Monthly Environmental Monitoring & Audit Report – July 2023

0039/23/ED/0108

Contract No. CPW 01/2023 Environmental Team for Relocation of Sha Tin Sewage Treatment Works to Caverns

ANEWR

Drainage Services Department
Cavern Projects Division
44/F., Revenue Tower
5 Gloucester Road
Wanchai
Hong Kong

Your reference:

Our reference: HKDSD209/50/109116

Date: 11 August 2023

Attention: Mr Felix Yu

BY EMAIL & POST
(email: csyu03@dsd.gov.hk)

Dear Sirs

Contract No. CPW 02/2023
Independent Environmental Checker Services for
Relocation of Sha Tin Sewage Treatment Works to Caverns
Verification of Monthly EM&A Report (July 2023)

We refer to the emails of 7 and 10 August 2023 attaching Monthly EM&A Report (July 2023) for the captioned project prepared by the ET.

We have no further comment and hereby verify the captioned report in accordance with Clause 3.5 of the Environmental Permit no. EP-533/2017/A.

Should you have any queries regarding the above, please do not hesitate to contact the undersigned on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Louis Kwan
Independent Environmental Checker

KSYL/lsmt

ANewR Consulting Limited
Unit 1813, 1815-16, 18/F, Tower A, Regent Centre
63 Wo Yi Hop Road, Kwai Chung, Hong Kong
Tel: (852) 2618 2831 Fax: (852) 3007 8648
Email: info@anewr.com
Web: www.anewr.com

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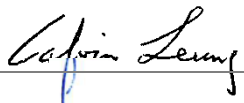
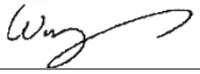
Client Information

Client	Drainage Services Department
Client Address	44/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Client Contact	Mr Felix C S Yu

Project Team

Initials	Name	Role	Signature
CL	Calvin M.P. Leung	**Environmental Team Leader**	
CL	Cyrus C.Y. Lai	Deputy Environmental Team Leader	
WS	Wing H.W. So	Deputy Environmental Team Leader	

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EXECUTIVE SUMMARY

i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report of Relocation of Sha Tin Sewage Treatment Works to Caverns – Site Preparation and Access Tunnel Construction under Environmental Permit no. EP-533/2017/A (Hereafter as "the Project"). This is the 53rd EM&A report presenting the environmental monitoring findings and information recorded during the period of 1 July to 31 July 2023. 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/2020/05 –
Relocation of Sha Tin Sewage Treatment Works to Caverns – Main Caverns Construction
(The contract was commenced on 5 July 2021)

- Construction of temporary drainage system
- Slope stabilization works
- Tunneling works
- Rigid barrier construction
- Operation of rock crushing plant
- Retaining wall construction
- TBM Tunneling and Pipe Jacking
- Preservation and protection of existing trees
- Construction of ventilation shaft

Air Quality Monitoring

iii. 1-hour TSP monitoring was conducted at AM1, AM2, AM3(B), AM4, AM5 and ASR51 on 3, 8, 14, 20 and 26 July 2023 in the reporting period.

iv. No action or limit level exceedances were determined in the reporting period.

Noise Monitoring

v. Noise monitoring was conducted at CM1, CM2(B), CM3, CM4 and CM5 on 3, 14, 20 and 26 July 2023 in the reporting period.

vi. No action or limit level exceedances were determined in the reporting period.

vii. Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 3, 14, 20 and 26 July 2023 with respect to the restricted hour works under CNP GW-RN0542-23, GW- RN0519-23, GW-RW0129-23 and GW-RN0746-23. All the results are within or below 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 3, 14, 20 and 26 July with respect to the restricted hour works under CNP GW-RN0542-23, GW-RN0519-23, GW- RW0129-23 and GW-RN0746-23. All the results are within or below the baseline level range after baseline correction.

APS Monthly Performance Test

ix. APS monthly performance test was conducted at ASR52 & ASR55 on 19, 20, 21 and 22 July 2023 in this reporting period.

x. The effectiveness of APS at Model Train Shop, Nana Café, Lantau Link Visitor Centre and Workshop Office were considered satisfactory and no additional units of APS were recommended to be deployed at the above-mentioned ASRs.

Complaints, Notifications of Summons and Successful Prosecutions

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

xii. No notification of summons and successful prosecutions were received in the reporting month.

Reporting Changes

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

Future Key Issues

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

Key Construction Works	Recommended Mitigation Measures
Contract no. DC/2020/05	
• **Construction of temporary drainage system** • **Slope stabilization works** • **Tunneling works** • **Rigid barrier construction** • **Operation of rock crushing plant** • **TBM Tunneling and Pipe Jacking** • **Preservation and protection of existing trees** • **Construction of ventilation shaft**	• **Dust control during dust generating works;** • **Implementation of proper noise pollution control;** • **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; and** • **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 Fugro Technical Services Limited (FTS) has been appointed as the Environmental Team (ET) by Drainage Services Department (DSD) under Environmental Permit (EP) no. EP-533/2017/A 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/A, 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, and 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 **Compliance 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 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	Principal Resident Engineer	Mr. Peter POON	9861 8654	2251 0693
China State – Alchmex Joint Venture (CSAJV) **(DC/2020/05)**	Construction Manager	S. Y. TSZ	9078 0458	3914 5951
	Site Agent	Mr. KONG Ming, Elvis	9186 2081	
	Environmental Officer	Mr. LAM Moon Lin	9489 4641	
		Mr. Michael Tsang	9277 4956	
	Environmental Supervisor	TSANG Chiu Fat	9137 8733	
		CHAN Chin Ming	9128 9993	
		IP Tat Hing	9600 8900	
		Tiffany Yeung	6761 8726	
ANewR Consulting Limited (ANewR)	Independent Environmental Checker (IEC)	Mr. Louis KWAN	2618 2831	3007 8648
Fugro Technical Services Limited (Fugro)	Environmental Team Leader (ETL)	Mr. Calvin LEUNG	3565 4441	2694 0659

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/2020/05 –
Relocation of Sha Tin Sewage Treatment Works to Caverns – Main Caverns Construction
(The contract was commenced on 5 July 2021)

- Construction of temporary drainage system
- Slope stabilization works
- Tunneling works
- Rigid barrier construction
- Operation of rock crushing plant
- Retaining wall construction
- TBM Tunneling and Pipe Jacking
- Preservation and protection of existing trees
- Construction of ventilation shaft

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

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

- Construction of temporary drainage system
- Slope stabilization works
- Tunneling works
- Rigid barrier construction
- Operation of rock crushing plant
- TBM Tunneling and Pipe Jacking
- Preservation and protection of existing trees
- Construction of ventilation shaft

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 is shown in **Table 3.1**.

Table 3.1 Summary of the current status on licences and/or permits

Permits and/or Licences	Reference No.	Valid Date (dd-MM-yyyy)	Expiry Date (dd-MM-yyyy)	Status
Contract no. DC/2020/05				
Environmental Permit	EP-533/2017/A	08/11/2022	N/A	Valid
Notification of Works Under APCO (Main Site in Ma On Shan)	469268	08/07/2021	N/A	Valid
Notification of Works Under APCO (WA3 & WA4 in Tsing Yi)	477699	15/03/2022	N/A	Valid
Licence for the Conduct of a Specified Process (WA3 & WA4 in Tsing Yi)	L-11-55(01)	26/09/2022	25/09/2024	Valid
Registration as a Chemical Waste Producer (Main Site in Ma On Shan)	5117-756-C4617-01	02/08/2021	N/A	Valid
Registration as a Chemical Waste Producer (WA3 in Tsing Yi)	8335-351-C4742-01	21/09/2022	N/A	Valid
Billing account under Waste Disposal Ordinance	7041077	22/07/2021	N/A	Valid
Discharge Licence (Main Site in Ma On Shan)	WT00040534-2022	15/11/2022	30/04/2027	Valid
Discharge Licence (WA3 in Tsing Yi)	WT00042574-2022	07/12/2022	31/12/2027	Valid
Construction Noise Permit (Tunnel)	GW-RN0542-23	06/06/2023	31/08/2023	Valid
Construction Noise Permit (Portion 11)	GW-RN0519-23	08/06/2023	07/10/2023	Valid
Construction Noise Permit (WA3 & WA4)	GW-RW0129-23	09/03/2023	31/08/2023	Valid
Construction Noise Permit (P6A)	GW-RN0746-23	20/07/2023	19/10/2023	Valid

3.2 Status of Submission under the EP-533/2017/A

3.2.1 A summary of the current status on submission under EP-533/2017/A is shown in **Table 3.2**.

Table 3.2 Summary of Submission Status Under EP-533/2017/A

EP Condition	Submission	Date of Submission (dd-MM-yyyy)
Contract no. DC/2018/05 and DC/2020/05		
Condition 1.12	Notification of Commencement Date of Works	18/02/2019
Condition 2.1	Notification of EPD of Community Liaison Group	18/04/2019
Condition 2.12	Management Organization of Main Construction Companies	18/04/2019
Condition 2.14	Submission of Detailed Vegetation Survey Report and Protection and Transplantation Proposal	18/04/2019
Condition 2.15	Woodland Compensation Plan	26/08/2021
Condition 2.18	Submission of Landscape & Visual Mitigation and Tree Preservation Plan(s)	18/04/2019
Condition 2.2	Notification of EPD of telephone hotline	18/04/2019
Condition 2.21	Submission of Supplementary Contamination Assessment Plan (CAP)	10/09/2020
Condition 2.21	Submission of Supplementary Contamination Assessment Plan (CAP) for Sha Tin Sewage Treatment Works (For the Areas of Mechanical Workshop, Chemical Waste Area, Scrap Iron Storage Area and Chemical Waste Collection Tank, Dangerous Goods and Chemical Waste Sore, ENV-G04, ENV-G07, ENV-G14 and ENV-G28)	25/11/2021

EP Condition	Submission	Date of Submission (dd-MM-yyyy)
Condition 2.22	Submission of Measures to Mitigate Traffic Noise from Ma On Shan Road	18/04/2019
Condition 2.29	Commissioning Test Report for Air Purification System Installed at Air Sensitive Receivers	13/12/2022
Condition 3.1	Proposal for Commencement of Construction Phase Air Quality Monitoring in Phases	17/04/2019
Condition 3.1	Proposal for Alternative Sampling Method for Construction Phase Air Quality Monitoring (1-hr TSP)	16/04/2019
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	06/03/2020
Condition 3.1	Temporary suspension of EM&A Programme during 29 Jan 2020 to 2 Feb 2020	28/02/2020
Condition 4.2	Dedicated internet website	22/05/2019
Condition 3.4	Baseline Noise Monitoring Report	11/08/2021
Condition 3.4	Baseline Air Quality Monitoring Report for the Rock Processing Plant at Ngau Kok Wan	03/11/2022

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 AM4 and AM5 were setup and commencement of monitoring on 3 May 2019 and 18 April 2019 respectively.

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. 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 for proposed fine adjustment for air monitoring station at Kowloon City Baptist Church Hay Nien Primary School was agreed by EPD on 17 December 2020 and the air quality monitoring for the station AM3(B) was commenced on 18 December 2020.

4.1.3 Air quality monitoring for the station AM6 was commenced on 2 November 2021 since the demolition of DSD staff quarter and ended on 31 December 2021. The proposal was verified by IEC and approved by EPD on 9 May 2019.

4.1.4 Air quality monitoring station ASR51 at WA3 was recommended in the supporting document for application for variation of Environmental Permit (EP-533/2017/A issued on 11 August 2022) and the associated air quality monitoring was commenced on 19 August 2022.

4.1.5 The updated 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
ASR51	The Hong Kong Yaumati Ferry Company Ltd. Administrative Building	G/F

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 as shown in **Table 4.1**. The proposal was verified by IEC on 8 March 2023 and submitted to EPD on 14 March 2023.

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	Sibata, Model LD-3B
	Sibata, Model LD-5R

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

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 for stations of AM1, AM2, AM3(A), AM4 & AM5. And wind data from Tsing Yi HKO Automatic Weather Station was obtained covering the 1-hr TSP monitoring periods for station of ASR51. 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/m^3	
	Action Level	Limit Level
AM1	294	500
AM2	325	500
AM3(B)	360	500
AM4	297	500
AM5	349	500
ASR51	310	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.

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. 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 noise monitoring station was proposed 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 and the noise monitoring for station CM2(B) was commenced on 18 December 2020.

4.2.3 Noise monitoring for stations DM1, DM2 and DM3 were commenced on 2 November 2021 and ended on 31 December 2021.

4.2.4 The updated 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

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

4.2.8 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

4.2.9 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	Casella, CEL-63X Series
Acoustic Calibrator	Casella, CEL-120/1

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

Sampling Procedure and Monitoring Equipment

4.2.11 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:
   - Frequency weighting: A,
   - Time weighting: Fast,
   - Measurement time set: continuous 5 mins
e) 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.

f) 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.

4.2.12 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

4.2.13 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		

Remark 1: Limit level of CM1, CM2(B) and CM3 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 APS Performance Test

4.3.1 According to EP Condition 2.29(ii) of EP-533/2017/A, monthly performance test shall be carried out in the following month of the Air Purification System (APS) commissioning test, in order to monitor the effectiveness of the APS in removing NO2 at the designated air sensitive receivers (ASR) as described in the Environmental Review Report (ERR) submitted under the application for Variation of EP (Application No.: VEP-618/2022).

4.3.2 The commissioning test was carried out for a duration of 24 hours at Model Train Shop (ASR55), Lantau Link Visitor Centre (ASR55), Nana Café (ASR55) and Workshop Office (ASR52) on 19 to 20, 20 to 21, 26 to 27 (for Nana Café & Workshop Office) September 2022, respectively, the Commissioning Test Report (CTR) was then submitted to EPD on 3 November 2022. Since the owner of premises (Model Train Shop) requested to reduce the APS units due to the space constraints. The measurement was re-carried out in 21 to 22 November 2022 by using one APS unit for commissioning test. The CTR was submitted to EPD on 13 December 2022 for approval (Ref: LES/J2021-03/CS/L062).

4.3.3 The ASRs of the APS Performance Test are listed and shown in **Table 4.7** and **Figure 4.1**.

Table 4.7 ASR of the APS Performance Test

ASR ID	Location of ASR
ASR52	North West Tsing Yi Interchange Maintenance Workshops
ASR55	Lantau Link Visitor Centre
	Nana Café
	Model Train Shop

Monitoring Equipment

4.3.4 The monitoring equipment used for the APS Performance Test are listed in **Table 4.8**.

Table 4.8 NO_2 Monitoring Equipment

Equipment	Serial Number
Aeroqual AQS1 Urban Air Quality Monitor	AQS1 17082022-2139
	AQS1 17082022-2140
	AQS1 17082022-2141
	AQS1 17082022-2142

4.3.5 The calibration certificates of the NO_2 monitoring equipment are attached in **Appendix 4.2**.

Sampling Procedure

4.3.6 The monthly performance tests will be carried out in accordance with the measurement method as described in Appendix 3.8E of the ERR submitted under the application for Variation of EP (Application No.: VEP-618/2022) which is extracted below:

a) Measure the ambient NO_2 concentration at indoor and outdoor simultaneously at the ASRs.

b) Measure hourly NO_2 concentration in 24 hours to capture daily fluctuation on the measurement day.
c) Compare the NO_2 concentration at indoor and outdoor, and determine the effectiveness of the APS.
d) Measurement duration: 1 day.

Maintenance and Contingency Plan

4.3.7 Maintenance and contingency plan described in Appendix 3.8E of the ERR submitted under the application for Variation of EP (Application No.: VEP-618/2022) which is extracted below:

a) If the NO_2 removal efficiency of the Air Purifier is lower than 60% after the ad-hoc maintenance work for any malfunction of the equipment or regular maintenance work by replacement of filters, another Air Purifier shall be deployed for treatment of air pollutants.
b) 1 no. spare unit is ready for immediate replacement of malfunctioned Air Purifier upon notification.
c) Regular maintenance schedule: The HEPA filter shall be replaced every six months while the NCCO filter shall be replaced every three years under normal operational conditions insider the premises.

4.3.8 The responsibilities of relevant parties presented in **Table 4.9** as per Appendix 3.8E of the ERR submitted under the application for Variation of EP (Application No.: VEP-618/2022):

Table 4.9 Responsibilities Matrix

Actions	Responsible Parties
Implementation Plan	The Contractor (Contract No. DC/2020/05)
Commissioning Test Plan	The Environmental Team (*for measurement*)
Performance Test Plan	The Contractor (Contract No. DC/2020/05) (*for follow-up actions*)
Maintenance and Contingency Plan	The Contractor (Contract No. DC/2020/05)

5. Monitoring Results

5.1.1 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.

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

5.1 Air Monitoring Results

5.1.1 1-hour TSP monitoring was conducted at AM1, AM2, AM3(B), AM4, AM5 and ASR51 on 3, 8, 14, 20 and 26 July 2023 in the reporting period.

5.1.2 No action or limit level exceedances were determined in the reporting period.

5.1.3 Details of air monitoring results and graphical presentation is shown in **Appendix 5.1**.

5.2 Noise Monitoring Results

5.2.1 Noise monitoring was conducted at CM1, CM2(B), CM3, CM4 and CM5 on 3, 14, 20 and 26 July 2023 in the reporting period.

5.2.2 No action or limit level exceedances were determined in the reporting period.

5.2.3 Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 3, 14, 20 and 26 July 2023 with respect to the restricted hour works under CNP GW-RN0542-23, GW-RN0519-23, GW-RW0129-23 and GW-RN0746-23. All the results are within or below the baseline level range after baseline correction.

5.2.4 Additional weekly night time noise monitoring from 23:00 to 07:00 on next day was carried out at CM4 on 3, 14, 20 and 26 July 2023 with respect to the restricted hour works under CNP GW-RN0542-23, GW- RN0519-23, GW- RW0129-23 and GW-RN0746-23. All the results are within or below the baseline level range after baseline correction.

5.2.5 Details of noise monitoring results and graphical presentation is shown in **Appendix 5.3**.

5.3 APS Performance Test Results

5.3.1 APS monthly performance test was conducted at ASR52 & ASR55 on 19, 20, 21 and 22 July 2023 in this reporting period. Rock crushing activities at the rock crushing plant were undertaken within the reporting period.

5.3.2 APS performance test results measured in this reporting period are reviewed and summarized in **Table 5.1**. Details of APS Performance Test results is shown in **Appendix 5.4**.

Table 5.1 APS Performance Test Results

ASR	Location of ASR	Monitoring Date	Measured Daily Average of Indoor NO_2 Concentration ($\mu g/m^3$)	Measured Daily Average of Outdoor NO_2 Concentration ($\mu g/m^3$)	NO_2 Removal Efficiency (%)
ASR52	Workshop Office	20/07/2023 - 21/07/2023	19.2	35.7	46.2
ASR55	Lantau Link Visitor Centre	19/07/2023 - 20/07/2023	7.9	32.4	75.6
	Nana Café	21/07/2023 - 22/07/2023	30.1	42.8	29.7
	Model Train Shop	20/07/2023 - 21/07/2023	1.7	37.7	95.5

5.3.3 Based on the results presented in **Table 5.1**, The NO_2 removal efficiency for Lantau Link Visitor Centre and Model Train Shop (ASR55) was over 60% which is one of the criteria for determination of effectiveness of the APS at ASR while that of the rest (i.e. Nana Café and Workshop Office) was below the criterion of 60% or above. Nevertheless, it should be noted that the daily average of Indoor NO_2 were found to be below another criterion of 40 $\mu g/m^3$ for all ASRs.

5.3.4 Based on the above-mentioned findings, the effectiveness of APS at Model Train Shop, Nana Café, Lantau Link Visitor Centre and Workshop Office were considered satisfactory and no additional units of APS were recommended to be deployed at the above-mentioned ASRs.

5.4 Waste Management

5.4.1 The quantities of waste for disposal in the Reporting Period are summarized in **Table 5.2** and the Monthly Summary Waste Flow Table are shown in **Appendix 5.5**. Whenever possible, materials were reused on-site as far as practicable.

Table 5.2 Summary of Waste Disposal

Waste Type	**Quantity this month**	**Cumulative Quantity-to-Date**	**Disposal / Dumping Grounds**	**Remarks:**
Inert C&D materials disposed**, m³**	1,254	16,152	Fill Bank at Tuen Mun Area 38	--
	557	105,974	Lam Tei Quarry & CEDD Contract No. NE/2015/01	Alternative Disposal Ground
Inert C&D materials recycled**, m³**	0	1,197	Fill Bank at Tuen Mun Area 38	Broken concrete
Non-inert C&D materials disposed**, tonne**	34.31	1,000.00	SENT	--
Non-inert C&D materials recycled**, kg**	300	2,620	Golden Sino Management Limited	Waste Paper
	0	230		Plastic
	0	148,414		Metals
Chemical waste disposed, **L**	0	200	Collected by licensed chemical collector: Ecospace Limited	Spent Lube Oil
Asbestos waste disposed, **Kg**	0	560	WENT	--

6. Land Contamination

6.1.1 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.

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

6.1.3 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.

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

7. Compliance Audit

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

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

7.1 Air Monitoring

7.1.1 No action or limit level exceedances were determined in the reporting period at stations of AM1, AM2, AM3(B), AM4, AM5 and ASR51.

7.2 Noise Monitoring

7.2.1 No action or limit level exceedances were determined in the reporting period for the stations of CM1, CM2(B), CM3, CM4 and CM5.

7.2.2 Additional weekly noise monitoring from 19:00 to 23:00 was carried out at CM4 on 3, 14, 20 and 26 July 2023 with respect to the restricted hour works under CNP GW-RN0542-23, GW-RN0519-23, GW- RW0129-23 and GW-RN0746-23. All the results are within or below the baseline level range after baseline correction.

7.2.3 Additional weekly night time noise monitoring from 23:00 to 07:00 on next day was carried out at CM4 on 3, 14, 20 and 26 July 2023 with respect to the restricted hour works under CNP GW-RN0542-23, GW- RN0519-23, GW- RW0129-23 and GW-RN0746-23. All the results are within or below the baseline level range after baseline correction.

