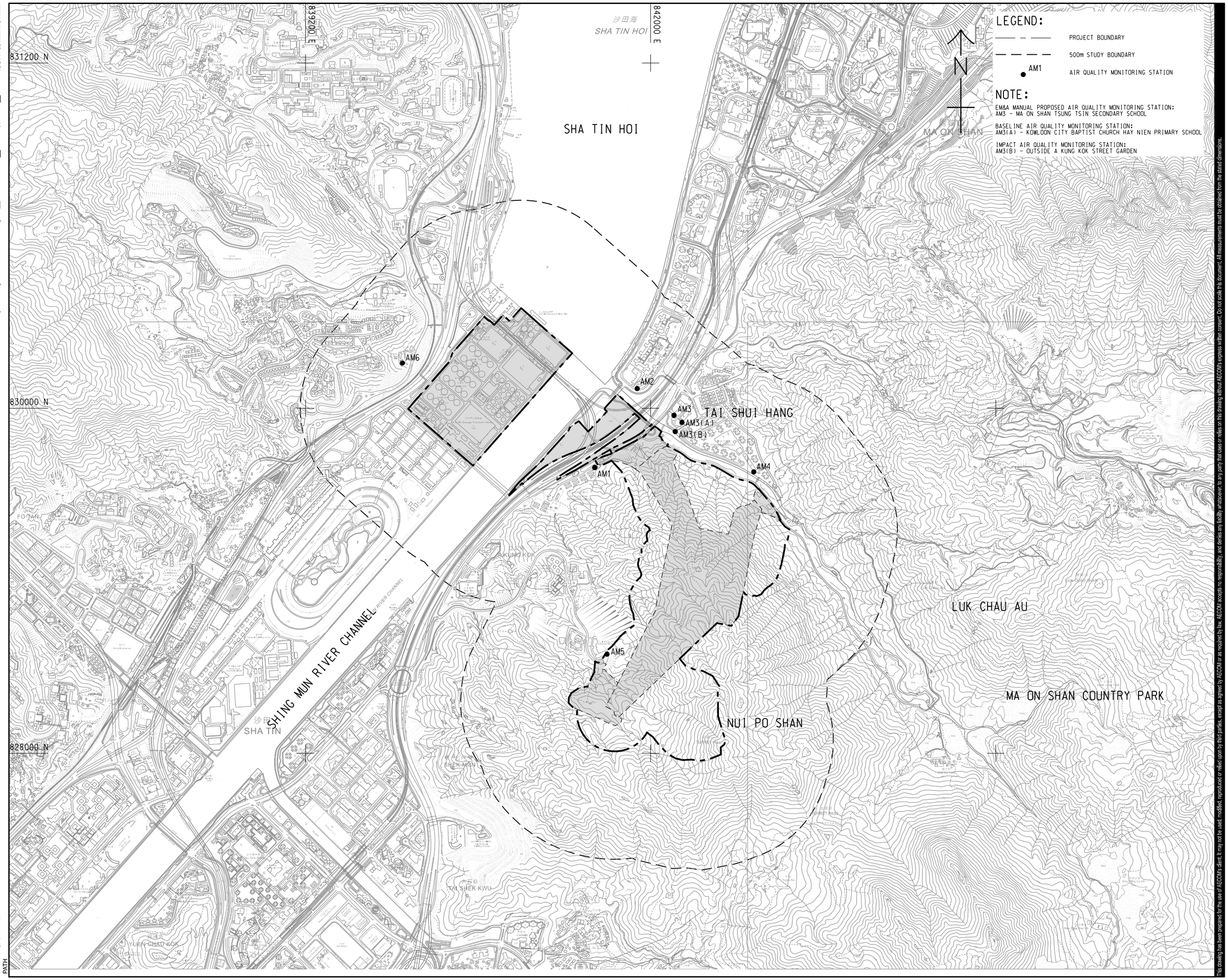
Figure 2.2

Figure 4.1 to Figure 4.3

Locations of Monitoring Stations

ISO A1 594mm x 841mm

Project Management Initials: Designer:__ Checked:__ Approved:__



9/2/2020

Plot File by: $USER$
PATH

AECOM

PROJECT
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RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

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STATUS
階段

SCALE 比例
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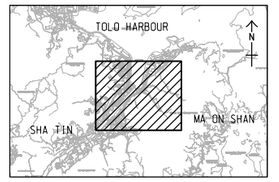
DIMENSION UNIT 尺寸單位
METRES

KEY PLAN A3 1 : 400000
索引圖



PROJECT NO. 項目編號
60334056

CONTRACT NO. 合約編號
CE 30/2014 (DS)

SHEET TITLE
圖紙名稱

LOCATION OF AIR QUALITY MONITORING STATION DURING CONSTRUCTION PHASE

SHEET NUMBER
圖紙編號

60334056/EM&A/2.01

ISO A1 594mm x 841mm

Approved:__

Checked:__

Designer:__

Project Management Initials:

840000 E

841000 E

842000 E

830000 N

829000 N

828000 N

SHA TIN HOI

TAI SHUI HANG

LUK CHAU AU

NUI PO SHAN

TURRET HILL

SHING MUN RIVER CHANNEL

A KUNG KOK

SHEK MUN

TURRET PASS

DM1

DM2

DM3

CM1

CM2

CM2(A)

CM2(B)

CM3

CM4

CM5

N

LEGEND:

PROJECT BOUNDARY

300m CONSTRUCTION NOISE / OPERATION FIXED PLANT NOISE STUDY BOUNDARY

CM1/DM1 NOISE MONITORING STATION

NOTE:

EM&A MANUAL PROPOSED NOISE MONITORING STATION:
CM2 - MA ON SHAN TSUNG TSIN SECONDARY SCHOOL

BASELINE NOISE MONITORING STATION:
CM2(A) - KOWLOON CITY BAPTIST CHURCH HAY NIEN PRIMARY SCHOOL

IMPACT NOISE MONITORING STATION:
CM2(B) - OUTSIDE A KUNG KOK STREET GARDEN

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PROJECT
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RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

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STATUS
狀況

SCALE 比例
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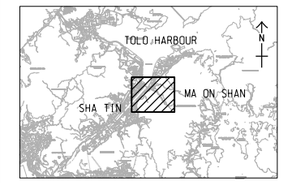
DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖 A3 1 : 500000



PROJECT NO. 項目編號
60334056

CONTRACT NO. 合約編號
CE 30/2014 (DS)

SHEET TITLE
圖紙名稱

LOCATION OF CONSTRUCTION PHASE TRAFFIC NOISE MONITORING STATION

SHEET NUMBER
圖紙編號

60334056/EM&A/3.01

9/2/2020

Plot File by: $USER$
PATH

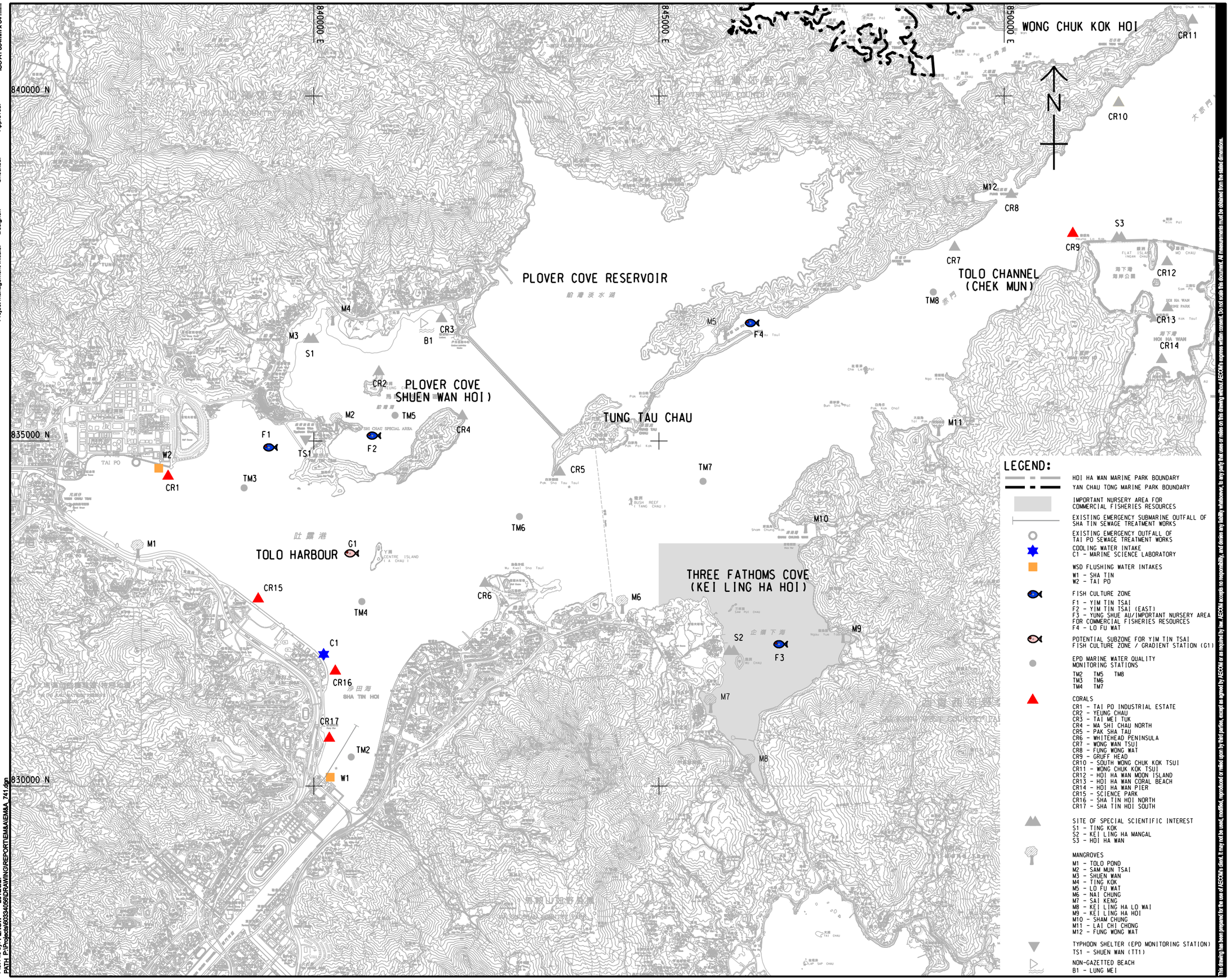
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



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AECOM

PROJECT
項目

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS: CAVERNS AND SEWAGE TREATMENT WORKS - INVESTIGATION, DESIGN AND CONSTRUCTION

CLIENT
業主

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Drainage Services Department

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修訂

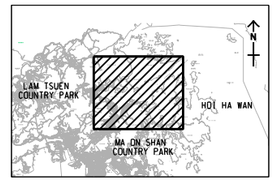
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核實

STATUS
狀況

SCALE 比例: A3 1 : 50000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN 索引圖 A3 1 : 1200000



PROJECT NO. 項目編號: 60334056

CONTRACT NO. 合約編號: CE 30/2014 (DS)

SHEET TITLE
圖紙名稱

LOCATIONS OF MARINE WATER QUALITY MONITORING STATIONS

SHEET NUMBER
圖紙編號

60334056/EM&A/4.01

Appendix 1.1
Ecological Monitoring Report

CONTRACT NO. STW 01/2021

ENVIRONMENTAL TEAM FOR

RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS – SITE PREPARATION

AND ACCESS TUNNEL CONSTRUCTION

UNDER ENVIRONMENTAL PERMIT NO. EP-533/2017

29th ECOLOGICAL MONITORING REPORT

NOVEMBER 2021

Contents

1. Recommendation on plant species of conservation importance under approved protection and transplantation proposal

1.1.1. According to the latest approved Protection and Transplantation Proposal (ver. 9.2), four out of six recorded plant species of conservation importance are to be transplanted. The relevent informations of the plant species were summarized in **Table 1 and figure 1-4**. Base on the ongoing detailed design of the Project, the details of approved Protection and Transplantation Proposal and ecological monitoring will be updated in stages subject to further changes.

Table 1. Recommendations on the recorded plant species of conservation importance (Approved Protection and Transplantation Proposal Version 9.2)

Common Name	Species Name	Units	Recommendations				
			Retain	Transplant	Fell	Total (in Project Boundary)	Compensatory Planting in Temporary Works Area
Adopted from previously approved Protection and Transplantation Proposal Version 9.2							
Site 1							
Small Persimmon	*Diospyros vaccinioides*	No.	930	350	4810	6090	Seedlings + Broadcast Seeding
Luofushan Joint-fir	*Gnetum luofuense*	m^2	270	0	1660	1930	Seedlings
Purple Bulb Orchid	*Ania hongkongensis*	No.	4	1	0	5	N/A
Site 2							
Small Persimmon	*Diospyros vaccinioides*	No.	3240	250	4050	7540	Seedlings + Broadcast Seeding
Luofushan Joint-fir	*Gnetum luofuense*	m^2	750	0	3230	3980	Seedlings
Hong Kong Eagle's Claw	*Artabotrys hongkongensis*	No.	0	0	1	1	1 Seedling
Butulang Canthium	*Canthium dicoccum*	No.	6	3	5	14	5 Whip Trees
Lamb of Tartary	*Cibotium barometz*	No.	860	61	30	951	No suitable habitat for compensatory planting
Buttercup Orchid	*Spathoglottis pubescens*	No.	0	16	1	17	Difficult to propagate from seed & not available in market

Common Name	Species Name	Units	Recommendations				
			Retain	Transplant	Fell	Total (in Project Boundary)	Compensatory Planting in Temporary Works Area
Site 3							
Small Persimmon	*Diospyros vaccinioides*	No.	4510	100	8250	12860	Seedlings + Broadcast Seeding
Luofushan Joint-fir	*Gnetum luofuense*	m^2	990	0	1990	2980	Seedlings
Butulang Canthium	*Canthium dicoccum*	No.	0	0	4	4	4 Whip Trees
Lamb of Tartary	*Cibotium barometz*	No.	101	7	50	158	No suitable habitat for compensatory planting
Incense Tree	*Aquilaria sinensis*	No.	0	1	0	1	N/A

2. Results of Ecological monitoring

2.1. Transplantation monitoring

Pre-construction survey

2.1.1. As per Section 3.1 of the approved Protection and Transplantation Proposal, pre-construction survey shall be carried out by a qualified ecologist which includes: -

1) Desktop study and survey preparation based on the specific area of site clearance as notified by the construction contractor and confirmed with the Resident Site Staff;
2) Schedule and conduct physical site survey to locate the affected species, reconfirm the species condition and record the physical condition before transplantation; and
3) Report site survey results and provide recommendations to contractor on transplantation and post-transplantation maintenance.

2.1.2. No pre-construction survey was conducted in November 2021.

Transplantation

2.1.3. Based on method statement in the approved Protection and Transplantation Proposal, all of the plants affected by project should be transplanted as soon as possible. Where possible, transplantation work is preferably done on the same day of lifting. Otherwise, the plants dug out shall be transported to a nursery before transplanting into their final receptor sites.

2.1.4. No Transplantation was conducted in November 2021.

One-year Establishment Period after Planting (Post-Transplantation Monitoring)

2.1.5. Regular monitoring of health condition of transplanted plants, also called post-transplantation monitoring, should be carried out in monthly basis in the first three months, quarterly afterwards during one-year establishment period after transplanting to receptor site/ nursery as per Section 5.4 and 5.5 of the approved Protection and Transplantation Proposal.

2.1.6. The schedule of the on-going for Post-transplantation monitoring were summarized in **Table 2**.

Table 2 schedule of the on-going for Post-transplantation monitoring

Common Name	Species Name	Nos.	Date of Transplantation (MM/Year)	Post-transplantation monitoring Period																	
				2021							2022										
				Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Small Persimmon	*Diospyros vaccinioides*	530 (DV 001-DV0530)	05/2021	x	x	x			x			x			x						
Small Persimmon	*Diospyros vaccinioides*	20 (DV 0531-DV 0550)	09/2021					x	x	x			x			x			x		
Small Persimmon	*Diospyros vaccinioides*	150 (ADV 551 -ADV 700)	10/2021						x	x	x			x			x			x	
Butulang Canthium	*Canthium dicoccum*	3	10/2021						x	x	x			x			x			x	

X: Monitoring schedule

Post-transplantation monitoring findings

2.1.7. The monthly monitoring for the on-going for Post-transplantation were conducted on 9 and 23 Nov 2021.

2.1.8. A total 530nos. of *Diospyros vaccinioides* (DV001-DV0530) were recorded during the monitoring in the receptor site– RMZ1 downhill side in Nov 2021. 6nos. of *Diospyros vaccinioides* (DV0525 – DV0530) were found in the receptor site after removal of weed. The plant conditions for *Diospyros vaccinioides* at the receptor site were listed in **Appendix 3.** Some seedlings were generally tiny (about 10cm in height) aiming at smaller root zone and better survival. However, some of them have yet developed sufficient leaves. Sign of leaf drop and dehydration has been observed. Although tiny new branch or leaf buds were observed, seedlings may struggle for survival against environmental stress.

2.1.9. In September 2021, 20nos. of *Diospyros vaccinioides* in the nursery has been transplanted to the receptor site - RMZ1 uphill side (green hatched area adjacent to the access road in **Figure 3**) at a spacing of at least 0.5m. The first three months after transplantation (Oct to Dec 2021) will serve as an adaptation period for these newly transplanted individuals. Change in condition or survival rate is expected more fluctuating, especially as the hillside receptor site does not have any shelter and irrigation as the nursery set-up; while temperature and sunlight can be extreme in recent months.

2.1.10. The 20 nos. of *Diospyros vaccinioides* (Name as DV 0531-DV0550), Sign of leaf drop and dehydration has been observed. Plant photos of *Diospyros vaccinioides* at the receptor site were illustrated in **Appendix 1.**

2.1.11. On 21 October 2021, 150nos. of *Diospyros vaccinioides* has been transplanted to Receptor Site - RMZ1 uphill side and 3 nos of *Canthium dicoccum* has been transplanted to Receptor Site (Portion 10) by contractor of Contract no. DC/2020/05 at spacing of 0.5m. The first three months after transplantation (Nov 2021 to Jan 2022) will serve as an adaptation period for these newly transplanted individuals. Change in condition or survival rate is expected more fluctuating, especially as the hillside receptor site does not have any shelter and irrigation as the nursery set-up; while temperature and sunlight can be extreme in recent months.

2.1.12. For the 150nos. of *Diospyros vaccinioides* (names as ADV551-DV700) Sign of leaf drop and dehydration has been observed. Plant conditions of *Diospyros vaccinioides* at the receptor site will be provided after adaptation period. Photo records of *Diospyros vaccinioides* at the receptor site illustrated in **Appendix 2.**

2.1.13. For the 3nos. of *Canthium dicoccum* (names as D0016B, D0017 and D0018), Sign of leaf drop has been observed. Plant conditions of *Canthium dicoccum* at the receptor site will be provided after adaptation period. Photo records conditions of *Canthium dicoccum* at the receptor site illustrated in **Appendix 2.**

Recommendation on post-transplantation monitoring maintenance

2.1.14. According to environmental condition and location of the receptor sites/ nursery, watering frequency was recommended in daily practice for at least the first 3 months as the transplant time is in summer months with strong sunlight and high temperature; except the days with fog and rain. Water frequency may be reduced based on the plant condition after monitoring in the first 3 months.

2.1.15. In contrast, the Landscape Contractor was recommended to check all transplanted plants after heavy rains/ typhoon under safe condition, in order to carry out any stabilization/ maintenance work. Blocked drainage shall be cleared; excessive water shall be pumped or diverged from nursery ground; saturated soil shall be aerated.

2.1.16. Other maintenance works (e.g. weeding, spraying off construction dust, use of approved pesticide and fertilization) shall be determined throughout the monitoring period in agreement with the Supervisor of the Contract and ET.

Summary of the transplantation and recommended after establishment period

2.1.17. The status of the transplantation were shown in **Table 3.**

Table 3 Summary of the transplantation

Common Name	Species Name	Units	Recommendations for Transplant *	Pre-construction survey implementation**	Transplantation Date		Monitoring Status		
					To Nusery (MM/YY)	To Receptor Site (MM/YY)	Started at	Ended at	Status
Site 1									
Small Persimmon	*Diospyros vaccinioides*	No.	228	12/2019	2/2020	5/2021	6/2021	-	On-going
			122	7/2020	9/2020	5/2021	6/2021	-	On-going
Purple Bulb Orchid	*Ania hongkongensis*	No.	1	NA	-	7/2019	8/2019	7/2020	Completed
Site 2									
Small Persimmon	*Diospyros vaccinioides*	No.	40	before transplantion	8/2019	5/2021	6/2021	-	On-going
			10	7/2020	9/2020	5/2021	6/2021	-	On-going
			50	before transplantion	11/2020	5/2021 & 9/2021	6/2021 & 10/2021	-	On-going
			150	9/2021	-	10/2021	11/2021	-	On-going
Butulang Canthium	*Canthium dicoccum*	No.	3	NA	-	10/2021	11/2021	-	On-going
Lamb of Tartary	*Cibotium barometz*	No.	19	NA		9/2020	10/2020	9/2021	Completed
			42	NA	-	-	-	-	Pending
Buttercup Orchid	*Spathoglottis pubescens*	No.	16	NA	-	-	-	-	Pending
Site 3									
Small Persimmon	*Diospyros vaccinioides*	No.	100	7/2020	9/2020	5/2021	6/2021	-	On-going
Lamb of Tartary	*Cibotium barometz*	No.	7	NA	-	7/2019	7/2019	6/2020	Completed
Incense Tree	*Aquilaria sinensis*	No.	1	NA	-	7/2019	7/2019	6/2020	Completed

*Adopted from previously approved Protection and Transplantation Proposal Version 9.2

**Pre-construction survey implementation was conducted on *Diospyros vaccinioides* only

2.1.18. Based on latest conditions of the after-establishment period, regular monitoring is not recommended after establishment period expect replacement planting if found dead (subject to agreement with AFCD).

FIGURES

Figure 1 Original location of DV0229-DV0268 and DV0001-DV0228 at Site 1.

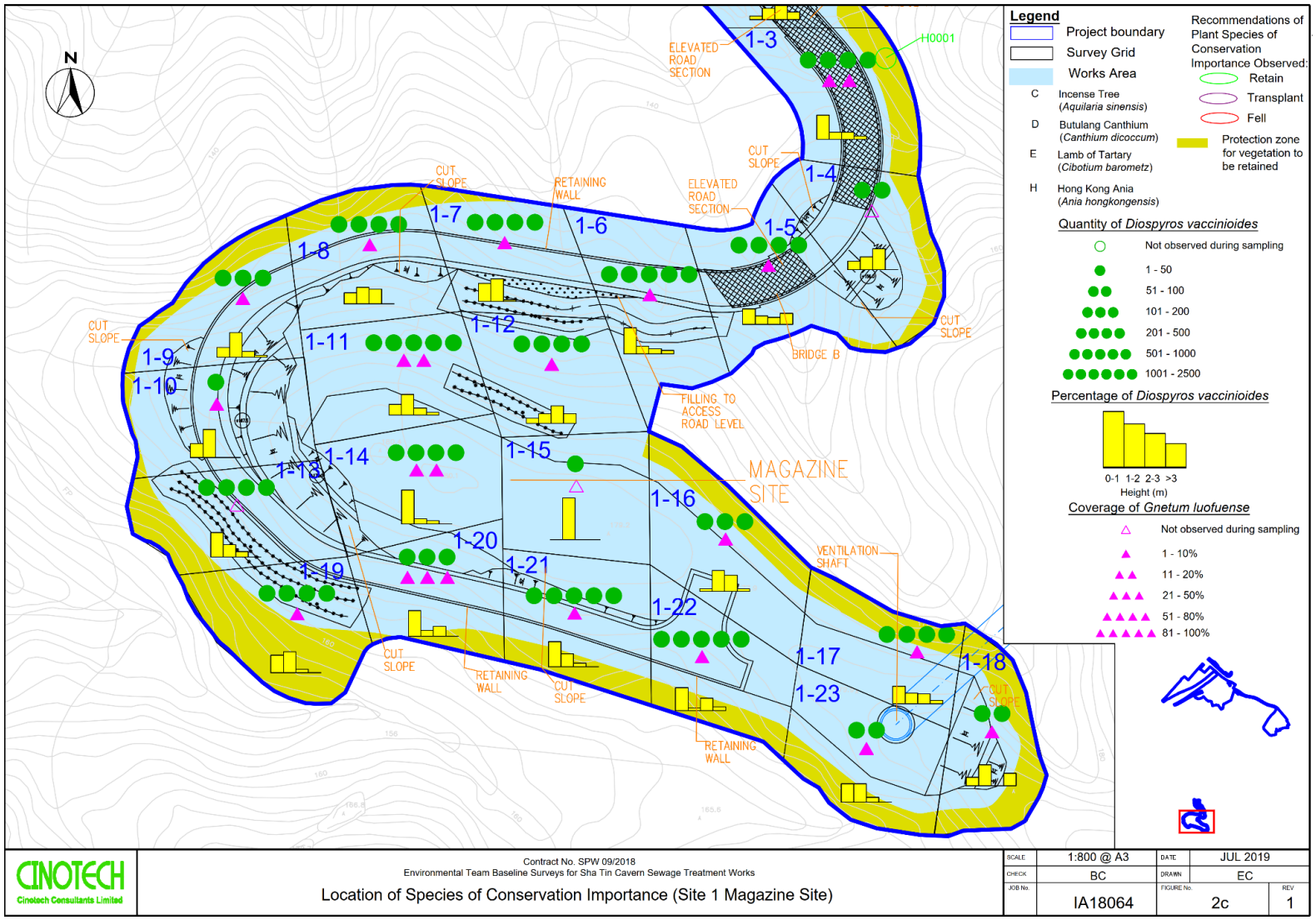


Figure 2. Original location of DV0269-DV0500 and DV0501-DV0550 at Site 2. Nursery site highlighted in red frame for DV0229-DV0268, DV0001-DV0228, DV0269-DV0500 and DV0501-DV0550 at Site 2.

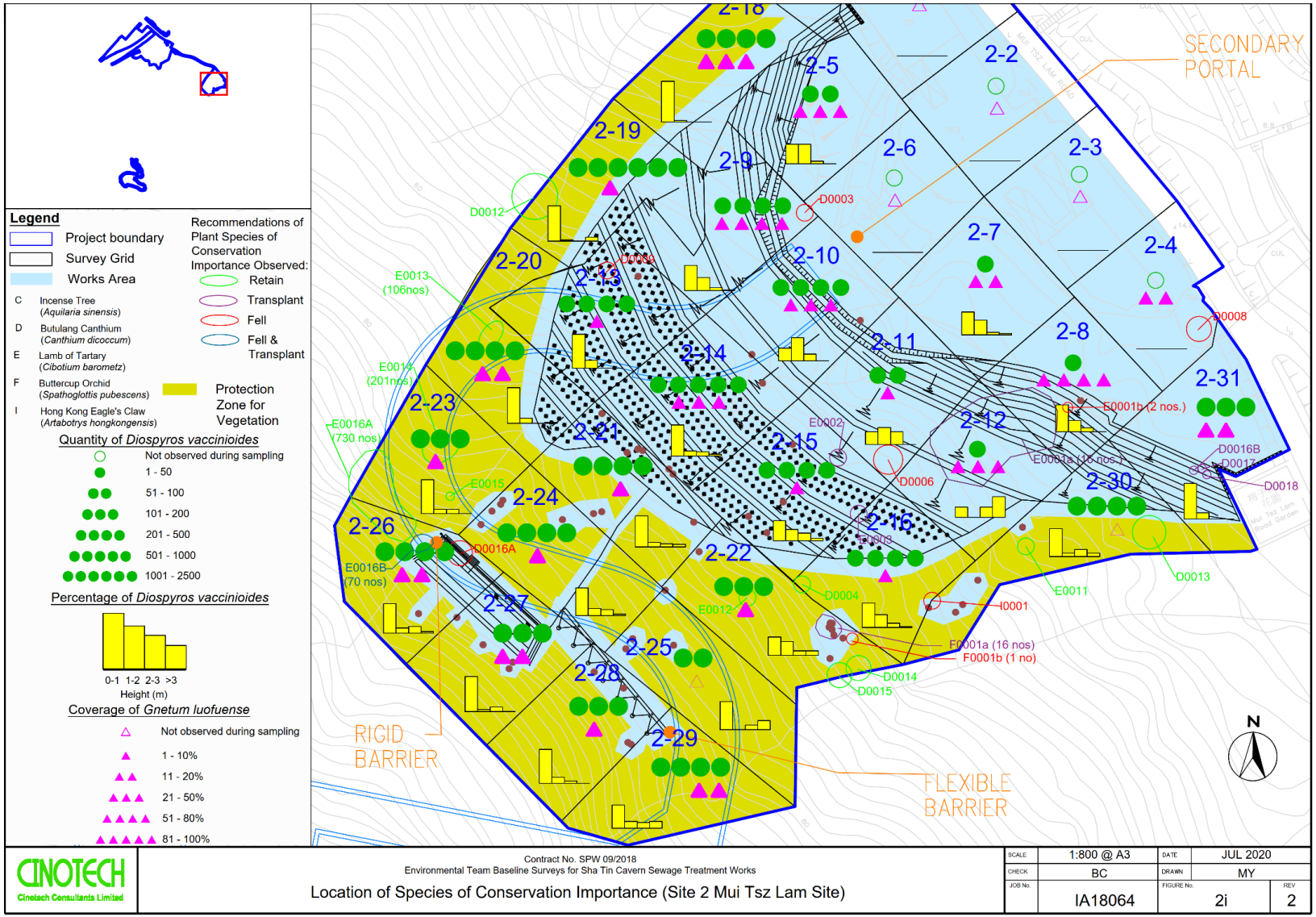


Figure 3. Original location of H0002 highlighted in yellow frame and its receptor site highlighted in red frame.