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

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

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

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

8. Environmental Site Audit

Weekly Site Inspection

8.1.1 The Environmental Team (ET) conducted weekly site inspections for the Contract on 6, 13, 20 and 27 July 2023. IEC attended the joint site inspection on 13 and 27 July 2023.

Landscape Site Audit

8.1.2 Within this reporting month, bi-weekly landscape site audits were conducted on 11 and 25 July 2023.

Ecology Site Audit

8.1.3 Within this reporting month, monthly ecology site audits were conducted on 11 July 2023.

8.1.4 The summary of inspection is presented in **Appendix 8.1**.

9. Complaints, Notification of Summons and Prosecution

9.1.1 No environmental complaint was received in the reporting period.

9.1.2 No notification of summons and successful prosecutions were received in the reporting month.

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

9.1.4 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
July 2023	**0**
Total	**8**

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

10.1.1 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.

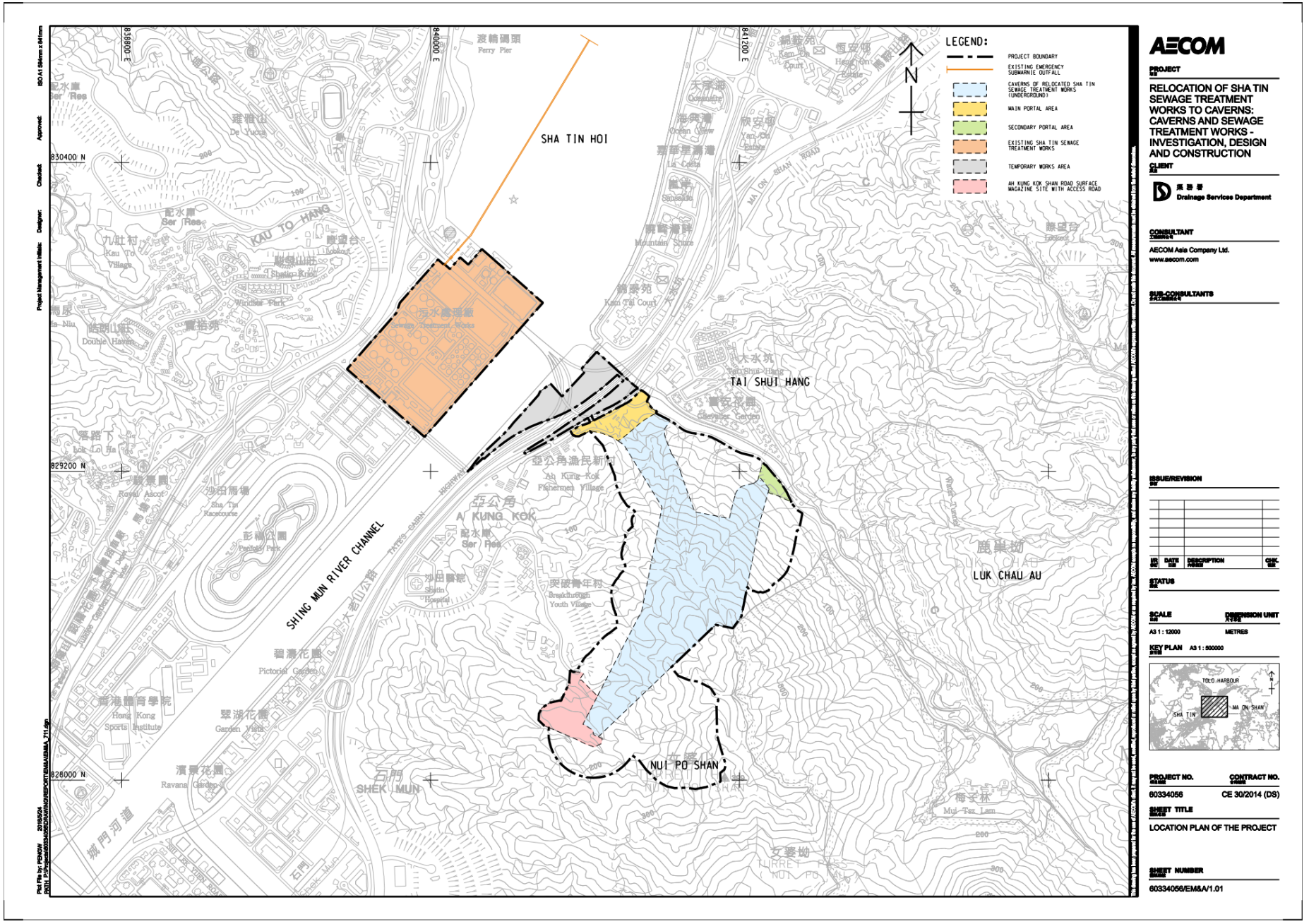
10.1.2 The scheduled construction activities and the recommended mitigation measures for the coming month are listed in **Table 10.1**. The construction programmes of the Project are provided in **Appendix 10.1**.

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

Key Construction Works	Recommended Mitigation Measures
Contract no. DC/2020/05	
• **Construction of temporary drainage system** • **Slope stabilization works** • **Tunneling works** • **Rigid barrier construction** • **Operation of rock crushing plant** • **TBM Tunneling and Pipe Jacking** • **Preservation and protection of existing trees** • **Construction of ventilation shaft**	• **Dust control during dust generating works;** • **Implementation of proper noise pollution control;** • **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; and** • **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



AECOM

PROJECT

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

CLIENT

Drainage Services Department

CONSULTANT

AECOM Asia Company Ltd.
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ISSUE/REVISION

RE	DATE	DESCRIPTION	CHK

STATUS

SCALE A3 1 : 12000

DIMENSION UNIT METRES

KEY PLAN A3 1 : 500000

PROJECT NO. 60334056

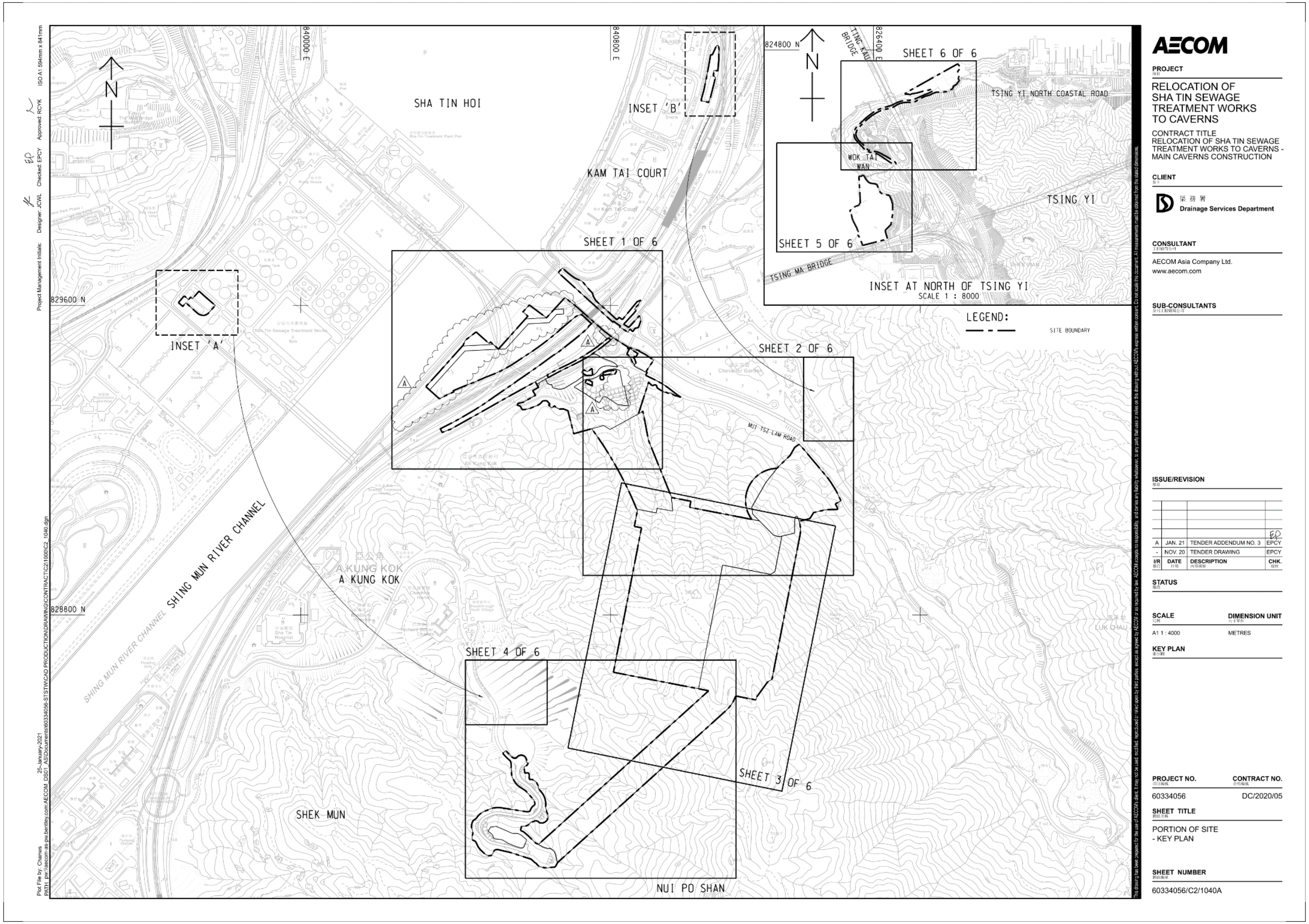
CONTRACT NO. CE 30/2014 (DS)

SHEET TITLE

LOCATION PLAN OF THE PROJECT

SHEET NUMBER

60334056/EM&A/1.01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KAM TAI COURT
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SHEET 4 OF 6
SHEET 5 OF 6
SHEET 6 OF 6
INSET 'A'
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828800 N
840000 E
840800 E
824800 N
826400 E
TING KAU BRIDGE
TSING YI NORTH COASTAL ROAD
WOK TAI WAN
TSING YI
TSING MA BRIDGE
INSET AT NORTH OF TSING YI
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MUI TSZ LAM ROAD
SHING MUN RIVER CHANNEL
A KUNG KOK
SHEK MUN
NUI PO SHAN
AECOM
PROJECT
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS
CONTRACT TITLE
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS - MAIN CAVERNS CONSTRUCTION
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- NOV. 20 TENDER DRAWING EPCY
I/R DATE DESCRIPTION CHK.
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METRES
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60334056
CONTRACT NO.
DC/2020/05
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PORTION OF SITE - KEY PLAN
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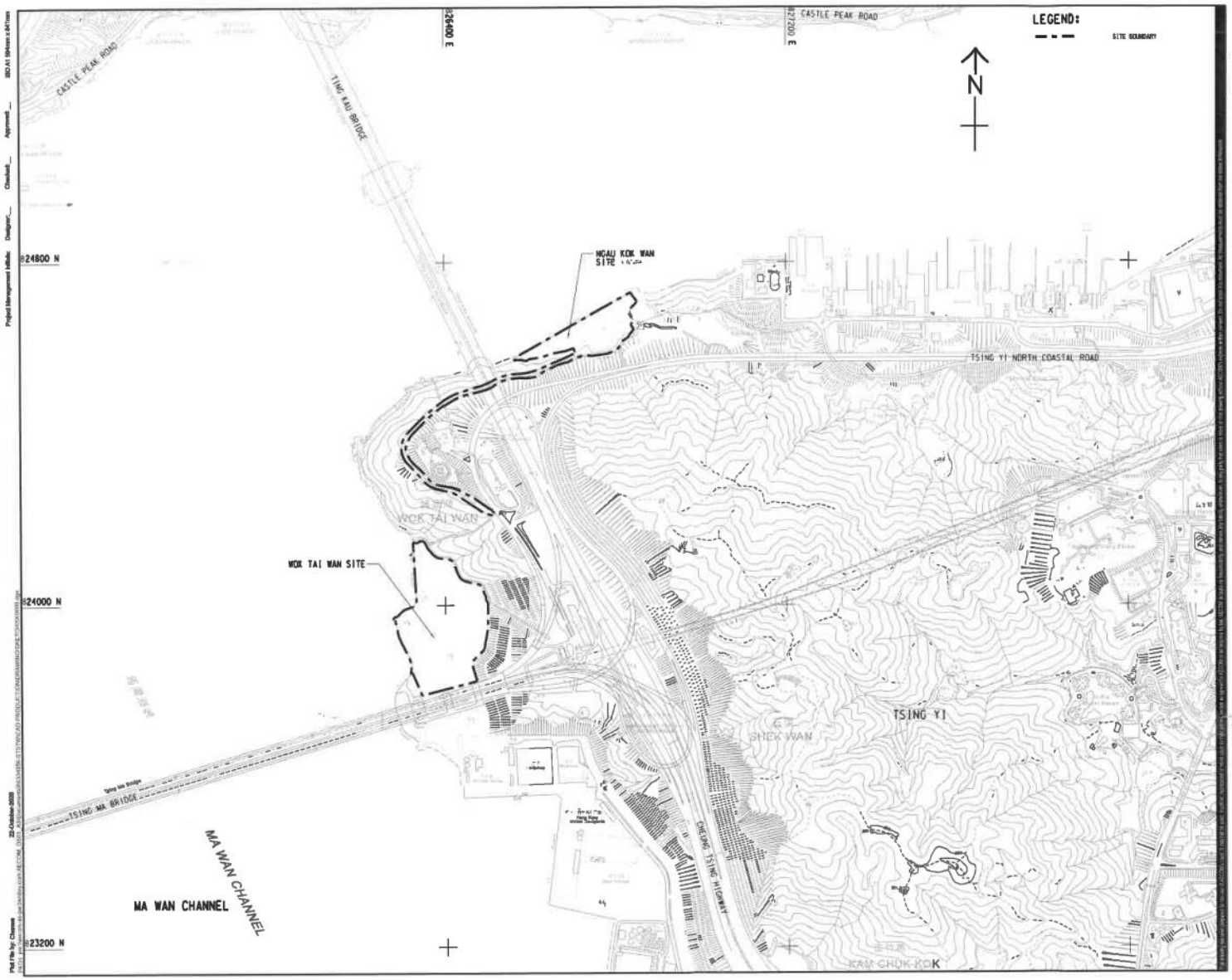
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STATUS
SCALE
A1 1 : 4000
DIMENSION UNIT
METRES
KEY PLAN
PROJECT NO.
60334056
CONTRACT NO.
SHEET TITLE
LOCATION OF WOK TAI WAN AND NGAU KOK WAN
SHEET NUMBER
Figure 1

Figure 2.2

Project Organization Chart

Project Organization Chart

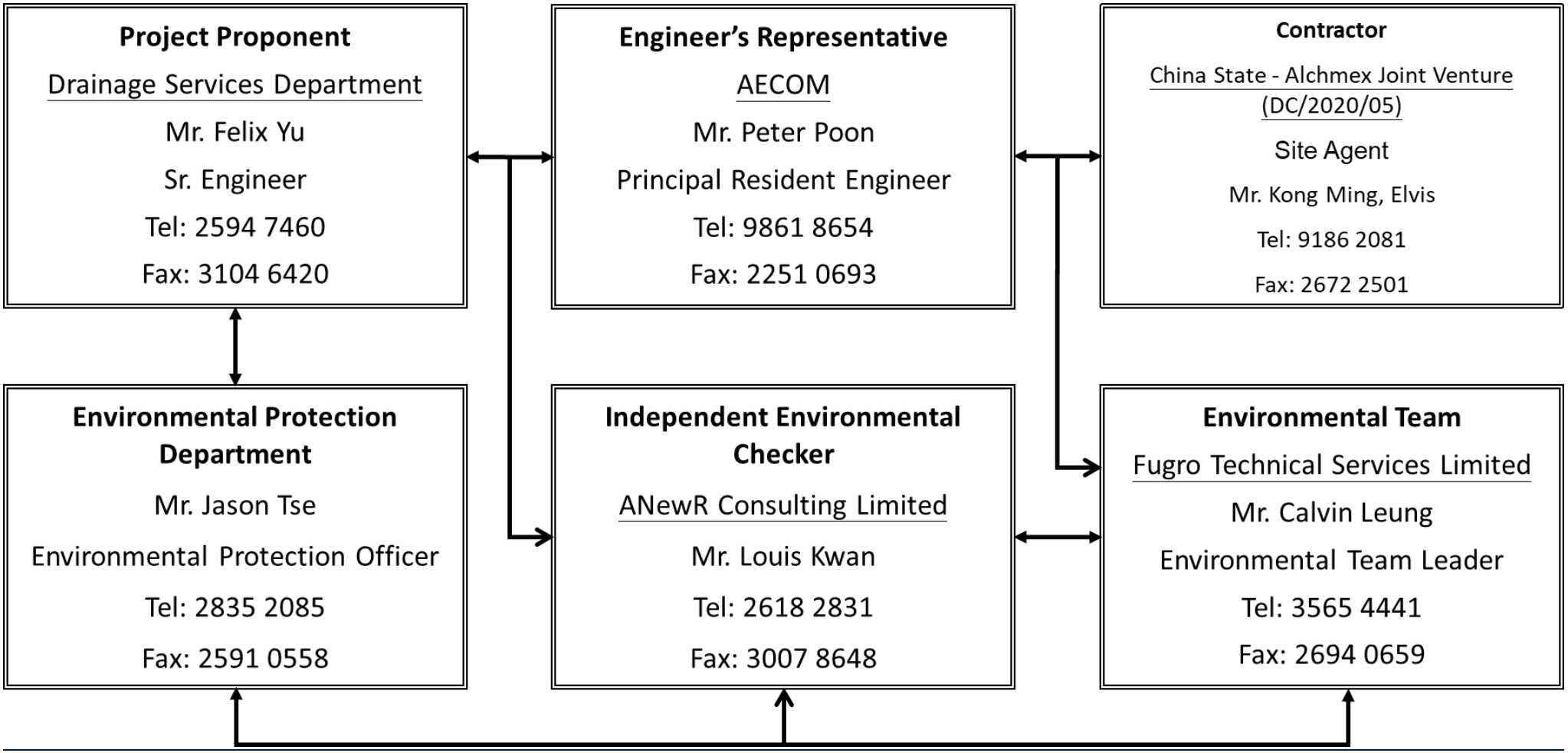
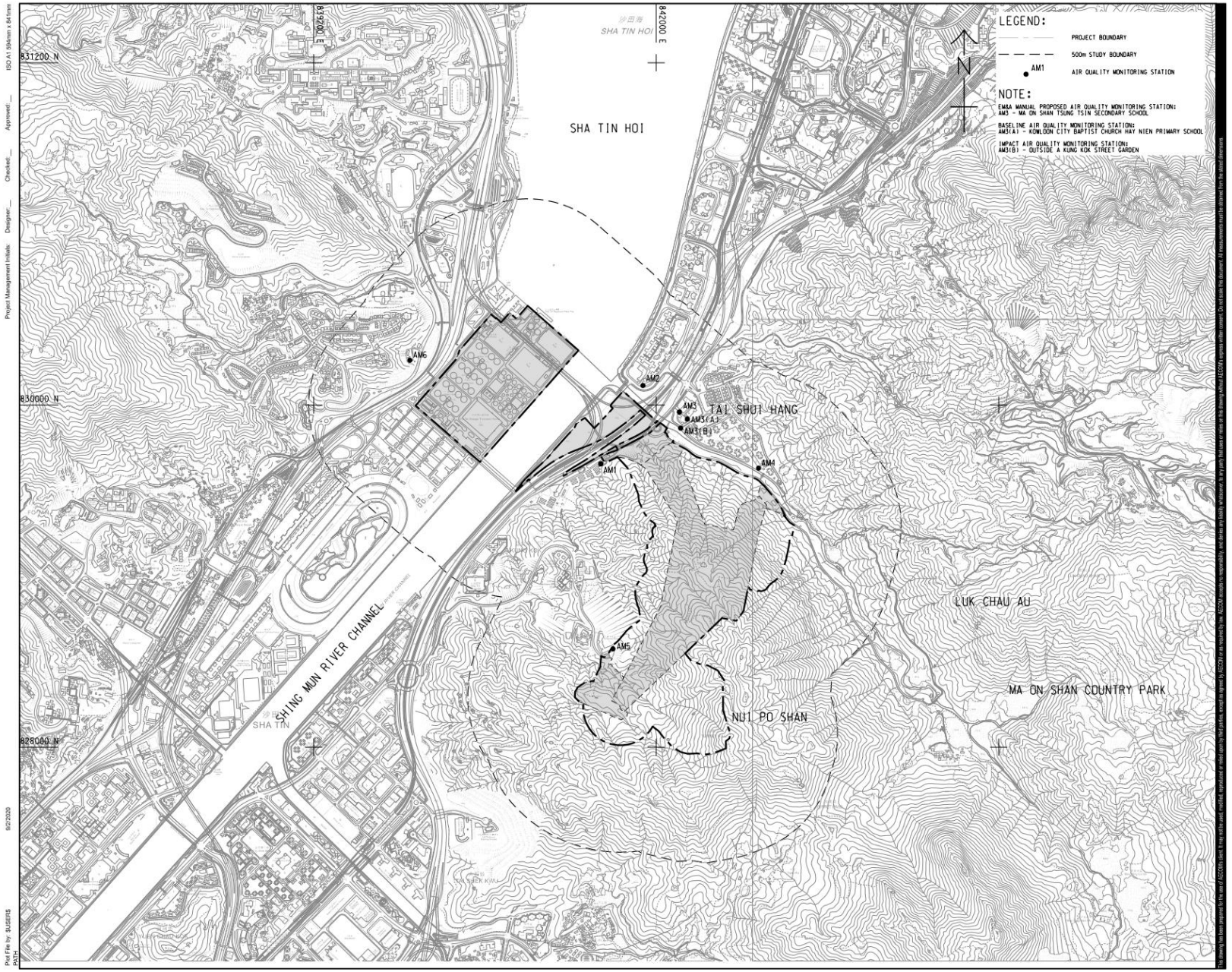


Figure 4.1 to 4.3

Locations of Environmental Monitoring Station



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PROJECT

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

CLIENT

Drainage Services Department

CONSULTANT

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I/R	DATE	DESCRIPTION	CHK.

STATUS

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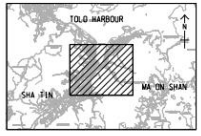
DIMENSION UNIT METRES

KEY PLAN A3 1 : 400000



PROJECT NO. 60334056

CONTRACT NO. CE 30/2014 (DS)

SHEET TITLE

LOCATION OF AIR QUALITY MONITORING STATION DURING CONSTRUCTION PHASE

SHEET NUMBER

60334056/EM&A/2.01

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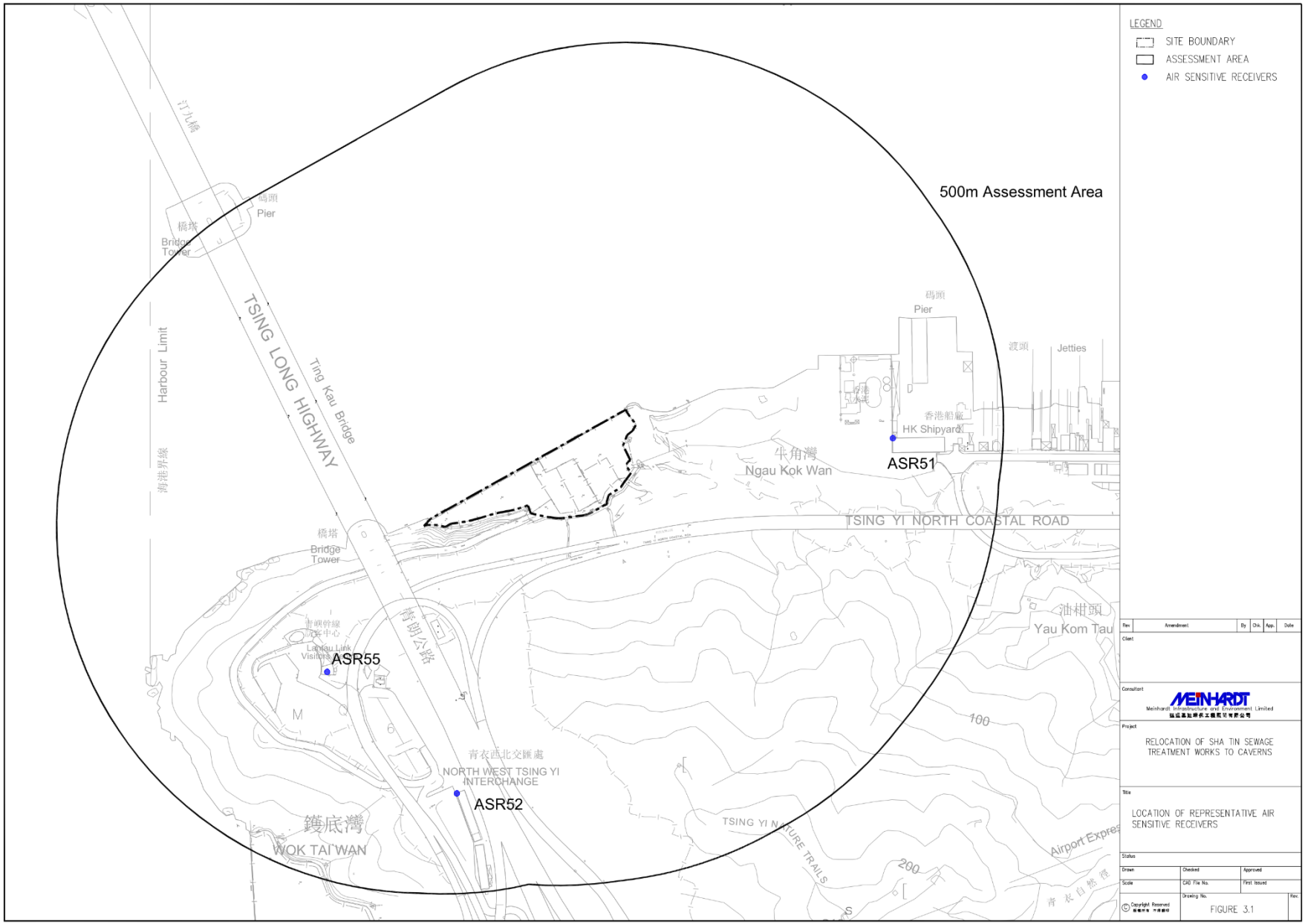
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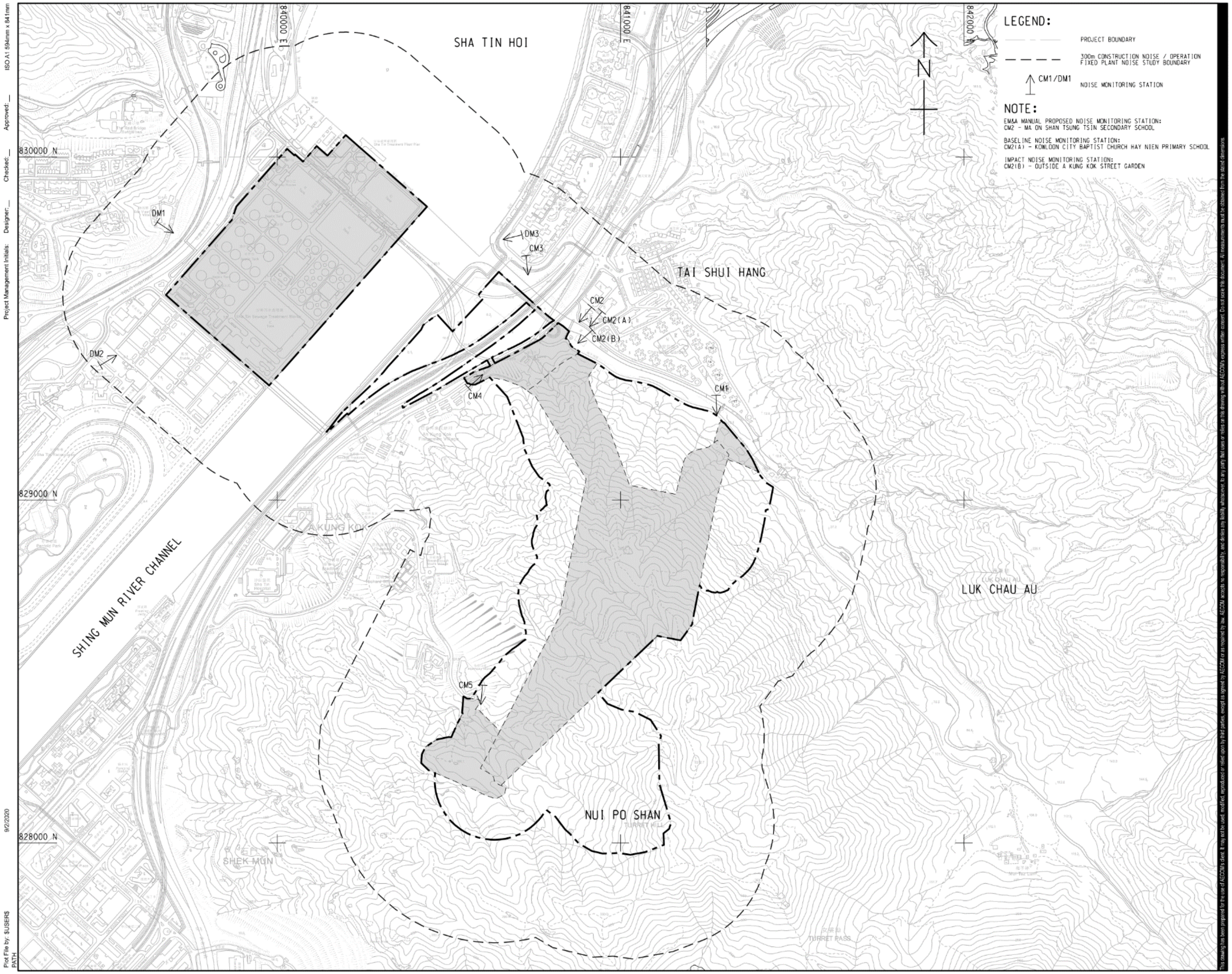
SITE BOUNDARY
ASSESSMENT AREA
AIR SENSITIVE RECEIVERS
500m Assessment Area
ASR51
ASR52
ASR55
TSING LONG HIGHWAY
Ting Kau Bridge
Harbour Limit
TSING YI NORTH COASTAL ROAD
Ngau Kok Wan
HK Shipyard
Pier
Jetties
Bridge Tower
NORTH WEST TSING YI INTERCHANGE
WOK TAI WAN
Yau Kom Tau
RELOCATION OF SHA TIN SEWAGE TREATMENT WORKS TO CAVERNS
LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS
FIGURE 3.1



AECOM

PROJECT

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

CLIENT

渠務署 Drainage Services Department

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

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ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

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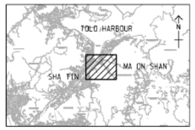
DIMENSION UNIT METRES

KEY PLAN A3 1 : 500000



PROJECT NO. 60334056

CONTRACT NO. CE 30/2014 (DS)

SHEET TITLE

LOCATION OF CONSTRUCTION PHASE TRAFFIC NOISE MONITORING STATION

SHEET NUMBER

60334056/EM&A/3.01

FUGRO

Appendix 1.1

Ecological Monitoring Report

Ecological Monitoring Report

Contract No. CPW 01/2023 Environmental Team for Relocation of Sha Tin Sewage Treatment Works to Caverns

0039/23/ED/0041 01 | 9 August 2023

Draft

Drainage Services Department

Document Control

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Client Information

Client	Drainage Services Department
Client Address	44/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Client Contact	Mr. Felix C S Yu

Document History

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00	07 Aug 2023	For review	Awaiting client comments	JT	FN	CY
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Project Team

Initials	Name	Role
CL	Calvin M.P. Leung	Environmental Team Leader
FN	Fenelyn Nabuab	Principal Environmental Consultant
CL	Cyrus C.Y. Lai	Deputy Environmental Team Leader
WS	Wing H.W. So	Deputy Environmental Team Leader
RL	Ray Li	Environmental Consultant
JT	Jhomar Tillo	Ecologist

Contents

Appendices

Table in the Main Text

1. Recommendation on Plant Species of Conservation Importance Under the Approved Protection and Transplantation Proposal

1.1 Pre-construction Survey

1.1.1 As per section 3.1 of the approved Protection and Transplantation Proposal (ver. 8.2), 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 confirmed with the Resident Site Staff;

2) Schedule and conduct physical site survey to locate the affected species, reconfirm the species condition and record physical condition before transplantation; and

3) Report site survey results and provide recommendations to contractor on transplantation and post-transplantation maintenance.

1.2 Transplantation

1.2.1 According to the approved Protection and Transplantation Proposal (ver. 8.2), four out of six recorded plant species of conservation importance are to be transplanted. The relevant information of the plant species were summarized in **Table 1, Table 2** and **Appendix A**.

Table 1. Recommendations (By Site) on the Recorded Plant Species of Conservation Importance (Approved Protection and Transplantation Proposal ver. 8.2)

Common Name	Species Name	Units	Recommendations				
			Retain	Transplant	Fell	Total (in Project Boundary)	Compensatory Planting in Temporary Works Area
Adopted from approved Protection and Transplantation Proposal ver. 8.2							
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

Common Name	Species Name	Units	Recommendations				
			Retain	Transplant	Fell	Total (in Project Boundary)	Compensatory Planting in Temporary Works Area
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 the market
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

Table 2. Recommendations on the Recorded Plant Species of Conservation Importance (Approved Protection and Transplantation Proposal ver. 8.2)

Common Name	Species Name	Units	Recommendations				
			Retain	Transplant	Fell	Total (in Project Boundary)	Compensatory Planting in Temporary Works Area
Adopted from approved Protection and Transplantation Proposal ver. 8.2							
Small Persimmon	*Diospyros vaccinioides*	No.	8,680	700	17,110	26,490	Seedlings (17,110)
Luofushan Joint-fir	*Gnetum luofuense*	m^2	2,010	0	6,680	8,690	Seedlings (22 locations at 50m interval)
Purple Bulb Orchid	*Ania hongkongensis*	No.	4	1	0	5	N/A
Hong Kong Eagle's Claw	*Artabotrys hongkongensis*	No.	0	0	1	1	1 Seedling

Common Name	Species Name	Units	Recommendations				
			Retain	Transplant	Fell	Total (in Project Boundary)	Compensatory Planting in Temporary Works Area
Butulang Canthium	*Canthium dicoccum*	No.	6	3	9	18	9 Whip Trees
Lamb of Tartary	*Cibotium barometz*	No.	961	68	80	1,109	No suitable habitat for compensatory planting
Incense Tree	*Aquilaria sinensis*	No.	0	1	0	1	N/A
Buttercup Orchid	*Spathoglottis pubescens*	No.	0	16	1	17	Difficult to propagate from seed & not available in the market

1.3 Compensatory Planting

1.3.1 The potential compensatory planting of the 17,110 nos. of *Diospyros vaccinioides,* 6,680 m^2 of *Gnetum luofuense,* nine (9) nos. of *Canthium dicoccum,* about 80 nos. of *Cibotium barometz,* and one (1) no. of *Artabotrys hongkongensis* shall be in accordance with the approved Protection and Transplantation Proposal (ver. 8.2). The status of the compensatory planting is presented in **Table 3**.

Table 3. Summary of the Status of Compensatory Planting

Common Name	Species Name	Units	Compensatory Planting in Temporary Works Area	Contract No.	Seeds Collection		Broadcast Seeding	Seedling Planting	Monitoring Status		
					Nos. of Seeds Collected	Date (MM/YY)	Date (MM/YY)	Date (MM/YY)	Started at	Ended at	Status
Small Persimmon	*Diospyros vaccinioides*	No.	Seedlings (17,110)	DC/2020 /05	3000	11/2021-12/2021	4/2022	8/2022 & 9/2022	9/2022 & 10/2022	-	On-going
					3000	11/2022	4/2023	07/2023	08/2023	-	-
Luofushan Joint-fir	*Gnetum luofuense*	m^2	Seedlings (22 locations at 50m interval)	Pending	-	-	-	-	-	-	-
Hong Kong Eagle's Claw	*Artabotrys hongkongensis*	No.	1 Seedling	Pending	-	-	-	-	-	-	-
Butulang Canthium	*Canthium dicoccum*	No.	9 Whip Trees	Pending	-	-	-	-	-	-	-

1.3.2 Further to **Table 3**, this monitoring report currently focuses on the status of the compensatory planting for *D. vaccinoides*.

Seeds Collection, Germination, Broadcast Seeding, and Seedling Planting of *Diospyros vaccinioides*

1.3.3 According to Section 3.8 under the approved Protection and Transplantation Proposal (ver. 8.2), healthy seeds of *D. vaccinoides* will be selected within the fruiting period (October – February). Before the receptor site is available, the collected seeds should be stored in a sealed container, with moisture content below 7% and at temperatures of less than 15°C.

1.3.4 According to Section 5.8 of the approved protection and Transplantation Proposal (ver. 8.2), a total of 13,060 nos. of *D. vaccinioides* seedlings shall be planted on newly formed SIMAR slopes in Sites 1 and 3.

1.3.5 According to Section 5.13 of the approved Protection and Transplantation Proposal (ver. 8.2), seeds of *D. vaccinioides* shall be broadcasted in spring so that the seeds can germinate and establish on wet season. To improve the germination rate of the seeds, soaking is recommended by the contractor.

2. Results of the Ecological Monitoring

2.1 Pre-construction survey

2.1.1 Pre-construction survey was already completed.

2.2 Transplantation Monitoring

2.2.1 Based on method statement in the approved Protection and Transplantation Proposal, all the plants affected by the Project shall 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.

2.2.2 No transplantation was conducted in July 2023.

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

2.2.3 Regular monitoring of health condition of transplanted plants, also called post-transplantation monitoring, shall 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 (ver. 8.2).

Recommendation on post-transplantation monitoring maintenance

2.2.4 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.

2.2.5 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.

2.2.6 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 Recommendations after Establishment Period

2.2.7 The status of the transplantation is provided in **Table 4**.

Table 4: Summary of the Status of Transplantation

Common Name	Species Name	Units	Recommendations for Transplant*	Pre-construction survey implementation**	Transplantation Date		Monitoring Status		
					To Nursery (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	6/2022	**Completed**
			122	7/2020	9/2020	5/2021	6/2021	6/2022	**Completed**
Purple Bulb Orchid	*Ania hongkongensis*	No.	1	N/A	-	7/2019	8/2019	7/2020	**Completed**
Site 2									
Small Persimmon	*Diospyros vaccinioides*	No.	40	before transplantation	8/2019	5/2021	6/2021	6/2022	**Completed**
			10	7/2020	9/2020	5/2021	6/2021	6/2022	**Completed**
			50	before transplantation	11/2020	5/2021 & 9/2021	6/2021 & 10/2021	6/2022 & 9/2022	**Completed**
			150	9/2021	-	10/2021	11/2021	10/2022	**Completed**
Butulang Canthium	*Canthium dicoccum*	No.	3	NA	-	10/2021	11/2021	10/2022	**Completed**
Lamb of Tartary	*Cibotium barometz*	No.	19	NA	-	9/2020	10/2020	9/2021	**Completed**
			42	NA	-	-	-	-	Undisturbed

Common Name	Species Name	Units	Recommendations for Transplant*	Pre-construction survey implementation**	Transplantation Date		Monitoring Status		
					To Nursery (MM/YY)	To Receptor Site (MM/YY)	Started at	Ended at	Status
Buttercup Orchid	*Spathoglottis pubescens*	No.	16	NA	-	-	-	-	Undisturbed
Site 3									
Small Persimmon	*Diospyros vaccinioides*	No.	100	7/2020	9/2020	5/2021	6/2021	6/2022	**Completed**
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 8.2

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

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

2.3 Compensatory Planting Monitoring

2.3.1 No seeds collection of *Diospyros vaccinioides* was conducted in July 2023. However, a total of 3000 nos. of seeds of *D. vaccinioides* were collected by the contractor of Contract No. DC/2020/05 between November and December 2021 and an additional 3000 nos. of seeds of *D. vaccinioides* in November 2022. Photo records of *D. vaccinioides* are shown in **Appendix B**.

2.3.2 A total of 6000 nos. of *D. vaccinioides* seeds were sown on plates in nursery by the contractor of Contract No. DC/2020/05 (3000 nos. of seeds of *D. vaccinioides* in April 2022 and an additional 3000 nos. of seeds of the same species in April 2023). Photo records of *D. vaccinioides* are shown in **Appendix B**.

2.3.3 Soaked seeds of *D. vaccinioides* were broadcasted in the nursery on 20 April 2022 and April 2023. A total of 3,000 nos. of *D. vaccinioides* seedlings have been planted on the newly formed SIMAR slopes in Sites 1 and 3 (Portion 12: RMZ3 downhill) in August and September 2022 during wet season. Moreover, the contractor was reminded that frequent watering is required to reduce loss in dry season. Photo records of *D. vaccinioides* are shown in **Appendix B**.

2.3.4 Monthly monitoring for the on-going compensatory planting was conducted on 11 July 2023. Health and growth condition of the *D. vaccinioides* seedlings are generally fair in condition. It was also noted that there were no construction activities adjacent to the receptor site; hence, there are no adverse impacts on the transplanted seedlings. Photo records of *D. vaccinioides* and site observations are shown in **Appendix B**.

2.3.5 The schedule of inspection of the existing locations of *Artabotrys hongkongensis* (Hong Kong Eagle's Claw) and *Spathoglottis pubsecens* (Buttercup Orchid) will be arranged during the peak of their flowering period to ascertain identification of the species.

3. Summary

3.1.1 Monthly ecological monitoring was conducted on 11 July 2023. No pre-construction survey was conducted during the current monitoring period since it has already been completed. Furthermore, transplantation and seeds collection for compensatory planting were also not conducted within the monitoring period.

3.1.2 During the current monitoring period, it was noted that the growth and health condition of the transplanted seedlings of *D. vaccinioides* were generally fair in condition. There were no construction activities adjacent to the receptor; hence, no adverse impacts are expected on the transplanted seedlings of *D. vaccinioides* in the receptor site.