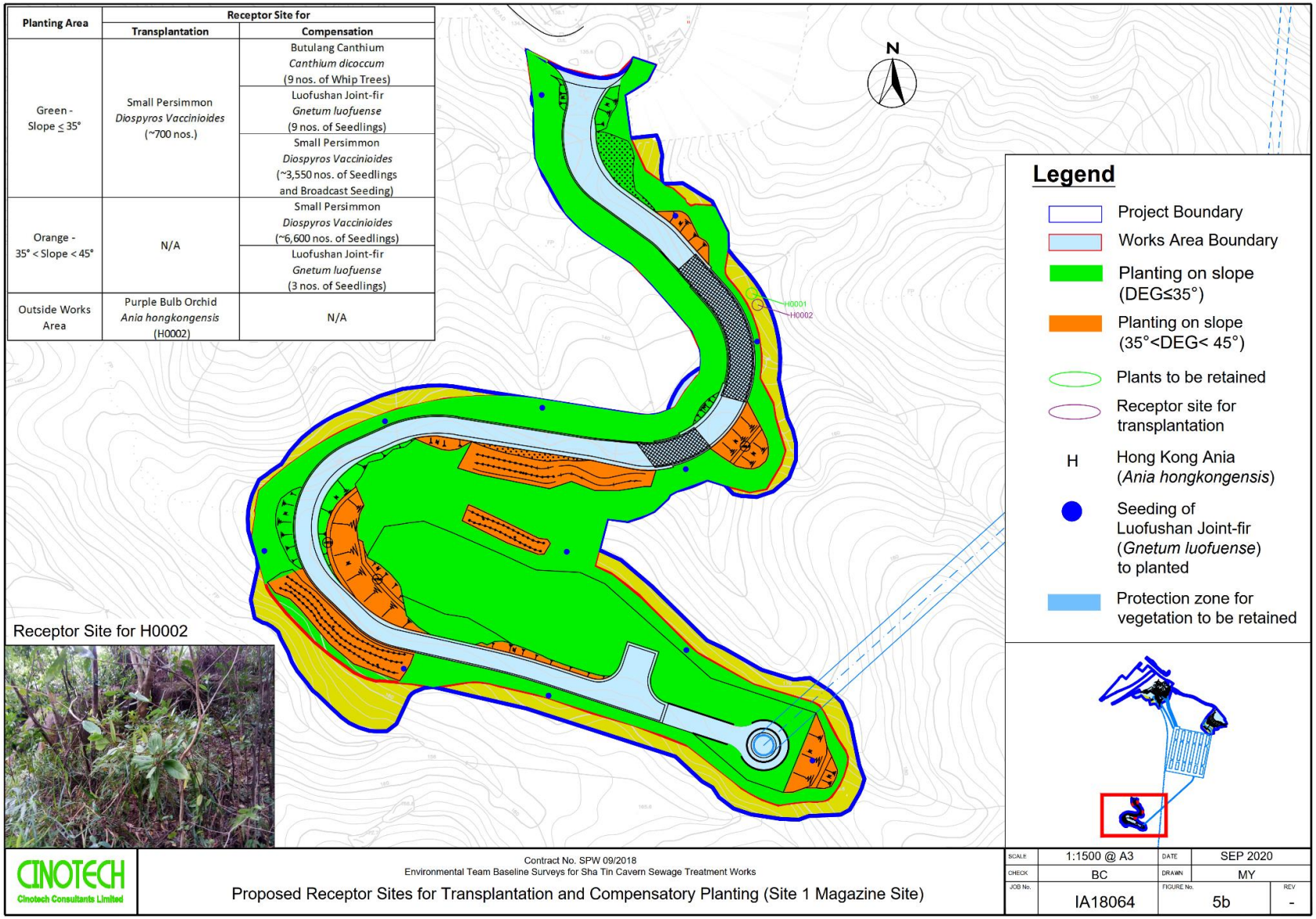
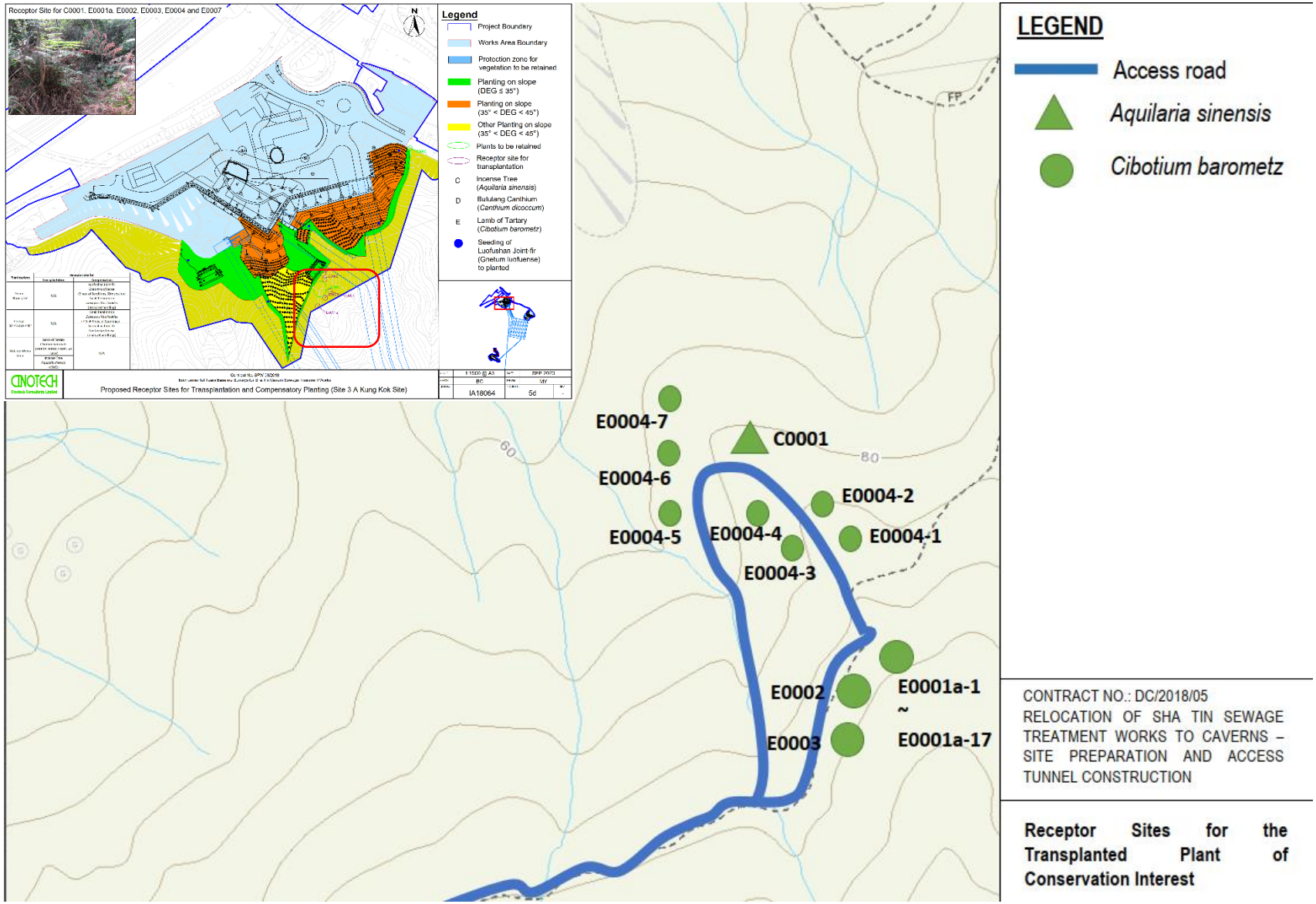


Figure 4. Receptor site for C0001 and E0001a-E0004, the area highlighted in red frame is enlarged.



Appendix 1

Photographic records of post-transplantation monitoring on plants of conservation importance transplanted at receptor site

Post-transplantation monitoring at receptor site on 23 Nov 2021

	
Receptor site of *Diospyros vaccinioides*	Receptor site of *Diospyros vaccinioides*
	
Receptor site of *Diospyros vaccinioides*	Receptor site of *Canthium dicoccum*

APPENDIX 2

Photographic records of post-transplantation monitoring on plants of conservation importance transplanted at receptor site

Photographic records of post-transplantation monitoring on plants of conservation importance transplanted at receptor site on 23 Nov 2021.

	
Photo record of *Diospyros vaccinioides*	Photo record of *Diospyros vaccinioides*
	
Photo record of *Diospyros vaccinioides*	Photo record of *Canthium dicoccum*

APPENDIX 3
Conditions of the transplanted *Diospyros vaccinioides* at Receptor site in Post-transplantation monitoring

Conditions of the transplanted *Diospyros vaccinioides* at Receptor site in Post-transplantation monitoring

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
23-Nov-21	DV0001	Fair	Fair	Fair	Fair	-
	DV0002	Poor	Fair	Fair	Fair	-
	DV0003	Fair	Fair	Fair	Fair	-
	DV0004	Fair	Fair	Fair	Fair	-
	DV0005	Fair	Fair	Fair	Fair	-
	DV0006	Fair	Fair	Fair	Fair	-
	DV0007	Fair	Fair	Fair	Fair	-
	DV0008	Fair	Fair	Fair	Fair	-
	DV0009	Fair	Fair	Fair	Fair	-
	DV0010	Fair	Fair	Fair	Fair	-
	DV0011	Fair	Fair	Fair	Fair	-
	DV0012	Fair	Fair	Fair	Fair	-
	DV0013	Fair	Fair	Fair	Fair	-
	DV0014	Fair	Fair	Fair	Fair	-
	DV0015	Fair	Fair	Fair	Fair	-
	DV0016	Fair	Fair	Fair	Fair	-
	DV0017	Fair	Fair	Fair	Fair	-
	DV0018	Fair	Fair	Fair	Fair	-
	DV0019	Fair	Fair	Fair	Fair	-
	DV0020	Fair	Fair	Fair	Fair	-
	DV0021	Fair	Fair	Fair	Fair	-
	DV0022	Fair	Fair	Fair	Fair	-
	DV0023	Fair	Fair	Fair	Fair	-
	DV0024	Fair	Fair	Fair	Fair	-
	DV0025	Fair	Fair	Fair	Fair	-
	DV0026	Fair	Fair	Fair	Fair	Leaf dropped
	DV0027	Fair	Fair	Fair	Fair	-
	DV0028	Fair	Fair	Fair	Fair	-
	DV0029	Fair	Fair	Fair	Fair	-
	DV0030	Fair	Fair	Fair	Fair	-
	DV0031	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0032	Fair	Fair	Fair	Fair	-
	DV0033	Fair	Fair	Fair	Fair	-
	DV0034	Poor	Fair	Fair	Fair	-
	DV0035	Fair	Fair	Fair	Fair	-
	DV0036	Fair	Fair	Fair	Fair	-
	DV0037	Fair	Fair	Fair	Fair	-
	DV0038	Fair	Fair	Fair	Fair	-
	DV0039	Fair	Fair	Fair	Fair	-
	DV0040	Poor	Fair	Fair	Fair	-
	DV0041	Fair	Fair	Fair	Fair	-
	DV0042	Fair	Fair	Fair	Fair	-
	DV0043	Fair	Fair	Fair	Fair	-
	DV0044	Fair	Fair	Fair	Fair	-
	DV0045	Fair	Fair	Fair	Fair	-
	DV0046	Fair	Fair	Fair	Fair	-
	DV0047	Poor	Poor	Poor	Poor	-
	DV0048	Fair	Fair	Fair	Fair	-
	DV0049	Fair	Fair	Fair	Fair	-
	DV0050	Fair	Fair	Fair	Fair	-
	DV0051	Fair	Fair	Fair	Fair	-
	DV0052	Fair	Fair	Fair	Fair	-
	DV0053	Fair	Fair	Fair	Fair	-
	DV0054	Fair	Fair	Fair	Fair	-
	DV0055	Fair	Fair	Fair	Fair	-
	DV0056	Fair	Fair	Fair	Fair	-
	DV0057	Fair	Fair	Fair	Fair	-
	DV0058	Fair	Fair	Fair	Fair	-
	DV0059	Fair	Fair	Fair	Fair	-
	DV0060	Fair	Fair	Fair	Fair	-
	DV0061	Fair	Fair	Fair	Fair	-
	DV0062	Fair	Fair	Fair	Fair	-
	DV0063	Fair	Fair	Fair	Fair	-
	DV0064	Fair	Fair	Fair	Fair	-
	DV0065	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0066	Fair	Fair	Fair	Fair	-
	DV0067	Poor	Fair	Fair	Fair	-
	DV0068	Fair	Fair	Fair	Fair	-
	DV0069	Fair	Fair	Fair	Fair	-
	DV0070	Fair	Fair	Fair	Fair	-
	DV0071	Fair	Fair	Fair	Fair	-
	DV0072	Fair	Fair	Fair	Fair	-
	DV0073	Fair	Fair	Fair	Fair	-
	DV0074	Fair	Fair	Fair	Fair	-
	DV0075	Fair	Fair	Fair	Fair	-
	DV0076	Fair	Fair	Fair	Fair	-
	DV0077	Fair	Fair	Fair	Fair	-
	DV0078	Poor	Poor	Fair	Fair	-
	DV0079	Fair	Fair	Fair	Fair	-
	DV0080	Fair	Fair	Fair	Fair	-
	DV0081	Fair	Fair	Fair	Fair	-
	DV0082	Fair	Fair	Fair	Fair	-
	DV0083	Fair	Fair	Fair	Fair	-
	DV0084	Fair	Fair	Fair	Fair	-
	DV0085	Poor	Poor	Fair	Fair	-
	DV0086	Fair	Fair	Fair	Fair	-
	DV0087	Poor	Poor	Fair	Fair	-
	DV0088	Fair	Fair	Fair	Fair	-
	DV0089	Fair	Fair	Fair	Fair	-
	DV0090	Fair	Fair	Fair	Fair	-
	DV0091	Fair	Fair	Fair	Fair	-
	DV0092	Fair	Fair	Fair	Fair	-
	DV0093	Fair	Fair	Fair	Fair	-
	DV0094	Fair	Fair	Fair	Fair	-
	DV0095	Fair	Fair	Fair	Fair	-
	DV0096	Poor	Poor	Fair	Fair	-
	DV0097	Fair	Fair	Fair	Fair	-
	DV0098	Fair	Fair	Fair	Fair	-
	DV0099	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0100	Poor	Poor	Fair	Fair	-
	DV0101	Fair	Fair	Fair	Fair	-
	DV0102	Fair	Fair	Fair	Fair	-
	DV0103	Poor	Poor	Fair	Fair	-
	DV0104	Fair	Fair	Fair	Fair	-
	DV0105	Fair	Fair	Fair	Fair	-
	DV0106	Fair	Fair	Fair	Fair	-
	DV0107	Fair	Poor	Fair	Fair	-
	DV0108	Fair	Fair	Fair	Fair	-
	DV0109	Fair	Fair	Fair	Fair	-
	DV0110	Fair	Fair	Fair	Fair	-
	DV0111	Fair	Fair	Fair	Fair	-
	DV0112	Fair	Fair	Fair	Fair	-
	DV0113	Fair	Fair	Fair	Fair	-
	DV0114	Fair	Fair	Fair	Fair	-
	DV0115	Fair	Fair	Fair	Fair	-
	DV0116	Fair	Fair	Fair	Fair	-
	DV0117	Fair	Fair	Fair	Fair	-
	DV0118	Fair	Fair	Fair	Fair	-
	DV0119	Fair	Fair	Fair	Fair	-
	DV0120	Fair	Fair	Fair	Fair	-
	DV0121	Fair	Fair	Fair	Fair	-
	DV0122	Fair	Fair	Fair	Fair	-
	DV0123	Fair	Fair	Fair	Fair	-
	DV0124	Fair	Fair	Fair	Fair	-
	DV0125	Fair	Fair	Fair	Fair	-
	DV0126	Fair	Poor	Fair	Fair	-
	DV0127	Fair	Fair	Fair	Fair	-
	DV0128	Fair	Fair	Fair	Fair	-
	DV0129	Fair	Fair	Fair	Fair	-
	DV0130	Fair	Fair	Fair	Fair	-
	DV0131	Fair	Fair	Fair	Fair	-
	DV0132	Fair	Fair	Fair	Fair	-
	DV0133	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0134	Fair	Fair	Fair	Fair	-
	DV0135	Fair	Fair	Fair	Fair	-
	DV0136	Fair	Fair	Fair	Fair	-
	DV0137	Fair	Fair	Fair	Fair	-
	DV0138	Fair	Fair	Fair	Fair	-
	DV0139	Fair	Fair	Fair	Fair	-
	DV0140	Fair	Fair	Fair	Fair	-
	DV0141	Fair	Fair	Fair	Fair	-
	DV0142	Fair	Fair	Fair	Fair	-
	DV0143	Fair	Fair	Fair	Fair	-
	DV0144	Fair	Fair	Fair	Fair	-
	DV0145	Fair	Fair	Fair	Fair	-
	DV0146	Fair	Fair	Fair	Fair	-
	DV0147	Fair	Fair	Fair	Fair	-
	DV0148	Fair	Fair	Fair	Fair	-
	DV0149	Fair	Poor	Fair	Fair	-
	DV0150	Fair	Fair	Fair	Fair	-
	DV0151	Fair	Fair	Fair	Fair	-
	DV0152	Fair	Fair	Fair	Fair	-
	DV0153	Fair	Fair	Fair	Fair	-
	DV0154	Poor	Poor	Fair	Poor	-
	DV0155	Fair	Fair	Fair	Fair	-
	DV0156	Fair	Fair	Fair	Fair	-
	DV0157	Fair	Fair	Fair	Fair	-
	DV0158	Fair	Fair	Fair	Fair	-
	DV0159	Fair	Fair	Fair	Fair	-
	DV0160	Fair	Fair	Fair	Fair	-
	DV0161	Fair	Fair	Fair	Fair	-
	DV0162	Fair	Fair	Fair	Fair	-
	DV0163	Fair	Fair	Fair	Fair	-
	DV0164	Fair	Fair	Fair	Fair	-
	DV0165	Fair	Fair	Fair	Fair	-
	DV0166	Fair	Fair	Fair	Fair	-
	DV0167	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0168	Fair	Fair	Fair	Fair	-
	DV0169	Fair	Fair	Fair	Fair	-
	DV0170	Fair	Fair	Fair	Fair	-
	DV0171	Fair	Fair	Fair	Fair	-
	DV0172	Fair	Fair	Fair	Fair	-
	DV0173	Fair	Fair	Fair	Fair	-
	DV0174	Fair	Fair	Fair	Fair	-
	DV0175	Fair	Fair	Fair	Fair	-
	DV0176	Fair	Fair	Fair	Fair	-
	DV0177	Fair	Fair	Fair	Fair	-
	DV0178	Fair	Fair	Fair	Fair	-
	DV0179	Fair	Fair	Fair	Fair	-
	DV0180	Fair	Fair	Fair	Fair	-
	DV0181	Fair	Fair	Fair	Fair	-
	DV0182	Fair	Fair	Fair	Fair	-
	DV0183	Fair	Fair	Fair	Fair	-
	DV0184	Fair	Fair	Fair	Fair	-
	DV0185	Fair	Fair	Fair	Fair	-
	DV0186	Fair	Fair	Fair	Fair	-
	DV0187	Fair	Fair	Fair	Fair	-
	DV0188	Fair	Fair	Fair	Fair	-
	DV0189	Fair	Fair	Fair	Fair	-
	DV0190	Fair	Fair	Fair	Fair	-
	DV0191	Fair	Fair	Fair	Fair	-
	DV0192	Fair	Fair	Fair	Fair	-
	DV0193	Fair	Fair	Fair	Fair	-
	DV0194	Fair	Fair	Fair	Fair	-
	DV0195	Fair	Poor	Fair	Fair	-
	DV0196	Fair	Fair	Fair	Fair	-
	DV0197	Fair	Fair	Fair	Fair	-
	DV0198	Fair	Fair	Fair	Fair	-
	DV0199	Fair	Fair	Fair	Fair	-
	DV0200	Fair	Fair	Fair	Fair	-
	DV0201	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0202	Fair	Fair	Fair	Fair	-
	DV0203	Fair	Fair	Fair	Fair	-
	DV0204	Fair	Fair	Fair	Fair	-
	DV0205	Fair	Fair	Fair	Fair	-
	DV0206	Fair	Fair	Fair	Fair	-
	DV0207	Fair	Fair	Fair	Fair	-
	DV0208	Fair	Fair	Fair	Fair	-
	DV0209	Fair	Fair	Fair	Fair	-
	DV0210	Fair	Fair	Fair	Fair	-
	DV0211	Fair	Fair	Fair	Fair	-
	DV0212	Fair	Fair	Fair	Fair	-
	DV0213	Fair	Fair	Fair	Fair	-
	DV0214	Fair	Fair	Fair	Fair	-
	DV0215	Fair	Fair	Fair	Fair	-
	DV0216	Fair	Fair	Fair	Fair	-
	DV0217	Fair	Fair	Fair	Fair	-
	DV0218	Fair	Fair	Fair	Fair	-
	DV0219	Fair	Fair	Fair	Fair	-
	DV0220	Fair	Fair	Fair	Fair	-
	DV0221	Fair	Fair	Fair	Fair	-
	DV0222	Fair	Fair	Fair	Fair	-
	DV0223	Fair	Fair	Fair	Fair	-
	DV0224	Fair	Fair	Fair	Fair	-
	DV0225	Fair	Fair	Fair	Fair	-
	DV0226	Fair	Fair	Fair	Fair	-
	DV0227	Fair	Fair	Fair	Fair	-
	DV0228	Fair	Fair	Fair	Fair	-
	DV0229	Fair	Fair	Fair	Fair	-
	DV0230	Fair	Poor	Fair	Fair	-
	DV0231	Fair	Fair	Fair	Fair	-
	DV0232	Fair	Fair	Fair	Fair	-
	DV0233	Fair	Fair	Fair	Fair	-
	DV0234	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0235	Fair	Fair	Fair	Fair	-
	DV0236	Fair	Fair	Fair	Fair	-
	DV0237	Fair	Fair	Fair	Fair	-
	DV0238	Fair	Fair	Fair	Fair	-
	DV0239	Fair	Poor	Fair	Fair	-
	DV0240	Fair	Fair	Fair	Fair	-
	DV0241	Fair	Fair	Fair	Fair	-
	DV0242	Fair	Fair	Fair	Fair	-
	DV0243	Fair	Fair	Fair	Fair	-
	DV0244	Fair	Fair	Fair	Fair	-
	DV0245	Fair	Fair	Fair	Fair	-
	DV0246	Fair	Fair	Fair	Fair	-
	DV0247	Fair	Fair	Fair	Fair	-
	DV0248	Fair	Fair	Fair	Fair	-
	DV0249	Fair	Fair	Fair	Fair	-
	DV0250	Fair	Fair	Fair	Fair	-
	DV0251	Fair	Fair	Fair	Fair	-
	DV0252	Fair	Fair	Fair	Fair	-
	DV0253	Fair	Fair	Fair	Fair	-
	DV0254	Fair	Fair	Fair	Fair	-
	DV0255	Fair	Fair	Fair	Fair	-
	DV0256	Fair	Fair	Fair	Fair	-
	DV0257	Fair	Fair	Fair	Fair	-
	DV0258	Fair	Fair	Fair	Fair	-
	DV0259	Fair	Fair	Fair	Fair	-
	DV0260	Fair	Fair	Fair	Fair	-
	DV0261	Fair	Fair	Fair	Fair	-
	DV0262	Fair	Fair	Fair	Fair	-
	DV0263	Fair	Fair	Fair	Fair	-
	DV0264	Fair	Fair	Fair	Fair	Leaf dropped

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0265	Fair	Fair	Fair	Fair	Leaf dropped
	DV0266	Fair	Fair	Fair	Fair	-
	DV0267	Fair	Fair	Fair	Fair	-
	DV0268	Fair	Fair	Fair	Fair	-
	DV0269	Fair	Fair	Fair	Fair	-
	DV0270	Fair	Fair	Fair	Fair	-
	DV0271	Fair	Fair	Fair	Fair	-
	DV0272	Fair	Fair	Fair	Fair	-
	DV0273	Poor	Poor	Fair	Fair	-
	DV0274	Fair	Fair	Fair	Fair	-
	DV0275	Fair	Fair	Fair	Fair	-
	DV0276	Fair	Fair	Fair	Fair	-
	DV0277	Fair	Fair	Fair	Fair	-
	DV0278	Fair	Fair	Fair	Fair	-
	DV0279	Fair	Fair	Fair	Fair	-
	DV0280	Fair	Fair	Fair	Fair	-
	DV0281	Fair	Fair	Fair	Fair	-
	DV0282	Fair	Fair	Fair	Fair	-
	DV0283	Fair	Fair	Fair	Fair	-
	DV0284	Fair	Fair	Fair	Fair	-
	DV0285	Fair	Fair	Fair	Fair	-
	DV0286	Fair	Fair	Fair	Fair	-
	DV0287	Fair	Fair	Fair	Fair	-
	DV0288	Fair	Fair	Fair	Fair	-
	DV0289	Fair	Fair	Fair	Fair	-
	DV0290	Fair	Fair	Fair	Fair	-
	DV0291	Fair	Fair	Fair	Fair	-
	DV0292	Fair	Fair	Fair	Fair	-
	DV0293	Fair	Fair	Fair	Fair	-
	DV0294	Fair	Fair	Fair	Fair	-
	DV0295	Fair	Fair	Fair	Fair	-
	DV0296	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0297	Fair	Fair	Fair	Fair	-
	DV0298	Fair	Fair	Fair	Fair	-
	DV0299	Fair	Fair	Fair	Fair	-
	DV0300	Fair	Fair	Fair	Fair	-
	DV0301	Fair	Fair	Fair	Fair	-
	DV0302	Fair	Fair	Fair	Fair	Leaf dropped
	DV0303	Fair	Fair	Fair	Fair	-
	DV0304	Fair	Fair	Fair	Fair	-
	DV0305	Fair	Fair	Fair	Fair	-
	DV0306	Fair	Fair	Fair	Fair	-
	DV0307	Fair	Fair	Fair	Fair	-
	DV0308	Fair	Fair	Fair	Fair	-
	DV0309	Fair	Fair	Fair	Fair	-
	DV0310	Fair	Fair	Fair	Fair	-
	DV0311	Fair	Fair	Fair	Fair	-
	DV0312	Fair	Fair	Fair	Fair	-
	DV0313	Fair	Fair	Fair	Fair	-
	DV0314	Fair	Fair	Fair	Fair	-
	DV0315	Fair	Fair	Fair	Fair	-
	DV0316	Fair	Fair	Fair	Fair	Leaf dropped
	DV0317	Fair	Fair	Fair	Fair	-
	DV0318	Fair	Fair	Fair	Fair	-
	DV0319	Fair	Fair	Fair	Fair	-
	DV0320	Fair	Fair	Fair	Fair	-
	DV0321	Fair	Fair	Fair	Fair	-
	DV0322	Fair	Fair	Fair	Fair	-
	DV0323	Fair	Fair	Fair	Fair	-
	DV0324	Fair	Fair	Fair	Fair	-
	DV0325	Fair	Fair	Fair	Fair	-
	DV0326	Fair	Fair	Fair	Fair	-
	DV0327	Fair	Fair	Fair	Fair	-
	DV0328	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0329	Fair	Fair	Fair	Fair	-
	DV0330	Fair	Fair	Fair	Fair	-
	DV0331	Fair	Fair	Fair	Fair	-
	DV0332	Fair	Fair	Fair	Fair	-
	DV0333	Fair	Fair	Fair	Fair	-
	DV0334	Fair	Fair	Fair	Fair	-
	DV0335	Fair	Fair	Fair	Fair	-
	DV0336	Fair	Fair	Fair	Fair	-
	DV0337	Fair	Fair	Fair	Fair	-
	DV0338	Fair	Fair	Fair	Fair	-
	DV0339	Fair	Fair	Fair	Fair	-
	DV0340	Fair	Fair	Fair	Fair	-
	DV0341	Fair	Fair	Fair	Fair	-
	DV0342	Fair	Fair	Fair	Fair	-
	DV0343	Fair	Fair	Fair	Fair	-
	DV0344	Fair	Fair	Fair	Fair	-
	DV0345	Fair	Fair	Fair	Fair	-
	DV0346	Fair	Fair	Fair	Fair	-
	DV0347	Fair	Fair	Fair	Fair	-
	DV0348	Fair	Fair	Fair	Fair	-
	DV0349	Fair	Fair	Fair	Fair	-
	DV0350	Fair	Fair	Fair	Fair	-
	DV0351	Fair	Fair	Fair	Fair	-
	DV0352	Fair	Fair	Fair	Fair	-
	DV0353	Fair	Fair	Fair	Fair	-
	DV0354	Fair	Fair	Fair	Fair	-
	DV0355	Poor	Fair	Fair	Fair	-
	DV0356	Fair	Fair	Fair	Fair	-
	DV0357	Fair	Fair	Fair	Fair	-
	DV0358	Fair	Fair	Fair	Fair	-
	DV0359	Fair	Fair	Fair	Fair	-
	DV0360	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0361	Fair	Fair	Fair	Fair	-
	DV0362	Fair	Fair	Fair	Fair	-
	DV0363	Fair	Fair	Fair	Fair	-
	DV0364	Fair	Fair	Fair	Fair	-
	DV0365	Fair	Fair	Fair	Fair	-
	DV0366	Fair	Fair	Fair	Fair	-
	DV0367	Fair	Fair	Fair	Fair	-
	DV0368	Fair	Fair	Fair	Fair	-
	DV0369	Fair	Fair	Fair	Fair	-
	DV0370	Fair	Fair	Fair	Fair	-
	DV0371	Fair	Fair	Fair	Fair	-
	DV0372	Fair	Fair	Fair	Fair	-
	DV0373	Fair	Fair	Fair	Fair	-
	DV0374	Fair	Fair	Fair	Fair	-
	DV0375	Fair	Fair	Fair	Fair	-
	DV0376	Fair	Fair	Fair	Fair	-
	DV0377	Fair	Fair	Fair	Fair	-
	DV0378	Fair	Fair	Fair	Fair	-
	DV0379	Fair	Fair	Fair	Fair	-
	DV0380	Fair	Fair	Fair	Fair	-
	DV0381	Fair	Fair	Fair	Fair	-
	DV0382	Fair	Fair	Fair	Fair	-
	DV0383	Fair	Fair	Fair	Fair	-
	DV0384	Fair	Fair	Fair	Fair	-
	DV0385	Fair	Fair	Fair	Fair	-
	DV0386	Fair	Fair	Fair	Fair	-
	DV0387	Fair	Fair	Fair	Fair	-
	DV0388	Fair	Fair	Fair	Fair	-
	DV0389	Fair	Fair	Fair	Fair	-
	DV0390	Fair	Fair	Fair	Fair	-
	DV0391	Fair	Fair	Fair	Fair	-
	DV0392	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0393	Fair	Fair	Fair	Fair	-
	DV0394	Fair	Fair	Fair	Fair	-
	DV0395	Fair	Fair	Fair	Fair	-
	DV0396	Fair	Fair	Fair	Fair	-
	DV0397	Fair	Fair	Fair	Fair	-
	DV0398	Fair	Fair	Fair	Fair	-
	DV0399	Fair	Fair	Fair	Fair	-
	DV0400	Fair	Fair	Fair	Fair	-
	DV0401	Fair	Fair	Fair	Fair	-
	DV0402	Fair	Fair	Fair	Fair	-
	DV0403	Fair	Fair	Fair	Fair	-
	DV0404	Fair	Fair	Fair	Fair	-
	DV0405	Fair	Fair	Fair	Fair	-
	DV0406	Fair	Fair	Fair	Fair	Leaf dropped
	DV0407	Fair	Fair	Fair	Fair	-
	DV0408	Fair	Fair	Fair	Fair	-
	DV0409	Fair	Fair	Fair	Fair	-
	DV0410	Fair	Fair	Fair	Fair	-
	DV0411	Fair	Fair	Fair	Fair	-
	DV0412	Fair	Fair	Fair	Fair	-
	DV0413	Fair	Fair	Fair	Fair	-
	DV0414	Fair	Fair	Fair	Fair	-
	DV0415	Fair	Fair	Fair	Fair	-
	DV0416	Fair	Fair	Fair	Fair	-
	DV0417	Fair	Fair	Fair	Fair	-
	DV0418	Fair	Fair	Fair	Fair	-
	DV0419	Fair	Fair	Fair	Fair	-
	DV0420	Fair	Fair	Fair	Fair	-
	DV0421	Fair	Fair	Fair	Fair	-
	DV0422	Fair	Fair	Fair	Fair	-
	DV0423	Fair	Fair	Fair	Fair	-
	DV0424	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0425	Fair	Fair	Fair	Fair	-
	DV0426	Fair	Fair	Fair	Fair	-
	DV0427	Fair	Fair	Fair	Fair	-
	DV0428	Fair	Fair	Fair	Fair	-
	DV0429	Fair	Fair	Fair	Fair	Leaf dropped
	DV0430	Fair	Fair	Fair	Fair	-
	DV0431	Fair	Fair	Fair	Fair	-
	DV0432	Fair	Fair	Fair	Fair	-
	DV0433	Fair	Fair	Fair	Fair	-
	DV0434	Fair	Fair	Fair	Fair	-
	DV0435	Fair	Fair	Fair	Fair	-
	DV0436	Fair	Fair	Fair	Fair	-
	DV0437	Fair	Fair	Fair	Fair	-
	DV0438	Fair	Fair	Fair	Fair	-
	DV0439	Fair	Fair	Fair	Fair	-
	DV0440	Fair	Fair	Fair	Fair	-
	DV0441	Fair	Fair	Fair	Fair	-
	DV0442	Fair	Fair	Fair	Fair	-
	DV0443	Fair	Fair	Fair	Fair	-
	DV0444	Fair	Fair	Fair	Fair	-
	DV0445	Poor	Poor	Poor	Poor	Leaf dropped
	DV0446	Fair	Fair	Fair	Fair	-
	DV0447	Fair	Fair	Fair	Fair	-
	DV0448	Fair	Fair	Fair	Fair	-
	DV0449	Fair	Fair	Fair	Fair	-
	DV0450	Fair	Fair	Fair	Fair	-
	DV0451	Fair	Fair	Fair	Fair	-
	DV0452	Fair	Fair	Fair	Fair	-
	DV0453	Fair	Fair	Fair	Fair	-
	DV0454	Fair	Fair	Fair	Fair	-
	DV0455	Fair	Fair	Fair	Fair	-
	DV0456	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0457	Fair	Fair	Fair	Fair	-
	DV0458	Fair	Fair	Fair	Fair	-
	DV0459	Fair	Fair	Fair	Fair	-
	DV0460	Fair	Fair	Fair	Fair	-
	DV0461	Fair	Fair	Fair	Fair	-
	DV0462	Fair	Fair	Fair	Fair	-
	DV0463	Fair	Fair	Fair	Fair	-
	DV0464	Fair	Fair	Fair	Fair	-
	DV0465	Fair	Fair	Fair	Fair	-
	DV0466	Fair	Fair	Fair	Fair	Leaf dropped
	DV0467	Fair	Fair	Fair	Fair	-
	DV0468	Fair	Fair	Fair	Fair	-
	DV0469	Fair	Fair	Fair	Fair	-
	DV0470	Fair	Fair	Fair	Fair	-
	DV0471	Fair	Fair	Fair	Fair	-
	DV0472	Fair	Fair	Fair	Fair	Leaf dropped
	DV0473	Fair	Fair	Fair	Fair	-
	DV0474	Fair	Fair	Fair	Fair	-
	DV0475	Fair	Fair	Fair	Fair	-
	DV0476	Fair	Fair	Fair	Fair	-
	DV0477	Fair	Fair	Fair	Fair	-
	DV0478	Fair	Fair	Fair	Fair	-
	DV0479	Fair	Fair	Fair	Fair	-
	DV0480	Fair	Fair	Fair	Fair	-
	DV0481	Fair	Fair	Fair	Fair	-
	DV0482	Fair	Fair	Fair	Fair	-
	DV0483	Fair	Fair	Fair	Fair	-
	DV0484	Fair	Fair	Fair	Fair	-
	DV0485	Fair	Fair	Fair	Fair	-
	DV0486	Fair	Fair	Fair	Fair	-
	DV0487	Fair	Fair	Fair	Fair	-
	DV0488	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0489	Fair	Fair	Fair	Fair	-
	DV0490	Fair	Fair	Fair	Fair	-
	DV0491	Fair	Fair	Fair	Fair	-
	DV0492	Fair	Fair	Fair	Fair	-
	DV0493	Fair	Fair	Fair	Fair	-
	DV0494	Fair	Fair	Fair	Fair	-
	DV0495	Fair	Fair	Fair	Fair	-
	DV0496	Fair	Fair	Fair	Fair	-
	DV0497	Fair	Fair	Fair	Fair	-
	DV0498	Fair	Fair	Fair	Fair	-
	DV0499	Fair	Fair	Fair	Fair	-
	DV0500	Fair	Fair	Fair	Fair	-
	DV0501	Fair	Fair	Fair	Fair	-
	DV0502	Fair	Fair	Fair	Fair	-
	DV0503	Fair	Fair	Fair	Fair	-
	DV0504	Fair	Fair	Fair	Fair	-
	DV0505	Fair	Fair	Fair	Fair	-
	DV0506	Fair	Fair	Fair	Fair	-
	DV0507	Fair	Fair	Fair	Fair	-
	DV0508	Fair	Fair	Fair	Fair	-
	DV0509	Fair	Fair	Fair	Fair	-
	DV0510	Fair	Fair	Fair	Fair	-
	DV0511	Fair	Fair	Fair	Fair	-
	DV0512	Fair	Fair	Fair	Fair	-
	DV0513	Fair	Fair	Fair	Fair	-
	DV0514	Fair	Fair	Fair	Fair	-
	DV0515	Fair	Fair	Fair	Fair	-
	DV0516	Fair	Fair	Fair	Fair	-
	DV0517	Fair	Fair	Fair	Fair	-
	DV0518	Fair	Fair	Fair	Fair	-
	DV0519	Fair	Fair	Fair	Fair	Leaf dropped
	DV0520	Fair	Fair	Fair	Fair	-

Date of monitoring	No.	Form	Health condition	Structural condition	Amenity value	Remarks
	DV0521	Fair	Fair	Fair	Fair	-
	DV0522	Fair	Fair	Fair	Fair	-
	DV0523	Fair	Fair	Fair	Fair	-
	DV0524	Fair	Fair	Fair	Fair	-
	DV0525	Fair	Fair	Fair	Fair	-
	DV0526	Fair	Fair	Fair	Fair	-
	DV0527	Fair	Fair	Fair	Fair	-
	DV0528	Fair	Fair	Fair	Fair	-
	DV0529	Fair	Fair	Fair	Fair	-
	DV0530	Fair	Fair	Fair	Fair	-

Appendix 3.1

Environmental Mitigation Implementation Schedule

APPENDIX C IMPLEMENTATION SCHEDULE OF RECOMMENDED MITIGATION MEASURES

C.1 Introduction

C.1.1 This section presents the implementation schedule of mitigation measures for the Project. **Table C.1** summarises the details of the recommended mitigation measures for all works areas. For each recommended mitigation measures, both the location and timing for the measure have clearly been identified as well as the parties responsible for implementing the measure and for maintenance (where applicable).