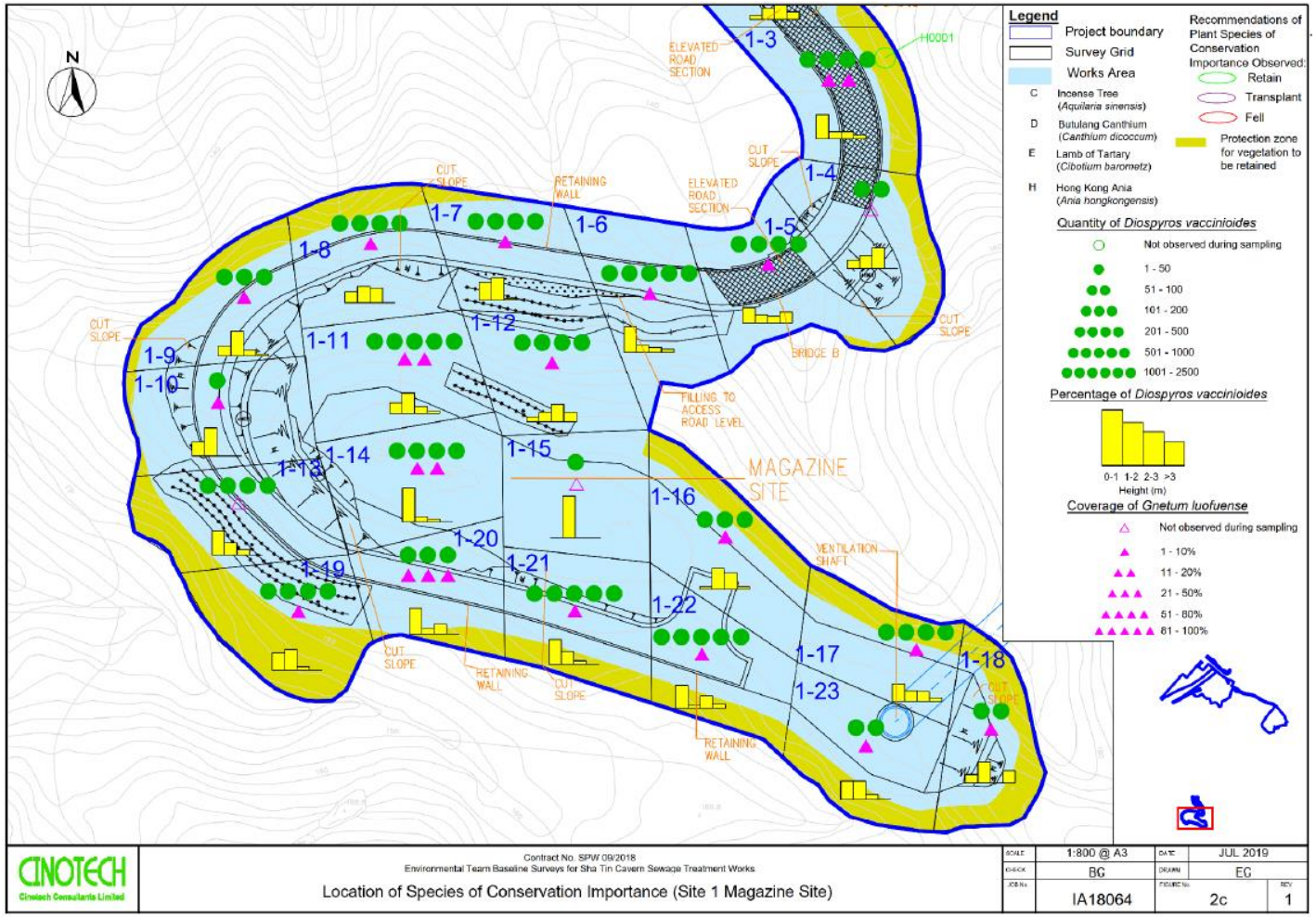
3.1.3 A site inspection will be conducted on the existing locations of *A. hongkongensis* and *S. pubescens* to confirm the identification of these species during the peak of their flowering period.

3.1.4 Based on the on-going detailed design of the Project, the details of the approved Protection and Transplantation Proposal (ver. 8.2) and the ecological monitoring are subject to review and will be updated in stages.

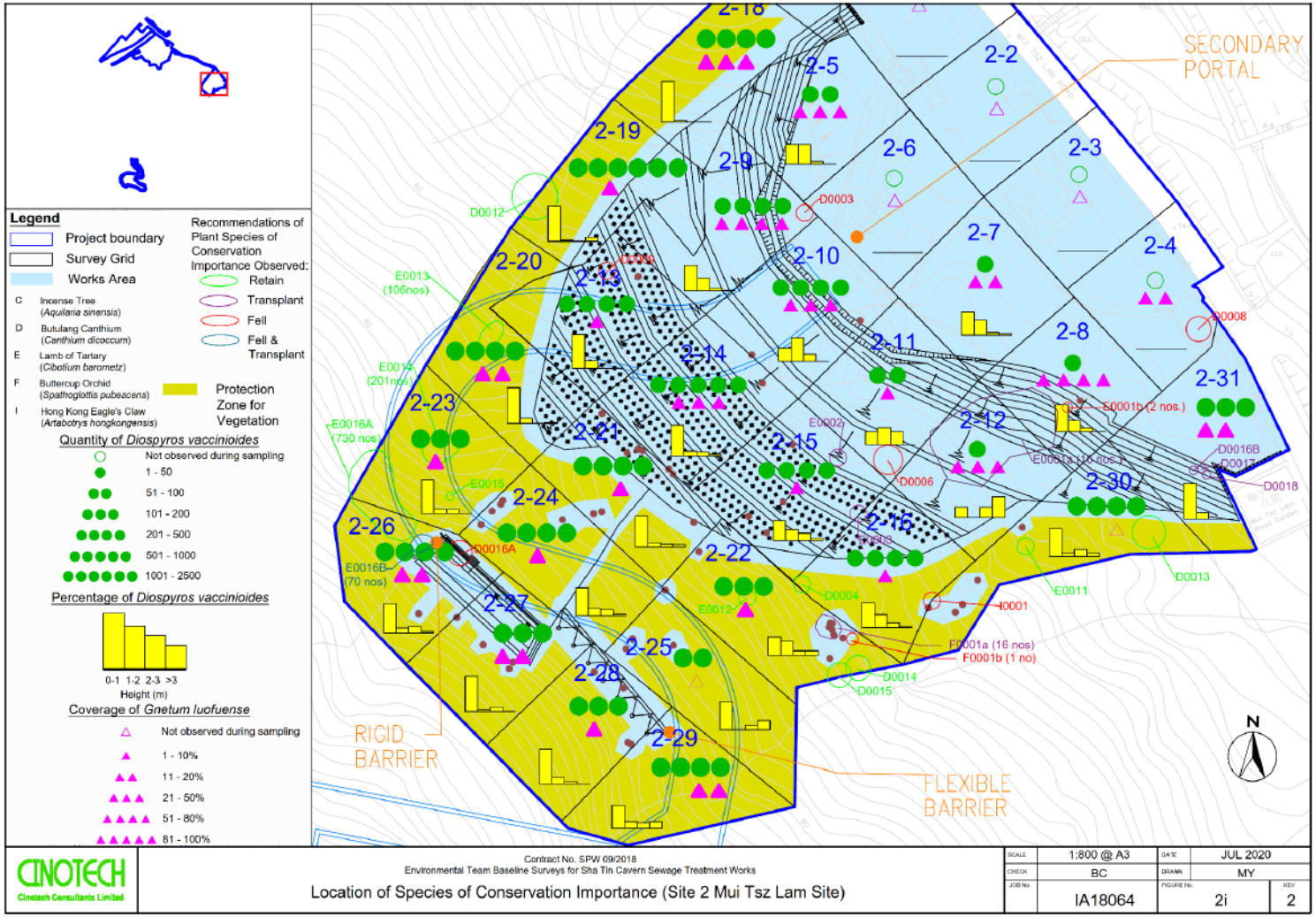
Appendix A

Locations of the Species of Conservation Importance

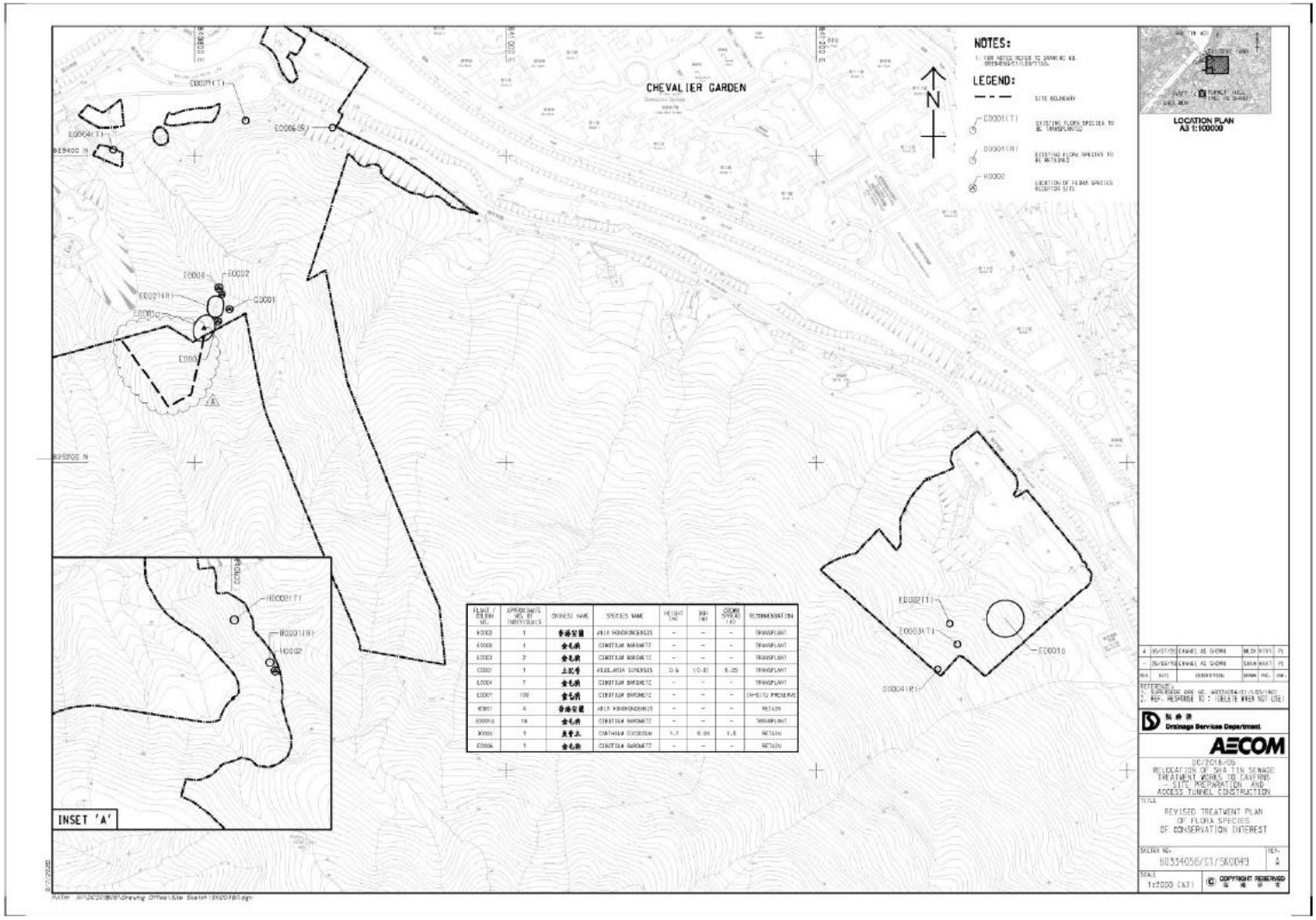
A.1 Original location of DV0229-DV0268 and DV0001 at Site 1



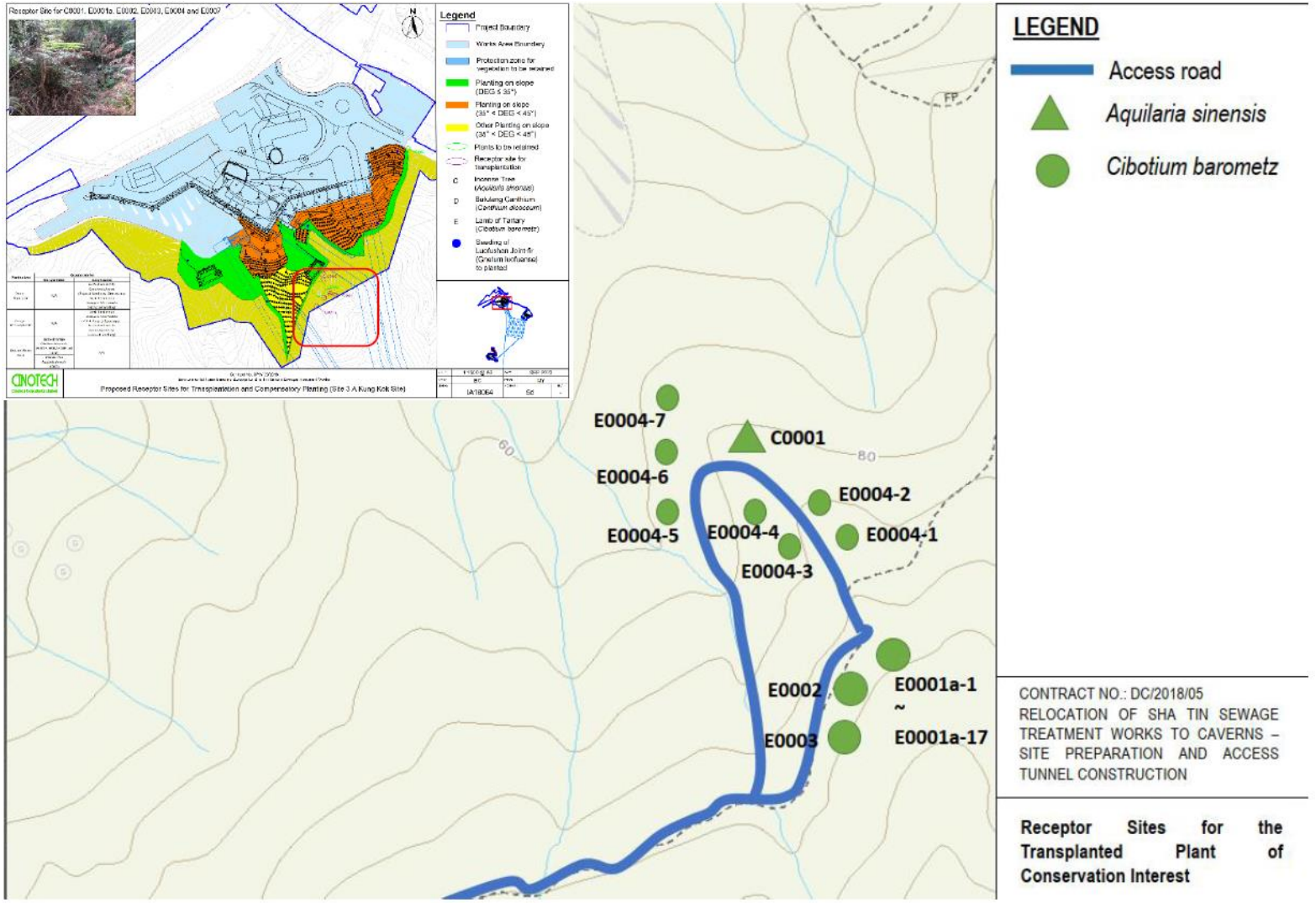
A.2 Original location of DV0269-DV0500 and DV0501-DV0550 at Site 2. Nursery site highlighted in red frame for DV0229-DV0268, DV-001-DV0228, DV0269-DV0500 and DV0501-DV0550 at Site 2



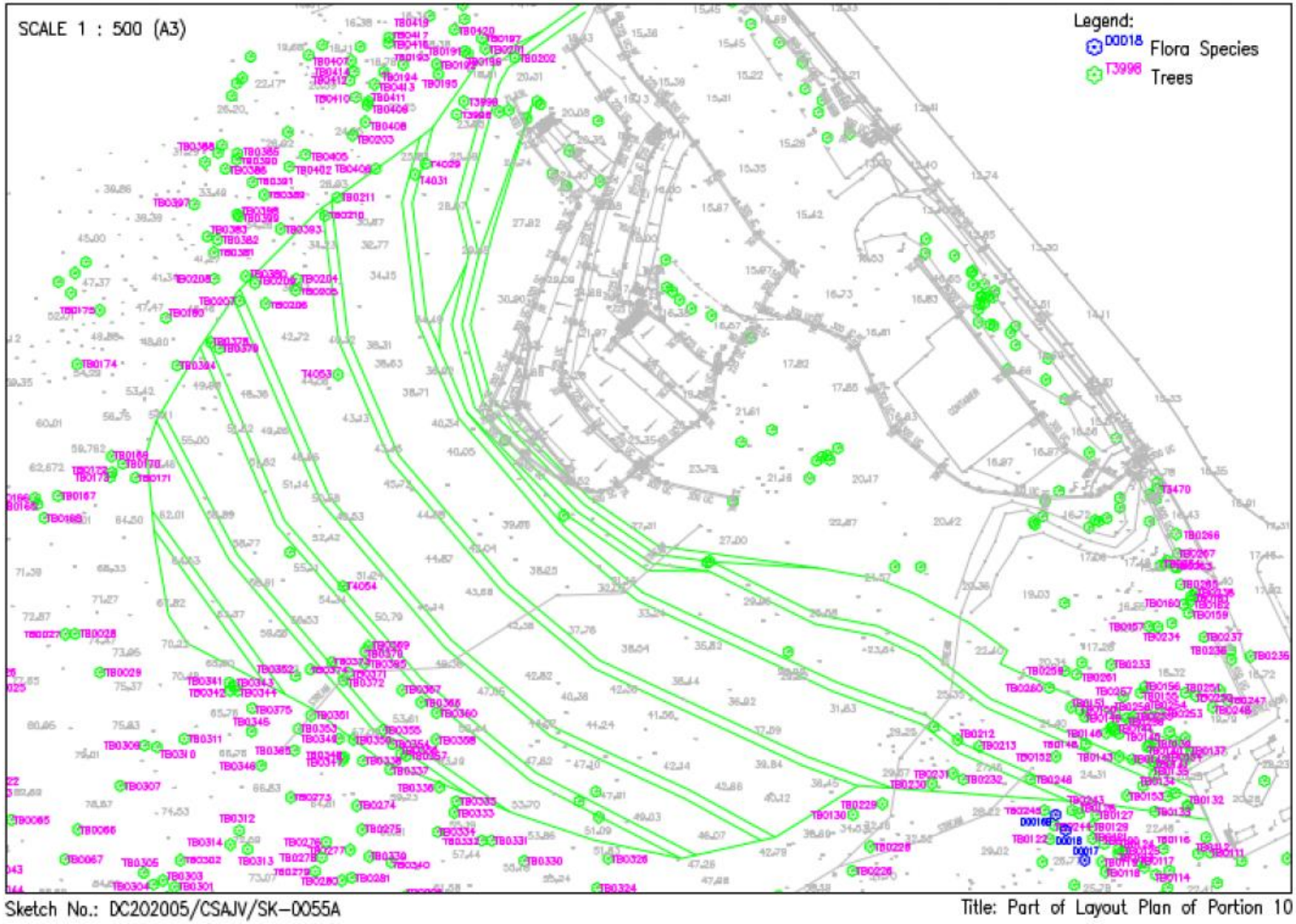
A.3 Original location of species of conservation importance frame and its receptor site



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



A.5 Receptor site of *Canthium dicoccum*



Appendix B

Photographic Records of the Compensatory Seeds Collection and Planting for *Diospyros vaccinioides*

Photo B.1: Seeds collection by the Contractor

Figure B.2: Seeds of *Diospyros vaccinioides*

Photo B.3: Weight of *Diospyros vaccinioides*

Photo B.4: Seeds of *Diospyros vaccinioides* were sown on plates in the nursery

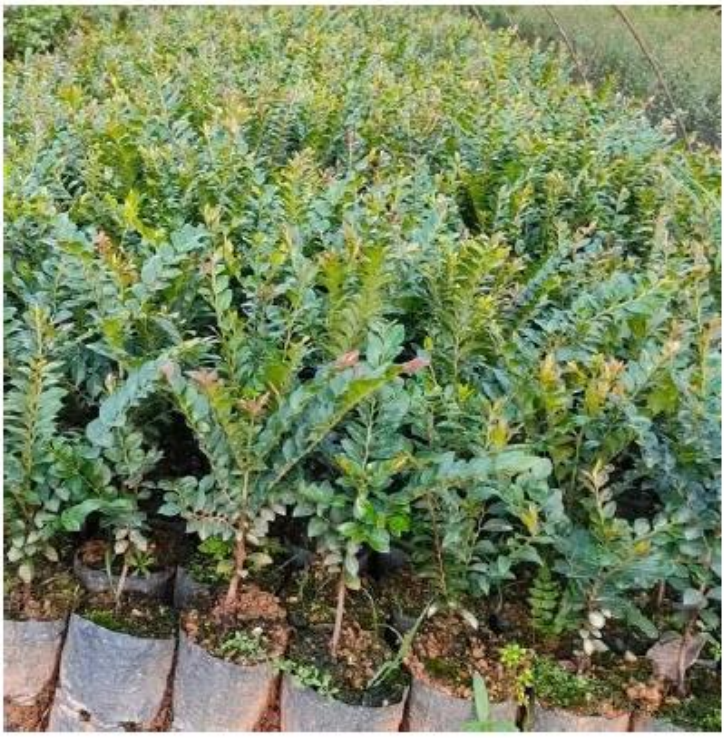


Photo B.5: Seedlings of *Diospyros vaccinioides* in the nursery

Photo B.6: Seedlings of *Diospyros vaccinioides* planted in receptor site observed on 11 July 2023

Photo B.7: Seedlings of *Diospyros vaccinioides* planted in receptor site observed on 11 July 2023

Photo B.8: Seedlings of *Diospyros vaccinioides* planted in receptor site observed on 11 July 2023

Photo B.9: Construction activities observed during the monitoring on 11 July 2023 but not adjacent to the receptor site.

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

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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

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		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
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		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

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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

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		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

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		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

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		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
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		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							

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		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

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		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.							

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	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

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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	√	√			-

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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	√	√			-

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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	√	√			-

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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							

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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	√	√		√	

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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		√			

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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		√			-

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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		√			-

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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		√			-

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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		√			-

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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		√	√		-

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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
					Des	C	O	Dec	
		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
					Des	C	O	Dec	
		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

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	
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	√	√	√		

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	
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	√	√	√		

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	
	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

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	
		• 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								

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	
		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

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	
		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.							