Table C.1 Implementation Schedule of Recommended Mitigation Measures

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
	Air Quality Impact								
	Construction Phase								
Table 3.5	2.4.1	The rock crushing plant is configured as an enclosed system. Dust collector with dust removal efficiency of 99% will be provided at the exhaust of the rock crusher during rock crushing. Watering will be provided to maintain material in wet condition. Vehicles would be required to pass through the wheel washing facilities provided at site exit.	Rock Crushing Plant / Construction Phase	Contractor	√	√		√	Air Pollution Control Ordinance (APCO)
3.8.1	2.4.1	Watering eight times a day on active works areas, exposed areas and unpaved haul roads to reduce dust emission by 87.5%.	All active works areas, exposed areas and unpaved haul roads	Contractor		√		√	APCO

[1] Des = Design; C = Construction; O = Operation; Dec = Decommissioning

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
3.8.1	2.4.1	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: • Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. • Use of frequent watering for particularly dusty construction areas and areas close to ASRs. • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. • Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. • Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area	Construction Sites	Contractor		√		√	APCO and Air Pollution Control (Construction Dust) Regulation

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. • Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. • Imposition of speed controls for vehicles on site haul roads. • Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. • Every stock of more than 20 bags of cement or dry PFA should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.							

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
	Operation Phase								
3.5.2	-	Sludge tanks with totally enclosed design proven by DSD should be deployed for transporting sludge. With thorough cleaning practice and regular condition test of the sludge tanks, odour emission and leachate leakage during storage and transportation are not anticipated.	Cavern Sewage Treatment Works (CSTW) / Operation Phase	Project Proponent / Operator	√		√		-
3.6.2, 3.7.2	2.4.2	All treatment units with potential odour emission will be covered and the exhausted air will be conveyed to the deodouriser (with 80 – 97% odour removal efficiency) for treatment before discharge to the environment.	CSTW / Operation Phase	Design team / Project Proponent / Operator	√		√		-
3.7.2	2.4.2	The following appropriate odour control measures would be implemented. (i) Adopting the advantage of caverns as natural barriers for odour control; (ii) Covering up of odour sources; (iii) Preventing odour leakage through the access tunnels by applying negative pressure inside caverns; (iv) Installing deodourizing units to clean up the collected foul air; (v) Discharging exhausted air at height to further enhance the dilution effect; and (vi) Enhancing the odour management of the sludge transportation.	CSTW / Operation Phase	Design team / Project Proponent / Operator	√		√		-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
3.10.2	2.3.1	Odour monitoring at the inlet and outlet of the deodourizing units is proposed to be conducted for first three years of the operation of CSTW, quarterly in the first year, and once every 6 months in the second and third years if monitoring results remain below the limit levels.	CSTW / Operation Phase	Project Proponent / Operator	√		√		-
3.10.2	2.3.2	An Odour Complaint Registration System is also proposed in the EM&A programme to check whether the deodorizing units can fulfill the recommended odour removal performance.	CSTW / Operation Phase	Operator			√		-
3.10.2	-	Any unexpected leakage from tanks could be observed with monitoring equipment. Monitoring equipment would be installed in the CSTW to monitor the concentration of H_2S, CO and CO_2 and methane. Investigation and repair works would be carried out immediately if abrupt increase of these concentrations are reported. Emergency Plan would be established for these upset conditions.	CSTW / Operation Phase	Project Proponent / Operator	√		√		-
	Noise Impact								
	Construction Phase								
4.5.1.6	-	Re-provision of 220m length noise barrier with 10mPD on temporary access haul road to replace the existing 150m length noise barrier with 9.2mPD to 10mPD on Ma On Sha Road. The	Proposed temporary access / Construction Phase	Contractor		√			Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Noise Control Ordinance (NCO)

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		location of the relocated noise barrier is shown in **Figure No. 60334056/EIA/4.02** and **Appendix 4.07**. Once the construction work for the CSTW is completed, the temporary access roads would be demolished and the relevant section of Ma On Shan Road and associated noise barrier would be recovered as before.							
4.8.1	3.8.1	The use of quiet plant associated with the construction works is prescribed in British Standard "Code of practice for noise and vibration control on construction and open sites, BS5228" which contains the SWLs for specific quiet PME.	All Construction Work Sites	Contractor		√		√	EIAO-TM, NCO
4.8.1	3.8.1	To alleviate the construction noise impact on the affected NSRs, movable noise barrier for Air Compressor, Bar Bender and Cutter, Breaker, Chisel, Saw, Compactor, Mixers, Pump, Crane, Desander, Drilling Rig, Dump Truck, Excavator, Generator, Grab, Lorry, Paver, Poker and Roller are proposed.	All Construction Work Sites	Contractor		√		√	EIAO-TM, NCO
4.8.1	3.8.1	Provision of noise barrier/acoustic mats for Drilling Jumbo so as to have screening effecting with 10 dB(A) noise attenuation	Drilling Jumbo operate outside the portal and within 20m inside the portal	Contractor		√			EIAO-TM, NCO
4.8.1	3.8.1	To further alleviate the construction noise impact on the Neighbourhood Advice-Action Council Harmony	Construction Site for access road for	Contractor		√		√	EIAO-TM, NCO

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		Manor, it is proposed to limit the number of on-time operating PMEs within 120m of this NSR during construction of access road.	magazine at A Kung Kok Road						
4.9.1	3.8.1	In addition to the above-mentioned mitigation measures, good site practices listed below shall be adopted by all the contractors to further ameliorate the noise impacts. • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Silencers or mufflers on construction equipment should be utilised and should be properly maintained 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 works 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.	All Construction Work Sites	Contractor		√		√	EIAO-TM, NCO

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		• Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.							
	Operation Phase								
4.7.4	3.8.2	The maximum allowable sound power levels for the ventilation shaft, ventilation buildings at main portal and emergency portal, ventilation fan for chiller plant room and cooling tower at the administration building as presented in Table 4.16 of the EIA Report should be achieved such that the nearest affected NSRs can be in compliance with the noise criteria	Ventilation Shaft, Administration Building and Ventilation Buildings/ Operation Phase	Project Proponent	√		√		EIAO-TM, NCO
4.11.2	3.8.2	Prior to the operational phase of the Project, a commissioning test for the ventilation buildings, the ventilation shaft, ventilation fan for chiller plant room at administration building and cooling tower at the administration building would be conducted to ensure compliance with the relevant allowable maximum sound power levels.	Ventilation Shaft, Administration Building and Ventilation Buildings/ Operation Phase	Contractor			√		EIAO-TM, NCO

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
	Water Quality Impact								
	Construction Phase								
5.7.2	4.10	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Construction Sites / Construction Phase	Contractor		√			Water Pollution Control Ordinance (WPCO), EIAO-TM
5.7.2	4.10	All vehicles and plant should be cleaned before they leave a construction site to minimise the deposition of earth, mud, debris on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfill to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Construction Sites / Construction Phase	Contractor		√			Professional Persons Environmental Consultative Committee (ProPECC) Practice Note (PN) 1/94, WPCO, Waste Disposal Ordinance (WDO)
5.7.2	4.10	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
5.7.2	4.10	The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed where applicable to minimise surface run-off and the chance of erosion.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, ProPECC PN 1/94
5.7.2	4.10	There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS). The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimise water consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence which is under the ambit of RO of EPD.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, (TM-DSS)
5.7.2	4.10	Contractor must register as a chemical waste producer if chemical wastes would be produced from the	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, WDO

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes.							
5.7.2	4.10	Any service shop and maintenance facilities should be located on hard standings within a bonded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM
5.7.2	4.10	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance should be followed to avoid leakage or spillage of chemicals.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, WDO
5.7.2	4.10	Sufficient chemical toilets should be provided in the works areas. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
5.7.2	4.10	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM
5.7.2	4.10	The practices outlined in ETWB TC (Works) No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" should also be adopted where applicable to minimise the water quality impacts upon any natural streams or surface water systems.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, ETWB TC (Works) No. 5/2005
5.7.2	4.10	Appropriate measures during the construction of the cavern construction should be implemented to minimise the groundwater infiltration.	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM
5.7.2	4.10	No directly discharge of groundwater from contaminated areas should be adopted. Prior to any excavation works within the potentially contaminated areas at the existing STSTW site, the baseline groundwater quality in these areas should be reviewed based on the relevant SI data and any additional groundwater quality measurements to be performed with reference to *Guidance Note for Contaminated Land Assessment and Remediation* and the review results should be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, Guidance Note for Contaminated Land Assessment and Remediation

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the TM-DSS. If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit shall deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as TPH) to an undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal.							
5.7.2	4.10	If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in section 2.3 of the TM-DSS. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and submit a working plan to EPD for agreement. Pollution	Construction Sites / Construction Phase	Contractor		√			WPCO, EIAO-TM, TM-DSS

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the recharge points to monitor the effectiveness of the recharge wells and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater							
5.7.2	4.10	THEES connection works should be synchronized with the THEES maintenance, for a duration not longer than 4 weeks each outside the algae blooming season (January to May) and frequency of THEES maintenance shall be no more than once per year during the construction phase of the Project.	Tolo Harbour / Construction Phase	Project Proponent / Contractor	√	√			EIAO-TM
	Construction and Operation Phases								
5.10.2	4.10	Shutdown of the THEES for maintenance should be shortened as far as possible. It is recommended that the maintenance of the THEES tunnel should be avoided during the algae blooming season (January to May).	Tolo Harbour / Construction and Operation Phase	Project Proponent		√	√		WPCO, EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
5.10.2	4.10	Relevant government departments including EPD, WSD, AFCD as well as the key stakeholders for mariculture and fisheries in Tolo Harbour should be informed of the maintenance event prior to any discharge.	Tolo Harbour / Construction and Operation Phase	Project Proponent		√	√		WPCO, EIAO-TM
5.10.3	4.2-4.5	An event and action plan and a water quality monitoring programme (as presented in the EM&A Manual) should be implemented for the THEES maintenance discharge	Tolo Harbour / Construction and Operation Phase	Project Proponent		√	√		WPCO, EIAO-TM
5.10.1	4.10	Silt screen may be installed at the flushing water intakes during the THEES maintenance discharge should it appear necessary. Close communication between DSD and WSD should be maintained to minimize any impact on the flushing water intakes due to THEES maintenance discharge.	WSD flushing water intakes / Construction and Operation Phase	WSD / Project Proponent		√	√		WPCO, EIAO-TM
	Design and Operation Phases								
5.8.3	4.6	In case adverse impact on KTN is identified based on the result of the three-month monitoring programme after commissioning of the project, the operation conditions of the treatment and THEES system should be investigated, and corrective and remedial action should be implemented to improve the effluent discharge from the CSTW. Furthermore, DSD should extend the water quality monitoring	Project site / Design and Operation Phases	Project Proponent			√		WPCO, EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		programme for at least three months or as agreed by the Director of Environmental Protection.							
5.11.2	4.10	Dual power supply or ring main supply from CLP Power Hong Kong Ltd. CLP should be provided for the CSTW to prevent the occurrence of power failure. In addition, standby facilities for the main treatment units and standby equipment parts / accessories should also be provided in order to minimise the chance of emergency discharge. CLP should be consulted in order to ascertain the power supply for normal plant operation within the caverns. It is recommended that government departments including EPD, WSD and AFCD as well as the key stakeholders for mariculture and fisheries in Tolo Harbour should be informed as soon as possible in case of any emergency discharge so that appropriate actions can be taken.	Project site / Design and Operation Phases	Project Proponent	√		√		WPCO, EIAO-TM
5.11.2	4.10	In case of emergency discharge, the plant operators of CSTW should carry out necessary follow-up actions according to the procedures of the current contingency plan formulated for the existing STSTW to minimise the water quality impact.	Project site / Operation Phase	Project Proponent			√		WPCO, EIAO-TM
5.11.2	4.10	WSD may also consider, should it appear necessary, to shut down the Sha Tin seawater pumping station for a short period of time in case of	Sha Tin seawater pumping station / Operation Phase	WSD / Project Proponent			√		WPCO, EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		emergency discharge in order to minimize any adverse impacts.							
5.13.2	4.10	Best Management Practices to reduce storm water and non-point source pollution are also proposed as follows: <u>Design Measures</u> • Exposed surface shall be avoided within the road and portal sites to minimise soil erosion. The access road and the portal areas shall be either hard paved or covered by landscaping area where appropriate. • Streams near the Project site will be retained to maintain the original flow path. The drainage system will be designed to avoid flooding. • Green areas / planting etc. should be introduced alongside the access road and within the portal areas, as far as possible, to minimise runoff pollution. <u>Devices/ Facilities to Control Pollution</u> • Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system. • Road gullies with standard design and silt traps should be provided to	Project site / Design and Operation Phase	Project Proponent	√		√		WPCO, ProPECC PN 5/93

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		remove particles present in stormwater runoff, where appropriate. <u>Administrative Measures</u> • Good management measures such as regular cleaning and sweeping of road surface/ open areas are suggested. The road surface/ open area cleaning should also be carried out prior to occurrence rainstorm. • Manholes, as well as stormwater gullies, ditches provided at the Project site should be regularly inspected and cleaned (e.g. monthly). Additional inspection and cleansing should be carried out before forecast heavy rainfall.							
	Land Contamination								
6.7.1	-	Further site walkover and/or detailed land contamination assessment will be required for sites that are inaccessible or currently in operation / yet to be constructed (i.e. existing STSTW, David Camp and part of existing Sha Tin VDC, and proposed A Kung Kok Shan Road surface magazine site within the Project boundary). The site walkover, detailed land contamination assessment and if necessary, remediation works should be carried out after decommissioning of the sites	Existing STSTW, David Camp and VDC / Construction Phase	Project Proponent / Contractor		√		√ (for existing STSTW)	Guidance Note for Contaminated Land Assessment and Remediation, Practice Guide for Investigation and Remediation of Contaminated Land, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		but prior to re-development and should include the following: • Prior to the commencement of the SI works, review the CAP to confirm whether the proposed SI works (e.g. sampling locations, testing parameters etc.) are still valid and to confirm the appropriate RBRGs land use scenario for the development; • Submit supplementary CAP(s), presenting the findings of the above review for EPD endorsement. If land contamination issues were identified within David Camp or part of existing VDC / proposed A Kung Kok Shan Road surface magazine site within the Project boundary in the further site walkover, findings of the site walkover and the proposal for SI works should also be presented in the supplementary CAP(s); • Carry out SI works according to the supplementary CAP endorsed by EPD; • Submit CAR(s), detailing findings of the SI works and nature/extent of any soil/groundwater contamination, and, if contaminated identified, RAP(s), discussing the appropriate remedial methods and mitigation							

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		measures, for the identified contamination, for EPD agreement; and • Carry out soil/groundwater remediation works according to EPD agreed RAP and submit RR(s) afterwards for EPD agreement. The remediation works and agreement of RR should be completed prior to re-development.							
6.7.2	-	If contamination were identified, mitigation measures as recommended in the RAP should be followed and should include the following: • Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; • Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; • Supply of suitable clean backfill material (or treated soil) after excavation; • Stockpiling site(s) shall be lined with impermeable sheeting and bunded. Stockpiles shall be fully covered by impermeable sheeting to reduce dust emission. If this is not practicable due to frequent	Project Site / Construction Phase	Contractor		√		√ (for existing STS TW)	Guidance Note for Contaminated Land Assessment and Remediation, Practice Guide for Investigation and Remediation of Contaminated Land, Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		usage, regular watering shall be applied. However, watering shall be avoided on stockpiles of contaminated soil to minimise contaminated runoff. • Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions; • Speed control for the trucks carrying contaminated materials shall be enforced; • Vehicle wheel and body washing facilities at the site's exist points shall be established and used; and • Pollution control measures for air emissions (e.g. from biopile blower and handling of cement), noise emissions (e.g. from blower or earthmoving equipment), and water discharges (e.g. runoff control from treatment facility) shall be implemented and complied with relevant regulations and guidelines.							

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
	Hazard to Life								
	Construction Phase								
7.14.1	6.2.2	The following recommendations are justified to be implemented to meet the EIAO-TM requirements: • The truck should be designed to minimise the amount of combustible in the cabin. The fuel carried in the fuel tank should also be minimised to reduce the duration of any fire; • The accident involvement frequency of the explosives delivery truck should be minimised through implementation of several administrative measures, such as providing training programme to the driver, regular "tool box" briefing session, implementing a defensive driving attitude, selecting driver with good safety record, and providing regular medical checks for the driver; • Avoidance of returning unused explosives to the magazine, only the required quantity of explosives for a particular blast should be transported; • Maintain a minimum headway of 10 minutes between two	Explosives dlivery route / Construction Phase	Contractor	√	√			EIAO-TM

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		consecutive truck convoys whenever practicable; and • The fire involvement frequency should be minimised by carrying better types of fire extinguishers and with bigger capacity onboard of the explosives delivery truck. Emergency plans and trainings could also be provided to make sure that the fire extinguishers are used adequately.							
7.14.2	6.2.3	The magazine should be designed, built, operated and maintained in accordance with Mines Division's guidelines and appropriate industry best practice. In addition, the following recommendations should be implemented: • The security plan should address different alert security level to reduce opportunity for arson or deliberate initiation of explosives; • Emergency plan should be developed to address uncontrolled fire in magazine area, and drill of the emergency plan should be regularly carried out; • Suitable work control system should be set-up, such as an operational manual including Permit-to-Work system, to ensure that work activities undertaken	Magazine Site/ Construction Phase	Contractor	√	√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		during operation of the magazine are properly controlled; • Good house-keeping within the magazine to ensure no combustible materials are accumulated; • Good house-keeping outside the magazine stores to ensure no combustible materials are accumulated; and • Regular checking of the magazine store to ensure no water seepage through the roof, walls or floor.							
7.14.3	6.2.4	The following recommendations should be implemented: • Emergency plan should be developed to address uncontrolled fire during transport. Case of fire near an explosive delivery truck in jammed traffic should be included in the plan. Activation of fuel and battery isolation switches on vehicle when fire breaks out should also be included in the emergency plan to reduce likelihood of prolonged fire leading to explosion; • Working guideline should be developed to define procedure for explosives transport during adverse weather such as thunderstorm;	To and from Magazine Site / Construction Phase	Contractor	√	√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		• Detonators should be transported separately from other Class 1 explosives. Separation of vehicles should also be maintained through the trip; • Develop procedure to ensure the availability of parking space on site for the explosives delivery truck. Delivery should not be commenced if parking space on site is not secured; • Hot work or other activities should be banned in the vicinity of the explosives offloading or charging activities; • Lining should be provided within the transportation box on the vehicle; • Fire screen should be used between cabin and the load on the vehicle; • Ensure packaging of detonators remains intact until handed over at blasting site; • Ensure that cartridged emulsion packages are not damaged before every trip; and • Use experienced driver with good safety record.							

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7.14.4	6.2.5	The following recommendations should be implemented for the safe use of explosives: • Blast Charge Weight should be within MIC as specified for the given blast face; • Temporary mitigation measures such as blast doors or heavy duty blast curtains should be installed at the portals or shafts and at suitable locations underground to prevent flyrock and control the air overpressure; • Multiple faces blasting will be carried out for the construction of cavern in this project. Good communication and control will need to be adopted in ensuring that the works are carried out safely; • It is not intended to carry out complete evacuation of the construction areas and secure refuge areas should be identified to workers in the areas; • A Chief Shotfirer and a Blasting Engineer shall be employed in addition to the normal blasting personnel to ensure that the works are safe and coordinated between blasting areas; • Shotfirer to be provided with a lightning detector, and appropriate	CSTW / Construction Phase	Contractor	√	√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		control measures should be in place; • Speed limit for the diesel vehicle truck and bulk emulsion truck in the access tunnel and cavern should be imposed. The truck may be escorted while underground to ensure route is clear from hazards and obstructions; and • Hot work should be suspended during passage of the diesel vehicle truck and bulk emulsion truck in the access tunnel and cavern. • A boulder survey should be undertaken based on the likely PPV values that would result from the blasting process. Those boulders subject to the vibration higher than the allowable limit should be strengthened, removed, or constructed with boulder fence, prior to the commencement of blasting.							
	Operation Phase								
		Nil							

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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	Ecological Impact (Terrestrial and Marine)								
	Construction Phase								
8.8.2	7.2.1	Construction of access roads and other temporary works should be carefully designed (e.g. elevated road for crossing streams) to avoid / minimise habitat loss and fragmentation.	Project site – areas access road / Pre-Construction Phase	Design team / Project Proponent	√				-
8.8.3	7.2.2	Minimise habitat loss to nearby habitats and associated wildlife by implementing the following mitigation measures: - • confining the works within the site boundary; • controlling access of site staff to avoid damage to the vegetation in surrounding areas; and • placement of equipment or stockpile in the existing disturbed / urbanised land within the site boundary of the Project to minimise disturbance to vegetated areas;	Project site / Construction Phase	Contractor		√			-
8.8.3	7.2.2	Reinstatement planting should be implemented upon the completion of construction works to minimise the ecological impact arising from the temporary habitat loss	Project Site (Main Portal Area / Secondary Portal Area / Access Road / Temporary Works Area) /Construction Phase	Project Proponent	√	√		√	

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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8.8.2, 8.8.3 & 8.10	7.2.2	Detailed Vegetation Survey shall be conducted by a suitably qualified botanist / ecologist within the works area requiring vegetation clearance prior to commencement of works to identify plant species of conservation importance. The potentially affected individuals shall be tagged and fenced off for preservation, and in the case of unavoidable loss, for transplantation to nearby suitable habitat(s).	Proposed works areas (Main Portal, Secondary Portal, Access Road) / Pre-Construction Phase	Project Proponent / Qualified botanist or ecologist		√			
8.8.2, 8.8.3 & 8.10	7.3.1	A Protection and Transplantation Proposal including the subsequent monitoring visit for the affected plant species should be prepared and conducted by a suitably qualified local ecologist. The Proposal should be submitted for approval at least one month before works commencement. To review the performance of the transplantation exercise, monitoring of transplanted flora should be conducted monthly after the transplantation throughout the construction phase. The parameters to be monitored should include the health condition and survival rate of the transplanted flora and presence of weedy species. Any observations and recommendations should be reported in monthly EM&A reports	Recipient Site for transplanted species / Construction Phase	Project Proponent / Qualified botanist or ecologist		√			

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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8.8.3	7.2.2	Mitigation measures should be implemented to control runoff from the construction site, as well as the adopting guidelines and good site practices for handling and disposal of construction discharges in order to minimise the potential indirect impact on the streams (particularly S2) resulting from site runoff. Precautionary measures should also be implemented to minimise indirect impacts to the streams, such as isolating the work site by placing sandbags and silt curtains, covering up construction materials, debris and spoil to avoid being washed into the stream, and properly collecting and treating construction effluent and sewage.	Access Road on Nui Po Shan / Construction Phase	Contractor		√			ETWB TCW No. 5/2005
8.8.3	7.2.2	Implement good site practice to further minimise impacts from disturbance such as noise, air quality and water quality issues, such as: - • the use of quiet plant and EPD's QPME and the availability of British Standards 5228 has been considered; • the use of movable noise barrier; • the use of temporary noise screening structures or purpose-built temporary noise barriers;	Project site / Construction Phase	Contractor		√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		• install site hoarding as temporary noise barrier where construction works are undertaken; • only well-maintained plant should be operated on site and plant should be serviced regularly during the construction programme; • Mitigation measures stipulated in the ProPECC PN 1/94 "Construction Site Drainage" should be complied to minimise water quality impact; • Installation of stand-by pump, emergency power supply and telemetry system to avoid sewage overflow and surcharge to sewerage system due to power/equipment failure.							
8.8.3	7.2.2	Minimise groundwater infiltration during cavern construction with the following water control strategies:- • Probing Ahead: As a normal practice, the Contractor will undertake rigorous probing of the ground ahead of excavation works to identify zones of significant water inflow. The probe drilling results will be evaluated to determine specific grouting requirements in line with the tunnel / cavern advance. In such zones of significant water inflow that could occur as a result of discrete, permeable features, the intent	Project site / Construction Phase	Contractor		√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		would be to reduce overall inflow by means of cut-off grouting executed ahead of the tunnel / cavern advance; • Pre-grouting: Where water inflow quantities are excessive, pre-grouting will be required to reduce the water inflow into the tunnel / cavern. The pre-grouting will be achieved via a systematic and carefully specified protocol of grouting; • In principle, the grout pre-treatment would be designed on the basis of probe hole drilling ahead of the tunnel / cavern face; • The installation of waterproof lining would also be adopted after the formation of the tunnels and caverns.							
8.8.3	7.2.2	In the event of excessive infiltration being observed as a result of the tunnelling or excavation works even after incorporation of the water control strategies, post-grouting should be applied as far as practicable as described below: • Post-grouting: Groundwater drawdown will be most likely due to inflows of water into the tunnel / cavern that have not been sufficiently controlled by the pre-grouting measures in high permeability area. Where this	Project site / Construction Phase	Contractor		√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		occurs post grouting will be undertaken before the lining is installed. Whilst unlikely to be required in significant measure, such a contingency should be allowed for reduction in permeability of the tunnel / cavern surround (by grouting) to limit inflow to acceptable levels. The practical groundwater control measures stated above are proven technologies and have been extensively applied in other past projects. These measures or other similar methods, as approved by the Engineer to suit the works condition shall be applied to minimise the groundwater infiltration.							
8.8.3	7.2.2	In case seepage of groundwater occurs, groundwater should be pumped out from works areas and discharged to the storm system via silt trap. Uncontaminated groundwater from dewatering process should also be discharged to the storm system via silt removal facilities.	Project site / Construction Phase	Contractor		√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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8.8.3	7.2.2	Mitigation measures recommended in the water quality impact assessment for controlling water quality impact will also serve to protect marine ecological resources from indirect impacts and ensure no unacceptable impact on marine ecological resources. Relevant government departments including EPD, WSD and AFCD as well as key stakeholders for mariculture and fisheries in Tolo Harbour should be informed of the THEES maintenance / emergency discharge event prior to any discharge. It is recommended that the temporary effluent bypass event and the THEES maintenance period should be shortened as far as possible.	Tolo Harbour / Construction Phase	Contractor and Operator		√			-
	Construction and Operation Phase								
8.8.3	7.2.2	Overall reduction of glare during both construction and operation phase should be considered. A balance between lighting for safety, and avoiding excessive lighting can be achieved through the use of directional lighting to avoid light spill into sensitive areas, and control/timing of lighting periods of some facilities, particularly at the secondary portal which lies approximately 200 m northwest of Ma On Shan Country Park.	Project site / Construction and Operation Phase	Contractor and Operator		√	√		-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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8.8.3	7.2.2	During the decommissioning and demolition of the existing STSTW, the direction and lighting periods should be controlled during ardeid breeding season (March to August) to minimise the potential indirect impact on Penfold Park Egretry and the ardeids flying over the existing STSTW.	Existing STSTW / Decommissioning / March to August	Contractor				√	-
8.10	7.3	It is anticipated that the construction of rock caverns would not have adverse impacts on groundwater in Nui Po Shan. Nonetheless, surface water level or groundwater level near the caverns will be closely monitored during the construction and operation stage.	Project site / Construction and Operation Phase	Contractor and Operator		√	√		-
	Compensatory Planting								
8.8.4& 8.10.1	7.2.3	Compensatory planting would be provided at main and secondary portal areas, and along the access road.	Main portal, secondary portal, and along access road	Project Proponent	√	√			DEVB TC(W) No. 7/2015
8.8.4 & 8.10.1	7.2.3	To facilitate successful planting, a detailed Woodland Compensation Plan should be prepared by local ecologists with at least 10 years relevant experience to form the basis of the proposed compensatory planting. The Woodland Compensation Plan should include implementation details, management requirement, as well as monitoring requirements (e.g. frequency and parameters) of the	Compensatory planting area (Main portal, secondary portal, and along access road) / pre-construction	Project Proponent	√	√			

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		compensatory planting area. Approval of the Plan should be obtained from EPD at least three months before the prior to commencement of compensatory woodland planting.							
8.8.4 & 8.10.1	7.2.3	Upon the completion of planting, monitoring of the woodland compensation areas should be implemented, with maintenance works (e.g. irrigation, weeding, pruning, control of pests and diseases, replacement planting, repair of damage, etc.) conducted as necessary.	Compensatory planting area (Main portal, secondary portal, and along access road) / Operation	Project Proponent / CSTW Operator			√		
	Fisheries Impact								
9.6	8.2	Potential impacts on fisheries resources and fishing operations arising from the Project have been avoided and minimised by construction of a connection pipes to the existing emergency outfall of STSTW by trenchless method underneath Shing Mun River with the least water quality impact. In addition, the temporary effluent bypass event for THEES connection work would be synchronized within regular THEES maintenance. Therefore, additional water quality impact and fisheries impact from changes of water quality have been avoided. Furthermore, the THEES maintenance discharge would avoid the blooming season of algae (i.e. January to May) to minimise the potential water quality impacts. It is	Tolo Harbour /Construction and Operation Phase	Project Proponent / Contractor	√	√			-

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
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		recommended that any THEES maintenance period should be shortened as far as possible.							
9.6	8.2	Mitigation measures recommended in the water quality impact assessment for controlling water quality impact will also serve to protect fisheries from indirect impacts and ensure no unacceptable impact on fisheries resources and operations. For more detailed mitigation measures regarding water quality refer to Sections 5.7.2 and 5.13.2 of the EIA Report.	Construction and Operation Phase	Contractor and Operator		√	√		-
9.6	8.2	Relevant government departments including EPD, WSD and AFCD as well as key stakeholders for mariculture and fisheries in Tolo Harbour should be informed prior to the THEES maintenance / emergency discharge events.	Tolo Harbour / Construction and Operation Phase	Project Proponent		√	√		
	Landscape and Visual Impact								
Table 10.10	-	CM1 - Preservation of Existing Vegetation	Construction Sites/ Construction Phase	Project Proponent	√	√		√	DEVB TCW No. 7/2015 and latest Guidelines on Tree Preservation during Development issued by GLTM Section of DEVB
Table 10.10	-	CM2 - Transplanting of Affected Trees	Construction Sites/ Construction Phase	Project Proponent	√	√		√	DEVB TCW No. 7/2015 and the latest Guidelines on Tree Transplanting issued by GLTM Section of DEVB

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Table 10.10	-	CM3 - Compensatory Tree Planting	Construction Sites/ Construction Phase	Project Proponent	√	√		√	DEVB TCW No. 7/2015
Table 10.10	-	CM4 - Control of Night-time Lighting Glare	Construction Sites/ Construction Phase	Project Proponent	√	√		√	
Table 10.10	-	CM5 - Erection of Decorative Screen Hoarding	Construction Sites/ Construction Phase	Project Proponent	√	√		√	
Table 10.10	-	CM6 - Management of Construction Activities and Facilities	Construction Sites/ Construction Phase	Project Proponent	√	√		√	
Table 10.10	-	CM7 - Reinstatement of Temporarily Disturbed Landscape Areas	Construction Sites/ Construction Phase	Project Proponent	√	√		√	
Table 10.11	-	OM1 - Tree and Shrub Planting at the Temporary Project Magazine Site after Completion of Engineering Works	Temporary Project Magazine Site / Operation Phase	Project Proponent	√	√	√		
Table 10.11	-	OM2 - Aesthetically pleasing design of Aboveground Structures	Tunnel Portals, Administration Building, Ventilation Buildings, Electrical Substations and Ventilation Shaft / Operation Phase	Project Proponent	√	√	√		

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Table 10.11	-	OM3 - Aesthetically pleasing design of Highways Structures	Access Road to Ventilation Shaft / Operation Phase	Highways Department	√	√	√		
Table 10.11	-	OM4 - Reprovision of Cycle Track	Cycle track / Operation Phase	Highways Department	√	√	√		
Table 10.11	-	OM5 - Provision of Green Roof	Administration Building and Ventilation Buildings / Operation Phase	Project Proponent	√	√	√		
Table 10.11	-	OM6 - Provision of Buffer Planting	Main and Secondary Portal Areas / Operation Phase	Project Proponent	√	√	√		
Table 10.11	-	OM7 - Hydroseeding on the disturbed ground surface after demolition works prior to future redevelopment of the existing STSTW	Existing STSTW / Operation Phase	Lands Department (LandsD) or future development agent in existing STSTW	√	√	√		
Table 10.11	-	OM8 - Woodland Mix Planting on Soil Slopes	Soil Slopes / Operation Phase	Project Proponent	√	√	√		

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	Cultural Heritage Impact								
11.5.1.1	10.1.1	No potential direct or indirect impact to cultural heritage resource is anticipated, and therefore no mitigation measures are required.	N/A	N/A					EIAO EIAO-TM Antiquities and Monuments Ordinance Guidelines for Cultural Heritage Impact Assessment
	Wastes Management Implications								
12.6.2	11.2.2	Appropriate waste handling, transportation and disposal methods for all waste arising generated during the construction works for the Project should be implemented to ensure that construction wastes do not enter the nearby streams or drainage channel. It is anticipated that adverse impacts would not arise on the construction site, provided that good site practices are strictly followed. Recommendations for 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.	Project Site Area / Construction Phase	Contractor		√		√	Waste Disposal Ordinance

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		• Training of site personnel in proper waste management and chemical waste handling procedures. • Provision of sufficient waste reception/ disposal points, of a suitable vermin-proof design that minimises windblown litter. • Arrangement for regular collection of waste for transport off-site and final 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 recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed. • A Waste Management Plan should be prepared and should be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 19/2005 for details. In order to monitor the disposal of C&D material at landfills and public filling areas, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual								

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		requirements to be implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. One may make reference to DEVB TCW No.6/2010 for details.							
12.6.3	11.2.3	Good management and control of construction site activities / processes can minimise the generation of waste. 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: • Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. • Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection 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. • Prior to disposal of C&D waste, it is recommended that wood, steel	Project Site Area / Construction Phase	Contractor		√		√	Waste Disposal Ordinance

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		and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill. • On-site crushing and sorting facilities are being considered to reduce the rock size to fulfill the size requirements from relevant waste collection / transfer / disposal facilities; • Adopt proper storage and site practices to minimise the potential for damage to, or contamination of, construction materials. • Plan the delivery and stock of construction materials carefully to minimise the amount of surplus waste generated. • Adopt pre-cast construction method instead of cast-in-situ method for construction of concrete structures as much as possible; and • Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering. In addition to the above measures, other specific mitigation measures are recommended below to minimise environmental impacts during handling, transportation and disposal of wastes.							

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12.6.4	11.2.4	Storage of materials on site may induce adverse environmental impacts if not properly managed, recommendations to minimise the impacts include: • Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution; • Maintain and clean storage areas routinely; • Stockpiling area should be provided with covers as much as practicable and water spraying system to prevent materials from wind-blown or being washed away; and • Different locations should be designated to stockpile each material to enhance reuse.	Project Site Area / Construction Phase	Contractor		√		√	-
12.6.4	11.2.4	Licensed waste haulers should be employed for the collection and transportation of waste generated. The following measures should be enforced to minimise the potential adverse impacts: • Remove waste in timely manner; • Waste collectors should only collect wastes prescribed by their permits; • Impacts during transportation, such as dust and odour, should be	Project Site Area / Construction Phase	Contractor		√		√	Waste Disposal Ordinance Waste Disposal (Charges for Disposal of Construction Waste) Regulation Land (Miscellaneous Provisions) Ordinance

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		mitigated by the use of covered trucks or in enclosed containers; • Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); • Waste should be disposed of at licensed waste disposal facilities; and • Maintain records of quantities of waste generated, recycled and disposed.							
12.6.4	11.2.4	Land transport will be used for transportation of excavated and stockpile materials. It is expected there will be 1260 vehicles per day for transporting waste during peak construction phase. The tentative transportation routings for the disposal of various types of wastes are shown in Table 12.4. The transportation routing may be changed subject to the traffic conditions. Nevertheless, it is anticipated that there is no adverse impact from the waste during transportation with the implementation of appropriated measures (e.g. using water-tight containers and covered trucks).	Transportation Route of Waste / Construction Phase	Contractor		√			-

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12.6.4	11.2.4	In order to monitor the disposal of C&D materials at PFRFs and landfills and to control fly-tipping, a trip-ticket system should be established in accordance with DEVB TCW No. 6/2010. A recording system for the amount of waste generated, recycled and disposed, including the disposal sites, should also be set up. Warning signs should be put up to remind the designated disposal sites. Close-circuited television should be installed at the vehicular entrance and exit of the site as additional measures to prevent fly-tipping.	Project Site Area / Construction Phase	Contractor		√		√	DEVB TCW No. 6/2010
12.6.4	11.2.5	In addition to the above general measures, other specific mitigation measures on handling the C&D materials and materials generated from site formation and demolition work are recommended below, which should form the basis of the WMP to be prepared by the contractor(s) in construction phase.	Project Site Area / Construction Phase	Contractor		√		√	Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site
12.6.5	11.2.5	In order to minimise the impact resulting from collection and transportation of C&D materials for off-site disposal, the excavated material arising from site formation and foundation works should be reused on-site as backfilling material and for landscaping works as far as practicable. Other mitigation requirements are listed below:	Project Site Area / Construction Phase	Contractor		√		√	Waste Disposal Ordinance ETWB TCW No.19/2005 DEVB TCW No. 6/2010

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					Des	C	O	Dec	
		• A WMP, which becomes part of the EMP, should be prepared in accordance with ETWB TCW No.19/2005; • A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be adopted for easy tracking; and • In order to monitor the disposal of C&D materials at public filling facilities and landfills and to control fly-tipping, a trip-ticket system should be adopted (refer to DEVB TCW No. 6/2010). It is recommended that specific areas should be provided by the Contractors for sorting and to provide temporary storage areas (if required) for the sorted materials.							
12.6.5	11.2.5	The Contactor should prepare and implement an EMP in accordance with ETWB TCW No.19/2005, which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should	Project Site Area / Construction Phase	Contractor		√			ETWB TCW No.19/2005

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		be submitted to the Engineer for approval. The Contractor should implement waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor, preferably on a monthly basis.							
12.6.5	11.2.5	All surplus C&D materials arising from or in connection with construction works should become the property of the Contractor when it is removed unless otherwise stated. The Contractor would be responsible for devising a system to work for on-site sorting of C&D materials and promptly removing all sorted and process materials arising from the construction activities to minimise temporary stockpiling on-site. The system should be included in the EMP identifying the source of generation, estimated quantity, arrangement for on-site sorting, collection, temporary storage areas and frequency of collection by recycling Contractors or frequency of removal off-site.	Project Site Area / Construction Phase	Contractor		√		√	-
12.6.6	11.2.6	The practices of good housekeeping for CSTW listed below should be followed to ameliorate any odour impact from handling, collection, transportation and disposal of sludge:	Operation Phases	Operator			√		Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		• Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge should be transported to the STF by water-tight containers to avoid Hydrogen Sulphide (H_2S)/odour emission and ingress of water into the containers which would lower the sludge dryness during transportation • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly							

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		• Sludge trucks and containers should be washed thoroughly before leaving the CSTW to avoid any odour nuisance during transportation							
12.6.6	11.2.6	In addition, all wastewater generated from the sludge dewatering process and all contaminated water from the cleaning operations recommended for odour control will be diverted to the relocated STSTW for proper treatment.	Operation Phases	Operator			√		Waste Disposal Ordinance
12.6.7	11.2.7	If chemical wastes are produced at the construction site or during operation, the Contractor during construction or the operator during operation will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to the licensed Chemical Waste Treatment Centre, or other	Construction and Operation Phases	Contractor / Operator		√	√		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes

EIA Ref.	EM&A Log Ref.	Environmental Protection Measures	Location / Duration of Measures / Timing of Completion of Measures	Implementation Agent	Implementation Stage [1]				Relevant Legislation & Guidelines
					Des	C	O	Dec	
		licensed facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.							
12.6.8	11.2.8	Recycling of waste paper, aluminium cans and plastic bottles should be encouraged, it is recommended to place clearly labelled recycling bins at designated locations which could be accessed conveniently. Other general refuse should be separated from chemical and industrial waste by providing separated bins for storage to maximise the recyclable volume.	Construction and Operation Phases	Contractor / Operator		√	√		Public Health and Municipal Services Ordinance (Cap.132)
12.6.8	11.2.8	A reputable licensed waste collector should be employed to remove general refuse on a daily basis to minimise odour, pest and litter impacts.	Construction and Operation Phases	Contractor / Operator		√	√		Public Health and Municipal Services Ordinance (Cap. 132)
	Health Impact								
-	-	Not applicable.							

Appendix 4.1

Action and Limit Level

Action and Limit Level

Action and Limit Level for Noise Monitoring

Monitoring Station	Action Level	Limit Level (dB(A))		
		0700-1900 hrs on normal weekdays	0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days [2]	2300-0700 hrs of all days [2]
CM1	When one documented complaint is received	65 / 70 [1]	60 / 65 / 70 [3]	45 / 50 / 55 [3]
CM2(A)		65 / 70 [1]		
CM3		65 / 70 [1]		
CM4		75		
CM5		75		
DM1		75		
DM2		75		
DM3		65 / 70 [1]		

Remark 1: Limit level of CM1, CM2(A), CM3 and DM3 reduce to 65 dB (A) during examination periods if any.

Remark 2: Construction noise during restricted hours is under the control of Noise Control Ordinance Limit Level to be selected based on Area Sensitivity Rating.

Remark 3: Limit Level for restricted hour monitoring shall act as reference level only. Investigation would be conducted on CNP compliance if exceedance recorded during restricted hour noise monitoring period.

Action and Limit Level for Air Quality Monitoring

Monitoring Locations	1-hour TSP Level in µg/m3	
	Action Level	Limit Level
AM1	294	500
AM2	325	500
AM3(A)	360	500
AM4	297	500
AM5	349	500
AM6	312	500

Appendix 4.2

Copies of Calibration Certificates

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CERTIFICATE OF CALIBRATION

Certificate No.: 21CA0222 02-02 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone	Preamp
Manufacturer:	Nti	,	Nti Andio	Nti Andio
Type/Model No.:	XL2	,	MC230A	MA220
Serial/Equipment No.:	A2A-15269-EO	,	A16673	8034
Adaptors used:	-	,		

Item submitted by

Customer Name:	Lam Environmental Services Limited.
Address of Customer:	-
Request No.:	-
Date of receipt:	22-Feb-2021

Date of test: 23-Feb-2021

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2021	CIGISMEC
Signal generator	DS 360	33873	19-May-2021	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1000 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Feng Junqi **Date:** 24-Feb-2021 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 21CA0222 02-02 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	2.1
	Lin	Pass	1.6	2.2
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100μs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

\- End -

Calibrated by: Tung Chi Yip **Date:** 23-Feb-2021

Checked by: Feng Junqi **Date:** 24-Feb-2021

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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SMECLab

Sound level meter type: XL2 Serial No. A2A-15269-EO Date 23-Feb-2021
Microphone type: MC230A Serial No. A16673
Report: 21CA0222 02-02

SELF GENERATED NOISE TEST

The noise test is performed in the most sensitive range of the SLM with the microphone replaced by an equivalent impedance.

Noise level in A weighting	10.5	dB
Noise level in C weighting	15.4	dB
Noise level in Lin	22.5	dB

LINEARITY TEST

The linearity is tested relative to the reference sound pressure level using a continuous sinusoidal signal of frequency 4 kHz. The measurement is made on the reference range for indications at 5 dB intervals starting from the 94 dB reference sound pressure level. And until within 5 dB of the upper and lower limits of the reference range, the measurements shall be made at 1 dB intervals.(SLM set to LEQ/SPL)

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
115.0	115.0	115.0	0.7	0.0	0.0
116.0	116.0	116.0	0.7	0.0	0.0
117.0	117.0	117.0	0.7	0.0	0.0
118.0	118.0	118.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
120.0	120.0	120.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	74.0	74.0	0.7	0.0	0.0
69.0	69.0	69.0	0.7	0.0	0.0
64.0	64.0	64.0	0.7	0.0	0.0
59.0	59.0	59.0	0.7	0.0	0.0
54.0	54.0	54.0	0.7	0.0	0.0
49.0	49.0	49.0	0.7	0.0	0.0
44.0	44.0	44.0	0.7	0.0	0.0
39.0	39.0	39.0	0.7	0.0	0.0
34.0	34.1	34.1	0.7	0.1	0.1
33.0	33.1	33.1	0.7	0.1	0.1

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SMECLab

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Microphone type: MC230A Serial No. A16673
Report: 21CA0222 02-02

32.0	32.2	32.2	0.7	0.2	0.2
31.0	31.2	31.2	0.7	0.2	0.2
30.0	30.2	30.2	0.7	0.2	0.2

Measurements for an indication of the reference SPL on all other ranges which include it

Other ranges	Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
40-140	94.0	94.0	0.7	0.0
20-120	94.0	94.0	0.7	0.0
0-100	94.0	94.0	0.7	0.0

Measurements on all level ranges for indications 2 dB below the upper limit and 2 dB above the lower limit

Ranges	Reference/Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
40-140	52.0	52.5	0.7	0.5
	138.0	138.0	0.7	0.0
20-120	30.0	30.2	0.7	0.2
	118.0	118.0	0.7	0.0
0-100	30.0	30.0	0.7	0.0
	98.0	98.0	0.7	0.0

FREQUENCY WEIGHTING TEST

The frequency response of the weighting netwoks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.6	1.5	1.5	0.0
63.1	94.0	67.8	67.7	1.5	1.5	-0.1
125.9	94.0	77.9	77.9	1.0	1.0	0.0
251.2	94.0	85.4	85.3	1.0	1.0	-0.1
501.2	94.0	90.8	90.8	1.0	1.0	0.0
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.5	3.0	6.0	-0.2

Frequency weighting C:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB

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SMECLab

Sound level meter type: XL2 Serial No. A2A-15269-EO Date 23-Feb-2021
Microphone type: MC230A Serial No. A16673
Report: 21CA0222 02-02

1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	90.8	1.5	1.5	-0.2
63.1	94.0	93.2	93.1	1.5	1.5	-0.1
125.9	94.0	93.8	93.8	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	93.8	93.8	1.0	1.0	0.0
3981.0	94.0	93.2	93.2	1.0	1.0	0.0
7943.0	94.0	91.0	91.0	1.5	3.0	0.0
12590.0	94.0	87.8	87.6	3.0	6.0	-0.2

Frequency weighting Lin:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	94.0	93.8	1.5	1.5	-0.2
63.1	94.0	94.0	93.9	1.5	1.5	-0.1
125.9	94.0	94.0	94.0	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	94.0	94.0	1.0	1.0	0.0
3981.0	94.0	94.0	94.0	1.0	1.0	0.0
7943.0	94.0	94.0	94.0	1.5	3.0	0.0
12590.0	94.0	94.0	94.0	3.0	6.0	0.0

Note: No corrections for the frequency response of the microphone, instrument case and windshield are made to the sound level meter.

TIME WEIGHTING FAST TEST

Time weighting F is tested on the reference range with a single sinusoidal burst of duration 200 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	115.0	115.0	1.0	1.0	0.0

TIME WEIGHTING SLOW TEST

Time weighting S is tested on the reference range with a single sinusoidal burst of duration 500 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	111.9	111.9	1.0	1.0	0.0

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SMECLab

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Microphone type: MC230A Serial No. A16673
Report: 21CA0222 02-02

PEAK RESPONSE TEST

The onset time of the peak detector is tested on the reference range by comparing the response to a 100 us rectangular test pulse with the response to a 10 ms reference pulse of the same amplitude. The amplitude of the 10 ms reference pulse is such as to produce an indication 1 dB below the upper limit of the primary indicator range.

Positive polarities: (Weighting Z, set the generator signal to single, Lzpeak)

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	118.6	2.0	-0.4

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	118.6	2.0	-0.4

RMS ACCURACY TEST

The RMS detector accuracy is tested on the reference range for a crest factor of 3.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz. (Set to INT)

Time wighting	Ref. Level	Expected level	Tone burst signal	Tolerance	Deviation
	dB	dB	indication(dB)	+/- dB	dB
Slow	118.0+6.6	118.0	117.9	0.5	-0.1

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)
Test frequency: 2000 Hz
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

Ref. Level	Single burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	111.2	111.1	2.0	-0.1

Repeated at 100 Hz

Ref. Level	Repeated burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	117.3	117.2	1.0	-0.1

TIME AVERAGING TEST

This test compares the SLM reading for continuous sine signals with readings obtained from a sine tone burst sequence having the same RMS level. The test level is 30 dB below the upper limit of the linearity range and repeated for Type 1 SLM with 40 dB below the upper limit of the linearity.

Frequency of tone burst: 4000 Hz
Duration of tone burst: 1 ms

Repetition Time	Level of tone burst	Expected Leq	Actual Leq	Tolerance	Deviation	Remarks

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SMECLab

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Microphone type: MC230A Serial No. A16673
Report: 21CA0222 02-02

msec	dB	dB	dB	+/- dB	dB	
1000	90.0	90.0	89.9	1.0	-0.1	60s integ.
10000	80.0	80.0	79.8	1.0	-0.2	6min. integ.

PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz

Integration time: 10 sec

The integrating sound level meter set to Leq:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	88.0	58.0	58.0	1.7	0.0

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	88.0	68.0	68.0	1.7	0.0

OVERLOAD INDICATION TEST

For SLM capable of operating in a non-integrating mode.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz.

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
121.3	120.3	117.3	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as following:
The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz
Integration time: 10 sec
Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
127.4	126.4	86.4	86.4	2.2	0.0

ACOUSTIC TEST

The acoustic test of the complete SLM is tested at the frequency 125 Hz and 8000 Hz using a B&K type 4226 Multifunction Acoustic Calibrator. The test is performed in A weighting.

Frequency	Expected level	Actual level	Tolerance (dB)		Deviation
Hz	dB	Measured (dB)	+	-	dB

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港新界葵涌永基路22-24號好爸爸創科大廈
Good Ba Ba Hitech Building, Nos. 22-24 Wing Kei Road, Kwai Chung, New Territories, Hong Kong
Tel: (852) 2873 6860 Fax: (852) 2555 7533 E-mail: smec@cigismec.com Website: www.cigismec.com

SMECLab

Test Data for Sound Level Meter

Sound level meter type: XL2 Serial No. A2A-15269-EO Date 23-Feb-2021
Microphone type: MC230A Serial No. A16673
Report: 21CA0222 02-02

1000	94.0	94.0	0.0	0.0	0.0
125	77.9	77.9	1.0	1.0	0.0
8000	92.9	92.8	1.5	3.0	-0.1

----------END---------

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港新界葵涌永基路22-24號好爸爸創科大廈
Good Ba Ba Hitech Building, Nos. 22-24 Wing Kei Road, Kwai Chung, New Territories, Hong Kong
Tel: (852) 2873 6860 Fax: (852) 2555 7533 E-mail: smec@cigismec.com Website: www.cigismec.com

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 21CA0120 04-02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Larson Davis
Type/Model No.:	CAL200
Serial/Equipment No.:	13128
Adaptors used:	-

Item submitted by

Curstomer:	Lam Geotechnics Limited.
Address of Customer:	-
Request No.:	-
Date of receipt:	20-Jan-2021

Date of test: 24-Jan-2021

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-May-2021	SCL
Preamplifier	B&K 2673	2743150	03-Jun-2021	CEPREI
Measuring amplifier	B&K 2610	2346941	03-Jun-2021	CEPREI
Signal generator	DS 360	33873	19-May-2021	CEPREI
Digital multi-meter	34401A	US36087050	19-May-2021	CEPREI
Audio analyzer	8903B	GB41300350	18-May-2021	CEPREI
Universal counter	53132A	MY40003662	18-May-2021	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1000 ± 5 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

Details of the performed measurements are presented on **page 2** of this certificate.

SOILS & MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Approved Signatory: Feng Junqi **Date:** 25-Jan-2021 **Company Chop:**

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港新界葵涌永基路22-24號好爸爸創科大廈
Good Ba Ba Hitech Building, Nos. 22-24 Wing Kei Road, Kwai Chung, New Territories, Hong Kong
Tel: (852) 2873 6860 Fax: (852) 2555 7533 E-mail: smec@cigismec.com Website: www.cigismec.com

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 21CA0120 04-02 **Page:** 2 **of** 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	93.63	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.014 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 999.5 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.5 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Date:** 24-Jan-2021

Checked by: Feng Junqi **Date:** 25-Jan-2021

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

Met One Instruments
1600 Washington Blvd
Grants Pass, OR 97526
(541) 471-7111
(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

The calibration results on this report certify that this instrument complies with the product specifications at the time of calibration. Calibration was performed according to accepted industry methods using equipment, procedures, and standards that are traceable to NIST and ISO.

Recommended calibration interval is 12 months from the first day of use.

Instrument Model# *Aerocet 831* **Instrument Serial#** *W15449*

Date of Calibration *12/3/2020* **Sensor #** *16439*

Jason Gist AT 14 — AT 21 DEC 07 2020

Calibration Technician **Quality Check**

Temperature *23* °C **Relative Humidity** *28* %

Test Procedure: *Aerocet 831-6100*

PSL Size (µm)	Test Results	Test Spec.	Lot# NIST	Expiration
0.3	Pass	± 10%	223077	04/30/2023
0.5	Pass	± 10%	219480	11/30/2022
1.0	Pass	± 10%	193291	1/31/2021
2.5	Pass	± 10%	REF	NA
4.0	Pass	± 10%	REF	NA
5.0	Pass	± 10%	REF	NA
7.0	Pass	± 10%	REF	NA
10.0	Pass	± 10%	REF	NA

Standards	Model	SN	Cal Due
Dry Cal	Defender 530+	170092	1/28/2021
DMM	289	23700150	5/4/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526S	X17420	12/20/2020

Met One Instruments
1600 Washington Blvd
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(541) 471-7111
(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

As Received

This certificate documents the as received condition of your instrument. Calibration was verified using accepted industry methods, equipment, procedures and standards that are traceable to NIST and ISO.

Instrument Model# Aerocet 831 **Instrument Serial#** W15449

Date of comparison against standard 12-2-2020 **Sensor #** 16439

Quality Control Technician Jason Gist AT14

Temperature 23 °C **Relative Humidity** 29 %

Test Procedure: Aerocet 831-6100

As Received	Value	Range	Condition
Zero Count	0	Less than 5 particles in 5 min.	PASS
Air Flow	.09109	.092 to .108 CFM	FAIL

PSL Size Micron	LOT# NIST	As Received PSL Count Comparison	Allowable PSL Count Comparison	Allowable Size Accuracy	As Received Condition
0.3	223077	46.06	10% to 90%	+/- 10 %	PASS
0.5	219480	64.40	10% to 90%	+/- 10 %	PASS
1.0	193291	46.62	10% to 90%	+/- 10 %	PASS

Standards	Model	SN	Cal Due
Dry Cal	Defender 530+	170092	1/28/2021
DMM	289	23700150	5/4/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526S	X17420	12/20/2020

Calibration was performed by direct comparison to a count standard.

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	Metone AEROCET 831
Model Number	:	831
Serial Number	:	W15449
Performance Check Date	:	18-Jun-21

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	06-May-21

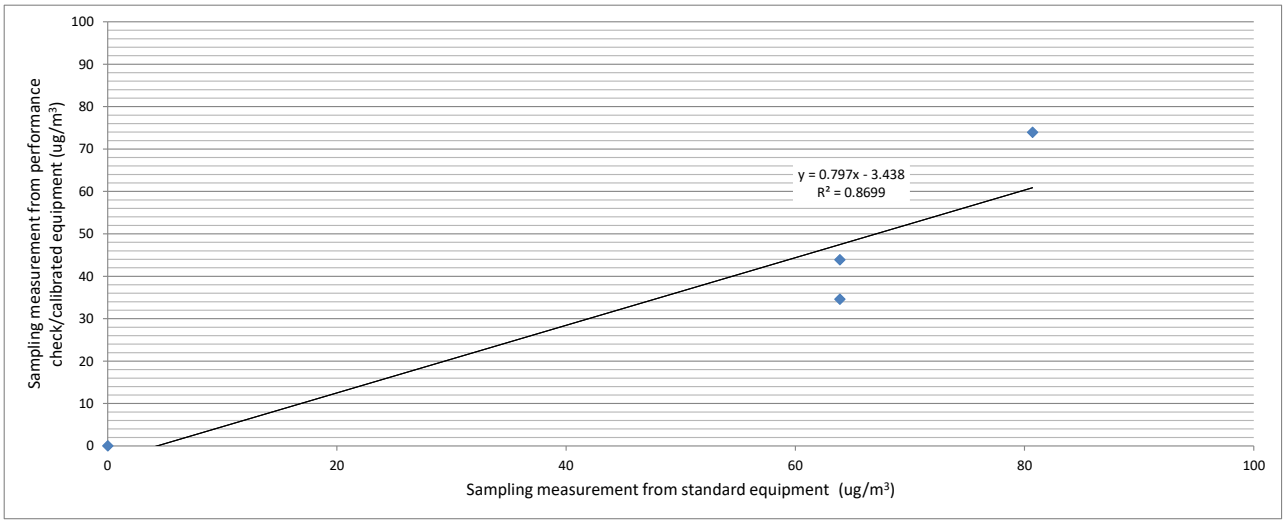
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (X - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (Y - Axis)
Zero Check	18/6/2021 08:00	0	0	0	0
1	18/6/2021 09:30	1007	28	81	74
2	18/6/2021 10:31	1007	28	64	44
3	18/6/2021 13:00	1007	28	64	35

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.1000
Correlation Coefficient	:	0.9327
Validity of Performance Check / Calibration Record	:	18/6/2022



Operator:	Alan Ng	Date:	18-Jun-21
Checked by:	James Chu	Date:	19-Jun-21

Met One Instruments
1600 Washington Blvd
Grants Pass, OR 97526
(541) 471-7111
(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

The calibration results on this report certify that this instrument complies with the product specifications at the time of calibration. Calibration was performed according to accepted industry methods using equipment, procedures, and standards that are traceable to NIST and ISO.

Recommended calibration interval is 12 months from the first day of use.

Instrument Model# *Aerocet 831* **Instrument Serial#** *Y23153*

Date of Calibration *12/3/2020* **Sensor #** *19493*

Jason Gist AT14 AT21 DEC 07 2020

Calibration Technician **Quality Check**

Temperature *23* °C **Relative Humidity** *28* %

Test Procedure: *Aerocet 831-6100*

PSL Size (µm)	Test Results	Test Spec.	Lot# NIST	Expiration
0.3	Pass	± 10%	223077	04/30/2023
0.5	Pass	± 10%	219480	11/30/2022
1.0	Pass	± 10%	193291	1/31/2021
2.5	Pass	± 10%	REF	NA
4.0	Pass	± 10%	REF	NA
5.0	Pass	± 10%	REF	NA
7.0	Pass	± 10%	REF	NA
10.0	Pass	± 10%	REF	NA

Standards	Model	SN	Cal Due
Dry Cal	Defender 530+	170092	1/28/2021
DMM	289	23700150	5/4/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526S	X17420	12/20/2020

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Service@metone.com

Calibration Certificate

As Received

This certificate documents the as received condition of your instrument. Calibration was verified using accepted industry methods, equipment, procedures and standards that are traceable to NIST and ISO.

Instrument Model# Aerocet 831 **Instrument Serial#** Y23153

Date of comparison against standard 12-2-2020 **Sensor #** 19493

Quality Control Technician Jason Gist

Temperature 23 °C **Relative Humidity** 29 %

Test Procedure: Aerocet 831-6100

As Received	Value	Range	Condition
Zero Count	0	Less than 5 particles in 5 min.	PASS
Air Flow	.09044	.092 to .108 CFM	FAIL

PSL Size Micron	LOT# NIST	As Received PSL Count Comparison	Allowable PSL Count Comparison	Allowable Size Accuracy	As Received Condition
0.3	223077	57.69	10% to 90%	+/- 10 %	PASS
0.5	219480	30.82	10% to 90%	+/- 10 %	PASS
1.0	193291	19.68	10% to 90%	+/- 10 %	PASS

Standards	Model	SN	Cal Due
Dry Cal	Defender 530+	170092	1/28/2021
DMM	289	23700150	5/4/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526S	X17420	12/20/2020

Calibration was performed by direct comparison to a count standard.