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	
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

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	
		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		√			-

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	
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

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	
		• 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 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		

Remark 1: Limit level of CM1, CM2(B) and CM3 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/m^3	
	Action Level	Limit Level
AM1	294	500
AM2	325	500
AM3(B)	360	500
AM4	297	500
AM5	349	500
ASR51	310	500

Appendix 4.2

Copies of Calibration Certificates

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA222607

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.
Project : Calibration Services

Details of Unit Under Test, UUT -

Description : Sound Level Meter
Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No. :	CEL-63X	CE-251	CEL-495
Serial No. :	1488269	03914	003984

Equipment ID : N/A
Next Calibration Date : 06-Nov-2023
Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID. : R-108-1

Date of Receipt : 03-Nov-2022
Date of Calibration : 07-Nov-2022
Calibration Location : Calibration Laboratory of FTS
Method Used : By direct comparison
Ambient Temperature : 20±2 °C
Relative Humidity : <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weigthing frequency response	4000Hz	1.0	2.6 to -0.6
	2000Hz	1.2	2.8 to -0.4
	1000Hz	-0.1	1.1 to -1.1
	500Hz	-3.4	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.2	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5 The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : _____ Date : 10-11-2022 Certified by : K.T. Leung Date : 10-11-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA222036

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Limited
Project : Calibration Services
Details of Unit Under Test, UUT

Description : Sound Level Meter
Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No. :	CEL-63X	CE-251	CEL-495
Serial No. :	1488287	04005	003036

Equipment ID : N/A
Next Calibration Date : 29-Aug-2023
Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -
Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID. : R-108-1
Date Receipt of UUT : 27-Aug-2022
Date of Calibration : 30-Aug-2022
Calibration Location : Calibration Laboratory of FTS
Method Used : By direct comparison
Ambient Temperature : 20±2 °C
Relative Humidity : <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weigthing frequency response	4000Hz	0.8	2.6 to -0.6
	2000Hz	1.2	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.4	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.3	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

1. The equipment used in this calibration is traceable to recognized National Standards.
2. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
3. The mean value is the average of four measurements.
4 The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : _____ Date : 13-9-2022 Certified by : _____ Date : 13-9-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA222278(1)

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.
Project : Calibration Services

Details of Unit Under Test, UUT -

Description : Sound Level Meter
Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No. :	CEL-63X	CE-251	CEL-495
Serial No. :	1488291	05683	002845

Equipment ID : N-61
Next Calibration Date : 26-Sep-2023
Specification Limit : EN 61672-1: 2003 Class 1

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID. : R-108-1

Date of Receipt UUT : 23-Sep-2022
Date of Calibration : 27-Sep-2022
Calibration Location : Calibration Laboratory of FTS
Method Used : By direct comparison
Ambient Temperature : 20±2 °C
Relative Humidity : <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weigthing frequency response	4000Hz	0.7	2.6 to -0.6
	2000Hz	1.1	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.4	-1.8 to -4.6
	250Hz	-8.7	-7.2 to -10.0
	125Hz	-16.1	-14.6 to -17.6
	63Hz	-26.1	-24.7 to -27.7
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
4. The UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5 The values given in this Calibration Certificate only relate to unit under test and the values measured at the time of the test. Any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.
6. The decision rule is based on binary statement for simple acceptance rule (w = 0).

Checked by : _____ Date : 29-9-2022 Certified by : K.T. Leung Date : 29-9-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no.: 212769CA222278(3)

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT -

Description	:	Sound Calibrator
Manufacturer	:	Casella (Model CEL-120/1)
Serial No.	:	5230950
Equipment ID	:	N/A

Next Calibration Date : 26-Sep-2023

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Details of Calibration Equipment

Description	:	Reference Sound level meter
Equipment ID.	:	R-119-2

Date of Receipt UUT : 23-Sep-2022

Date of Calibration : 27-Sep-2022

Calibration Location : Calibration Laboratory of FTS

Ambient Temperature : 20±2 °C

Method Used : By direct comparison

Relative Humidity : <80% R.H.

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 dB	±0.4dB
114dB	-0.4 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment under test does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties quoted will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.
5. The decision rule is based on binary statement for simple acceptance rule (w = 0).

Checked by : _____ Date : 29-9-2022 Certified by : K.T. Leung Date : 29-9-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

T +852 2450 8233 | F +852 2450 6138 | E matlab@fugro.com | W fugro.com

N-50

CASELLA

Certificate of Conformance and Calibration for

CEL-120 Acoustic Calibrator

Applicable Standards :-IEC 60942: 2003 & ANSI S1.40: 2006

CEL-120/1 Class 1 ☑

CEL-120/2 Class 2 ☐

Serial No: 2525896

Firmware: 04

Temperature: 22.9 °C Pressure: 1017 mb %RH 56

Frequency = 1.00kHz ± 2Hz T.H.D. = < 1%	Calibration Level
SPL @ 114.0dB Setting	114.01 dB
SPL @ 94.0dB Setting (CEL-120/1 only)	93.99 dB/N.A

Engineer :- JHorde Date :- 03 NOV 2022

Company test equipment and acoustic working standards, used for conformance testing, are subject to periodic calibration, traceable to UK national standards, in accordance with the company's ISO9001 Quality System.

DECLARATION OF CONFORMITY

This certificate confirms that the instrument specified above has been produced and tested to comply with the manufacturer's published specifications and the relevant European Community CE directives.

Casella
Regent House, Wolseley Road, Kempston, Bedford. MK42 7JY
Phone: +44 (0) 1234 844100 Fax: +44 (0) 1234 841490
E-mail: info@casellasolutions.com
Web: www.casellasolutions.com

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(4)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser Dust Monitor

Manufacturer : SIBATA

Model No. : LD-5R

Serial No. : 114893

Specification Limit : NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description : 1.Reference balance 2. TSP high Volume air sampler

Equipment ID / Serial no. : 1.C-065-5 2. 4350

Date of Calibration : 26-Aug-2022 Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1452	24.20
0.0366	1089	18.15
0.0443	1287	21.45

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.002057
3. Correlation coefficient (r) : 0.9996

Checked by : Date : 18-10-2022 Certified by : Date : 19-10-2022

Leung Kwok Tai (Assistant Manager)

CA-R-297 (22/07/2009)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Laser dust monitor Information

Model: Sibata LD-5R
Serial No: 114893
Performance Check Date: 25 Aug 2022
Validity of Performance Check: 25 Aug 2023

High Volume Sampler Information

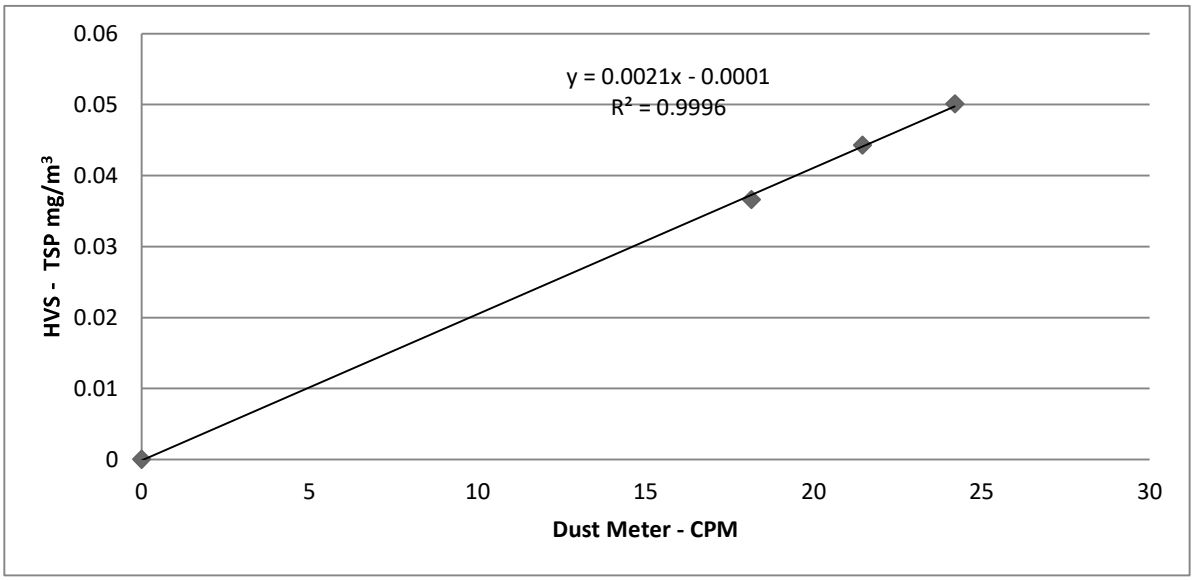
Model: Tisch TE-5170
Serial No: 4350
Method Used: By direct comparison the weight of dust particle trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit uner test. They should be paced at the same location and powered on and off at the same time.

Results:

Mean Pressure: 1006.3
Mean Temp: 27.2

	Zero Check	1st Test	2nd Test	3rd Test
HVS - Concentration in mg/m^3:	0	0.0501	0.0366	0.0443
Dust Meter - CPM	0	24.2	18.2	21.5

*Filter paper weighting was conducted by HOKLAS accredited laboratory



Remarks:

1. K-Factor = 0.002057
2. Correlation coefficient (r) = 0.9996

Calibrated by : Herman Wang Date : 25 Aug 2023
(Assistant Technical Officer)

Supervised by : Felix Fong Date : 26 Aug 2023
(Technical Officer)

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(6)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description : Laser Dust Monitor
Manufacturer : SIBATA
Model No. : LD-5R
Serial No. : 114895
Specification Limit : NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description : 1.Reference balance 2. TSP high Volume air sampler
Equipment ID / Serial no. : 1.C-065-5 2. 4350
Date of Calibration : 26-Aug-2022 Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1421	23.68
0.0366	963	16.05
0.0443	1233	20.55

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.002165
3. Correlation coefficient (r) : 0.9997

Checked by : Date : 18-10-2022 Certified by : Date : 19-10-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Laser dust monitor Information

Model: Sibata LD-5R
Serial No: 114895
Performance Check Date: 25 Aug 2022
Validity of Performance Check: 25 Aug 2023

High Volume Sampler Information

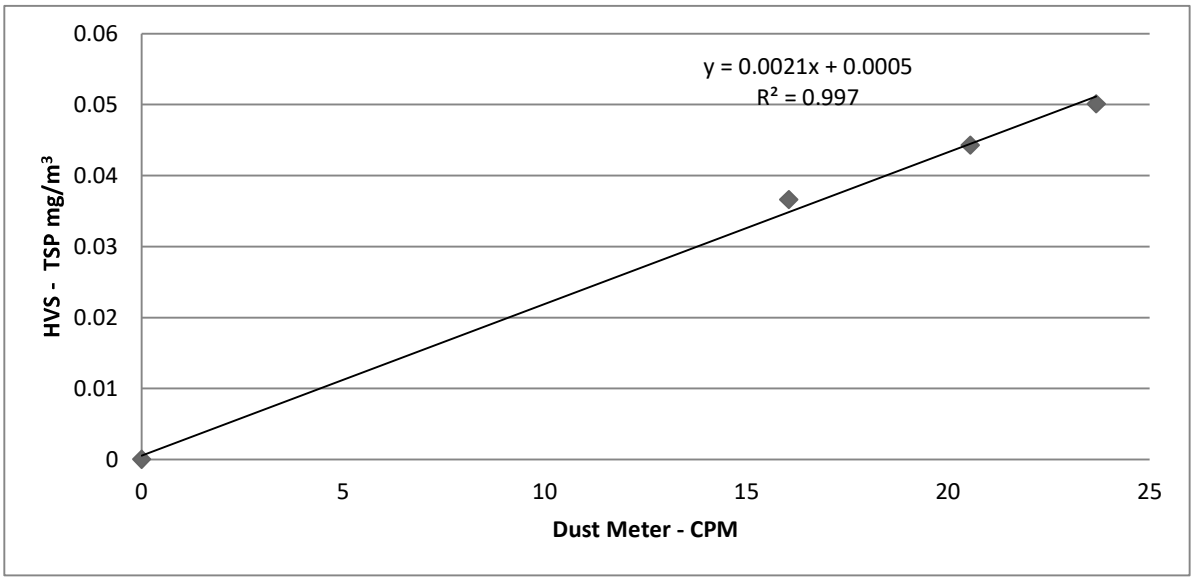
Model: Tisch TE-5170
Serial No: 4350
Method Used: By direct comparison the weight of dust particle trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit uner test. They should be paced at the same location and powered on and off at the same time.

Results:

Mean Pressure: 1006.3
Mean Temp: 27.2

	Zero Check	1st Test	2nd Test	3rd Test
HVS - Concentration in mg/m^3:	0	0.0501	0.0366	0.0443
Dust Meter - CPM	0	23.7	16.1	20.6

*Filter paper weighting was conducted by HOKLAS accredited laboratory



Remarks:

1. K-Factor = 0.002165
2. Correlation coefficient (r) = 0.9997

Calibrated by : **Herman Wang** Date : **25 Aug 2023**
(Assistant Technical Officer)

Supervised by : **Felix Fong** Date : **26 Aug 2023**
(Technical Officer)

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(7)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser Dust Monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 155716
Specification Limit	: NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description	: 1.Reference balance	2. TSP high Volume air sampler
Equipment ID / Serial no.	: 1.C-065-5	2. 4350
Date of Calibration	: 26-Aug-2022	Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1588	26.47
0.0366	1012	16.87
0.0443	1312	21.87

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.001991
3. Correlation coefficient (r) : 0.9984

Checked by : _____ Date : 18-10-2022 Certified by : _____ Date : 19-10-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Laser dust monitor Information

Model:	Sibata LD-5R
Serial No:	155716
Performance Check Date:	25 Aug 2022
Validity of Performance Check:	25 Aug 2023

High Volume Sampler Information

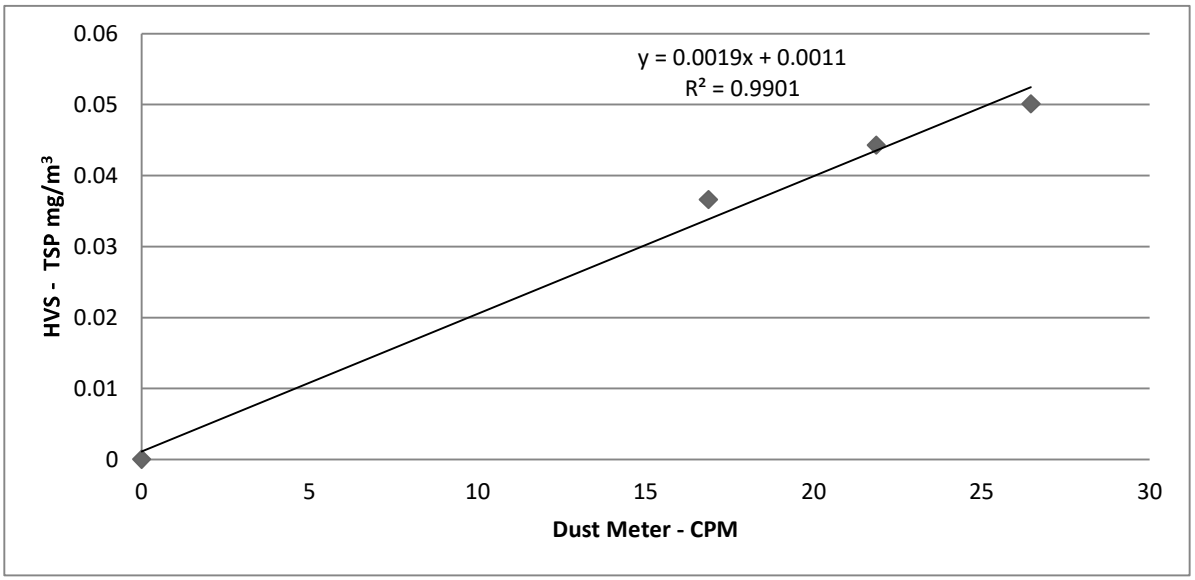
Model:	Tisch TE-5170
Serial No:	4350
Method Used:	By direct comparison the weight of dust particle trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit uner test. They should be paced at the same location and powered on and off at the same time.

Results:

Mean Pressure:	1006.3
Mean Temp:	27.2

	Zero Check	1st Test	2nd Test	3rd Test
HVS - Concentration in mg/m^3:	0	0.0501	0.0366	0.0443
Dust Meter - CPM	0	26.5	16.9	21.9

*Filter paper weighting was conducted by HOKLAS accredited laboratory



Remarks:

1. K-Factor = 0.001991
2. Correlation coefficient (r) = 0.9984

Calibrated by : **Herman Wang** Date : **25 Aug 2023**
(Assistant Technical Officer)

Supervised by : **Felix Fong** Date : **26 Aug 2023**
(Technical Officer)

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(8)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser Dust Monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 155717
Specification Limit	: NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description	: 1.Reference balance	2. TSP high Volume air sampler
Equipment ID / Serial no.	: 1.C-065-5	2. 4350
Date of Calibration	: 26-Aug-2022	Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1656	27.60
0.0366	1084	18.07
0.0443	1384	23.07

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.001893
3. Correlation coefficient (r) : 0.9986

Checked by : _____ Date : 18-10-2022 Certified by : _____ Date : 19-10-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Laser dust monitor Information

Model: Sibata LD-5R
Serial No: 155717
Performance Check Date: 25 Aug 2022
Validity of Performance Check: 25 Aug 2023

High Volume Sampler Information

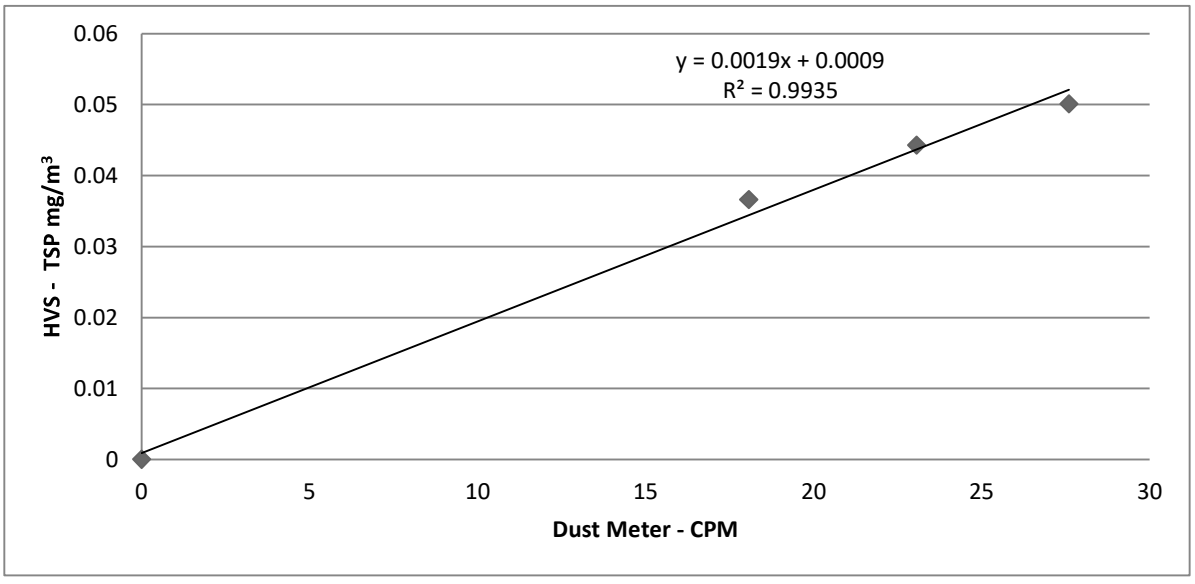
Model: Tisch TE-5170
Serial No: 4350
Method Used: By direct comparison the weight of dust particle trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit uner test. They should be paced at the same location and powered on and off at the same time.

Results:

Mean Pressure: 1006.3
Mean Temp: 27.2

	Zero Check	1st Test	2nd Test	3rd Test
HVS - Concentration in mg/m^3:	0	0.0501	0.0366	0.0443
Dust Meter - CPM	0	27.6	18.1	23.1

*Filter paper weighting was conducted by HOKLAS accredited laboratory



Remarks:

1. K-Factor = 0.001893
2. Correlation coefficient (r) = 0.9986

Calibrated by : Herman Wang Date : 25 Aug 2023
(Assistant Technical Officer)

Supervised by : Felix Fong Date : 26 Aug 2023
(Technical Officer)

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report no. : 940891CA222379(10)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser Dust Monitor
Manufacturer	: SIBATA
Model No.	: LD-3B
Serial No.	: 476783
Specification Limit	: NA

Next Calibration Date : 25-Aug-2023

Laboratory Information

Details of Reference Equipment -

Description	: 1.Reference balance	2. TSP high Volume air sampler
Equipment ID / Serial no.	: 1.C-065-5	2. 4350
Date of Calibration	: 26-Aug-2022	Ambient Temperature : 33 °C

Calibration Location : Calibration Lab. of FTS

Method Used : By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.0501	1449	24.15
0.0366	897	14.95
0.0443	1175	19.58

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x UUT reading (CPM) where K = 0.002206
3. Correlation coefficient (r) : 0.9971

Checked by : _____ Date : 18-10-2022 Certified by : _____ Date : 19-10-2022

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

T +852 2450 8233 | **F** +852 2450 6138 | **E** matlab@fugro.com | **W** fugro.com

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Laser dust monitor Information

Model:	Sibata LD-3B
Serial No:	476783
Performance Check Date:	25 Aug 2022
Validity of Performance Check:	25 Aug 2023

High Volume Sampler Information

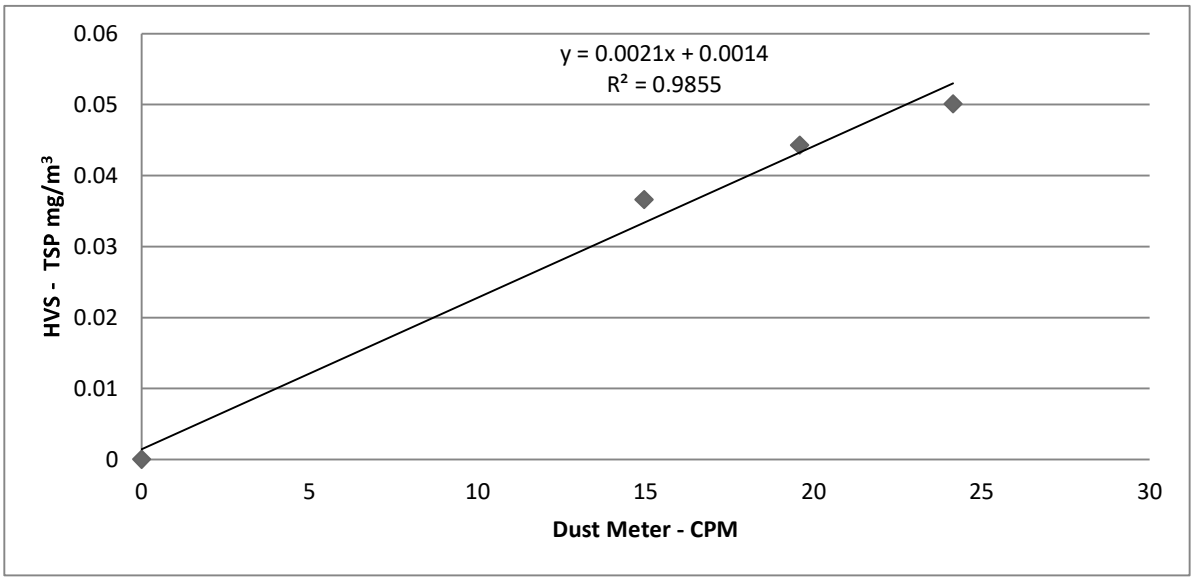
Model:	Tisch TE-5170
Serial No:	4350
Method Used:	By direct comparison the weight of dust particle trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit uner test. They should be paced at the same location and powered on and off at the same time.