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	Metone AEROCET 831
Model Number	:	831
Serial Number	:	Y23153
Performance Check Date	:	29-Dec-20

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS000
Last Calibration Date	:	28-Dec-20

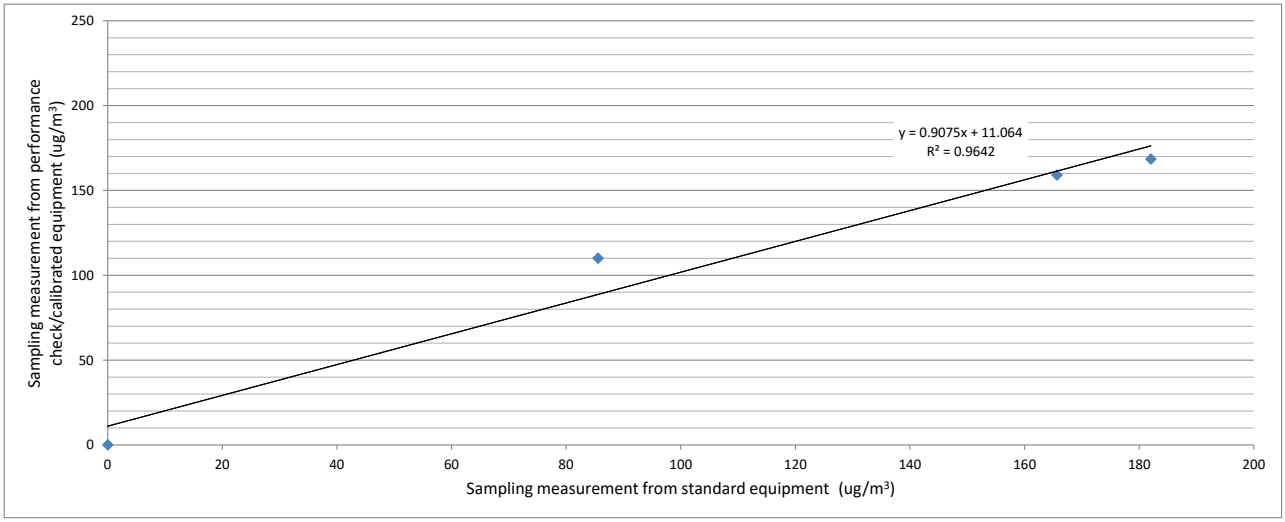
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (X - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (Y - Axis)
Zero Check	28/12/2020 08:00	0	0	0	0
1	29/12/2020 08:04	1015	21	182	168
2	29/12/2020 09:05	1015	21	166	159
3	29/12/2020 10:06	1015	21	86	110

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.1000
Correlation Coefficient	:	0.9819
Validity of Performance Check / Calibration Record	:	29/12/2021



Operator:	Henry Lau	Date:	29-Dec-20
Checked by:	James Chu	Date:	30-Dec-20

Met One Instruments
1600 Washington Blvd
Grants Pass, OR 97526
(541) 471-7111
(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

The calibration results on this report certify that this instrument complies with the product specifications at the time of calibration. Calibration was performed according to accepted industry methods using equipment, procedures, and standards that are traceable to NIST and ISO.

Recommended calibration interval is 12 months from the first day of use.

Instrument Model# 831 **Instrument Serial#** R14332

Date of Calibration 2/18/2021 **Sensor #** 12228

J. Chester AT1
Calibration Technician

AT14 MAR 0 2 2021
Quality Check

Temperature 30 °C **Relative Humidity** 33 %

Test Procedure: 831-6100

PSL Size (µm)	Test Results	Test Spec.	Lot# NIST	Expiration
0.5	Pass	± 10%	219480	11/30/2022
0.7	Pass	± 10%	229561	08/31/2023
1.0	Pass	± 10%	229294	8/31/2023
2.5	Pass	± 10%	REF	NA
4.0	Pass	± 10%	REF	NA
5.0	Pass	± 10%	REF	NA
7.0	Pass	± 10%	REF	NA
10.0	Pass	± 10%	REF	NA

Standards	Model	SN	Cal Due
Flowmeter	DCL-M	103751	3/14/2021
DMM	189 Multimeter	92130180	10/26/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526	M1760	5/19/2021

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	Metone AEROCET 831
Model Number	:	831
Serial Number	:	R14332
Performance Check Date	:	22-Mar-21

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	08-Mar-21

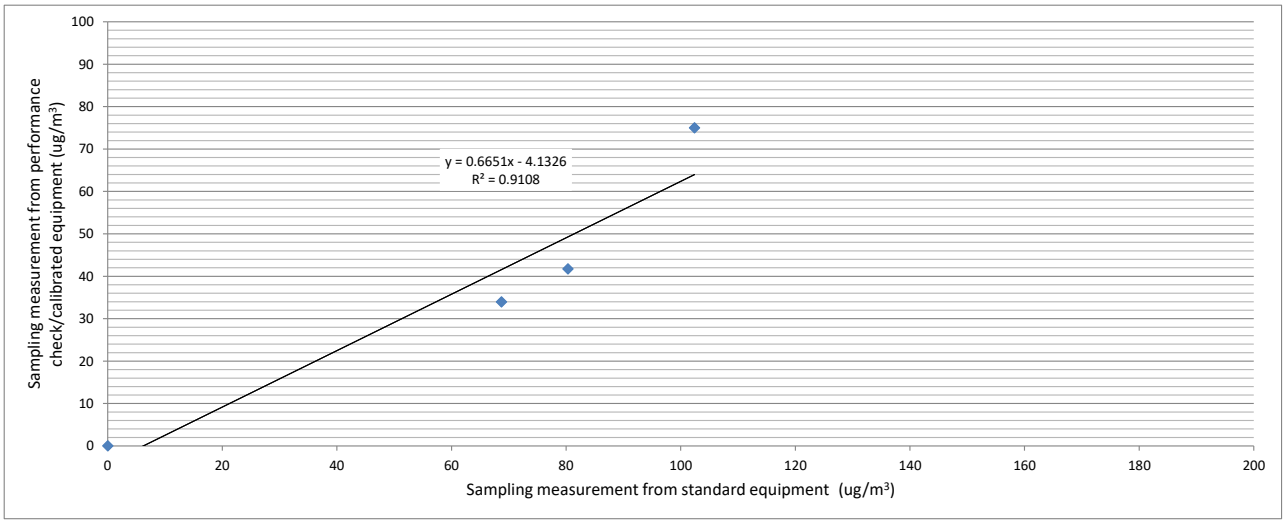
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (X - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (Y - Axis)
Zero Check	28/12/2020 08:00	0	0	0	0
1	22/3/2021 08:00	1015	21	102	75
2	22/3/2021 09:01	1015	21	80	42
3	22/3/2021 10:02	1015	21	69	34

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	1.4000
Correlation Coefficient	:	0.9544
Validity of Performance Check / Calibration Record	:	22/3/2022



Operator:	Alan Ng	Date:	22-Mar-21
Checked by:	James Chu	Date:	23-Mar-21

Met One Instruments
1600 Washington Blvd
Grants Pass, OR 97526
(541) 471-7111
(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

The calibration results on this report certify that this instrument complies with the product specifications at the time of calibration. Calibration was performed according to accepted industry methods using equipment, procedures, and standards that are traceable to NIST and ISO.

Recommended calibration interval is 12 months from the first day of use.

Instrument Model# *Aerocet 831* **Instrument Serial#** *Y23160*

Date of Calibration *12/3/2020* **Sensor #** *19500*

Jason Gist AT14 AT21 DEC 07 2020

Calibration Technician **Quality Check**

Temperature *23* °C **Relative Humidity** *28* %

Test Procedure: *Aerocet 831-6100*

PSL Size (µm)	Test Results	Test Spec.	Lot# NIST	Expiration
0.3	Pass	± 10%	223077	04/30/2023
0.5	Pass	± 10%	219480	11/30/2022
1.0	Pass	± 10%	193291	1/31/2021
2.5	Pass	± 10%	REF	NA
4.0	Pass	± 10%	REF	NA
5.0	Pass	± 10%	REF	NA
7.0	Pass	± 10%	REF	NA
10.0	Pass	± 10%	REF	NA

Standards	Model	SN	Cal Due
Dry Cal	Defender 530+	170092	1/28/2021
DMM	289	23700150	5/4/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526S	X17420	12/20/2020

Met One Instruments
1600 Washington Blvd
Grants Pass, OR 97526
(541) 471-7111
(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

As Received

This certificate documents the as received condition of your instrument. Calibration was verified using accepted industry methods, equipment, procedures and standards that are traceable to NIST and ISO.

Instrument Model# Aerocet 831 **Instrument Serial#** Y23160

Date of comparison against standard 12-2-2020 **Sensor #** 19500

Quality Control Technician Jason Gist AT14

Temperature 23 °C **Relative Humidity** 29 %

Test Procedure: Aerocet 831-6100

As Received	Value	Range	Condition
Zero Count	0	Less than 5 particles in 5 min.	PASS
Air Flow	.09579	.092 to .108 CFM	PASS

PSL Size Micron	LOT# NIST	As Received PSL Count Comparison	Allowable PSL Count Comparison	Allowable Size Accuracy	As Received Condition
0.3	223077	41.05	10% to 90%	+/- 10 %	PASS
0.5	219480	14.29	10% to 90%	+/- 10 %	PASS
1.0	193291	15.89	10% to 90%	+/- 10 %	PASS

Standards	Model	SN	Cal Due
Dry Cal	Defender 530+	170092	1/28/2021
DMM	289	23700150	5/4/2021
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
Particle Counter	GT-526S	X17420	12/20/2020

Calibration was performed by direct comparison to a count standard.

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	Metone AEROCET 831
Model Number	:	831
Serial Number	:	Y23160
Performance Check Date	:	29-Dec-20

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS000
Last Calibration Date	:	28-Dec-20

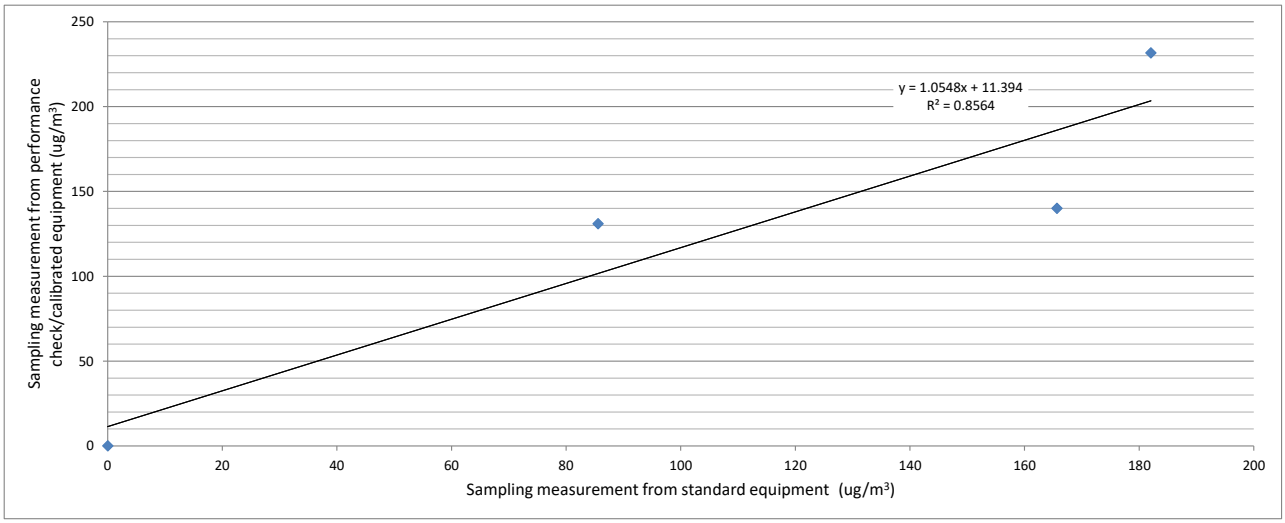
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (˚C)	Concentration in ug/m^3 (Standard equipment) (X - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (Y - Axis)
Zero Check	28/12/2020 08:00	0	0	0	0
1	29/12/2020 08:04	1015	21	182	232
2	29/12/2020 09:05	1015	21	166	140
3	29/12/2020 10:06	1015	21	86	131

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor)	:	0.9000
Correlation Coefficient	:	0.9254
Validity of Performance Check / Calibration Record	:	29/12/2021



Operator:	Henry Lau	Date:	29-Dec-20
Checked by:	James Chu	Date:	30-Dec-20

Met One Instruments, Inc.
1600 NW Washington Blvd, Grants Pass, OR
TEL (541) 471-7111 Fax (541) 471-7116

Certificate of Calibration

BT-645

Particulate Monitor

Recommended calibration interval is 24 months from first day of use.

Unit Info

Model:	**BT-645**	**81865 Firmware Rev:**	**1.2.0**
Serial Number:	**R22586**	**81113**	**0.2.5**
Calibrated By:	J. Chester AT	**Cal. Date:**	**04/13/2021**
Quality Inspector:	AJ6	**Date:**	APR 15 2021
Calibration Hz/µg/m³:	**6.06**		

Final Test

Flow (2.0 L/min):	**Pass**	**Ambient Temp (C):**	**23**
Serial Communication:	**Pass**	**RH (%):**	**24**
Concentration:	370	**Standard:**	**372**

Calibration Standards

Standards	Manufacturer	Model	SN	Cal Due Date
DMM	Fluke	189	92130180	10/26/2021
Temp/Humidity	Met One Instruments	083E-1-6	R20313	09/17/21
Flow Meter	TSI	4000	40419545007	11/21/2021
LD-3B	SIBATA	LD-3B	476795	06/29/2021

The standards used for this calibration have accuracy equal to or greater than the instrument tested. These standards are on record and traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated, all instruments are calibrated to meet the manufacturer's published specifications. The Calibration system complies with MIL-STD-45662A.

Lam Environmental Services Limited

Portable Dust Meter Performance Check Record

Portable Dust Meter

Type	:	Particulare Monitor
Manufacturer	:	MET ONE INSTRUMENTS
Model Number	:	BT-645
Serial Number	:	R22586
Performance Check Date	:	10-May-21

Standard Equipment

Type	:	High Volume Sampler
Manufacturer	:	TISCH
Model Number	:	TE-5170
Equipment Number	:	HVS018
Last Calibration Date	:	06-May-21

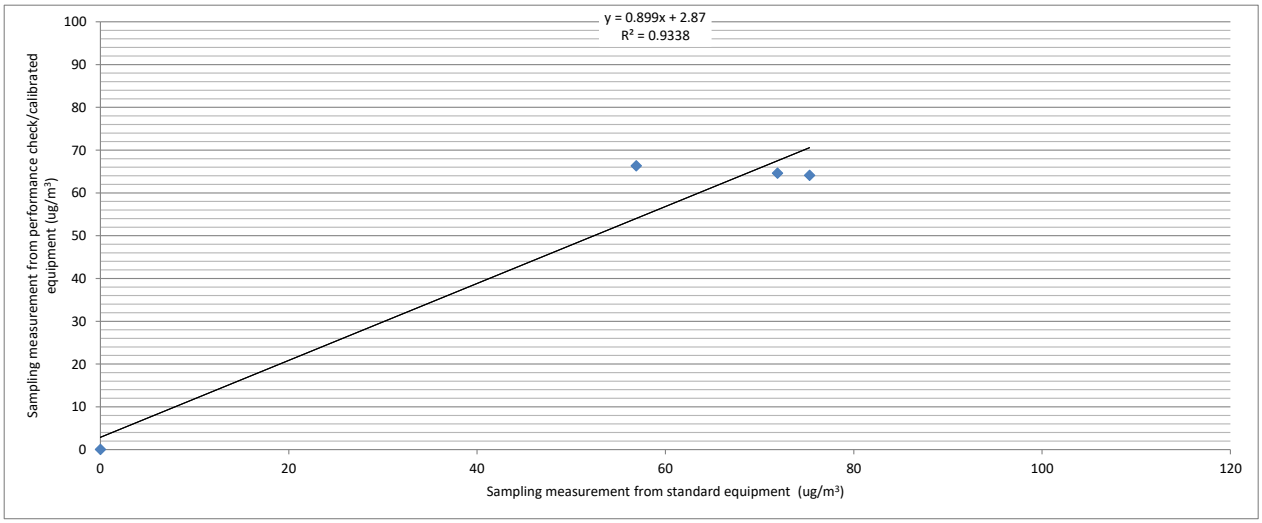
Portable Dust Meter Performance Check Results

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard equipment) (Y - Axis)	Concentration in ug/m^3 (Performance Check / Calibrated equipment) (X - Axis)
Zero Check	9/5/21 08:00	28	1009	0	0
1	10/5/21 08:05	28	1009	72	65
2	10/5/21 09:06	28	1009	75	64
3	10/5/21 10:07	28	1009	57	66

* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

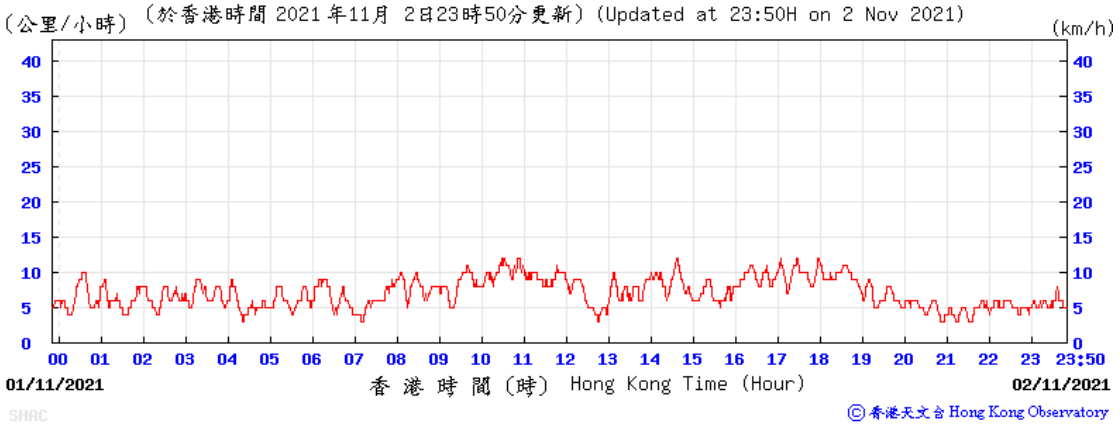
Slope (K- factor)	:	1.1000
Correlation Coefficient	:	0.9663
Validity of Performance Check / Calibration Record	:	10/5/2022



Operator:	Henry Lau	Date:	10/05/2021
Checked by:	James Chu	Date:	11/05/2021

Appendix 4.3

Wind data extracted from Sha Tin HKO Automatic Weather Station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(km/h)
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35
30
25
20
15
10
5
0
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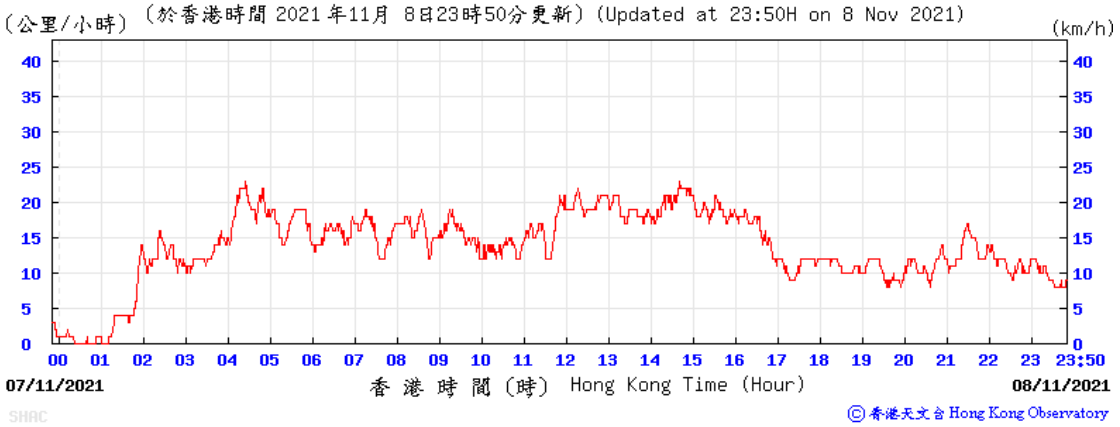
01/11/2021
香 港 時 間 (時) Hong Kong Time (Hour)
02/11/2021
SHAC
© 香港天文台 Hong Kong Observatory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20
15
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0
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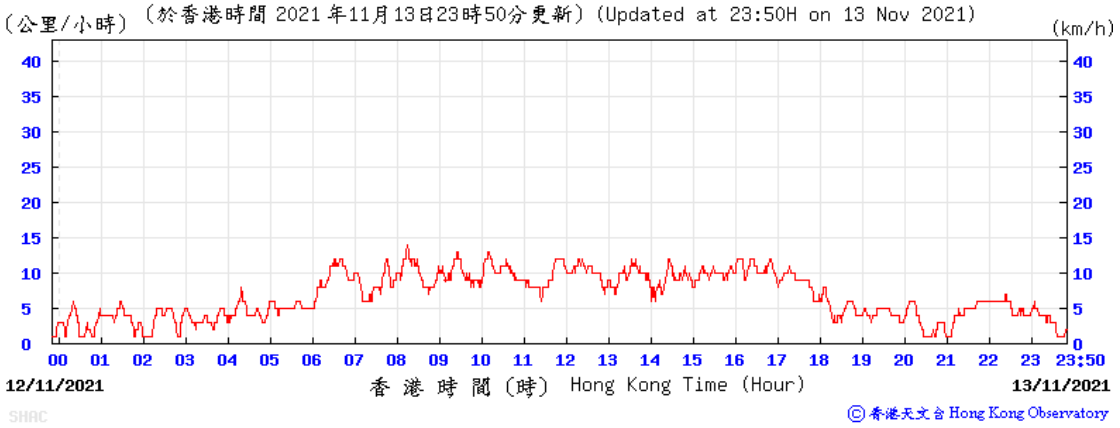
07/11/2021
香 港 時 間 (時) Hong Kong Time (Hour)
08/11/2021
SHAC
© 香港天文台 Hong Kong Observatory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20
15
10
5
0
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12/11/2021
香 港 時 間 (時) Hong Kong Time (Hour)
13/11/2021
SHAC
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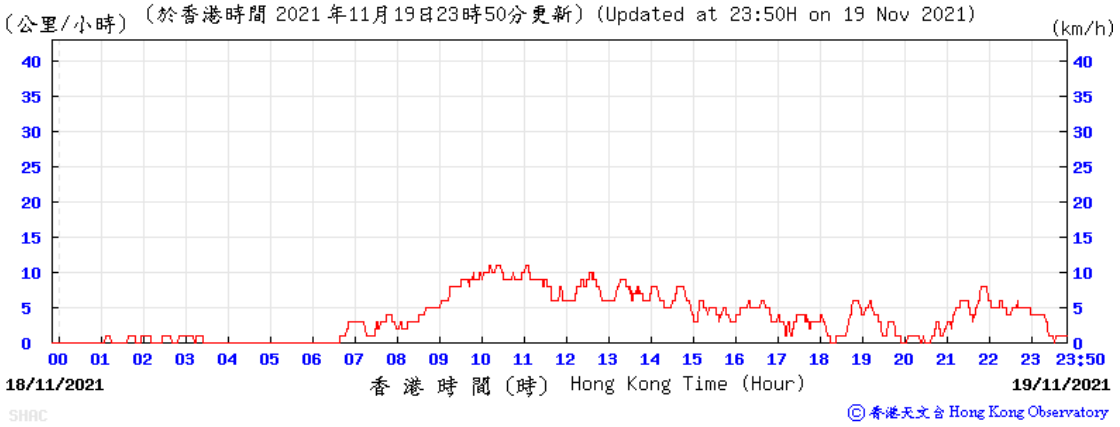
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25
20
15
10
5
0
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18/11/2021
香 港 時 間 (時) Hong Kong Time (Hour)
19/11/2021
SHAC
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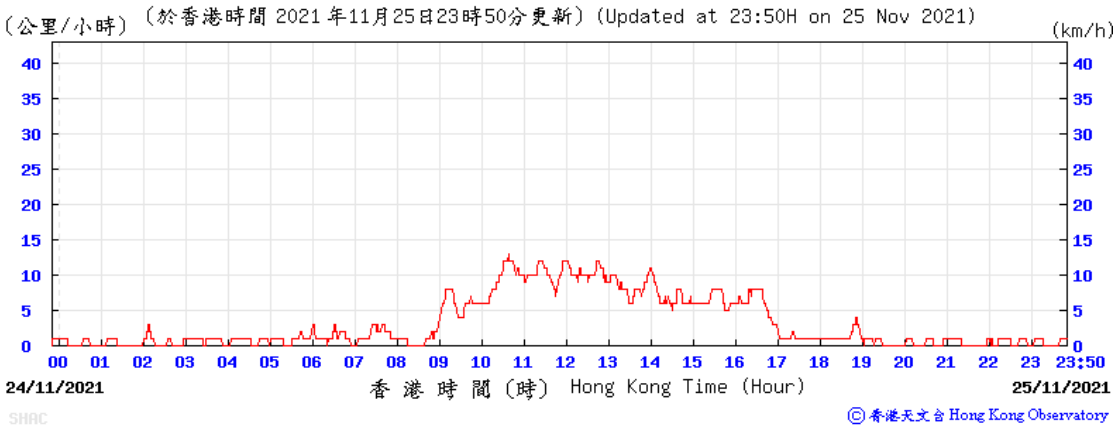
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25
20
15
10
5
0
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
24/11/2021
香 港 時 間 (時) Hong Kong Time (Hour)
25/11/2021
SHAC
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香港天文台 HONG KONG OBSERVATORY

每日數據摘錄

二零二一年十一月每日數據摘錄

返回 年 2021 月 11 前往

日	天文台								京士柏	橫瀾島^	
	平均氣壓(百帕斯卡)	氣溫			平均露點溫度(攝氏度)	平均相對濕度(%)	平均雲量(%)	總雨量(毫米)	總日照(小時)	盛行風向(度)	平均風速(公里/小時)
		絕對最高(攝氏度)	平均(攝氏度)	絕對最低(攝氏度)							
01	1018.5	27.6	25.2	23.7	20.5	76	63	微量	9.3	***	***
02	1018.0	27.9	25.1	24.1	20.6	76	74	微量	6.9	***	***
03	1016.7	27.4	25.2	24.1	20.4	75	65	微量	8.6	***	***
04	1014.9	27.9	25.5	24.1	21.3	78	61	0.0	9.0	***	***
05	1012.5	27.8	25.6	24.6	22.6	84	61	0.0	4.4	***	***
06	1010.1	29.2	26.4	24.0	22.3	79	23	0.0	10.2	***	***
07	1012.2	29.0	26.1	24.8	23.0	83	38	0.0	8.5	***	***
08	1017.2	25.3	20.1	18.1	12.1	61	35	2.0	9.4	***	***
09	1019.3	23.0	19.5	16.9	8.8	50	76	0.0	7.8	***	***
10	1018.7	24.7	20.5	17.8	6.6	41	41	0.0	8.9	***	***
11	1017.7	25.0	21.5	18.9	9.5	47	64	0.0	7.9	***	***
12	1018.8	25.7	22.6	20.0	11.7	51	54	0.0	9.5	***	***
13	1018.1	25.4	22.3	20.1	10.9	49	46	微量	9.6	***	***
14	1018.2	24.7	21.6	19.3	13.2	59	23	0.0	10.0	***	***
15	1017.2	25.5	22.1	20.4	15.1	65	59	0.0	8.1	***	***
16	1017.0	26.3	23.2	21.0	17.7	71	41	0.0	9.9	***	***
17	1017.1	26.5	23.5	22.0	18.5	74	65	0.0	4.3	***	***
18	1014.3	25.8	22.4	20.2	16.3	69	45	0.0	9.7	***	***
19	1012.2	25.7	23.0	21.3	18.9	77	71	微量	3.8	***	***
20	1012.9	26.1	23.7	22.4	19.5	77	48	0.3	9.5	***	***
21	1014.1	25.6	23.5	22.7	20.4	82	56	0.0	4.0	***	***
22	1017.0	23.3	19.6	16.8	15.2	76	80	3.5	0.3	***	***
23	1021.1	17.4	16.1	14.3	10.3	69	89	微量	0.0	***	***
24	1020.3	22.1	19.0	16.9	12.3	65	55	0.0	7.8	***	***

25	1018.2	23.7	20.6	18.4	13.4	64	34	0.0	7.8	***	***
26	1018.4	24.8	21.6	18.6	14.2	64	24	0.0	9.6	***	***
27	1020.1	24.3	21.2	18.7	13.8	63	52	0.0	9.7	***	***
28	1019.5	24.5	21.6	19.2	15.6	69	38	0.0	9.7	***	***
29	1017.3	26.1	22.4	19.4	15.7	67	10	0.0	9.7	***	***
30	1018.4	24.6	21.3	17.1	13.0	59	21	0.0	9.4	***	***
平均/總值	1016.9	25.4	22.4	20.3	15.8	67	50	5.8	233.3	***	***
氣候平均值(1991-2020)	1017.3	24.5	22.2	20.3	16.7	72	58	39.3	172.3	070	26.6
氣候平均值(1981-2010)	1017.7	24.1	21.8	19.8	16.0	71	54	37.6	180.1	080	27.0

*** 沒有數據
^ 自*1989*年*8*月開始,橫瀾島的風向和風速資料基於自動氣象站數據
微量表示少於 0.05 毫米

Appendix 5.1

Monitoring Schedules for Reporting Month and Next Month

Contract No. STW 01/2021
Environmental Team for Relocation of Sha Tin Sewage Treatment Works to Caverns
Impact Air Quality and Noise Monitoring Schedule
Nov 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31 Oct	1 Nov	2 Nov AQM NM (CM1, CM2(B), CM3, CM4, CM5, DM3) NM (CM4)_Evening Time (1900-2300 hrs)	3 Nov NM (CM4)_Night Time (2300-0700 hrs on next day)	4 Nov	5 Nov NM (DM1, DM2)	6 Nov
7 Nov	8 Nov AQM NM (CM1, CM2(B), CM3, CM4, CM5, DM1, DM2, DM3) NM (CM4)_Evening Time (1900-2300 hrs)	9 Nov NM (CM4)_Night Time (2300-0700 hrs on next day)	10 Nov	11 Nov	12 Nov	13 Nov AQM
14 Nov	15 Nov	16 Nov	17 Nov NM (CM1, CM2(B))	18 Nov NM (CM4)_Evening Time (1900-2300 hrs)	19 Nov AQM NM (CM3, CM4, CM5, DM1, DM2, DM3) NM (CM4)_Night Time (2300-0700 hrs on next day)	20 Nov
21 Nov	22 Nov NM (CM1, CM2(B))	23 Nov NM (CM3, DM3)	24 Nov NM (CM4) NM (CM4)_Evening Time (1900-2300 hrs)	25 Nov AQM NM (CM5, DM1, DM2) NM (CM4)_Night Time (2300-0700 hrs on next day)	26 Nov	27 Nov
28-Nov	29-Nov	30-Nov NM (CM4) NM (CM4)_Evening Time (1900-2300 hrs) WQM	1-Dec NM (CM4)_Night Time (2300-0700 hrs on next day)	2-Dec	3-Dec	4-Dec

Remark:

1. AQM: Air Quality Monitoring
   NM: Noise Monitoring

WQM: Water Quality Monitoring

Contract No. STW 01/2021
Environmental Team for Relocation of Sha Tin Sewage Treatment Works to Caverns –Site Preparation and Access Tunnel Construction
Tentative Impact Air Quality and Noise Monitoring Schedule
Dec 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28 Nov	29 Nov	30 Nov WQM	01 Dec AQM NM WQM	02 Dec WQM	03 Dec WQM	04 Dec
05 Dec	06 Dec WQM	07 Dec AQM NM	08 Dec WQM	09 Dec	10 Dec WQM	11 Dec
12 Dec	13 Dec AQM NM WQM	14 Dec	15 Dec WQM	16 Dec	17 Dec WQM	18 Dec AQM
19 Dec	20 Dec WQM	21 Dec	22 Dec WQM	23 Dec	24 Dec AQM NM WQM	25 Dec
26 Dec	27 Dec WQM	28 Dec	29 Dec WQM	30 Dec AQM NM	31 Dec WQM	01 Jan

Remark:

1. AQM: Air Quality Monitoring
   NM: Noise Monitoring, the monitoring dates are tentative and subject to change
   WQM: Water Quality Monitoring

Appendix 5.2

Air Quality Monitoring Results and Graphical Presentations

Report on 1-hour TSP monitoring at AM1 - Ah Kung Kok Fishermen Village

Action Level (μg/m3) - 294
Limit Level (μg/m3) - 500

Date	Weather Condition	Time	Mass Concentration (μg/m3)
2-Nov-21	Fine	8:29	44
2-Nov-21	Fine	9:30	38
2-Nov-21	Fine	10:30	40
8-Nov-21	Fine	8:43	36
8-Nov-21	Fine	9:44	38
8-Nov-21	Fine	10:45	38
13-Nov-21	Fine	8:04	35
13-Nov-21	Fine	9:05	32
13-Nov-21	Fine	10:06	30
19-Nov-21	Fine	8:46	74
19-Nov-21	Fine	9:47	66
19-Nov-21	Fine	10:48	58
25-Nov-21	Fine	8:48	26
25-Nov-21	Fine	9:49	31
25-Nov-21	Fine	10:50	35

Report on 1-hour TSP monitoring at AM2 - Block H, Kam Tai Court

Action Level (μg/m3) - 325
Limit Level (μg/m3) - 500

Date	Weather Condition	Time	Mass Concentration (μg/m3)
2-Nov-21	Fine	8:55	56
2-Nov-21	Fine	9:56	43
2-Nov-21	Fine	10:56	52
8-Nov-21	Fine	8:54	30
8-Nov-21	Fine	9:55	27
8-Nov-21	Fine	10:56	32
13-Nov-21	Fine	9:42	52
13-Nov-21	Fine	10:43	52
13-Nov-21	Fine	13:00	38
19-Nov-21	Fine	9:39	43
19-Nov-21	Fine	10:40	31
19-Nov-21	Fine	13:00	41
25-Nov-21	Fine	9:09	24
25-Nov-21	Fine	10:10	24
25-Nov-21	Fine	13:00	22

Report on 1-hour TSP monitoring at AM3(B) - Outside A Kung Kok Street Garden

Action Level (μg/m3) - 360
Limit Level (μg/m3) - 500

Date	Weather Condition	Time	Mass Concentration (μg/m3)
2-Nov-21	Fine	8:26	33
2-Nov-21	Fine	9:27	33
2-Nov-21	Fine	10:27	35
8-Nov-21	Fine	8:20	35
8-Nov-21	Fine	9:21	38
8-Nov-21	Fine	10:22	39
13-Nov-21	Fine	8:16	36
13-Nov-21	Fine	9:17	39
13-Nov-21	Fine	10:17	39
19-Nov-21	Fine	8:36	94
19-Nov-21	Fine	9:37	92
19-Nov-21	Fine	10:38	100
25-Nov-21	Fine	8:19	17
25-Nov-21	Fine	9:20	16
25-Nov-21	Fine	10:21	18

Report on 1-hour TSP monitoring at AM4 - Wellborn Kindergarten

Action Level (μg/m3) - 297
Limit Level (μg/m3) - 500

Date	Weather Condition	Time	Mass Concentration (μg/m3)
2-Nov-21	Fine	8:13	31
2-Nov-21	Fine	9:14	23
2-Nov-21	Fine	10:14	25
8-Nov-21	Fine	8:09	40
8-Nov-21	Fine	9:10	41
8-Nov-21	Fine	10:11	41
13-Nov-21	Fine	8:20	36
13-Nov-21	Fine	9:21	38
13-Nov-21	Fine	10:22	37
19-Nov-21	Fine	8:34	58
19-Nov-21	Fine	9:35	55
19-Nov-21	Fine	10:36	53
25-Nov-21	Fine	8:22	46
25-Nov-21	Fine	9:23	42
25-Nov-21	Fine	10:25	39

Report on 1-hour TSP monitoring at AM5 - The NAAC Harmony Manor

Action Level (μg/m3) - 349
Limit Level (μg/m3) - 500

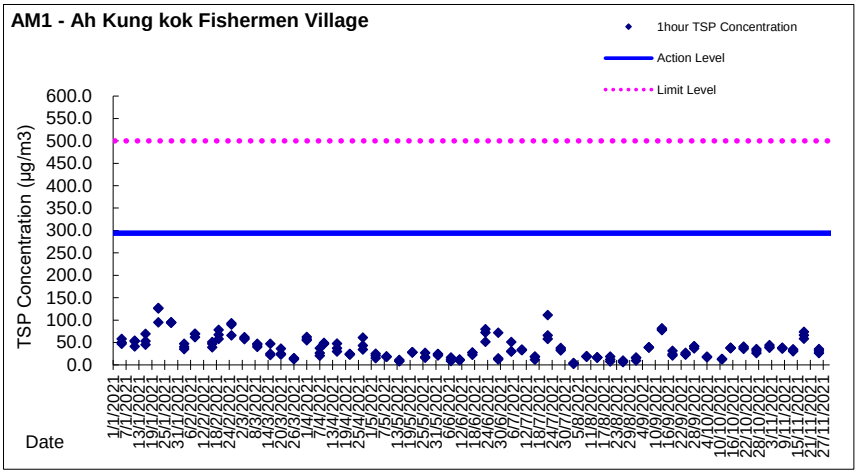
Date	Weather Condition	Time	Mass Concentration (μg/m3)
2-Nov-21	Fine	8:40	31
2-Nov-21	Fine	9:41	26
2-Nov-21	Fine	10:42	26
8-Nov-21	Fine	8:41	35
8-Nov-21	Fine	9:42	39
8-Nov-21	Fine	10:43	39
13-Nov-21	Fine	8:49	40
13-Nov-21	Fine	9:50	43
13-Nov-21	Fine	10:51	40
19-Nov-21	Fine	8:26	88
19-Nov-21	Fine	9:27	62
19-Nov-21	Fine	10:28	54
25-Nov-21	Fine	8:39	38
25-Nov-21	Fine	9:40	32
25-Nov-21	Fine	10:41	38

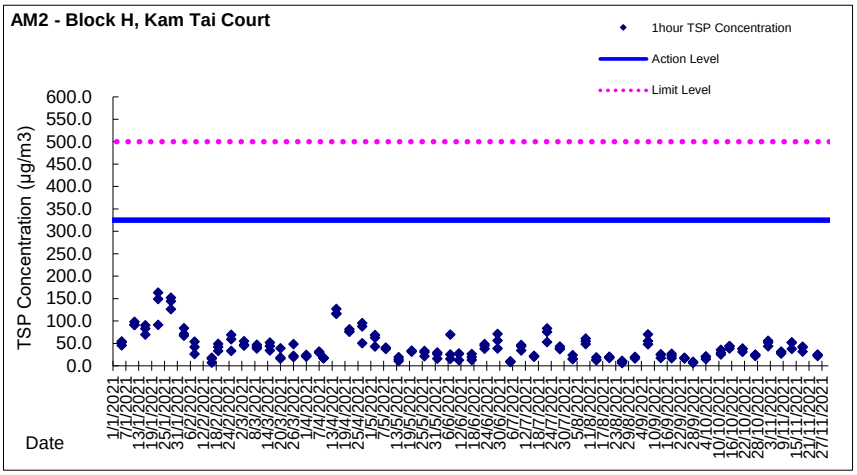
Report on 1-hour TSP monitoring at AM6 - Seaview Villa

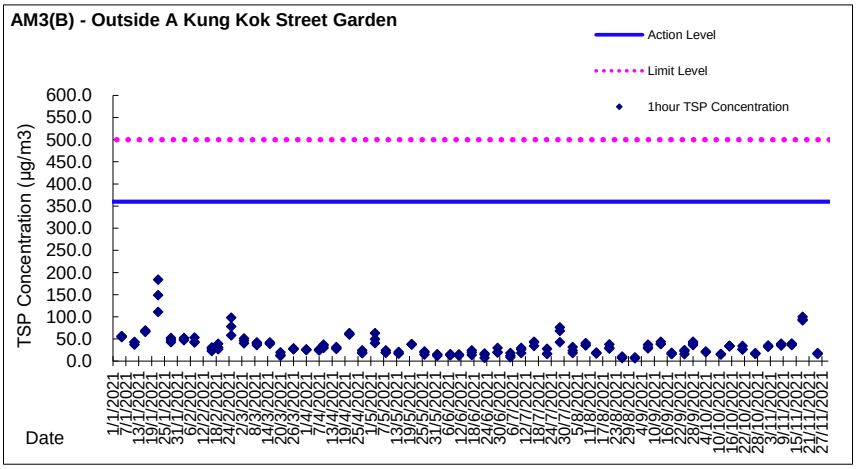
Action Level (μg/m3) - 312
Limit Level (μg/m3) - 500

Date	Weather Condition	Time	Mass Concentration (μg/m3)
2-Nov-21	Fine	9:13	27
2-Nov-21	Fine	10:14	32
2-Nov-21	Fine	13:00	28
8-Nov-21	Fine	8:51	48
8-Nov-21	Fine	9:52	51
8-Nov-21	Fine	10:52	53
13-Nov-21	Fine	8:35	38
13-Nov-21	Fine	9:36	41
13-Nov-21	Fine	10:36	43
19-Nov-21	Fine	8:10	59
19-Nov-21	Fine	9:11	56
19-Nov-21	Fine	10:12	56
25-Nov-21	Fine	13:00	44
25-Nov-21	Fine	14:01	52
25-Nov-21	Fine	15:02	55

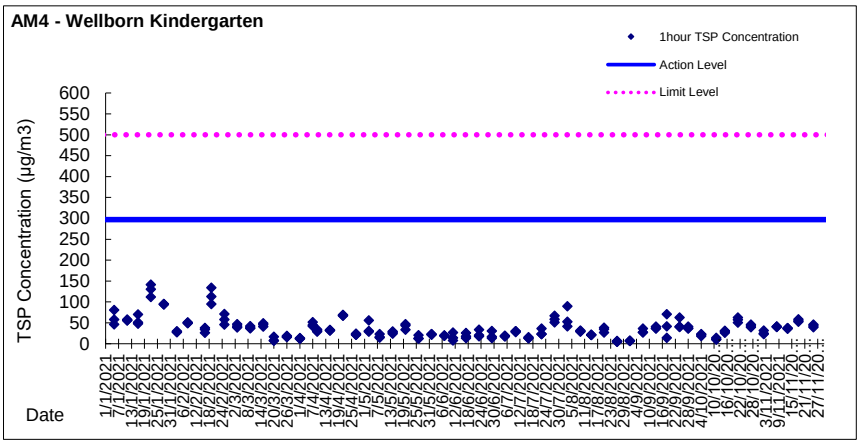
Graphic Presentation of TSP Result

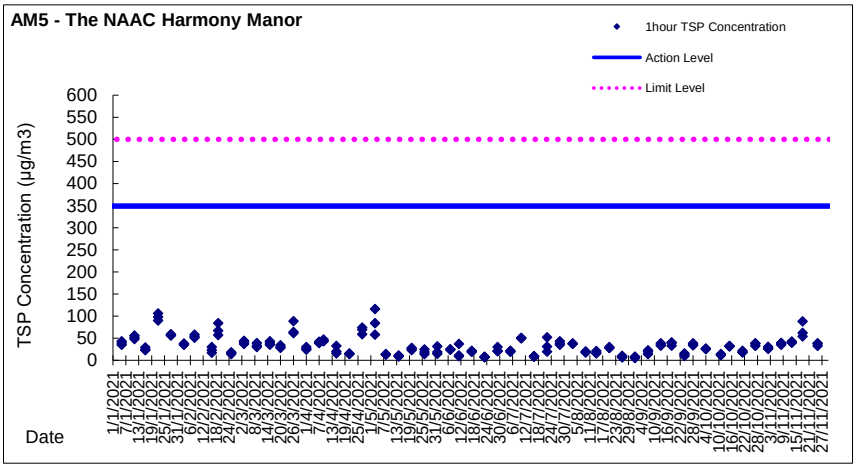


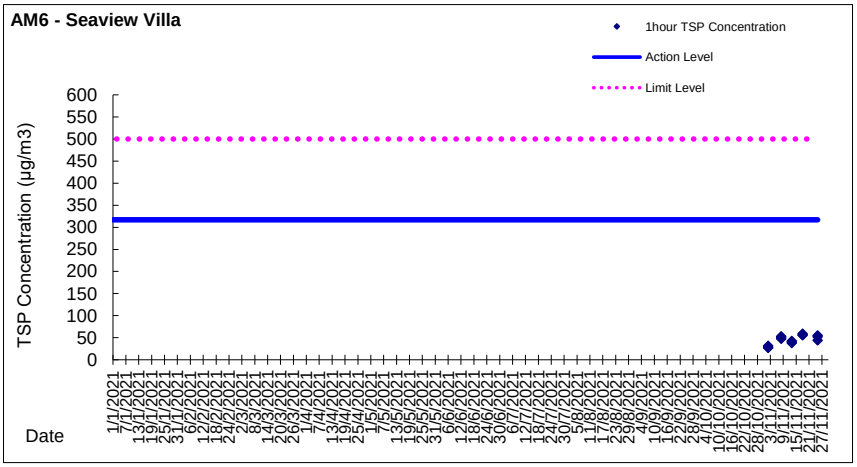




Graphic Presentation of TSP Result







Appendix 5.3

Noise Quality Monitoring Results and Graphical Presentations

Noise Monitoring Result

Day Time (0700 - 1900hrs on weekday)

Location: CM1 - G/F, Wellborn Kindergarten

Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
02/11/2021	14:20	Fine	0.0	54.1	58.5	48.4	70
08/11/2021	13:55	Fine	0.0	54.6	57.0	49.0	70
17/11/2021	10:30	Fine	0.2	52.5	54.2	48.7	70
22/11/2021	8:18	Fine	0.0	53.8	56.3	50.1	70

* Limit level of noise monitoring station CM1 was adjusted to 65dB(A) during examination period.

Location: CM2(B) - G/F, Outside A Kung Kok Street Garden

Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30-min)			
02/11/2021	13:45	Fine	0.0	63.9	66.2	59.6	70
08/11/2021	13:15	Fine	0.0	63.7	65.4	59.4	70
17/11/2021	9:50	Fine	0.3	61.2	63.7	57.5	70
22/11/2021	8:55	Fine	0.0	59.4	64.2	56.5	70

* Limit level of noise monitoring station CM2(A) was adjusted to 65dB(A) during examination period.

Location: CM3 - R/F, S.K.H. Ma On Shan Holy Spirit Primary School

Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
02/11/2021	13:00	Fine	0.0	64.7	67.5	61.4	70
08/11/2021	11:25	Fine	0.0	65.3	67.4	59.3	70
19/11/2021	9:55	Fine	0.0	65.2	66.9	62.7	70
23/11/2021	11:05	Cloudy	0.8	65.1	67.0	62.3	70

* Limit level of noise monitoring station CM3 was adjusted to 65dB(A) during examination period.

Location: CM4 - G/F, Ah Kung Kok Fishermen Village

Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
02/11/2021	17:00	Fine	0.0	63.4	67.0	58.2	75
08/11/2021	17:00	Fine	0.0	63.8	66.1	59.5	75
19/11/2021	17:00	Fine	0.0	64.5	67.2	60.3	75
24/11/2021	17:10	Fine	0.0	65.3	68.9	61.6	75
30/11/2021	17:00	Fine	0.0	62.9	66.0	60.6	75

Location: CM5 - R/F, The Neighbourhood Advice-Action Council Harmony Manor

Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
02/11/2021	15:15	Fine	0.0	62.7	66.3	57.9	75
08/11/2021	14:30	Fine	0.0	63.3	66.2	59.7	75
19/11/2021	14:23	Fine	1.0	51.4	54.7	47.2	75
25/11/2021	16:14	Fine	0.8	55.9	57.4	48.5	75

Location: DM1 - G/F, Seaview Villa

Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
05/11/2021	9:45	Fine	0.0	63.3	66.2	59.7	75
08/11/2021	10:20	Fine	0.0	62.9	65.3	58.9	75
19/11/2021	11:06	Fine	0.8	63.3	66.9	55.9	75
25/11/2021	16:02	Fine	0.0	64.7	69.1	60.3	75

Location: DM2 - G/F, Racecourse Gardens

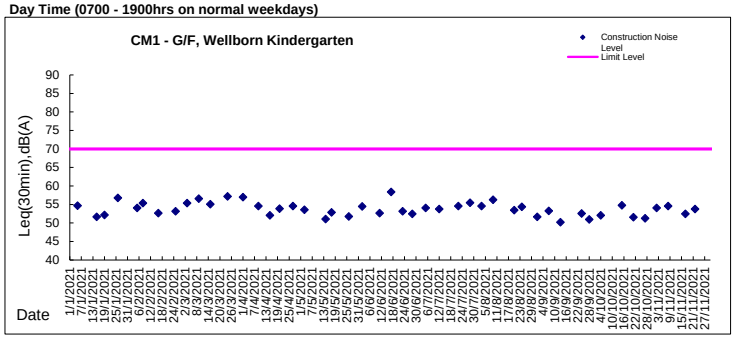
Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
05/11/2021	9:30	Fine	0.0	67.0	69.1	63.0	75
08/11/2021	10:00	Fine	0.0	67.1	69.4	60.5	75
19/11/2021	10:15	Fine	0.0	67.4	70.0	62.3	75
25/11/2021	13:30	Fine	0.0	65.6	68.9	61.3	75

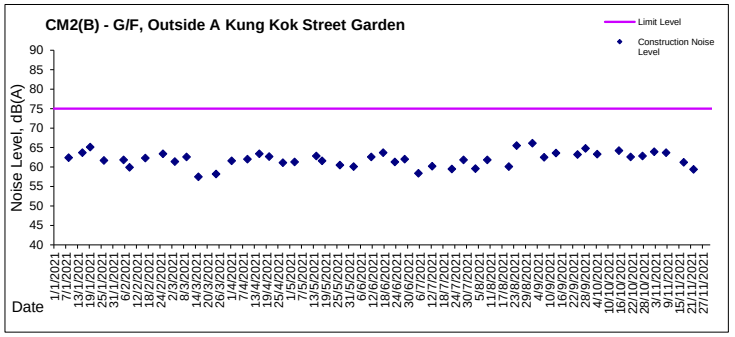
Location: DM3 - R/F, S.K.H. Ma On Shan Holy Spirit Primary School

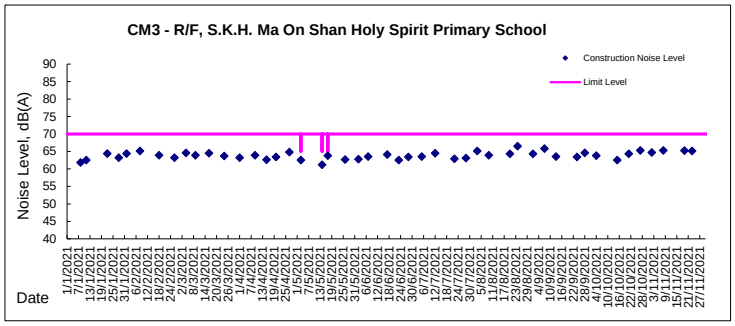
Date	Time	Weather	Wind Speed (m/s)	Measurement Noise Level Leq	L10	L90	Limit Level Leq
				Unit: dB(A), (30min)			
02/11/2021	13:00	Fine	0.0	64.7	67.5	61.4	70
08/11/2021	11:25	Fine	0.0	65.3	67.4	59.3	70
19/11/2021	9:55	Fine	0.0	65.2	66.9	62.7	70
23/11/2021	11:05	Cloudy	0.8	65.1	67.0	62.3	70

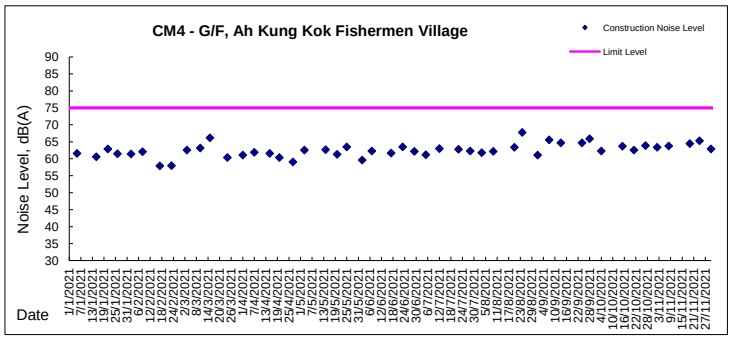
* Limit level of noise monitoring station CM3 was adjusted to 65dB(A) during examination period.

Graphic Presentation of Noise Monitoring Result
Day Time (0700 - 1900hrs on normal weekdays)



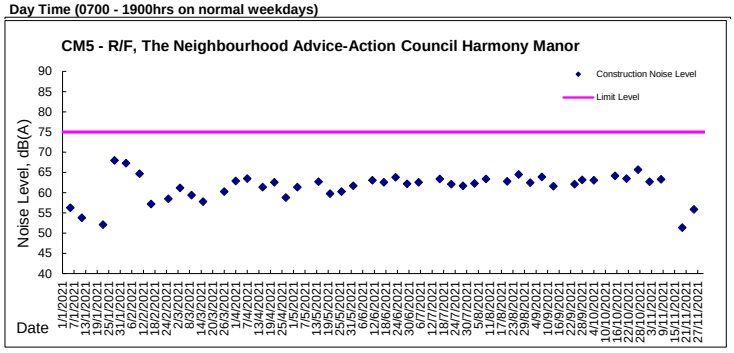


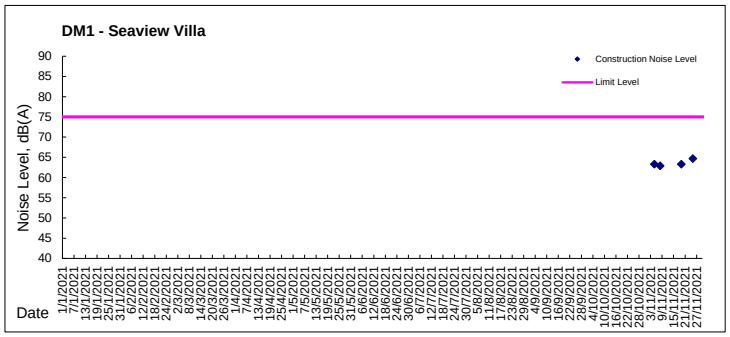


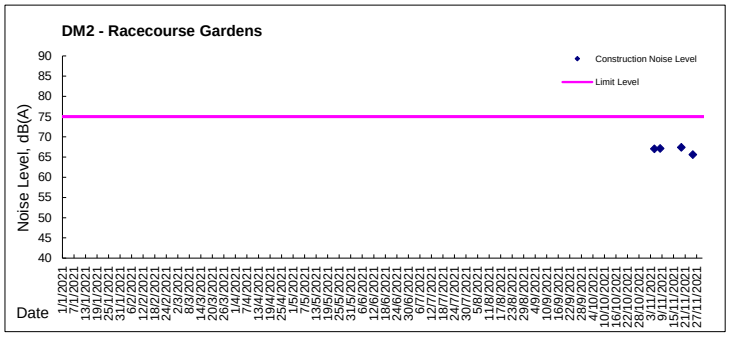


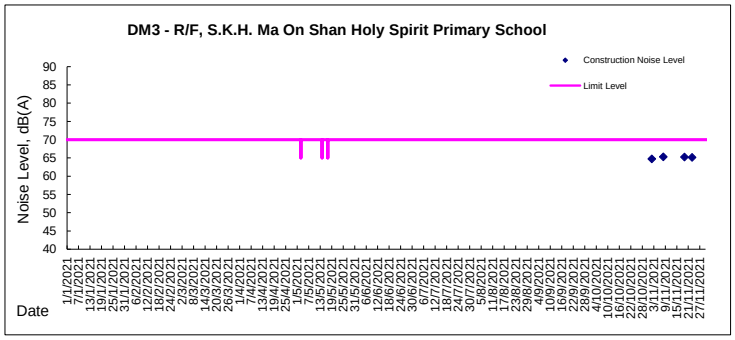
Graphic Presentation of Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)









Noise Monitoring Result

Night Time (2300 - 0700hrs on next day)

Location: CM4 - G/F, Ah Kung Kok Fishermen Village

Date	Weather	Time	Measurement Noise Level			Mean Noise Level	Baseline Level Range (mean level)	Construction Noise Level (baseline correction)	Major Construction Noise Source(s)	Other Noise Source(s)
			Leq	L10	L90	Leq (5min)	Leq	Leq		
			dB(A), (5-min)			Unit: dB(A), (5-min)				
3/11/2021	Fine	0:00	60.2	62.0	57.3	61	45.6-63.2 (mean 52.8)	60	nil	Traffic
		0:05	61.6	63.4	57.9					
		0:10	59.6	61.4	57.2					
		0:15	61.0	62.9	58.9					
		0:20	60.4	61.4	57.0					
		0:25	61.0	63.0	57.0					
9/11/2021	Fine	0:00	59.0	61.0	55.9	59	45.6-63.2 (mean 52.8)	58	nil	Traffic
		0:05	59.5	61.6	55.1					
		0:10	58.8	60.8	56.5					
		0:15	59.1	61.2	55.7					
		0:20	58.0	60.3	55.2					
		0:25	59.4	61.6	56.5					
20/11/2021	Fine	0:05	55.6	58.2	58.8	59	45.6-63.2 (mean 52.8)	57	nil	Traffic
		0:10	63.1	57.3	55.6					
		0:15	54.2	59.6	63.1					
		0:20	62.5	58.1	58.4					
		0:25	62.0	61.3	56.0					
		0:30	54.0	55.0	58.4					
25/11/2021	Fine	3:30	52.2	57.6	50.3	58	45.6-63.2 (mean 52.8)	56	nil	Traffic
		3:35	58.9	64.2	55.5					
		3:40	54.7	60.5	53.1					
		3:45	60.4	64.4	58.2					
		3:50	57.9	64.5	53.6					
		3:55	61.6	64.3	58.0					
1/12/2021	Fine	0:30	58.9	63.2	55.5	59	45.6-63.2 (mean 52.8)	57	nil	Traffic
		0:35	57.4	66.6	55.6					
		0:40	58.2	62.5	56.2					
		0:45	59.8	63.1	57.5					
		0:50	60.4	64.1	58.2					
		0:55	57.8	61.3	56.5					

Noise Monitoring Result

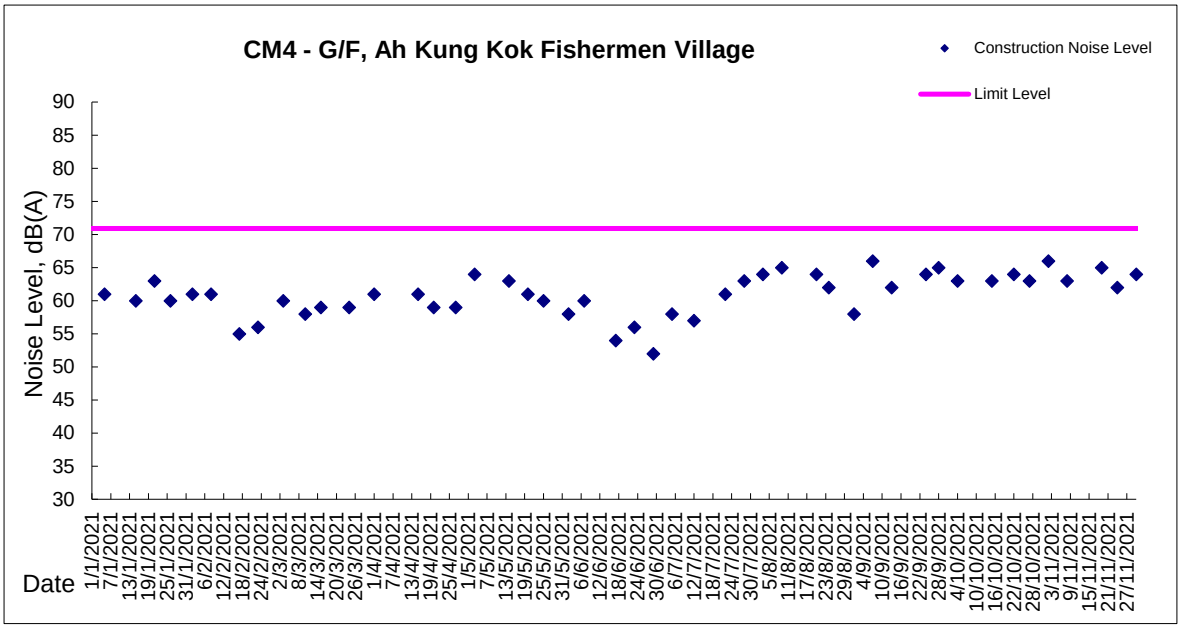
Evening Time (1900 - 2300hrs)

Location: CM4 - G/F, Ah Kung Kok Fishermen Village

Date	Weather	Time	Measurement Noise Level			Mean Noise Level	Baseline Level Range (mean level)	Construction Noise Level (baseline correction)	Major Construction Noise Source(s)	Other Noise Source(s)
			Leq	L10	L90	Leq (5min)	Leq	Leq		
			dB(A), (5-min)			Unit: dB(A), (5-min)				
2/11/2021	Fine	19:00	62.8	64.7	60.0	66	53.5-70.9 (mean 56.7)	65	nil	Traffic
		19:05	63.3	65.6	60.0					
		19:10	72.7	75.0	63.2					
		19:15	73.2	74.8	61.3					
		19:20	62.3	64.0	60.1					
		19:25	61.9	63.9	59.6					
8/11/2021	Fine	19:20	63.6	65.5	60.9	63	53.5-70.9 (mean 56.7)	62	nil	Traffic
		19:25	63.3	64.7	61.3					
		19:30	62.8	64.2	61.1					
		19:35	63.5	65.2	61.0					
		19:40	62.7	64.4	60.5					
		19:45	64.8	65.9	60.2					
19/11/2021	Fine	19:45	64.2	61.4	65.0	65	53.5-70.9 (mean 56.7)	64	nil	Traffic
		19:50	67.2	61.6	56.8					
		19:55	61.8	57.1	58.1					
		20:00	66.4	56.9	59.7					
		20:05	67.2	68.0	66.7					
		20:10	62.0	54.0	62.1					
24/11/2021	Fine	22:00	60.6	63.8	58.9	62	53.5-70.9 (mean 56.7)	60	nil	Traffic
		22:05	61.7	63.3	60.2					
		22:10	62.2	64.8	59.8					
		22:15	61.4	64.6	59.8					
		22:20	61.1	65.7	60.4					
		22:25	62.5	65.2	60.8					
30/11/2021	Fine	20:30	64.4	69.7	60.9	64	53.5-70.9 (mean 56.7)	63	nil	Traffic
		20:35	62.8	67.3	61.1					
		20:40	64.2	69.4	62.0					
		20:45	63.5	68.8	60.5					
		20:50	63.4	67.7	60.7					
		20:55	65.1	69.5	61.8					

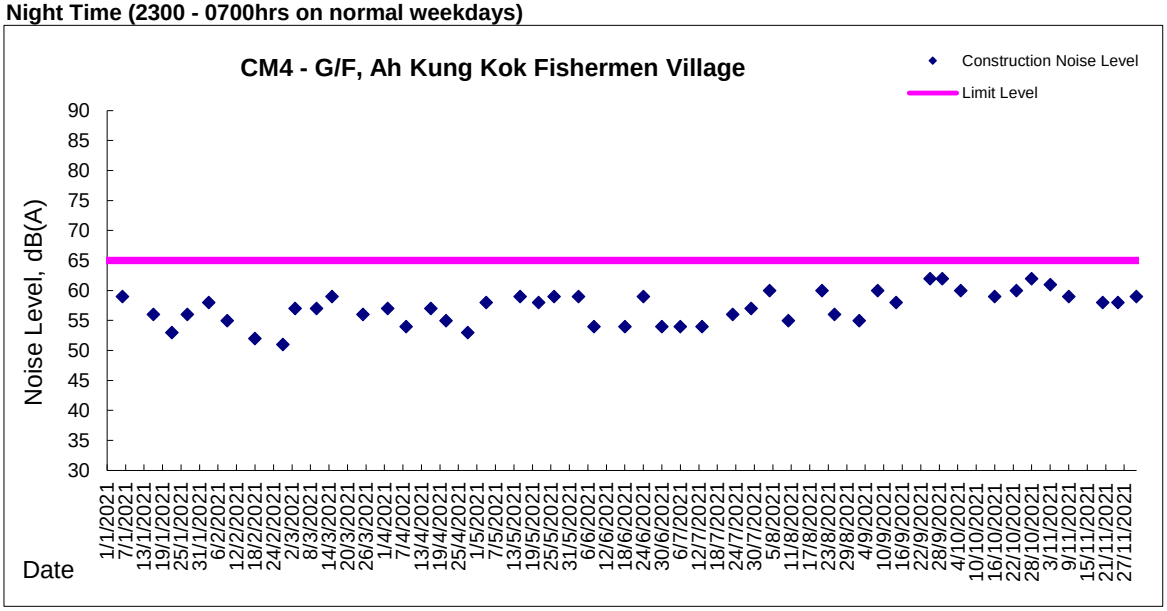
Graphic Presentation of Noise Monitoring Result

Evening Time (1900 - 2300hrs on normal weekdays)



Graphic Presentation of Noise Monitoring Result

Night Time (2300 - 0700hrs on normal weekdays)



Appendix 5.4

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: Drainage Services Department **Contract No.: DC/2018/05**

Monthly Summary Waste Flow Table for November 2021 [to be submitted not later than the 15th day of each month following reporting month]

(All quantities shall be rounded off to 3 decimal places.)