Results:

Mean Pressure:	1006.3
Mean Temp:	27.2

	Zero Check	1st Test	2nd Test	3rd Test
HVS - Concentration in mg/m^3:	0	0.0501	0.0366	0.0443
Dust Meter - CPM	0	24.2	15.0	19.6

*Filter paper weighting was conducted by HOKLAS accredited laboratory



Remarks:

1. K-Factor = 0.002206
2. Correlation coefficient (r) = 0.9971

Calibrated by : **Herman Wang** Date : **25 Aug 2023**
(Assistant Technical Officer)

Supervised by : **Felix Fong** Date : **26 Aug 2023**
(Technical Officer)

InnoTech Instrumentation Co., Limited
Unit D, 21/F, Yan's Tower, 27 Wong Chuk Hang Road, Hong Kong
Tel: (852) 2553 7101 FAX: (852) 2553 8711
E-Mail: info@innotechi.com Web: http://www.innotechi.com

創 新 科 儀 有 限 公 司
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Calibration Report

Report Number: 230726-CSA-TN-P01
Customer Name: China State – Alchmex Joint Venture
Unit-Under-Test: Aeroqual AQS1
Serial Number: 17082022-2139 (AQS1 main body)
2206091-003 (NO2 sensor 0 – 0.5 ppm)
Calibration Date: 26 July 2023
Temperature: 25.8 ^{o}C %RH: 54.1 %

Standard Used:

Standard	Make/ Model	Serial Number	Calibration Date
52.5 ppm NO in N_2	Scientific Gas	ER0005215	23 Jan 2023
Dynamic Calibrator	Teledyne API, T700	1506	25 Nov 2022
Flowmeter	MesaLabs, Defender 510-L	117527	28 Dec 2022

** All our calibration gases are traceable to National Standards-this is maintained by our gas suppliers.*

** NO_2 gas is prepared by Gas Phase Titration method (GPT). NO is mixed with known amount of O_3, which is generated by T700 to produce NO_2.*

Test Result – Sample flow rate:

NO_2 sample flow rate (sccm)	Measured Flow Rate (sccm)	Result
60	56	PASS

** NO2 sample flow rate: 60 +/- 5 sccm*

InnoTech Instrumentation Co., Limited
Unit D, 21/F, Yan's Tower, 27 Wong Chuk Hang Road, Hong Kong
Tel: (852) 2553 7101 FAX: (852) 2553 8711
E-Mail: info@innotechi.com Web: http://www.innotechi.com

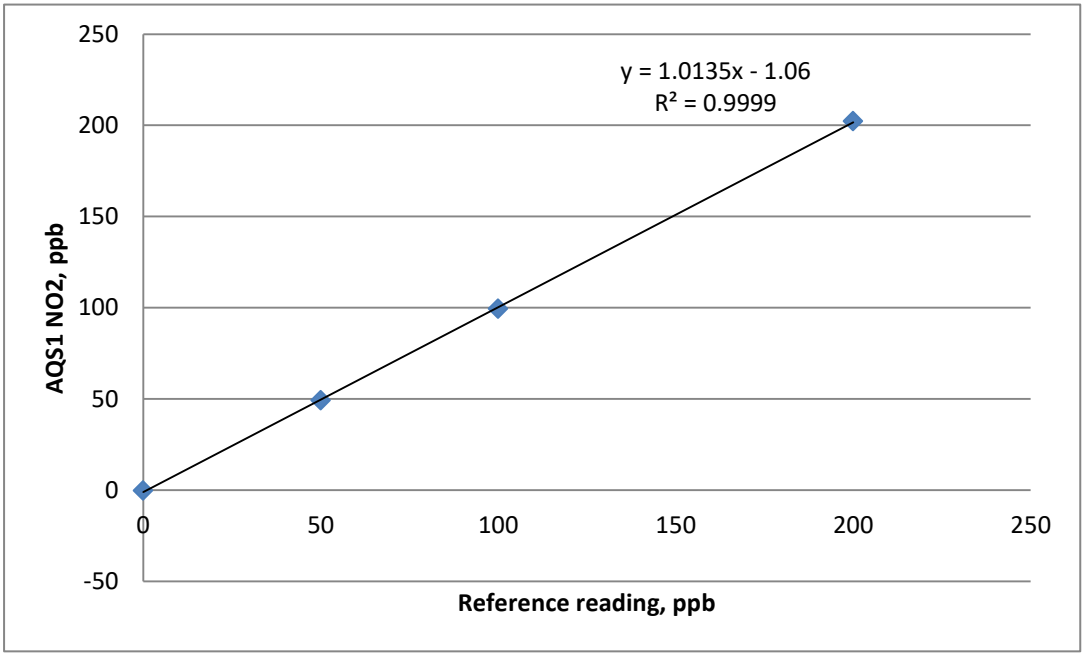
創 新 科 儀 有 限 公 司
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Test Result – Concentration:

Reference Set Point (ppm)	Reading of UUT (ppm)	Result
Zero	-0.3	PASS
200	202.2	PASS
100	99.4	PASS
50	49.2	PASS

** Zero reading: 0 +/- 5 ppb*

** Span reading: 200 +/- 10 ppb*



Calibrated by: Tommy NG Date: 26 Jul 2023

*** End of report ***

InnoTech Instrumentation Co., Limited
Unit D, 21/F, Yan's Tower, 27 Wong Chuk Hang Road, Hong Kong
Tel: (852) 2553 7101 FAX: (852) 2553 8711
E-Mail: info@innotechi.com Web: http://www.innotechi.com

創 新 科 儀 有 限 公 司
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Calibration Report

Report Number: 230726-CSA-TN-P02
Customer Name: China State – Alchmex Joint Venture
Unit-Under-Test: Aeroqual AQS1
Serial Number: 17082022-2140 (AQS1 main body)
2206091-016 (NO2 sensor 0 – 0.5 ppm)
Calibration Date: 26 July 2023
Temperature: 25.8 ^{o}C %RH: 54.1 %

Standard Used:

Standard	Make/ Model	Serial Number	Calibration Date
52.5 ppm NO in N_2	Scientific Gas	ER0005215	23 Jan 2023
Dynamic Calibrator	Teledyne API, T700	1506	25 Nov 2022
Flowmeter	MesaLabs, Defender 510-L	117527	28 Dec 2022

** All our calibration gases are traceable to National Standards-this is maintained by our gas suppliers.*

** NO_2 gas is prepared by Gas Phase Titration method (GPT). NO is mixed with known amount of O_3, which is generated by T700 to produce NO_2.*

Test Result – Sample flow rate:

NO_2 sample flow rate (sccm)	Measured Flow Rate (sccm)	Result
60	59	PASS

** NO2 sample flow rate: 60 +/- 5 sccm*

InnoTech Instrumentation Co., Limited
Unit D, 21/F, Yan's Tower, 27 Wong Chuk Hang Road, Hong Kong
Tel: (852) 2553 7101 FAX: (852) 2553 8711
E-Mail: info@innotechi.com Web: http://www.innotechi.com

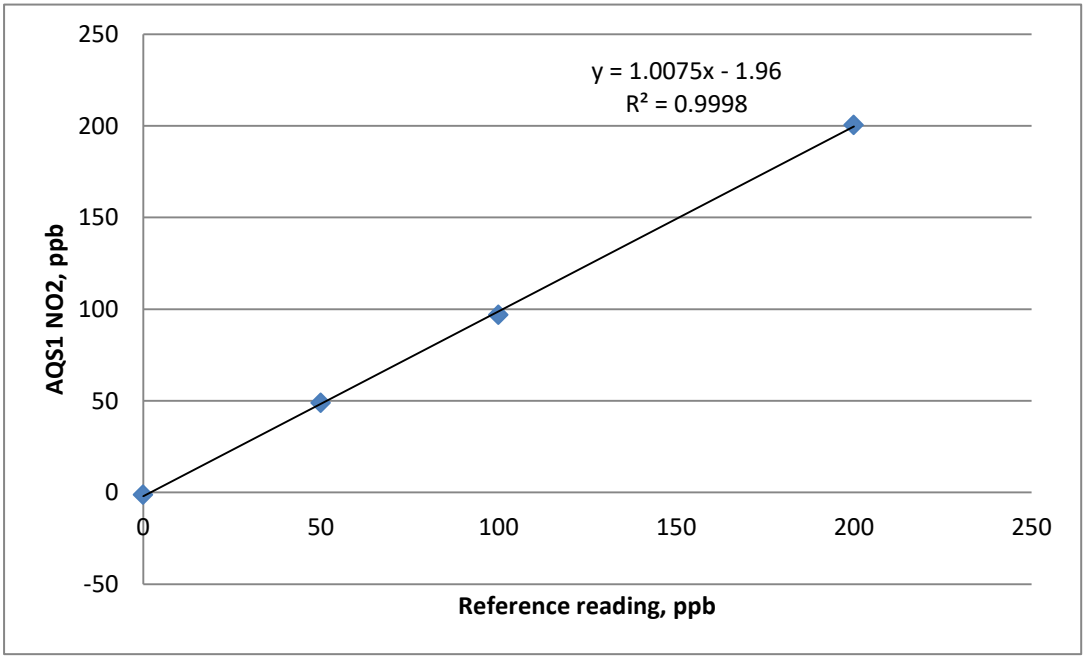
創 新 科 儀 有 限 公 司
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Test Result – Concentration:

Reference Set Point (ppm)	Reading of UUT (ppm)	Result
Zero	-1.3	PASS
200	200.4	PASS
100	96.9	PASS
50	48.8	PASS

** Zero reading: 0 +/- 5 ppb*

** Span reading: 200 +/- 10 ppb*



Calibrated by: Tommy NG Date: 26 Jul 2023

*** End of report ***

InnoTech Instrumentation Co., Limited
Unit D, 21/F, Yan's Tower, 27 Wong Chuk Hang Road, Hong Kong
Tel: (852) 2553 7101 FAX: (852) 2553 8711
E-Mail: info@innotechi.com Web: http://www.innotechi.com

創 新 科 儀 有 限 公 司
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Calibration Report

Report Number: 230726-CSA-TN-P03
Customer Name: China State – Alchmex Joint Venture
Unit-Under-Test: Aeroqual AQS1
Serial Number: 17082022-2141 (AQS1 main body)
2206091-014 (NO2 sensor 0 – 0.5 ppm)
Calibration Date: 26 July 2023
Temperature: 25.8 ^{o}C %RH: 54.1 %

Standard Used:

Standard	Make/ Model	Serial Number	Calibration Date
52.5 ppm NO in N_2	Scientific Gas	ER0005215	23 Jan 2023
Dynamic Calibrator	Teledyne API, T700	1506	25 Nov 2022
Flowmeter	MesaLabs, Defender 510-L	117527	28 Dec 2022

** All our calibration gases are traceable to National Standards-this is maintained by our gas suppliers.*

** NO_2 gas is prepared by Gas Phase Titration method (GPT). NO is mixed with known amount of O_3, which is generated by T700 to produce NO_2.*

Test Result – Sample flow rate:

NO_2 sample flow rate (sccm)	Measured Flow Rate (sccm)	Result
60	58	PASS

** NO2 sample flow rate: 60 +/- 5 sccm*

InnoTech Instrumentation Co., Limited
Unit D, 21/F, Yan's Tower, 27 Wong Chuk Hang Road, Hong Kong
Tel: (852) 2553 7101 FAX: (852) 2553 8711
E-Mail: info@innotechi.com Web: http://www.innotechi.com

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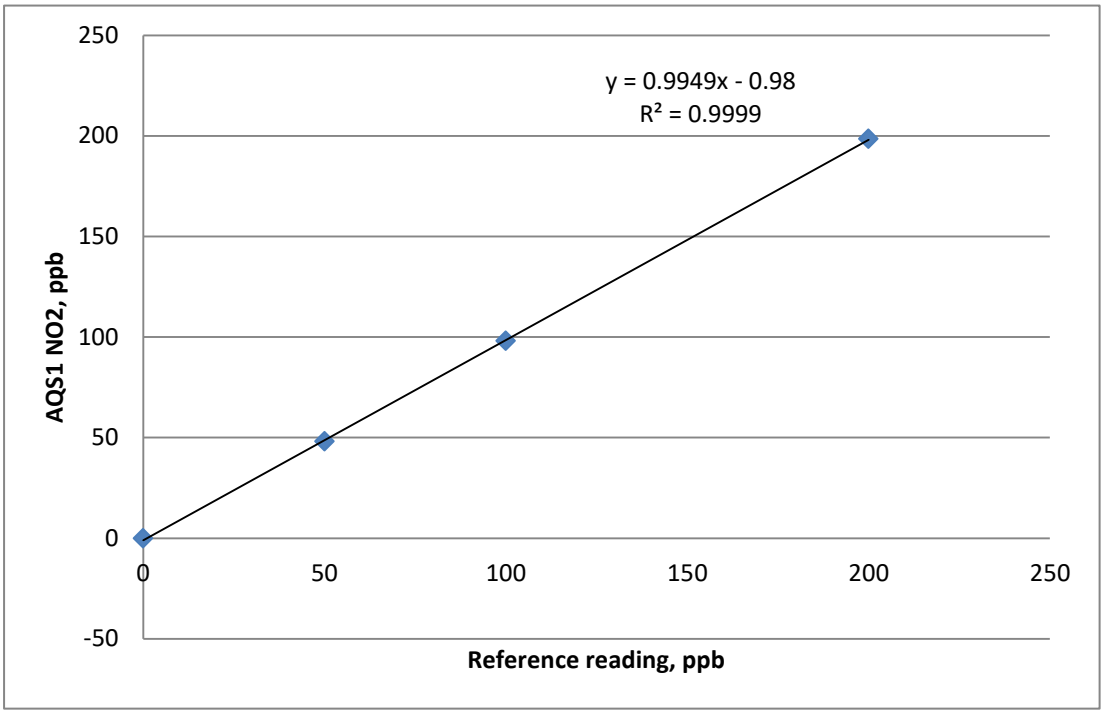
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Test Result – Concentration:

Reference Set Point (ppm)	Reading of UUT (ppm)	Result
Zero	-0.2	PASS
200	198.4	PASS
100	98.1	PASS
50	48.0	PASS

** Zero reading: 0 +/- 5 ppb*

** Span reading: 200 +/- 10 ppb*



Calibrated by: Tommy NG Date: 26 Jul 2023

*** End of report ***

InnoTech Instrumentation Co., Limited
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E-Mail: info@innotechi.com Web: http://www.innotechi.com

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香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Calibration Report

Report Number: 230726-CSA-TN-P04
Customer Name: China State – Alchmex Joint Venture
Unit-Under-Test: Aeroqual AQS1
Serial Number: 17082022-2142 (AQS1 main body)
2111252-014 (NO2 sensor 0 – 0.5 ppm)
Calibration Date: 26 July 2023
Temperature: 25.8 ^{o}C %RH: 54.1 %

Standard Used:

Standard	Make/ Model	Serial Number	Calibration Date
52.5 ppm NO in N_2	Scientific Gas	ER0005215	23 Jan 2023
Dynamic Calibrator	Teledyne API, T700	1506	25 Nov 2022
Flowmeter	MesaLabs, Defender 510-L	117527	28 Dec 2022

** All our calibration gases are traceable to National Standards-this is maintained by our gas suppliers.*

** NO_2 gas is prepared by Gas Phase Titration method (GPT). NO is mixed with known amount of O_3, which is generated by T700 to produce NO_2.*

Test Result – Sample flow rate:

NO_2 sample flow rate (sccm)	Measured Flow Rate (sccm)	Result
60	57	PASS

** NO2 sample flow rate: 60 +/- 5 sccm*

InnoTech Instrumentation Co., Limited
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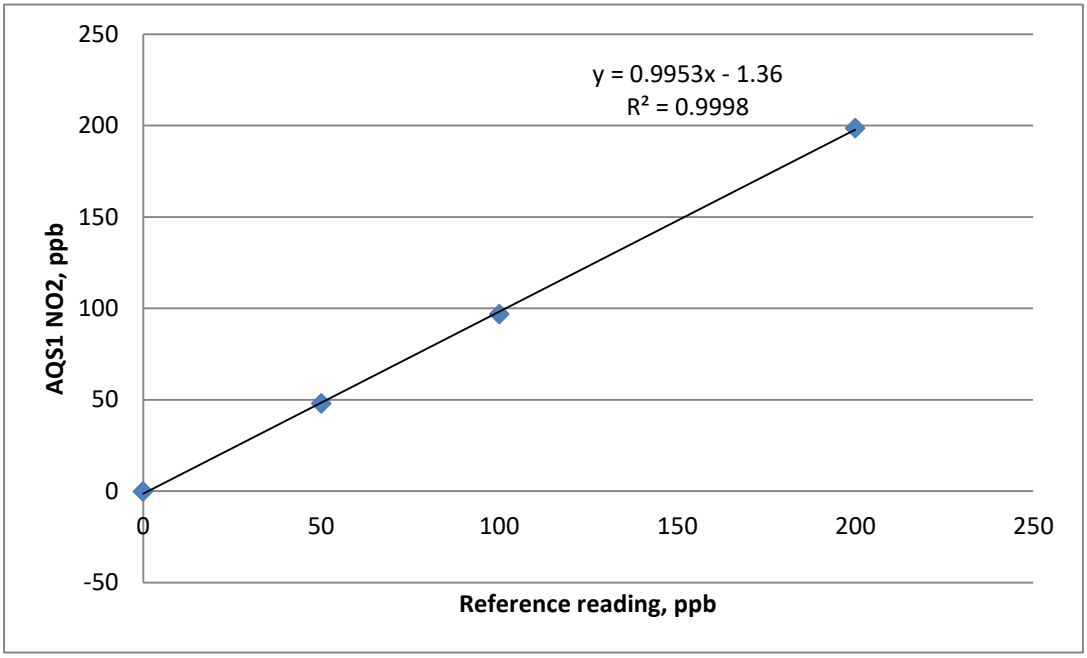
香港黃竹坑道 27 號甄沾記大廈 21 樓 D 室
電話: (852) 25537101 傳真: (852) 2553 8711
電郵: info@innotechi.com 網址: http://www.innotechi.com

Test Result – Concentration:

Reference Set Point (ppm)	Reading of UUT (ppm)	Result
Zero	-0.3	PASS
200	198.5	PASS
100	96.8	PASS
50	47.9	PASS

** Zero reading: 0 +/- 5 ppb*

** Span reading: 200 +/- 10 ppb*



Calibrated by: Tommy NG Date: 26 Jul 2023

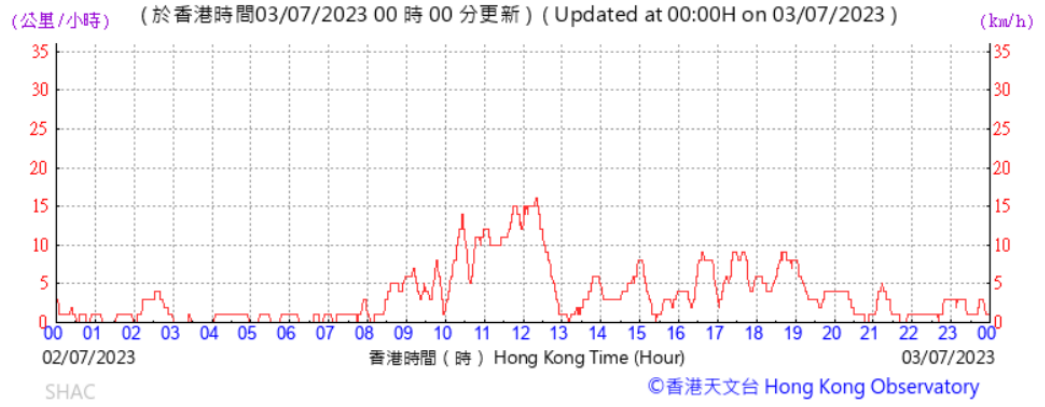
*** End of report ***

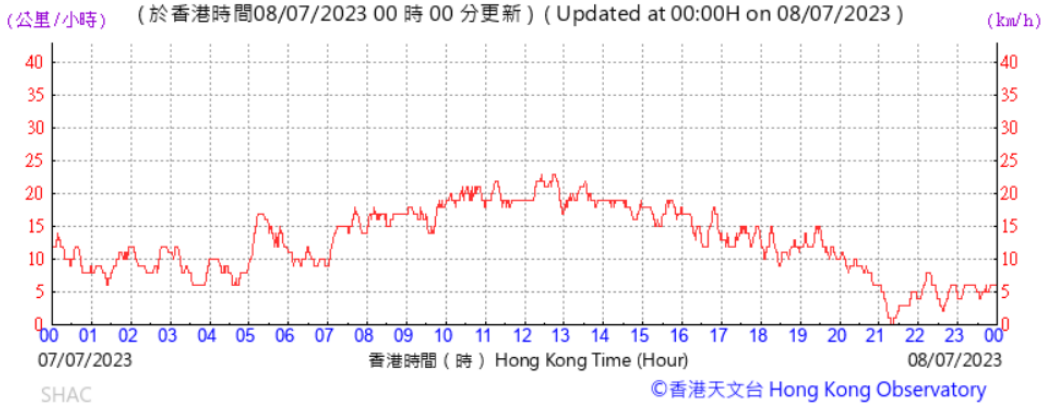
Appendix 4.3

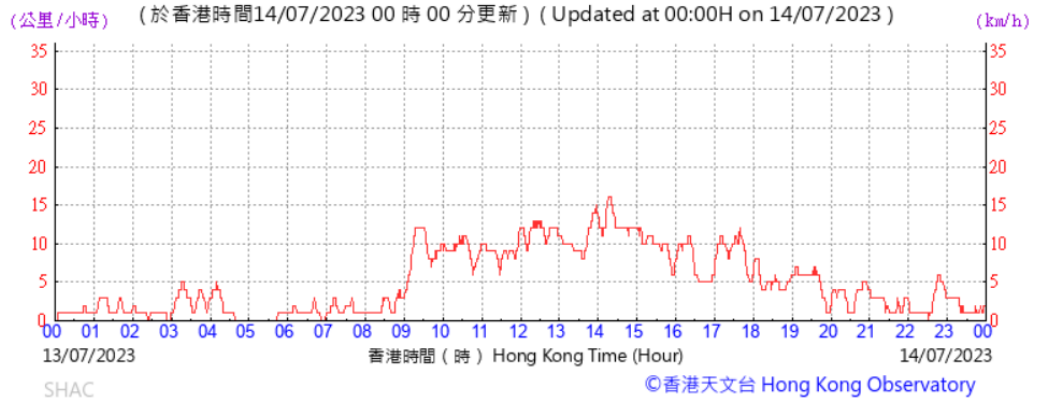
Wind data extracted from Sha Tin and

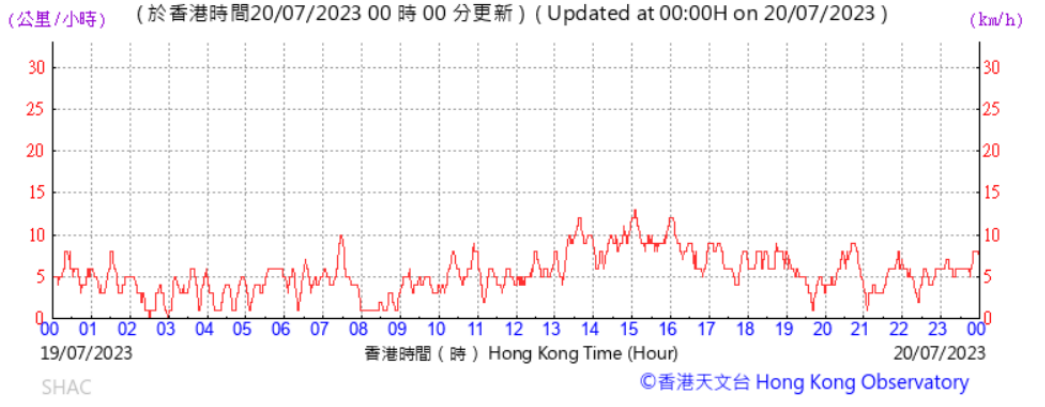
Tsing Yi HKO Automatic Weather Stations

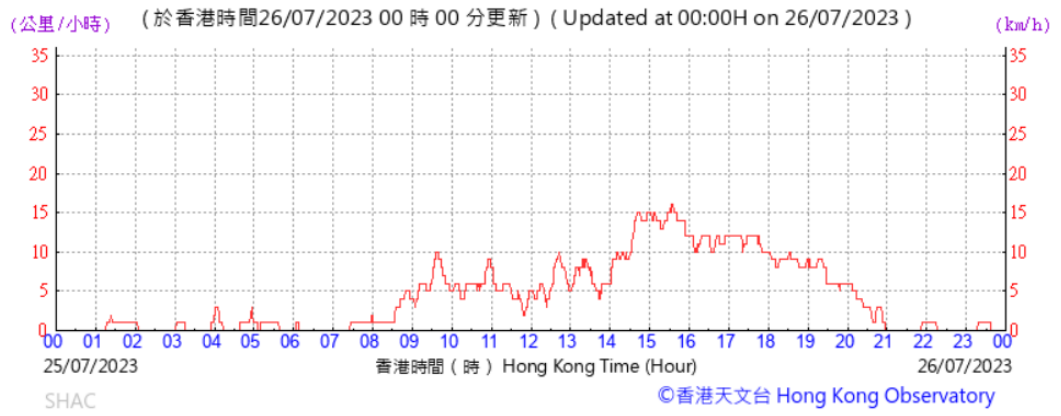
Wind data extracted from Sha Tin HKO Automatic Weather Stations



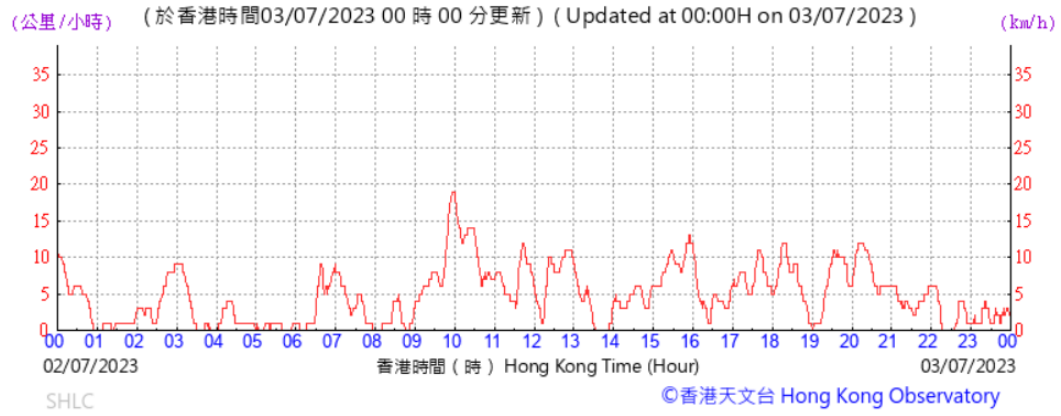


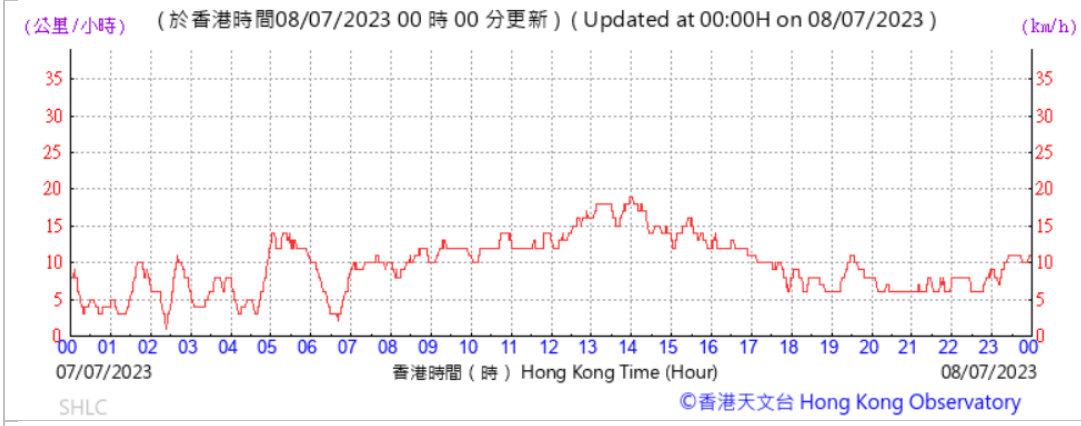


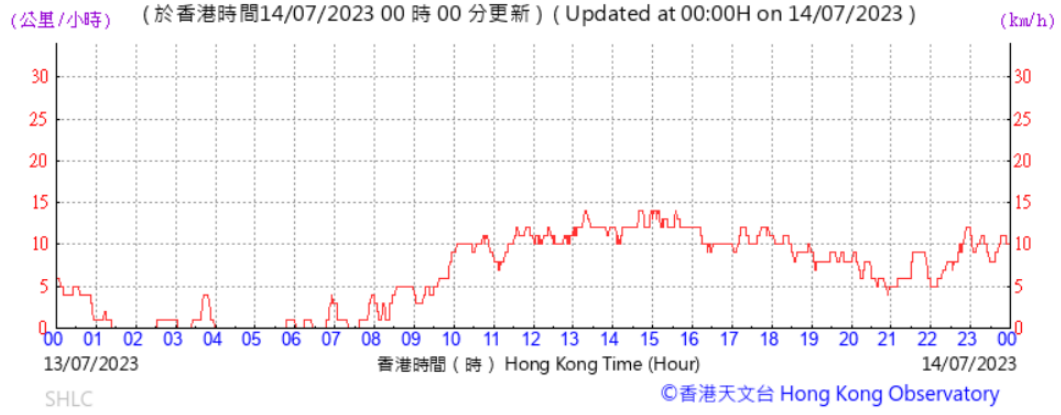


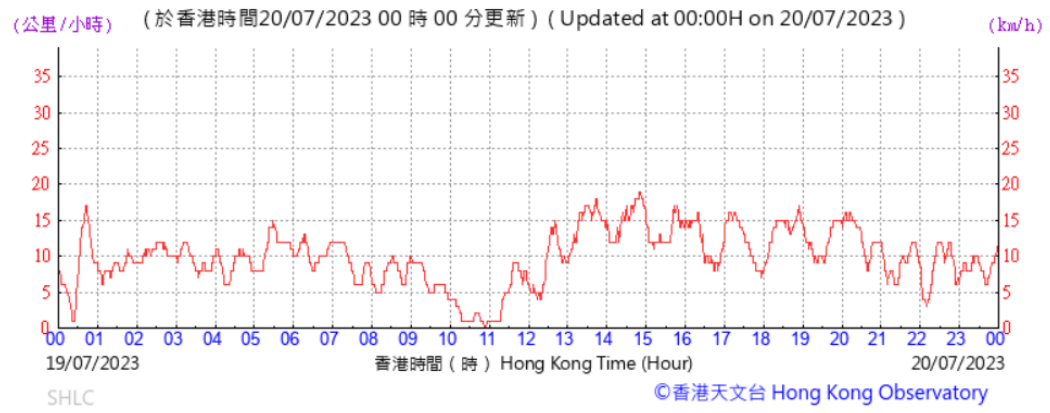


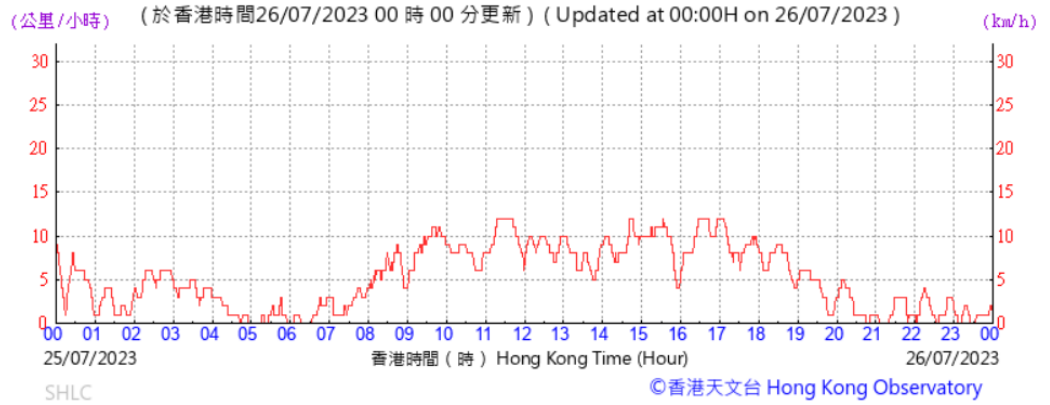
Wind data extracted from Tsing Yi HKO Automatic Weather Stations








(公里/小時)
(於香港時間20/07/2023 00 時 00 分更新) (Updated at 00:00H on 20/07/2023)
(km/h)
35
30
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 00
19/07/2023
香港時間 (時) Hong Kong Time (Hour)
20/07/2023
SHLC
©香港天文台 Hong Kong Observatory


(公里/小時)
(於香港時間26/07/2023 00 時 00 分更新) (Updated at 00:00H on 26/07/2023)
(km/h)
30
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 00
25/07/2023
香港時間 (時) Hong Kong Time (Hour)
26/07/2023
SHLC
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July 2023

	Hong Kong Observatory								King's Park	Waglan Island^	
Day	Mean Pressure (hPa)	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)	Total Bright Sunshine (hours)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	1006.6	30.9	28.9	26.2	25.6	82	85	4.7	***	***	***
2	1007.9	29.3	27.5	26.2	25.5	89	88	15.6	***	***	***
3	1008.8	32.4	28.9	27.0	25.7	83	82	3.6	***	***	***
4	1008.7	32.0	29.3	26.7	25.8	82	87	10.6	***	***	***
5	1008.4	33.0	30.4	28.9	25.9	77	86	Trace	***	***	***
6	1008.9	32.8	30.3	28.4	25.7	77	77	Trace	***	***	***
7	1009.7	33.4	30.4	29.0	25.7	76	71	0.3	***	***	***
8	1010.4	33.2	30.4	28.8	25.6	76	48	0.0	***	***	***
9	1009.8	33.7	30.5	28.7	26.0	77	46	Trace	***	***	***
10	1008.5	33.7	30.7	28.9	25.7	75	40	0.0	***	***	***
11	1008.4	33.6	30.7	28.9	25.8	76	42	0.0	***	***	***
12	1008.2	34.5	30.7	28.9	25.4	74	40	0.0	***	***	***
13	1006.8	34.8	30.9	28.6	24.8	71	58	0.0	***	***	***
14	1004.4	33.8	31.3	28.5	25.2	71	68	0.0	***	***	***
15	1000.8	34.5	31.1	28.2	25.8	74	83	2.5	***	***	***
16	997.7	33.3	29.7	27.2	24.8	75	87	4.9	***	***	***
17	997.5	29.4	28.4	27.2	25.7	85	88	29.0	***	***	***
18	1004.5	31.1	29.2	27.5	26.6	86	88	10.9	***	***	***
19	1007.5	30.3	28.7	27.3	26.5	88	88	3.9	***	***	***
20	1008.5	33.6	29.6	26.8	25.6	80	84	4.8	***	***	***
21	1009.7	32.4	29.7	27.7	25.6	79	76	Trace	***	***	***
22	1010.8	34.0	30.6	28.3	25.7	76	77	0.0	***	***	***
23	1009.5	34.1	30.6	28.6	26.0	77	86	Trace	***	***	***
24	1007.7	34.6	30.7	28.4	26.0	76	62	0.0	***	***	***
25	1006.3	33.4	30.7	28.4	25.3	73	56	0.0	***	***	***
26	1002.3	35.5	32.0	29.3	26.1	72	78	0.0	***	***	***
27	997.7	36.1	32.2	28.4	25.1	67	77	6.9	***	***	***
28	996.8	34.7	31.5	28.9	25.7	72	86	0.0	***	***	***
29	1002.3	31.5	29.8	27.2	26.8	84	91	21.0	***	***	***
30	1005.4	32.1	29.2	27.5	26.7	87	88	10.0	***	***	***
31	1006.3	32.5	29.1	26.5	26.1	84	85	46.5	***	***	***

*** *unavailable*

^ *Information of wind direction and wind speed for Waglan Island are based on automatic weather station data since August 1989*

Trace means rainfall less than 0.05 mm

Data Source: Hong Kong Observatory

Appendix 5.1

Monitoring Schedule for Reporting Month and Next Month

Project: **Contract No. CPW 01/2023 for Relocation of Sha Tin Sewage Treatment Works to Caverns**

Impact Monitoring Schedule (July 2023)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 AQM NM NM (Evening & Night time)	4	5	6	7	8 AQM
9	10	11	12	13	14 AQM, NM NM NM (Evening & Night time)	15
16	17	18	19 APS Performance Test	20 AQM NM NM (Evening & Night time) APS Performance Test	21 APS Performance Test	22 APS Performance Test
23	24	25	26 AQM NM NM (Evening & Night time)	27	28	29
30	31					

Project: **Contract No. CPW 01/2023 for Relocation of Sha Tin Sewage Treatment Works to Caverns**

Impact Monitoring Schedule (August 2023)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 AQM NM NM (Evening & Night time)	2	3	4	5
6	7 AQM NM NM (Evening & Night time)	8	9	10	11	12 AQM
13	14	15	16	17	18 AQM, NM NM NM (Evening & Night time)	19
20	21 APS Performance Test	22 APS Performance Test	23 APS Performance Test	24 AQM NM NM (Evening & Night time)	25	26
27	28	29	30 AQM NM NM (Evening & Night time)	31		

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
2. **AQM**: Air Quality Monitoring: 3 x 1-hour TSP Monitoring per 6 days
3. **APS Performance Test**: Monthly Air Purification System performance test
4. **NM**: Noise Monitoring: Leq (30 min) between 0700 and 1900 hours
5. **NM (Evening time)**: Additional noise monitoring will be carried out if construction works are extended to include works between 1900 and 2300 hours.
6. **NM (Night time)**: Additional noise monitoring will be carried out if construction works are extended to include works between 2300 and 0700 hours of next day.
7. Air Quality Monitoring Location: **AM1** (Ah Kung Kok Fishermen Village), **AM2** (Block H, Kam Tai Court), **AM3(B)** (Outside A Kung Kok Street Garden), **AM4** (Wellborn Kindergarten), **AM5** (The Neighbourhood Advice-Action Council Harmony Manor), **ASR51** (The Hong Kong Yaumati Ferry Company Ltd. Administrative Building)
8. Noise Monitoring Location: **CM1** (Wellborn Kindergarten), **CM2(B)** (Outside A Kung Kok Street Garden), **CM3** (S.K.H. Ma On Shan Holy Spirit Primary School), **CM4** (Ah Kung Kok Fishermen Village), **CM5** (The Neighbourhood Advice-Action Council Harmony Manor)
9. APS Performance Test Location: **ASR52** (North West Tsing Yi Interchange Maintenance Workshops), **ASR55** (Lantau Link Visitor Centre, Nana Café, Model Train Shop)
10. Due to adverse weather on 17 July 2023, the APS Performance Test (Location ASR52 & ASR55) was rescheduled to 19 – 22 July 2023.