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 3)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed as Public Fill	(f) Metals	(g) Paper/cardboard packaging	(h) Plastics (see Note 2)	(i) Chemical Waste	(j) Others, e.g. general refuse disposed at Landfill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in L)	(in tonne)
Jan-21	17.798	0.389	1.648	15.516	0.245	0.000	0.300	0.000	0.00	190.10
Feb-21	15.555	0.176	0.034	15.092	0.253	0.030	0.250	0.000	0.22	27.65
Mar-21	13.422	0.032	2.050	11.078	0.263	0.000	0.000	0.000	0.0	38.61
Apr-21	27.113	0.107	4.999	21.851	0.157	0.000	0.000	0.000	0.0	60.40
May-21	11.323	0.019	0.684	10.332	0.289	0.000	0.000	0.000	0.0	30.93
Jun-21	17.561	0.000	0.669	16.527	0.365	0.000	0.000	0.000	0.0	51.46
Sub-total	102.771	0.721	10.084	90.395	1.572	0.030	0.550	0.000	0.220	399.15
Jul-21	4.124	0.218	0.500	3.098	0.309	0.034	0.350	0.000	0.300	38.02
Aug-21	2.865	0.286	0.365	2.041	0.173	19.670	0.000	0.000	0.000	21.19
Sep-21	2.555	0.100	0.215	2.125	0.115	0.045	0.350	0.000	0.000	27.46
Oct-21	3.714	0.041	0.195	3.455	0.024	0.000	0.000	0.000	0.000	57.29
Nov-21	9.577	0.087	0.106	7.224	2.160	0.000	0.000	0.000	0.000	26.86
Total	125.607	1.453	11.465	108.336	4.354	19.779	1.250	0.000	0.520	569.97

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 plastics bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

(4) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 5 m^3 by volume.

(5) Conversion factors for reporting purpose:

Excavated: rock = 2.0 tonnes/m^3, soil = 1.8 tonnes/m^3, broken concrete and bitumen = 2.4 tonnes/m^3, Slurry = 2.8 tonnes/m^3

Monthly Summary Waste Flow Table

Name of Department: Drainage Services Department **Contract No.: DC/2020/05**

Monthly Summary Waste Flow Table for November 2021 [to be submitted not later than the 15th day of each month following reporting month]

(All quantities shall be rounded off to 3 decimal places.)

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 3)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed as Public Fill	(f) Metals	(g) Paper/cardboard packaging	(h) Plastics (see Note 2)	(i) Chemical Waste	(j) Others, e.g. general refuse disposed at Landfill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in tonne)
Jan-21	-	-	-	-	-	-	-	-	-	-
Feb-21	-	-	-	-	-	-	-	-	-	-
Mar-21	-	-	-	-	-	-	-	-	-	-
Apr-21	-	-	-	-	-	-	-	-	-	-
May-21	-	-	-	-	-	-	-	-	-	-
Jun-21	-	-	-	-	-	-	-	-	-	-
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jul-21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Aug-21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Sep-21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Oct-21	0.026	0.000	0.000	0.000	0.026	0.000	0.000	0.000	0.560	11.92
Nov-21	0.761	0.164	0.030	0.000	0.567	75.270	0.000	0.000	0.000	0.000
Dec-21										
Total	0.787	0.164	0.030	0.000	0.593	75.270	0.000	0.000	0.560	11.920

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 plastics bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

(4) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 5 m^3 by volume.

(5) Conversion factors for reporting purpose:

Excavated: rock = 2.0 tonnes/m^3, soil = 1.8 tonnes/m^3, broken concrete and bitumen = 2.4 tonnes/m^3, Slurry = 2.8 tonnes/m^3

Appendix 7.1

Event Action Plans

Event and Action Plan for Construction Air Quality

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Action level being exceedance by one sampling	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC and ER; 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(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; and 3. Amend working methods agreed with the ER as appropriate
2. Action level being exceeded by two or more consecutive sampling	1. Identify source; 2. Inform Contractor, IEC and ER; 3. Advise the Contractor and ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with Contractor, IEC and ER; 8. If exceedance stops, cease additional monitoring.	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 ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 4. 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 and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal as appropriate.

Event and Action Plan for Construction Air Quality (Con't)

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
LIMIT LEVEL				
1. Limit level exceedance by one sampling	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; and 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 4. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
2. Limit level exceedance by two or more consecutive sampling	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 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; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 3. Review Contractor' s remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 4. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. 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(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

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

Appendix 7.2

Summary for Notification of Exceedance

Ref no.	Date	Location	Parameters (Unit)	Measured	Action Level	Limit Level	Follow-up action
-	-	-	-	-	-	-	-

Appendix 9.1

Complaint Log

Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
190808	29 July 2019	DSD	Construction site area Portion 6	Exposed slope surface without any covering was observed at Portion 6	A public complaint regarding construction dust received by DSD on 29 July 2019 was subsequently referred to ET on 6 August 2019. The complainant reported that exposed slope surface without any covering at Portion 6. Based on the information provided by the Contractor, the concerned area was under slope cutting and filling works for temporary haul road construction. Based on the observation on 6 August 2019 and weekly site inspection on 7 August 2019, the concerned slope was observed covered with the tarpaulin sheets to alleviate the potential dust impact to the surroundings. Upon review on the monitoring data, no exceedances were recorded at the air quality monitoring stations AM2 - Block H, Kam Tai Court and AM4 - Wellborn Kindergarten (located nearest to the concerned slope) during the 1hr TSP monitoring on 23 July 2019 and 29 July 2019 respectively. Follow up site inspection was conducted by the Environmental Team on 07 August 2019 and it was observed that the slope at Portion 6 was properly covered. Nevertheless, in view of the public concern, the Contractor of DC/2018/05 was reminded to enhance the dust suppression measure by providing adequate watering to any exposed surface during cutting slope and fill works to avoid potential dust impact to the surroundings.	Interim investigation report was issue on 16 August 2019
201112	12 November 2020	DSD	Outside site boundary of Portion 11	water contamination / ecological impact	A letter from Kadoorie Farm and Botanic Garden (KFBG) regarding water contamination / ecological impact received by DSD on 12 November 2020 was subsequently referred to ET on 12 November 2020. The KFBG alleged that: - Extracting water directly from the stream, - Surface run-off silt smothering forest understorey	Interim investigation report was issue on 14 December 2020

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					and silting the stream, - **Cement has been disposed into the forest understorey and the stream , and** - **Diesel fuel leaking from pumps and generators at Portion 11.** **The concerned area is natural stream near slope cutting and filling works for temporary haul road construction, outside of the DC/2018/05 construction site boundary.** **The Contractor, RSS conducted walk-through survey on 17 November 2020 starting from around the tree tag T9511/ T9512 and ending at the pool of the natural stream near Portion 11 of DC/2018/05.** **Additional site inspection with EPD, DSD, RSS, ET and the Contractor was conducted on 17 November 2020, additional site inspection with KFBG, DSD, RSS, ET and the Contractor was conducted on 19 November 2020.** **No Pollutants were observed being discharged to the stream, the natural stream was clean with running water during above inspections. However, few spots were found with cement and silt on the bedding of the stream.** **According to the Contractor, the water pumps were the emergency pumps and it had been removed away from the natural stream. No pump was observed during above inspections.** **There was no sign of any diesel fuel leaking from pumps or generators. The nearest generator for the construction work has been located far away from the concerned location. By the walk-through survey along the natural stream, there was no oil-strain or diesel likes contamination being observed.** **By the walk-through survey, various locations were found with silting / sand. The sources of the silt were not necessary from the construction site of DC/2018/05. It could also be contributed by the natural erosion from both sides of the stream.** **Nevertheless, in view of the public concern, the**	

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					Contractor of DC/2018/05 was willing to clean up the stream to address the concerns from KFBG to protect the environment. The Contractor also reminded to keep review the performance of mitigation measures including well cover slope / area with exposed soil with tarpaulin sheets to prevent surface runoff, using cellular confinement system to prevent soil erosion.	
210127	**27 January 2021**	**DSD**	**Construction Area at Portion 6 (Tunnel)**	**Air Quality**	**A public complaint regarding construction dust referred by DSD on 27 January 2021 was subsequently received by ET on 27 January 2021. The complainant reported that:** - **Construction dust emission arising from blasting works in tunnel was observed near Block 6, Chevalier Garden.** **Blasting in the tunnel was carried out under Contract DC/2018/05 at the concerned area** **According to the relevant site information provided by the Contractor of DC/2018/05, there are total of 13nos. of blasting works was carried out in January 2021 in the tunnel.** **The blasting works was carried out in the tunnel. Dust screen, mist curtain, sprinkler system and mist cannon were installed / operated when blasting, the blast door was tightly closed during blasting.** **Based on review on air quality monitoring data, no exceedances were recorded at the air quality monitoring stations AM3(B) - Outside A Kung Kok Street Garden and AM4 - Wellborn Kindergarten (located nearest to the concerned area) during the scheduled 1hr TSP monitoring in January 2021.** **Ad-hoc TSP monitoring and inspection was carried out on 29 January and 1 February 2021 during blasting, no exceedances were recorded at the air**	**Interim investigation report was issue on 7 February 2021**

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					quality monitoring stations AM3(B) - Outside A Kung Kok Street Garden and AM4 - Wellborn Kindergarten. **Based on the site inspection on 28 January 2021, 2nos. mist cannons have been installed and operated on the top of blast door during / after the blast door opened to reduce fumes / mists emission.** **The Contractor of DC/2018/05 was reminded to enhance the dust suppression measure by providing adequate watering after the blast door opened. Contractor is requested to consider extend the time to open the blast door after blasting in order to the fumes and rock dust have been settled in the tunnel.** **Also, the Contractor of DC/2018/05 was reminded that the ventilation system in the tunnel should be maintained in good condition.**	

Appendix 10.1

Construction Programme of Individual Contracts

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Late Start	Late Finish
Relocation of Sha Tin Sewage Treatment Works to Caverns - Site Preparation & Access Tunnel							
Contract Particular							
Sectional Completion							
Sectional Completion							
Sect010	Sect 1 (1034d) - Construction of Retaining Wall RMP2 and RMP3	0		23-Dec-21*	5		28-Dec-21
Sect050	Sect 5 (1034d) - Comprises the Preservation and Protection of Existing Trees	0		28-Dec-21*	0		28-Dec-21
Sect070	Sect 7 (1034d) - Comprises the Establishment Works to landscape softworks	0		28-Dec-21*	0		28-Dec-21
Sect080	Establishment Works to Landscape softworks under Section 2 (365d)	366	06-Dec-20 A	06-Dec-21	22	30-Nov-21	28-Dec-21
Sect090	Establishment Works to Landscape softworks under Section 3 (245d)	245	28-Apr-21 A	28-Dec-21	0	08-Nov-21	28-Dec-21
Preliminary Works							
Preliminary Works							
Preliminary Works							
A11980	Preservation and Protection of Existing Trees	835	28-Feb-19 A	28-Dec-21	0	28-Dec-21	28-Dec-21
A12340	Establishment Works to landscape softworks (Section 7)	718	23-Jul-19 A	28-Dec-21	0	23-Jul-19	28-Dec-21
Access Road to Main Portal Area							
Noise Barrier							
Existing Noise Barrier							
A11000	Demolish existing noise barrier	75	02-Aug-21 A	13-Nov-21	82	22-Feb-22	28-Feb-22
Road Works							
Construction Access connecting Ma On Shan Road							
A12300	Existing noise barrier demolished	0	15-Nov-21		82	28-Feb-22	
Mui Tsz Lam Road							
Works within Portion 4 & 6							
DN450 Water Main							
A10730	Water connection for DN450	13	01-Nov-21 A	11-Nov-21	48	06-Jan-22	10-Jan-22
A10750	Existing DN450 potable water main disconnected	0		11-Nov-21	48		10-Jan-22
MTLR - TTA Stage 4							
General							
C10470	Road Works at TTA stage 4 area (including street furniture)	18	02-Dec-21	22-Dec-21	8	11-Dec-21	04-Jan-22
Drainage Works							
C10250	Excavation (SMH1017)	6	08-Nov-21 A	13-Nov-21	8	17-Nov-21	23-Nov-21
C10260	Construct Manhole (SMH1017)(4.9m depth)	14	15-Nov-21	30-Nov-21	9	25-Nov-21	10-Dec-21
C10610	Construct (SMH1018 - 1017 pipe)(4.9m depth)	15	15-Nov-21	01-Dec-21	8	24-Nov-21	10-Dec-21
C10630	MTLR Drainage Works complete	0		01-Dec-21	26		04-Jan-22
Road Works							
Mui Tsz Lam Road Realignment							
A10445	Construct remaining road work at MTL Raod realigment	12	23-Dec-21	08-Jan-22	8	05-Jan-22	18-Jan-22
A10490	Kerb installation	12	10-Jan-22	22-Jan-22	8	19-Jan-22	08-Feb-22

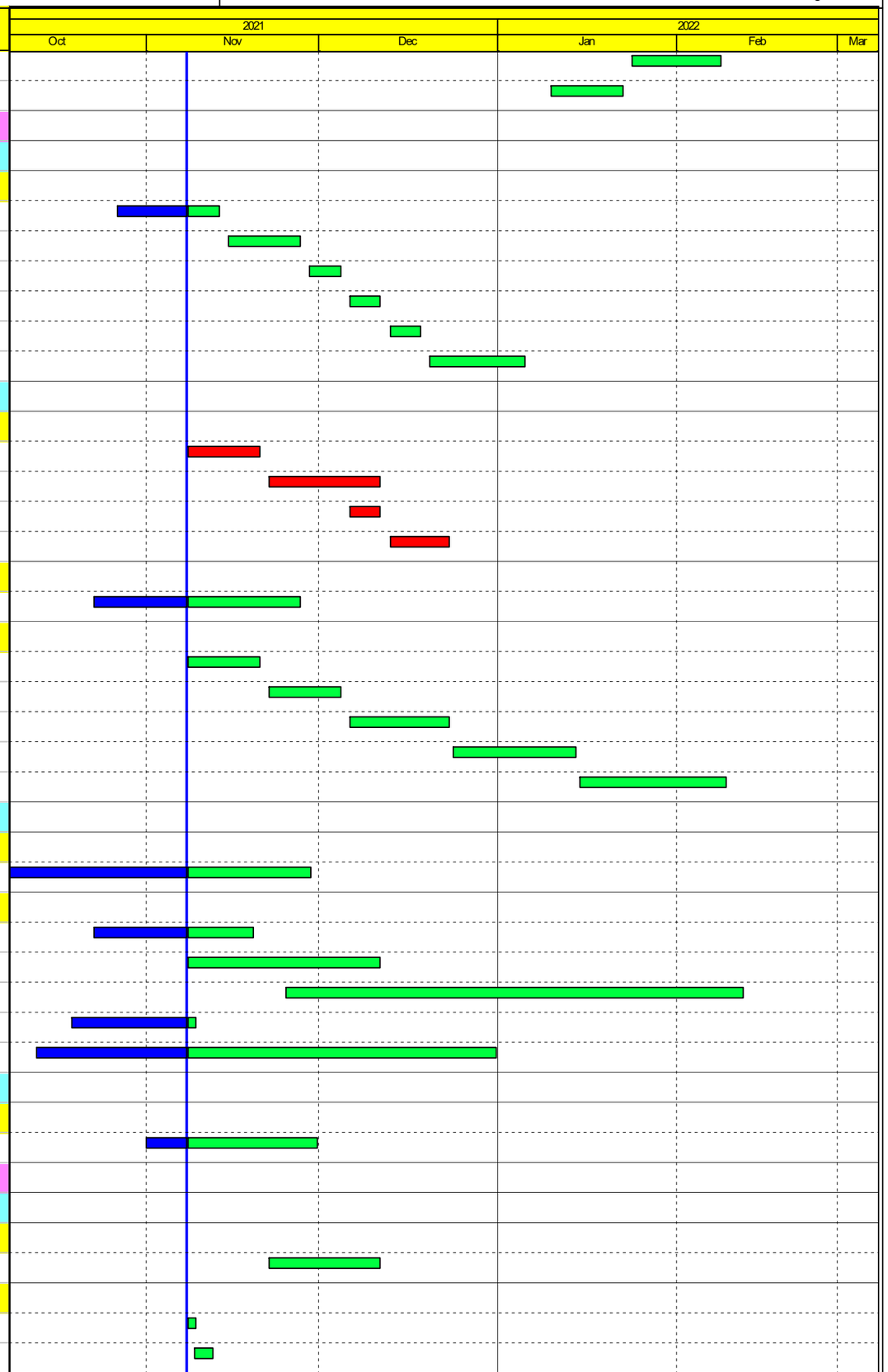
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Crit. Milestone

Project ID: MP006 (2111)
Layout: 3 Month Rolling Programme
Data Date: 08-Nov-21
Page 1 of 3
Primavera Systems, Inc.

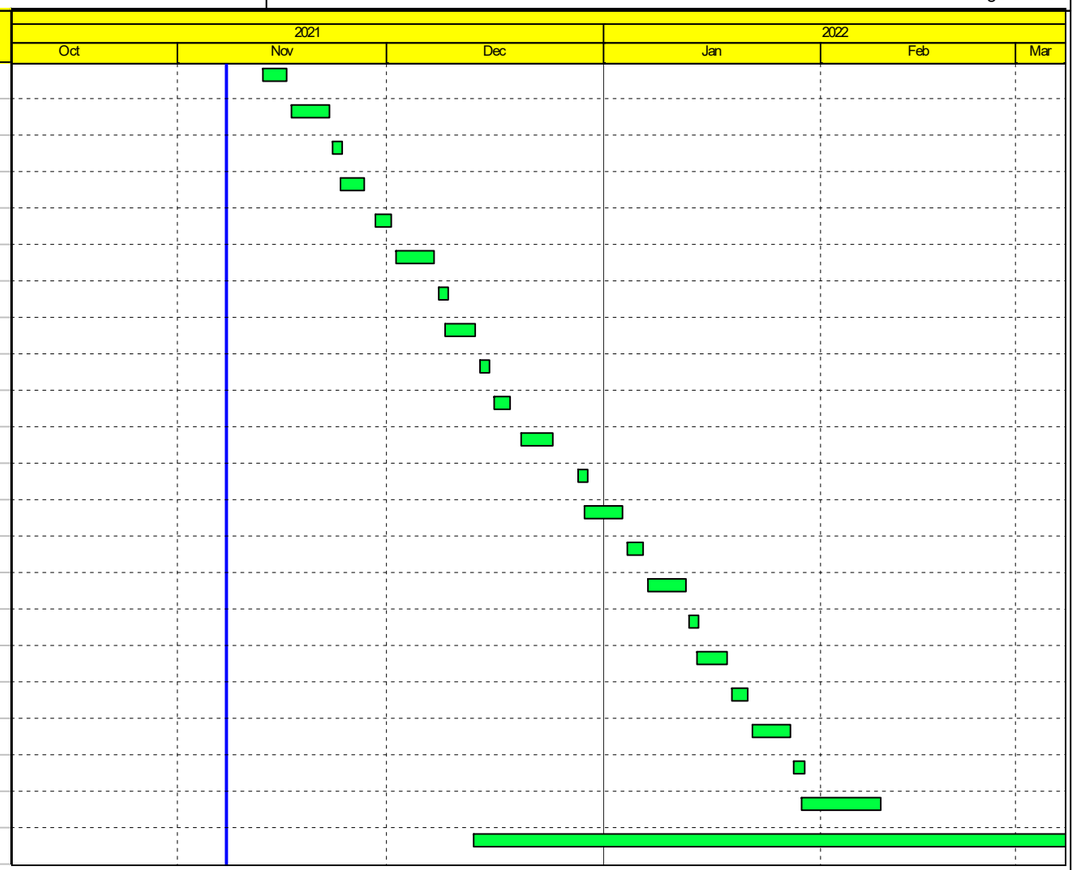
Contract No. DC/2018/05
Relocation of Sha Tin Sewge Treatment Works to Caverns - Site Preparation and Access Tunnel Construction
3 Month Rolling Programme

CHINA STATE JOINT VENTURE

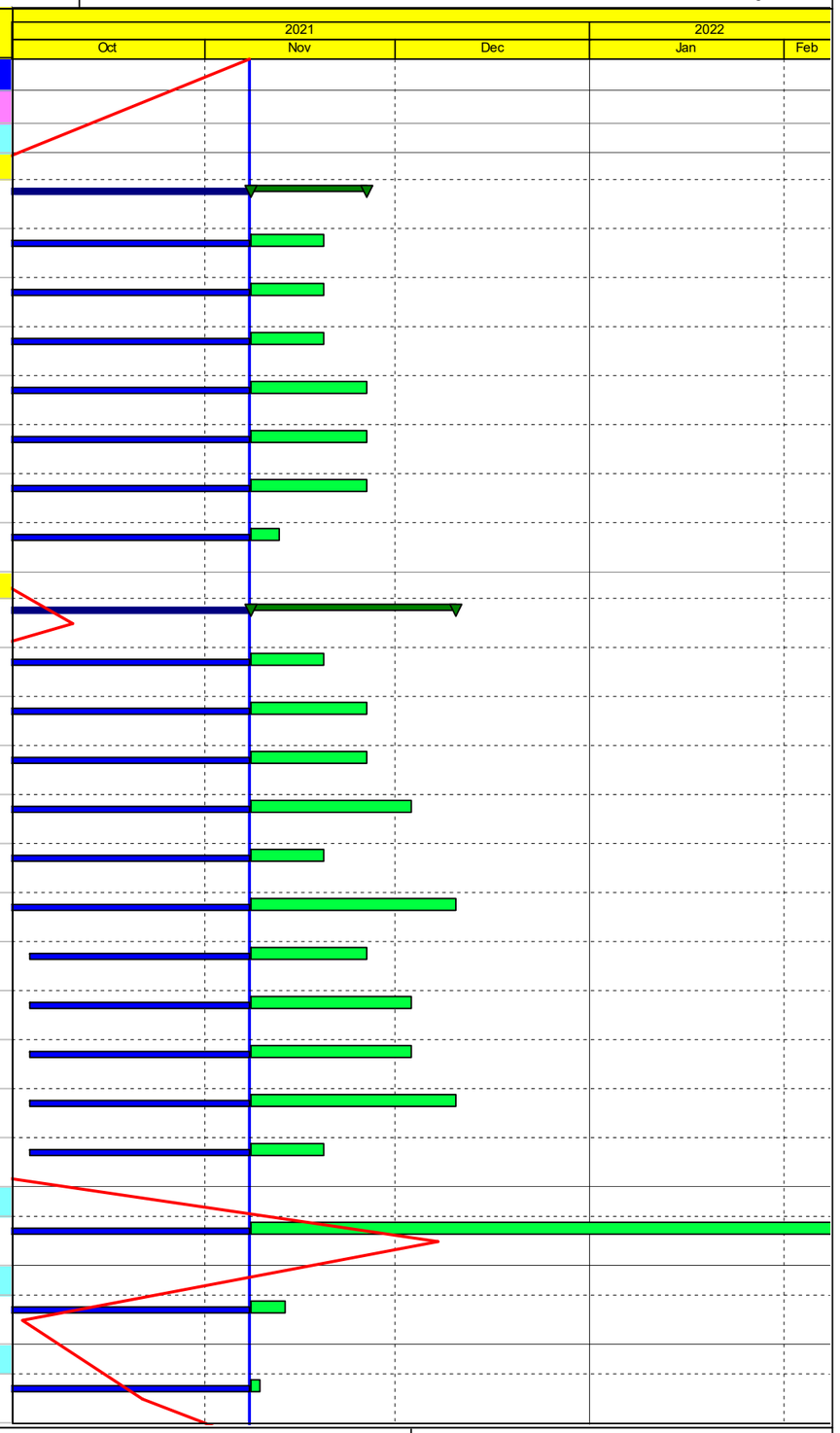
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Late Start	Late Finish
A10500	Railing	8	24-Jan-22	08-Feb-22	8	09-Feb-22	17-Feb-22
A13120	Street Lighting	12	10-Jan-22	22-Jan-22	8	19-Jan-22	08-Feb-22
Main Portal Area							
Site Formation for Main Portal							
Slope SMP 1							
A12490	Excavate slope from +16 to +8mpd (SMP1)	6	27-Oct-21 A	13-Nov-21	40	24-Dec-21	03-Jan-22
A12495	Slope & berm formation (SMP1)	12	15-Nov-21	27-Nov-21	40	04-Jan-22	17-Jan-22
A12500	Catpatch (3nos) & U-channel at +23mpd (SMP1)	6	29-Nov-21	04-Dec-21	40	18-Jan-22	24-Jan-22
A12510	Catpatch (2nos) & U-channel at +16mpd (SMP1)	6	06-Dec-21	11-Dec-21	40	25-Jan-22	31-Jan-22
A12520	Catpatch (2nos) & U-channel at +8mpd (SMP1)	6	13-Dec-21	18-Dec-21	40	08-Feb-22	14-Feb-22
A12530	Maintenance Stairway (SMP1)	12	20-Dec-21	05-Jan-22	40	15-Feb-22	28-Feb-22
Retaining Wall for Main Portal							
Retaining Wall RMP2							
A14110	Excavate trench for Gabion wall	12	08-Nov-21	20-Nov-21	2	10-Nov-21	23-Nov-21
A14120	Gabion wall cage & rock installation	18	22-Nov-21	11-Dec-21	2	24-Nov-21	14-Dec-21
A14130	Subsoil pipe installation	6	06-Dec-21	11-Dec-21	2	08-Dec-21	14-Dec-21
A14140	Backfill the slope	10	13-Dec-21	23-Dec-21	2	15-Dec-21	28-Dec-21
Retaining Wall RMP6 - CSD							
A15550	Retaining Wall wall structure to 23mpd - CSD RMP6	12	23-Oct-21 A	27-Nov-21	70	08-Feb-22	28-Feb-22
Retaining Wall RMP5 - CSD							
A17165	Temp work (Steel ribs footing) at WAT Tunnel portal	12	08-Nov-21 A	20-Nov-21	14	24-Nov-21	07-Dec-21
A17170	Retaining Wall base (Bay 1) - CSD RMP5	12	22-Nov-21	04-Dec-21	16	10-Dec-21	23-Dec-21
A17180	Retaining Wall wall structure to 7.5mpd (Bay 1)- CSD RMP5 (at WAT portal area)	16	06-Dec-21	23-Dec-21	16	24-Dec-21	14-Jan-22
A17190	Retaining Wall wall structure to 16mpd (Bay 1)- CSD RMP5 (at WAT portal area)	16	24-Dec-21	14-Jan-22	16	15-Jan-22	09-Feb-22
A17200	Retaining Wall wall structure to 23mpd (Bay 1) - CSD RMP5 (at WAT portal area)	16	15-Jan-22	09-Feb-22	16	10-Feb-22	28-Feb-22
Tunnel							
Hard Rock 284m, Tunnel Excavation by Drill and Blast							
B10760	Permanent bolt and shotcrete - Bottom Bench	188	13-Mar-21 A	29-Nov-21	69	31-Jan-22	28-Feb-22
Permanent Lining							
A13280	Erect Platform for Crown Steel fixing	21	23-Oct-21 A	19-Nov-21	9	18-Nov-21	30-Nov-21
A13290	Erect Shutter Travellier for Crown	30	08-Nov-21	11-Dec-21	9	18-Nov-21	22-Dec-21
A13300	Crown Lining	60	25-Nov-21	12-Feb-22	9	06-Dec-21	23-Feb-22
A14150	Backfill ramp for temp access	18	19-Oct-21 A	09-Nov-21	22	03-Dec-21	04-Dec-21
A14170	Backfill 200 thick Grade 200 rock fill for tunnel	60	13-Oct-21 A	31-Dec-21	43	30-Dec-21	28-Feb-22
Rigid Barriers							
Rigid Barrier BMP2							
A13740	Hand rail - RB BMP2	14	01-Nov-21 A	30-Nov-21	68	29-Jan-22	28-Feb-22
CE205 - Western Access Tunnel Entrustment Works							
Western Access Tunnel							
Site Formation for Western Tunnel Portal							
E11110	Excavation (+13 to +8mpd) rock breaking (RHS)	18	22-Nov-21	11-Dec-21	14	08-Dec-21	30-Dec-21
Soft Ground Tunnel Excavation by Drill and Break							
E10870	Tunnel excavation (Ch199 - 203)	2	08-Nov-21	09-Nov-21	47	05-Jan-22	06-Jan-22
E10880	Steel rib & Shortcrete installation (Ch199 - 203)	4	09-Nov-21	12-Nov-21	47	06-Jan-22	10-Jan-22



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Late Start	Late Finish
E10890	Long Canopy Tube (Ch203 - 207)	3	13-Nov-21	16-Nov-21	47	11-Jan-22	13-Jan-22
E10900	Pre-Excavation Grouting (Ch203 - 207)	5	17-Nov-21	22-Nov-21	47	14-Jan-22	19-Jan-22
E10910	Tunnel excavation (Ch203 - 207)	2	23-Nov-21	24-Nov-21	47	20-Jan-22	21-Jan-22
E10920	Steel rib & Shortcrete installation (Ch203 - 207)	4	24-Nov-21	27-Nov-21	47	21-Jan-22	25-Jan-22
E10930	Long Canopy Tube (Ch207 - 211)	3	29-Nov-21	01-Dec-21	47	26-Jan-22	28-Jan-22
E10940	Pre-Excavation Grouting (Ch207 - 211)	5	02-Dec-21	07-Dec-21	47	29-Jan-22	10-Feb-22
E10950	Tunnel excavation (Ch207 - 211)	2	08-Dec-21	09-Dec-21	47	11-Feb-22	12-Feb-22
E10960	Steel rib & Shortcrete installation (Ch207 - 211)	4	09-Dec-21	13-Dec-21	47	12-Feb-22	16-Feb-22
E10970	Probing and PEG (4nos.,30m)	2	14-Dec-21	15-Dec-21	47	17-Feb-22	18-Feb-22
E10980	Long Canopy Tube (Ch211 - 215)	3	16-Dec-21	18-Dec-21	47	19-Feb-22	22-Feb-22
E10990	Pre-Excavation Grouting (Ch211 - 215)	5	20-Dec-21	24-Dec-21	47	23-Feb-22	28-Feb-22
E11000	Tunnel excavation (Ch211 - 215)	2	28-Dec-21	29-Dec-21	47	01-Mar-22	02-Mar-22
E11010	Steel rib & Shortcrete installation (Ch211 - 215)	4	29-Dec-21	03-Jan-22	47	02-Mar-22	05-Mar-22
E11020	Long Canopy Tube (Ch215 - 219)	3	04-Jan-22	06-Jan-22	47	07-Mar-22	09-Mar-22
E11030	Pre-Excavation Grouting (Ch215 - 219)	5	07-Jan-22	12-Jan-22	47	10-Mar-22	15-Mar-22
E11040	Tunnel excavation (Ch215 - 219)	2	13-Jan-22	14-Jan-22	47	16-Mar-22	17-Mar-22
E11050	Steel rib & Shortcrete installation (Ch215 - 219)	4	14-Jan-22	18-Jan-22	47	17-Mar-22	21-Mar-22
E11060	Long Canopy Tube (Ch219 - 222)	3	19-Jan-22	21-Jan-22	47	22-Mar-22	24-Mar-22
E11070	Pre-Excavation Grouting (Ch219 - 222)	5	22-Jan-22	27-Jan-22	47	25-Mar-22	30-Mar-22
E11080	Tunnel excavation (Ch219 - 222)	2	28-Jan-22	29-Jan-22	47	31-Mar-22	01-Apr-22
E11090	Steel rib & Shortcrete installation (Ch219 - 222)	4	29-Jan-22	09-Feb-22	47	01-Apr-22	06-Apr-22
E11120	Bottom bench excavation (Ch171 - 203)	75	13-Dec-21	19-Mar-22	14	31-Dec-21	06-Apr-22



Activity ID	Activity Name	Physical % Complete	Remaining Duration	Start	Finish	Total Float	Late Start	Late Finish
Updated Programme (as of 8 Nov 21) - Relocation of STST to Caverns - Main Caverns Construction								
Preliminary Works								
Subletting and Procurement								
2nd Batch								
C1031	[Summary] Sub-letting & procurement for the 2nd batch	70%	17	10-Aug-21 A	26-Nov-21	1523	10-Aug-21	05-Feb-27
C1031-RP02	Sub-letting 2nd batch - P2 & P4 Access construction	70%	11	10-Aug-21 A	19-Nov-21	1436	03-Oct-26	15-Oct-26
C1031-RP04	Sub-letting 2nd batch - Permanent Lining (MAT) construction	70%	11	10-Aug-21 A	19-Nov-21	492	19-Jul-23	31-Jul-23
C1031-RP08	Sub-letting 2nd batch - Portion 10 - Site Investigation	70%	11	10-Aug-21 A	19-Nov-21	569	19-Oct-23	01-Nov-23
C1031-RP28	Sub-letting 2nd batch - pipe jacking for effluent pipeline	60%	17	10-Aug-21 A	26-Nov-21	159	30-May-22	18-Jun-22
C1031-RP38	Sub-letting 2nd batch - Portion 10 - piling works (Soldier Pile wall)	60%	17	10-Aug-21 A	26-Nov-21	563	12-Oct-23	01-Nov-23
C1031-RP48	Sub-letting 2nd batch - Slopeworks, soil nail, erosion mat, etc.	60%	17	10-Aug-21 A	26-Nov-21	208	28-Jul-22	16-Aug-22
C1031-RP58	[Cancelled] - Sub-letting 2nd batch - Design for Tunnel Temporary Ventilation System	50%	5	10-Aug-21 A	12-Nov-21	1535	01-Feb-27	05-Feb-27
3rd Batch								
C1032	[Summary] Sub-letting & procurement for the 3rd batch sub-contract	51%	29	01-Sep-21 A	10-Dec-21	1511	05-Feb-27	05-Feb-27
C1032-RP02	Sub-letting 3rd batch - Temp Explosive Magazine (civil works)	60%	11	01-Sep-21 A	19-Nov-21	2	10-Nov-21	22-Nov-21
C1032-RP04	Sub-letting 3rd batch - Temp Explosive Magazine (M&E works)	50%	17	08-Sep-21 A	26-Nov-21	125	14-Apr-22	07-May-22
C1032-RP06	Sub-letting 3rd batch - Noise Barrier NB4 (steelwork & panels)	50%	17	15-Sep-21 A	26-Nov-21	1424	17-Sep-26	08-Oct-26
C1032-RP08	Sub-letting 3rd batch - Noise Barrier NB4 (r.c. works)	50%	23	15-Sep-21 A	03-Dec-21	1346	16-Jun-26	14-Jul-26
C1032-RP10	Sub-letting 3rd batch - Blasting Works (1) - CA, MD, CAV1 &2, BD1,2,3,4	50%	11	16-Sep-21 A	19-Nov-21	177	21-Jun-22	04-Jul-22
C1032-RP20	Sub-letting 3rd batch - Blasting Works (2) - CAV3 &4, BD1,2,3,4, VA	50%	29	27-Sep-21 A	10-Dec-21	512	11-Aug-23	13-Sep-23
C1032-RP30	Sub-letting 3rd batch - Blasting Works (3) - CAV5, SD, BD1,2,3,4, SAT	50%	17	04-Oct-21 A	26-Nov-21	392	15-Mar-23	03-Apr-23
C1032-RP40	Sub-letting 3rd batch - Blasting Works (4) - Ventilation Shaft VS	50%	23	04-Oct-21 A	03-Dec-21	337	03-Jan-23	04-Feb-23
C1032-RP50	Sub-letting 3rd batch - apply for temp power supply for Cavern Tunneling Works	50%	23	04-Oct-21 A	03-Dec-21	1517	11-Jan-27	05-Feb-27
C1032-RP60	Sub-letting 3rd batch - apply for temp water supply for Cavern Tunneling Works	50%	29	04-Oct-21 A	10-Dec-21	1511	04-Jan-27	05-Feb-27
C1032-RP70	Sub-letting 3rd batch - Crusher setup, running and maintenance in WA3	50%	11	04-Oct-21 A	19-Nov-21	1529	25-Jan-27	05-Feb-27
Tree Preservation and Protection								
C1050	Preservation and Protection of Existing Trees	6.42%	1514	05-Jul-21 A	06-Jan-27	1	09-Nov-21	07-Jan-27
3D Reality Model								
C1130	Develope a 3D reality model for construction area	54.84%	6	05-Jul-21 A	13-Nov-21	1875	27-Dec-26	01-Jan-27
Temporary Drainage Management Plan								
C1170	Temporary drainage management plan	98%	2	05-Jul-21 A	09-Nov-21	152	21-May-22	23-May-22



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Crit. Milestone

Project File: C2-MP001-b-(2111)-2
Layout: MPR - 3M Rolling Prog (submission)
Data Date: 08-Nov-21
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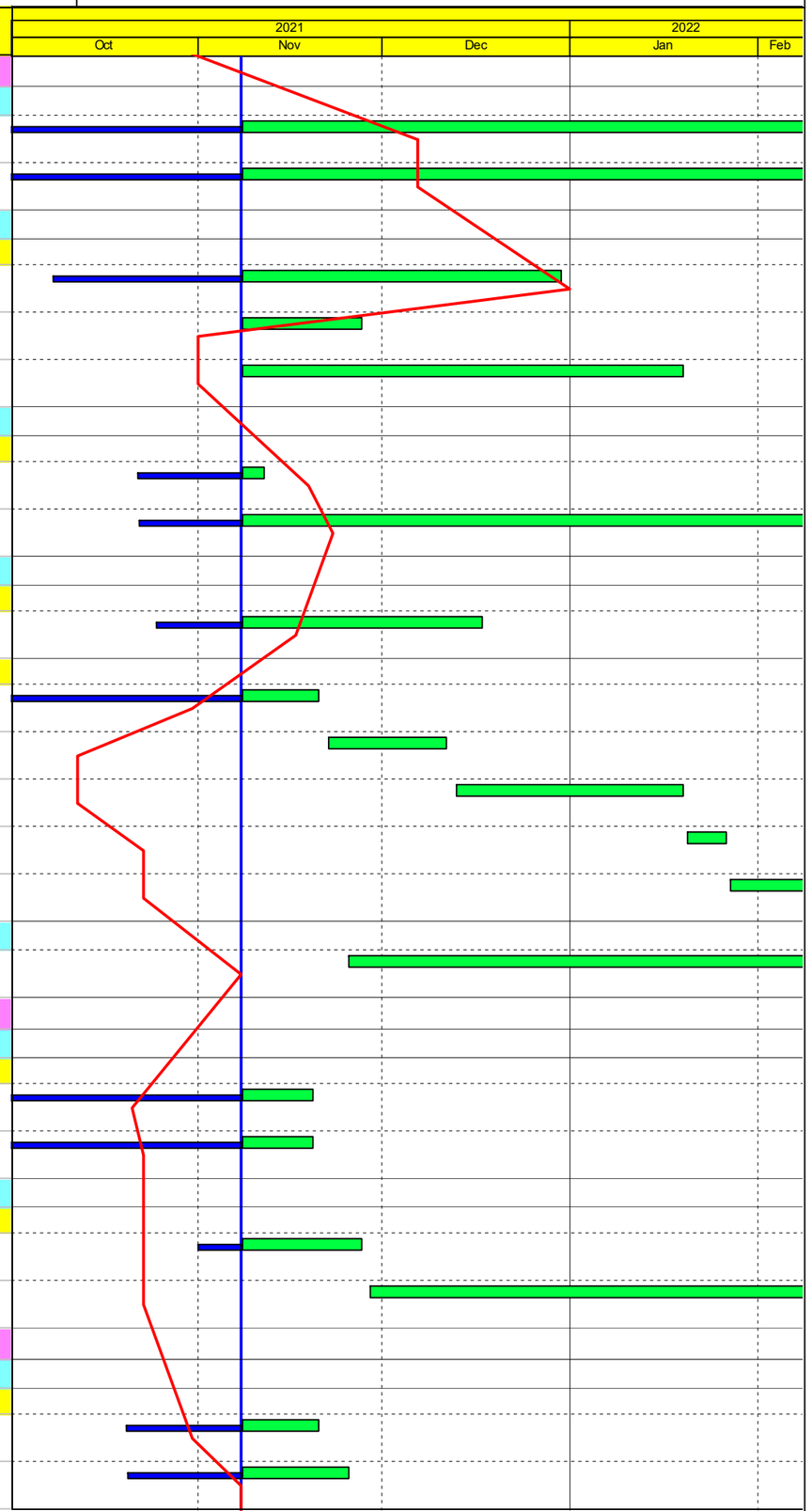
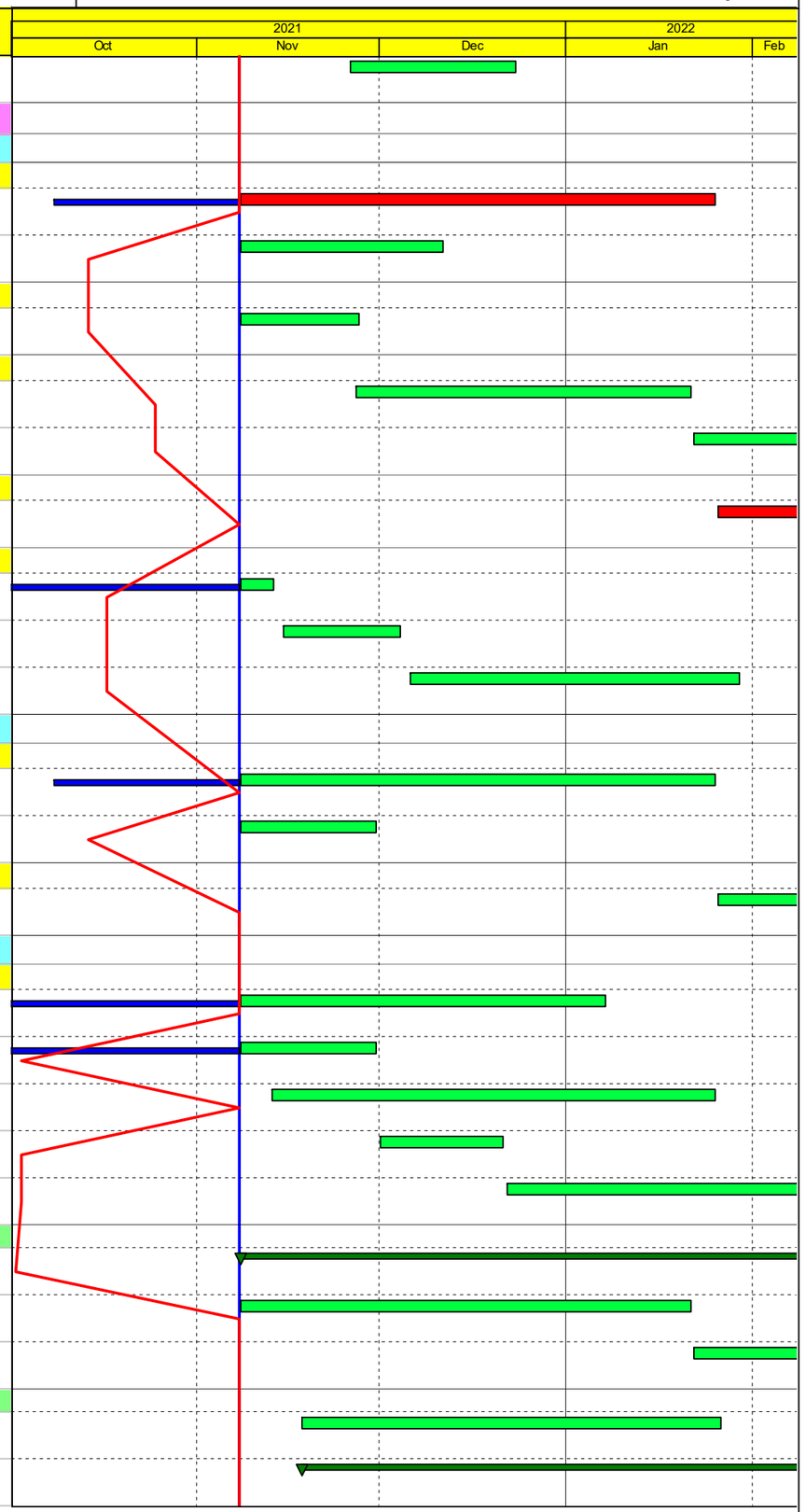
Contract No. DC/2020/05
Relocation of Sha Tin Sewge Treatment Works to Caverns - Main Caverns Construction
3 Months Rolling Programme (Nov to Jan 2022)

China State – Alchmex Joint Venture

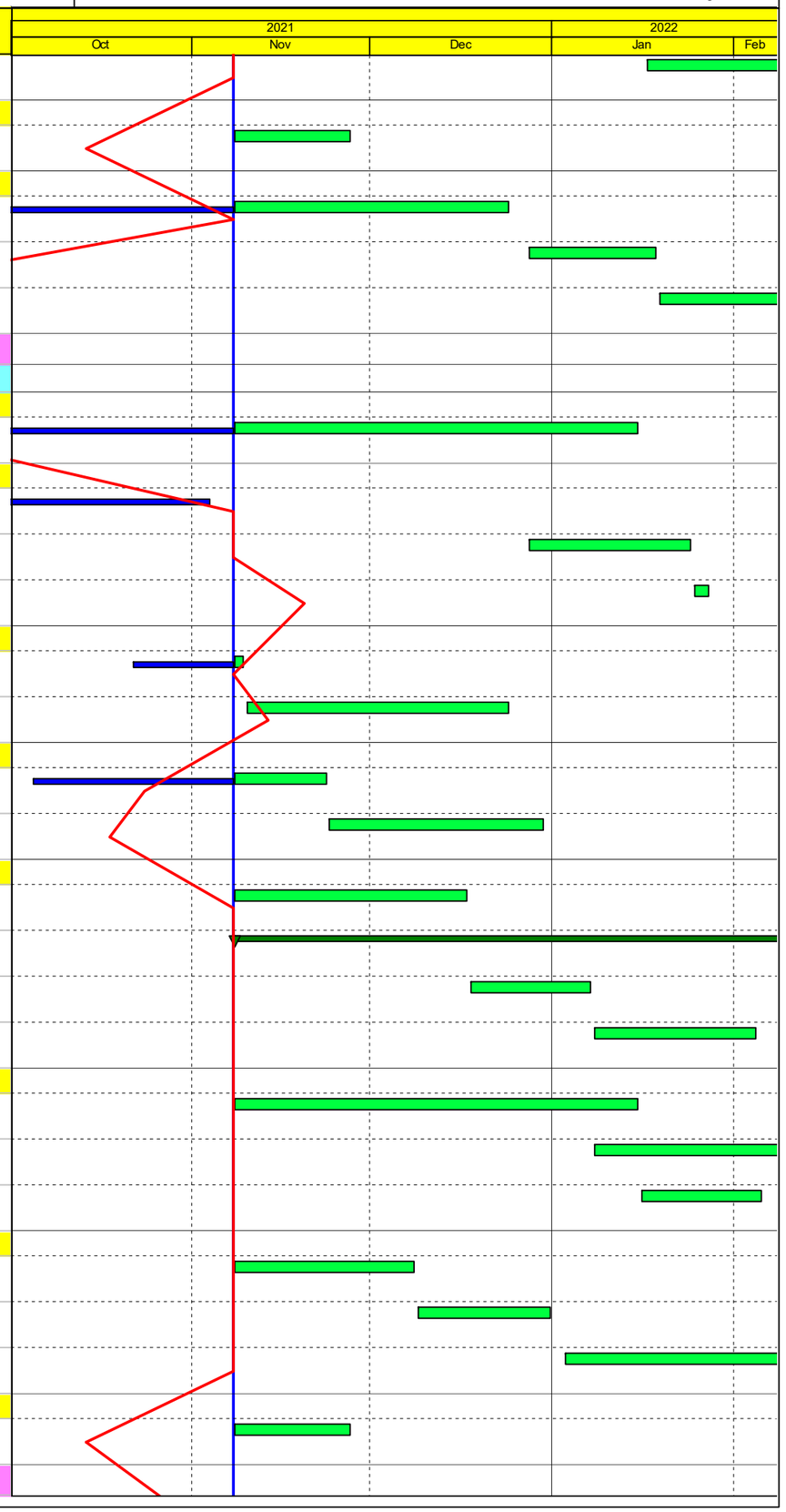
Activity ID	Activity Name	Physical % Complete	Remaining Duration	Start	Finish	Total Float	Late Start	Late Finish
General								
Maintainance and Upkeeping Works								
A10630	Core Boxes at Portion 10	6.42%	1515	05-Jul-21 A	07-Jan-27	25	07-Dec-21	05-Feb-27
A11890	Site hoarding and project signboard	6.42%	1515	05-Jul-21 A	07-Jan-27	25	07-Dec-21	05-Feb-27
Hoarding								
Hoarding								
A10060	Hoarding erection - WA3	10%	44	08-Oct-21 A	30-Dec-21	1448	17-Oct-26	08-Dec-26
A10030	Hoarding erection - Secondary Portal Area at Mui Tsz Lam Road	0%	18	08-Nov-21	27-Nov-21	29	11-Dec-21	04-Jan-22
A10050	Hoarding erection - WA4	0%	60	08-Nov-21	19-Jan-22	1450	21-Oct-26	31-Dec-26
Works in WA3								
Rock Crushing Plant								
A11910	Design approval by PM	80%	4	22-Oct-21 A	11-Nov-21	181	25-Jun-22	29-Jun-22
A11920	Design approval by relevant authorities	5%	131	22-Oct-21 A	18-Mar-22	103	19-Feb-22	29-Jun-22
Site Office								
Demolition								
A10470	Demolition of existing Buildings	6%	35	25-Oct-21 A	17-Dec-21	1430	24-Sep-26	06-Nov-26
Site Office Erection								
A10480	Site office design preparation	40%	12	17-Aug-21 A	20-Nov-21	1405	26-Aug-26	08-Sep-26
A10490	Site office design approval	0%	18	22-Nov-21	11-Dec-21	1405	09-Sep-26	30-Sep-26
A10500	Site office off-site fabrication	0%	30	13-Dec-21	19-Jan-22	1405	02-Oct-26	06-Nov-26
A10510	Site office unit delivery to site	0%	6	20-Jan-22	26-Jan-22	1405	07-Nov-26	13-Nov-26
A10520	Erection & installation	0%	36	27-Jan-22	16-Mar-22	1405	14-Nov-26	28-Dec-26
Design for Overhead Ventilation Duct, Protected Corridor and Emergency Bypass								
A16500	Prepare and submit design for OHVD	0%	60	25-Nov-21*	14-Feb-22	566	04-Nov-23	16-Jan-24
Area Besides Ma On Shan Road								
Construction Access								
General								
A10130	P2 access - STLA application period (if required)	85%	12	05-Jul-21 A	19-Nov-21	1904	25-Jan-27	05-Feb-27
A10550	P2 access - obtain consent from relevant authorities	85%	11	17-Sep-21 A	19-Nov-21	1529	25-Jan-27	05-Feb-27
Noise Barrier								
General								
A10200	Noise Barrier NB4 - design approval	5%	18	01-Nov-21 A	27-Nov-21	1333	01-Jun-26	22-Jun-26
A10230	Noise Barrier NB4 - panel submission & procurement	0%	90	29-Nov-21	23-Mar-22	1333	23-Jun-26	08-Oct-26
Main Portal and Tunnel								
Effluent Pipelines and Connection Chamber								
Effluent Pipelines								
A17222	Effluent Pipe - pre-construction condition survey method statement acceptance	50%	12	20-Oct-21 A	20-Nov-21	24	06-Dec-21	18-Dec-21
A17224	Effluent Pipe - Consent from DSD for access into THEEs tunnel for condition survey	50%	16	20-Oct-21 A	25-Nov-21	20	01-Dec-21	18-Dec-21



Activity ID	Activity Name	Physical % Complete	Remaining Duration	Start	Finish	Total Float	Late Start	Late Finish
A17232	Effluent Pipe - Condition survey for THEEs tunnel (1st entrance)	0%	24	26-Nov-21	23-Dec-21	20	20-Dec-21	18-Jun-22
Secondary Portal andTunnel								
Site Formation for Secondary Portal								
Trees								
A11580	Sec. Portal - Tree Transplant	5%	65	08-Oct-21 A	25-Jan-22	-18	18-Oct-21	04-Jan-22
A11570	Sec. Portal - Tree felling	0%	30	08-Nov-21	11-Dec-21	17	27-Nov-21	04-Jan-22
Instrumentation and Monitoring								
A19030	Sec. Portal - Settlement marker	0%	18	08-Nov-21	27-Nov-21	350	18-Jan-23	14-Feb-23
Slope SSP1								
A11105	Slope SSP1 - Temp cut slope with soil nail (+41 to +26mpd)	0%	45	27-Nov-21	21-Jan-22	208	17-Aug-22	12-Oct-22
A11110	Slope SSP1 - Rock Slope (26 - 19.5mpd)	0%	30	22-Jan-22	04-Mar-22	208	13-Oct-22	16-Nov-22
Rigid Barrier RB1								
A11380	Rigid Barrier RB1 - Form temp access to RB1	0%	90	26-Jan-22	24-May-22	-18	05-Jan-22	30-Apr-22
Flexible Barrier								
A11530	Flexible Barrier - Flexible barrier design preparation	50%	6	18-Sep-21 A	13-Nov-21	254	22-Sep-22	28-Sep-22
A11540	Flexible Barrier - Flexible barrier design approval	0%	18	15-Nov-21	04-Dec-21	254	29-Sep-22	21-Oct-22
A11550	Flexible Barrier - Material procurement & testing	0%	45	06-Dec-21	29-Jan-22	254	22-Oct-22	13-Dec-22
Retaining Wall								
Trees								
A11150	Tree Transplant	5%	65	08-Oct-21 A	25-Jan-22	515	15-Aug-23	01-Nov-23
A11140	Tree felling	0%	20	08-Nov-21	30-Nov-21	668	23-Feb-24	16-Mar-24
Soldier Pile Wall SP2								
A11250	SP2 - Soldier Pile Wall SP2 - Mobilization	0%	6	26-Jan-22	08-Feb-22	515	02-Nov-23	08-Nov-23
Secondary Access Tunnel (SAT)								
Blasting Permit								
A20140	Permanent Power for Tunnel work	50%	50	18-Sep-21 A	07-Jan-22	344	11-Jan-23	16-Mar-23
A20070	Blast Door Design preparation and submission	20%	20	18-Sep-21 A	30-Nov-21	1457	29-Oct-26	20-Nov-26
A20150	Tunnel Ventilation installation	0%	60	13-Nov-21	25-Jan-22	344	17-Jan-23	03-Apr-23
A20080	Blast Door Design approval	0%	18	01-Dec-21	21-Dec-21	1457	21-Nov-26	11-Dec-26
A20090	Blast Door construction at SAT	0%	45	22-Dec-21	22-Feb-22	1457	12-Dec-26	05-Feb-27
CBAR5 Permit Application								
A20100	[Summary] CBAR5 - Blasting Permit - Preparation and submission to PM	0%	86	08-Nov-21	25-Feb-22	193	05-Jul-22	22-Oct-22
A20100-100	CBAR5 - apply Permit - prepare draft of CBAR5 to PM for review	0%	75	08-Nov-21	21-Jan-22	239	05-Jul-22	17-Sep-22
A20100-110	CBAR5 - apply Permit - PM review and comments	0%	21	22-Jan-22	11-Feb-22	239	18-Sep-22	08-Oct-22
Tunnel Temporary Works								
A20120-200	CBAR5 - Tunnel Temp Works - prepare and submit tunnel temp work design to PM	0%	70	18-Nov-21	26-Jan-22	244	20-Jul-22	27-Sep-22
A20120-154	CBAR5 - Tunnel Temp Works - design preparation, submission and acceptance	0%	72	18-Nov-21	19-Feb-22	198	20-Jul-22	22-Oct-22



Activity ID	Activity Name	Physical % Complete	Remaining Duration	Start	Finish	Total Float	Late Start	Late Finish
A20120-210	CBAR5 - Tunnel Temp Works - PM review and comment	0%	28	17-Jan-22	13-Feb-22	244	18-Sep-22	15-Oct-22
Instrumentation and Monitoring								
A11600	Vibration monitoring station installation (Portion 10)	0%	18	08-Nov-21	27-Nov-21	312	01-Dec-22	21-Dec-22
Soft Ground Excavation (Drill & Break)								
A11702	Design preparation and submission for steel arch	40%	41	16-Sep-21 A	24-Dec-21	254	22-Sep-22	10-Nov-22
A11704	Design approval for steel arch	0%	18	28-Dec-21	18-Jan-22	254	11-Nov-22	01-Dec-22
A11706	Steel arch fabrication and delivery	0%	26	19-Jan-22	24-Feb-22	254	02-Dec-22	04-Jan-23
Cavern Complex								
General								
General								
A12510	Cavern Complex - temporary power for tunnel work	50%	57	18-Sep-21 A	15-Jan-22	99	14-Mar-22	25-May-22
CBAR 1 Blasting Permit Application								
A12480	CBAR1 Blasting Permit - Blasting Permit License - review by Mines Department	100%	0	17-Sep-21 A	04-Nov-21 A			
A12482	CBAR1 Blasting Permit - Pre-licencing inspection, preparation, interviews	0%	23	28-Dec-21	24-Jan-22	89	23-Apr-22	21-May-22
A12490	CBAR1 Blasting Permit - Obtain Blasting Permit/ License	0%	3	25-Jan-22	27-Jan-22	89	23-May-22	25-May-22
CBAR1 Blast Door Design and Installation								
A12464	CBAR1 Blasting Permit - Blast Door Design approval	90%	2	22-Oct-21 A	09-Nov-21	89	02-Mar-22	03-Mar-22
A12466	CBAR1 Blasting Permit - Blast Door construction	0%	39	10-Nov-21	24-Dec-21	89	04-Mar-22	22-Apr-22
CBAR1 Temporary Ventilatioin Design								
A12615	Cavern Complex - Temp tunnel ventilation design (Stage 1) approval	80%	14	05-Oct-21 A	23-Nov-21	50	08-Jan-22	24-Jan-22
A12625	Cavern Complex - Temp tunnel ventilation (Stage 1) installation	0%	30	24-Nov-21	30-Dec-21	112	19-Apr-22	25-May-22
CBAR2 Blasting Permit Application								
A21351	CBAR2 Blasting Permit - Prepare and submit draft of CBAR2 to PM	0%	35	08-Nov-21 A	17-Dec-21	94	08-Mar-22	21-Apr-22
A21350	[TG] ===== CBAR2 - Summary of Blasting Permit Application =====	0%	170	08-Nov-21	11-Jun-22	102	14-Oct-22	14-Oct-22
A21352	CBAR2 Blasting Permit - PM comment to CBAR1 & submit to Mines & GEO	0%	21	18-Dec-21	07-Jan-22	125	22-Apr-22	12-May-22
A21354	CBAR2 Blasting Permit - GEO & Mines review CBAR1	0%	28	08-Jan-22	04-Feb-22	125	13-May-22	09-Jun-22
CBAR2 Tunnel Temporary Design								
A21490	CBAR2 - Tunnel Temporary Work Design (Stage 1) - Prepare and submit to PM	0%	57	08-Nov-21	15-Jan-22	109	25-Mar-22	07-Jun-22
A21530	CBAR2 - Tunnel Temporary Work Design (Stage 2) - Prepare and submit to PM	0%	27	08-Jan-22	15-Feb-22	149	18-Jul-22	17-Aug-22
A21500	CBAR2 - Tunnel Temporary Work Design (Stage 1) - PM review and comment	0%	21	16-Jan-22	05-Feb-22	143	08-Jun-22	28-Jun-22
CBAR2 Temp Ventilation Design								
A20200	Cavern Complex - Temp tunnel ventilation design (Stage 2) preparation	0%	27	08-Nov-21	08-Dec-21	50	08-Jan-22	15-Feb-22
A20210	Cavern Complex - Temp tunnel ventilation design (Stage 2) approval	0%	18	09-Dec-21	31-Dec-21	50	16-Feb-22	08-Mar-22
A20220	Cavern Complex - Temp tunnel ventilation fan procurement	0%	90	03-Jan-22	28-Apr-22	50	09-Mar-22	29-Jun-22
Instrumentation and Monitoring								
A19040	Cavern Complex - Settlement marker (portion 13, 13A)	0%	18	08-Nov-21	27-Nov-21	124	13-Apr-22	07-May-22
Ventilation Shaft and Adit and Explosive Magazine								



Activity ID	Activity Name	Physical % Complete	Remaining Duration	Start	Finish	Total Float	Late Start	Late Finish
Ventilation Shaft								
CBAR4 - Blasting Permit Application								
A18550	[Summary] CBAR (Blasting Assessment Report) - preparation and submission	44%	30	08-Oct-21 A	11-Dec-21	223	20-Sep-22	20-Sep-22
A18550-100	CBAR3 - apply permit - prepare application and submission	90%	5	08-Oct-21 A	12-Nov-21	284	19-Aug-22	23-Aug-22
A18550-110	CBAR3 - apply permit - PM review and comments	0%	21	08-Nov-21	28-Nov-21	282	17-Aug-22	06-Sep-22
A18550-120	CBAR3 - apply permit - response to PM's comments	0%	14	29-Nov-21	12-Dec-21	282	07-Sep-22	20-Sep-22
A18555	[Summary] Blasting Permit License - review by Mines Department	0%	33	13-Dec-21	22-Jan-22	284	21-Sep-22	13-Jan-23
A18555-130	CBAR3 - apply permit - submit to GEO & Mines and reviewing	0%	28	13-Dec-21	09-Jan-22	282	21-Sep-22	18-Oct-22
A18555-140	CBAR3 - apply permit - close out GEO & Mines comments	0%	14	10-Jan-22	23-Jan-22	355	31-Dec-22	13-Jan-23
CBAR4 - Blasting Method Statement								
A18580	[Summary] Method statement for excavation works (Blasting)	0%	80	23-Dec-21	06-Apr-22	228	03-Oct-22	13-Jan-23
A18580-170	CBAR3 - BMS - prepare and submit blasting method statement to PM	0%	35	23-Dec-21	26-Jan-22	282	01-Oct-22	04-Nov-22
A18580-180	CBAR3 - BMS - PM review and comment to BMS	0%	21	20-Jan-22	09-Feb-22	282	29-Oct-22	18-Nov-22
CBAR4 - Design of Blasting Enclosure								
A18560	Design for Blasting Enclosure at Shaft - preparation and submission	89%	5	01-Sep-21 A	12-Nov-21	310	29-Nov-22	03-Dec-22
Instrumentation and Monitoring								
A18660	Vibration monitoring station installation (Portion 11, 12)	0%	26	08-Nov-21	07-Dec-21	112	29-Mar-22	03-May-22
A19050	Settlement marker (portion 12, 13A)	0%	12	08-Nov-21	20-Nov-21	188	05-Jul-22	18-Jul-22
Temporary Ventilation								
A18640	Shaft Ventilation installation	0%	60	24-Jan-22	11-Apr-22	237	17-Nov-22	04-Feb-23
Ventilation Shaft - Excavation								
A14620	Plant mobilization & initial setup	0%	13	08-Nov-21	22-Nov-21	188	05-Jul-22	19-Jul-22
A14630	Pipe-piles (84 nos)(from 177 to 170mpd)	0%	84	23-Nov-21	10-Mar-22	188	20-Jul-22	29-Oct-22
Temporary Explosive Magazine								
General								
A17580	Temporary Explosive Magazine design approval	100%	0	18-Aug-21 A	03-Nov-21 A			
A18390	Method statement review and approval by mines dept.	5%	22	05-Nov-21 A	02-Dec-21	-20	15-Oct-21	09-Nov-21
A18470	Submit information of Explosive Delivery Vehicle (EVD) and drivers	0%	30	03-Dec-21	10-Jan-22	100	11-Apr-22	20-May-22
A18520	EVD and divers approval by mines dept.	0%	14	11-Jan-22	26-Jan-22	100	21-May-22	07-Jun-22
Temporary Explosive Magazine								
A18170	Excavation and base slab	0%	18	03-Dec-21	23-Dec-21	-20	10-Nov-21	30-Nov-21
A18190	Construct Temporary Explosive Store No.1	0%	45	21-Dec-21	21-Feb-22	-20	27-Nov-21	21-Jan-22
A18200	Construct Temporary Explosive Store No.2	0%	45	22-Jan-22	22-Mar-22	-20	29-Dec-21	26-Feb-22