Appendix 5.2

Air Quality Monitoring Results and Graphical Presentations

AM1 - Ah Kung Kok Fishermen Village

Action Level ($\mu g/m^3$) - 294

Limit Level ($\mu g/m^3$) - 500

Date	Weather Condition	Time	Mass Concentration ($\mu g/m^3$)
03/07/2023	Overcast	15:00	22
03/07/2023	Overcast	16:00	17
03/07/2023	Overcast	17:00	17
08/07/2023	Fine	15:00	28
08/07/2023	Fine	16:00	26
08/07/2023	Fine	17:00	19
14/07/2023	Fine	15:00	11
14/07/2023	Fine	16:00	17
14/07/2023	Fine	17:00	19
20/07/2023	Fine	15:00	17
20/07/2023	Fine	16:00	26
20/07/2023	Fine	17:00	24
26/07/2023	Fine	15:00	35
26/07/2023	Fine	16:00	43
26/07/2023	Fine	17:00	41

AM2 - Block H, Kam Tai Court

Action Level ($\mu g/m^3$) - 325

Limit Level ($\mu g/m^3$) - 500

Date	Weather Condition	Time	Mass Concentration ($\mu g/m^3$)
03/07/2023	Overcast	10:18	23
03/07/2023	Overcast	11:18	19
03/07/2023	Overcast	12:18	23
08/07/2023	Fine	9:27	45
08/07/2023	Fine	10:27	37
08/07/2023	Fine	11:27	25
14/07/2023	Fine	10:21	10
14/07/2023	Fine	11:21	8
14/07/2023	Fine	12:21	14
20/07/2023	Fine	9:56	11
20/07/2023	Fine	10:56	15
20/07/2023	Fine	11:56	15
26/07/2023	Fine	10:03	25
26/07/2023	Fine	11:03	25
26/07/2023	Fine	12:03	25

AM3(B) - Outside A Kung Kok Street Garden

Action Level ($\mu g/m^3$) - 360

Limit Level ($\mu g/m^3$) - 500

Date	Weather Condition	Time	Mass Concentration ($\mu g/m^3$)
03/07/2023	Overcast	10:13	17
03/07/2023	Overcast	11:13	19
03/07/2023	Overcast	12:13	23
08/07/2023	Fine	9:50	49
08/07/2023	Fine	10:50	30
08/07/2023	Fine	11:50	25
14/07/2023	Fine	10:01	9
14/07/2023	Fine	11:01	15
14/07/2023	Fine	12:01	17
20/07/2023	Fine	13:48	9
20/07/2023	Fine	14:48	6
20/07/2023	Fine	15:48	6
26/07/2023	Fine	10:04	30
26/07/2023	Fine	11:04	21
26/07/2023	Fine	12:04	25

AM4 - Wellborn Kindergarten

Action Level ($\mu g/m^3$) - 297

Limit Level ($\mu g/m^3$) - 500

Date	Weather Condition	Time	Mass Concentration ($\mu g/m^3$)
03/07/2023	Overcast	13:35	19
03/07/2023	Overcast	14:35	23
03/07/2023	Overcast	15:35	21
08/07/2023	Fine	13:28	25
08/07/2023	Fine	14:28	25
08/07/2023	Fine	15:28	21
14/07/2023	Fine	13:42	11
14/07/2023	Fine	14:42	13
14/07/2023	Fine	15:42	25
20/07/2023	Fine	13:56	6
20/07/2023	Fine	14:56	6
20/07/2023	Fine	15:56	13
26/07/2023	Fine	13:42	25
26/07/2023	Fine	14:42	27
26/07/2023	Fine	15:42	32

AM5 - The NAAC Harmony Manor

Action Level ($\mu g/m^3$) - 349

Limit Level ($\mu g/m^3$) - 500

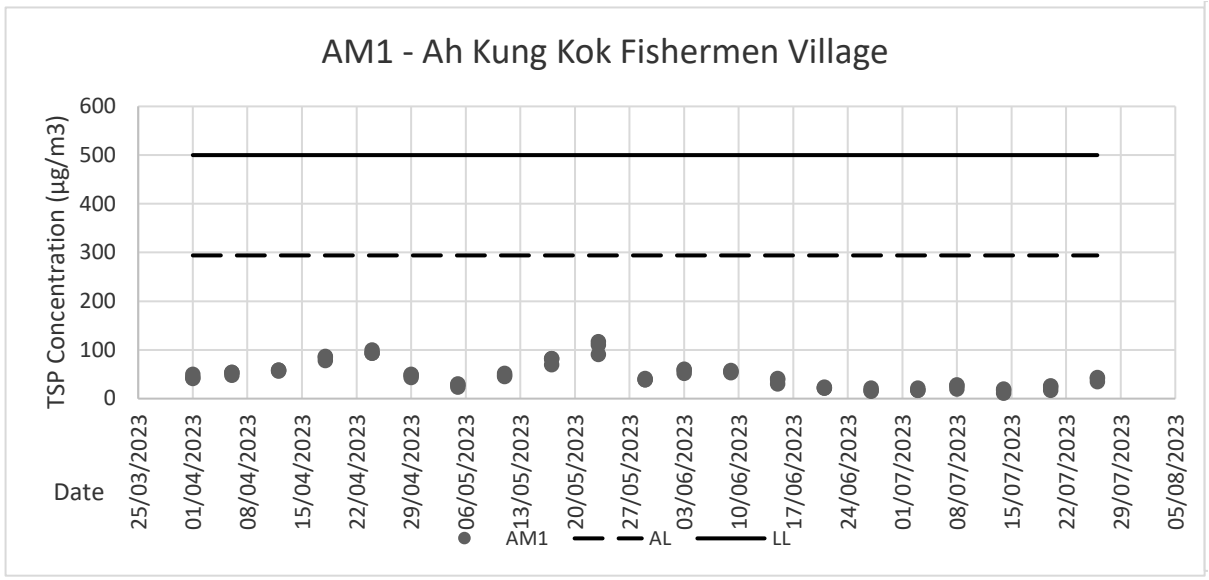
Date	Weather Condition	Time	Mass Concentration ($\mu g/m^3$)
03/07/2023	Overcast	8:36	19
03/07/2023	Overcast	9:36	24
03/07/2023	Overcast	10:36	17
08/07/2023	Fine	8:44	22
08/07/2023	Fine	9:44	52
08/07/2023	Fine	10:44	35
14/07/2023	Fine	8:44	9
14/07/2023	Fine	9:44	11
14/07/2023	Fine	10:44	11
20/07/2023	Fine	8:48	7
20/07/2023	Fine	9:48	5
20/07/2023	Fine	10:48	6
26/07/2023	Fine	8:45	24
26/07/2023	Fine	9:45	22
26/07/2023	Fine	10:45	24

ASR51 - The Hong Kong Yaumati Ferry Company Ltd. Administrative Building

Action Level ($\mu g/m^3$) - 310

Limit Level ($\mu g/m^3$) - 500

Date	Weather Condition	Time	Mass Concentration ($\mu g/m^3$)
03/07/2023	Overcast	10:46	48
03/07/2023	Overcast	11:46	40
03/07/2023	Overcast	12:46	46
08/07/2023	Fine	8:47	58
08/07/2023	Fine	9:47	42
08/07/2023	Fine	10:47	34
14/07/2023	Fine	12:56	34
14/07/2023	Fine	13:56	48
14/07/2023	Fine	14:56	40
20/07/2023	Fine	13:24	24
20/07/2023	Fine	14:24	28
20/07/2023	Fine	15:24	22
26/07/2023	Fine	11:45	26
26/07/2023	Fine	12:45	28
26/07/2023	Fine	13:45	34


AM1 - Ah Kung Kok Fishermen Village
TSP Concentration (µg/m3)
600
500
400
300
200
100
0
Date
25/03/2023
01/04/2023
08/04/2023
15/04/2023
22/04/2023
29/04/2023
06/05/2023
13/05/2023
20/05/2023
27/05/2023
03/06/2023
10/06/2023
17/06/2023
24/06/2023
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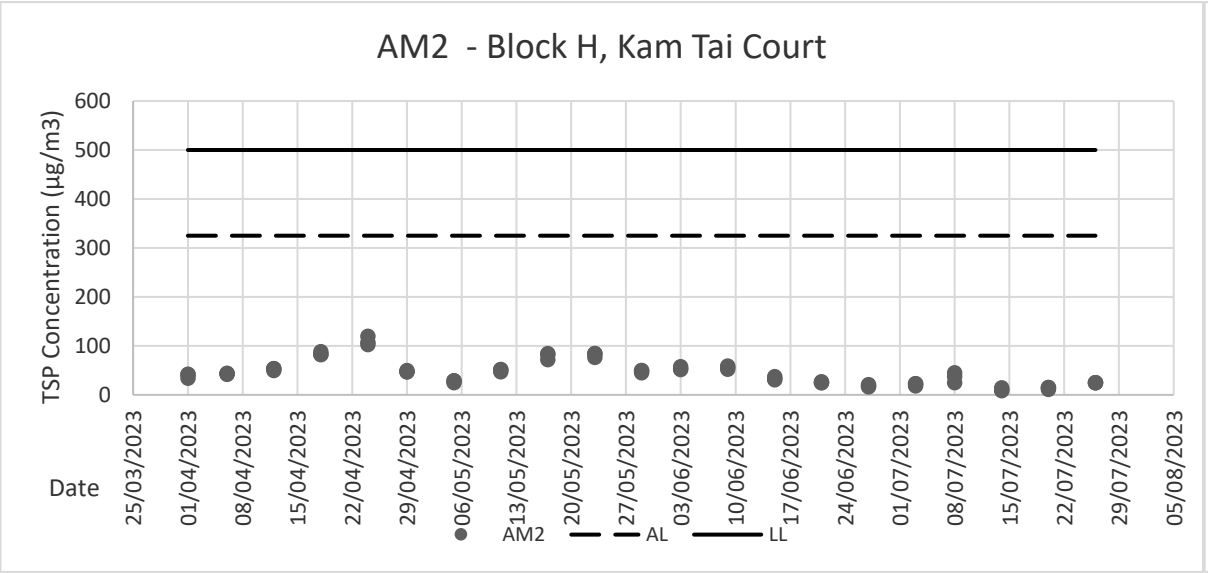
22/07/2023
29/07/2023
05/08/2023
AM1
AL
LL


AM2 - Block H, Kam Tai Court
TSP Concentration (µg/m3)
600
500
400
300
200
100
0
Date
25/03/2023
01/04/2023
08/04/2023
15/04/2023
22/04/2023
29/04/2023
06/05/2023
13/05/2023
20/05/2023
27/05/2023
03/06/2023
10/06/2023
17/06/2023
24/06/2023
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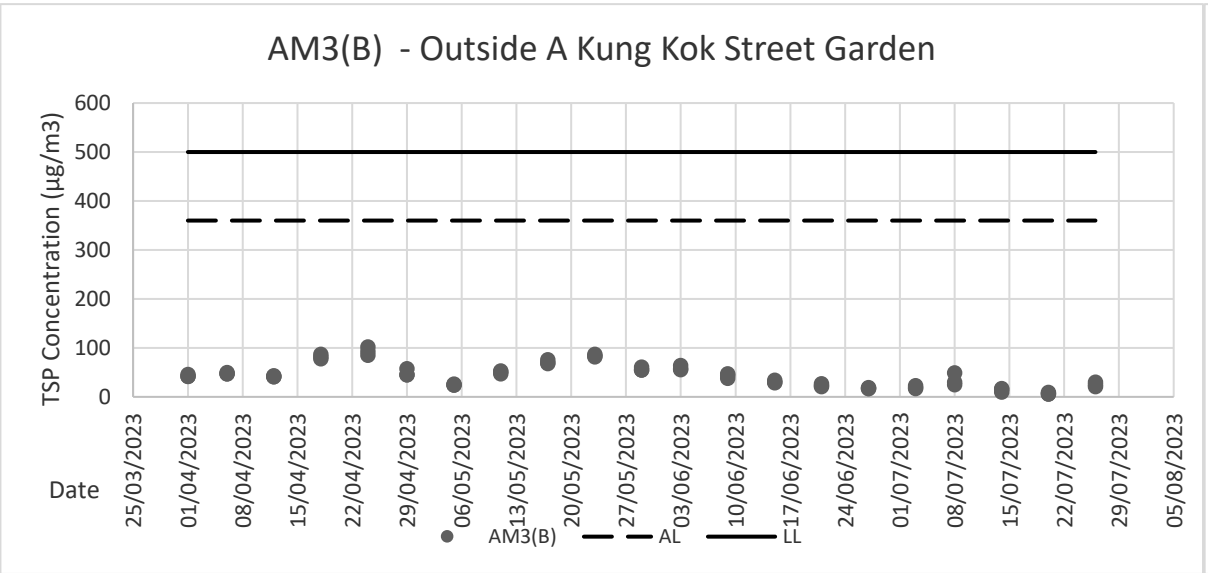
29/07/2023
05/08/2023
AM2
AL
LL


AM3(B) - Outside A Kung Kok Street Garden
TSP Concentration (µg/m3)
600
500
400
300
200
100
0
Date
25/03/2023
01/04/2023
08/04/2023
15/04/2023
22/04/2023
29/04/2023
06/05/2023
13/05/2023
20/05/2023
27/05/2023
03/06/2023
10/06/2023
17/06/2023
24/06/2023
01/07/2023
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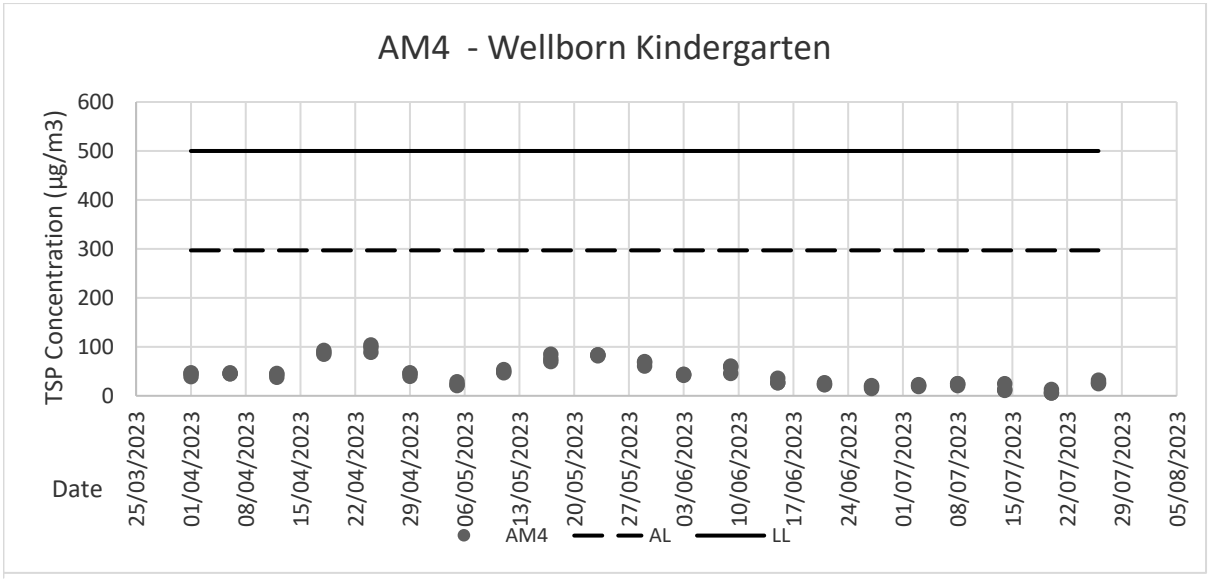
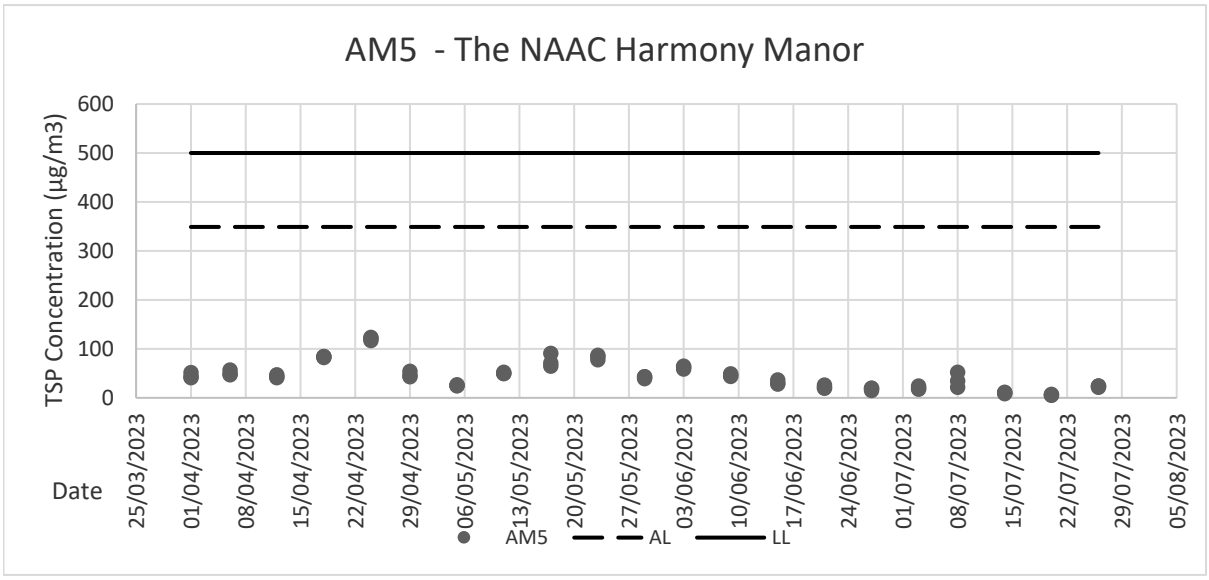
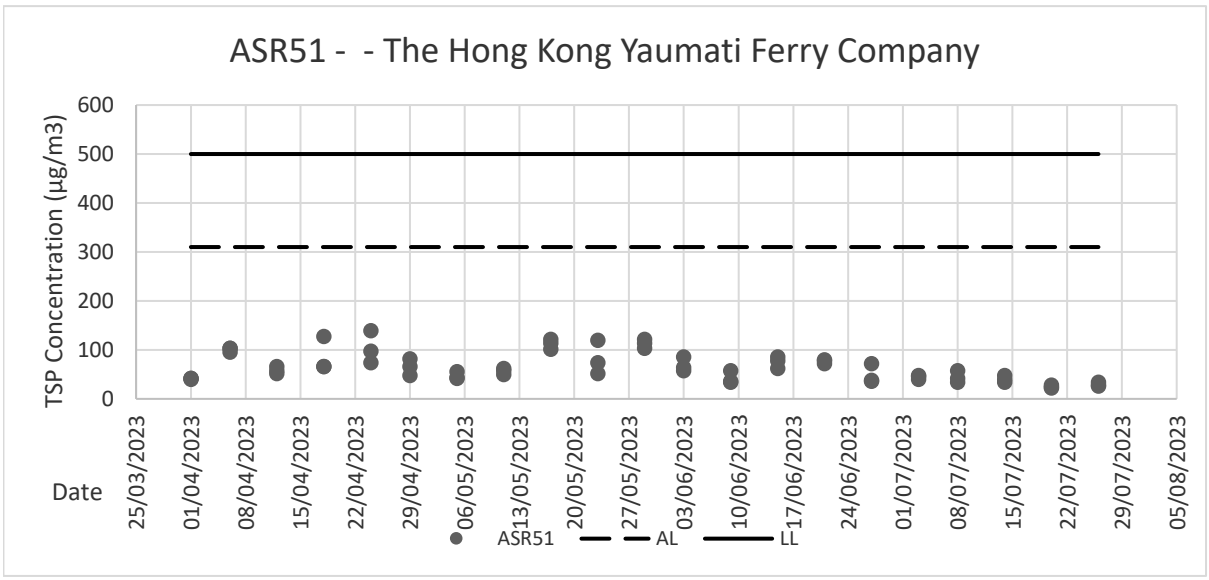
15/07/2023
22/07/2023
29/07/2023
05/08/2023
AM3(B)
AL
LL


AM4 - Wellborn Kindergarten
TSP Concentration (µg/m3)
600
500
400
300
200
100
0
Date
25/03/2023
01/04/2023
08/04/2023
15/04/2023
22/04/2023
29/04/2023
06/05/2023
13/05/2023
20/05/2023
27/05/2023
03/06/2023
10/06/2023
17/06/2023
24/06/2023
01/07/2023
08/07/2023
15/07/2023
22/07/2023
29/07/2023
05/08/2023
AM4
AL
LL


AM5 - The NAAC Harmony Manor
TSP Concentration (µg/m3)
600
500
400
300
200
100
0
Date
25/03/2023
01/04/2023
08/04/2023
15/04/2023
22/04/2023
29/04/2023
06/05/2023
13/05/2023
20/05/2023
27/05/2023
03/06/2023
10/06/2023
17/06/2023
24/06/2023
01/07/2023
08/07/2023
15/07/2023
22/07/2023
29/07/2023
05/08/2023
AM5
AL
LL


ASR51 - - The Hong Kong Yaumati Ferry Company
TSP Concentration (µg/m3)
600
500
400
300
200
100
0
Date
25/03/2023
01/04/2023
08/04/2023
15/04/2023
22/04/2023
29/04/2023
06/05/2023
13/05/2023
20/05/2023
27/05/2023
03/06/2023
10/06/2023
17/06/2023
24/06/2023
01/07/2023
08/07/2023
15/07/2023
22/07/2023
29/07/2023
05/08/2023
ASR51
AL
LL

Appendix 5.3

Noise Monitoring Results and Graphical Presentations

Day Time (0700 - 1900hrs on weekday)

Monitoring Location : CM1 - G/F, Wellborn Kindergarten

Date	Weather	Wind Speed (m/s)	Start Time	Noise Monitoring (30min)			Limit Level
				Leq dB(A)[2]	L90 dB(A)	L10 dB(A)	Leq[1]
03-07-2023	Overcast	0.5	10:57	56.6	50.0	56.0	70
14-07-2023	Fine	0.2	13:38	59.8	51.0	59.5	70
20-07-2023	Fine	0.2	14:13	62.1	52.0	63.0	70
26-07-2023	Fine	0.6	13:40	58.0	52.5	56.5	70

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

Date	Weather	Wind Speed (m/s)	Start Time	Noise Monitoring (30min)			Limit Level
				Leq dB(A)[2]	L90 dB(A)	L10 dB(A)	Leq[1]
03-07-2023	Overcast	0.4	10:15	64.7	55.5	64.0	70
14-07-2023	Fine	0.2	13:02	64.9	60.0	63.5	70
20-07-2023	Fine	0.2	13:54	62.6	57.0	61.5	70
26-07-2023	Fine	0.4	13:03	58.5	51.5	58.5	70

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

Date	Weather	Wind Speed (m/s)	Start Time	Noise Monitoring (30min)			Limit Level
				Leq dB(A)	L90 dB(A)	L10 dB(A)	Leq[1]
03-07-2023	Overcast	0.7	10:38	63.9	61.5	65.5	70
14-07-2023	Fine	0.0	10:45	62.3	60.0	64.0	70
20-07-2023	Fine	0.2	9:56	63.5	61.5	65.0	70
26-07-2023	Fine	0.2	10:24	61.8	59.0	63.5	70

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

Date	Weather	Wind Speed (m/s)	Start Time	Noise Monitoring (30min)			Limit Level
				Leq dB(A)[2]	L90 dB(A)	L10 dB(A)	Leq
03-07-2023	Overcast	0.6	13:00	55.7	52.3	57.8	75
14-07-2023	Fine	0.2	13:00	60.8	52.5	60.3	75
20-07-2023	Fine	0.2	13:00	59.8	56.6	61.7	75
26-07-2023	Fine	0.4	13:00	57.7	54.5	59.7	75

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

Date	Weather	Wind Speed (m/s)	Start Time	Noise Monitoring (30min)			Limit Level
				Leq dB(A)	L90 dB(A)	L10 dB(A)	Leq
03-07-2023	Overcast	0.2	8:40	51.8	49.0	53.5	75
14-07-2023	Fine	0.2	8:49	52.7	50.5	54.5	75
20-07-2023	Fine	0.2	8:54	53.4	50.0	55.5	75
26-07-2023	Fine	0.2	8:50	51.4	49.0	53.0	75

Remarks:

1) Limit level was adjusted to 65dB(A) during examination period.
2) Noise results were calculated by +3 dB (A) correction for free-field measurement.

Evening Time (1900 - 2300hrs)

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

Date	Weather	Start Time	Noise Monitoring 5min in dB(A)			Mean Noise Level	Baseline Level Range (mean level)	Construction Noise Level (Baseline correction)	Major Construction Noise Source(s)	Other Noise Source(s)	Limit Level
			$L_{eq}^{(1)}$	L90	L10	Leq (5min) in dB(A)					dB(A)
03-07-2023	Fine	19:00	54.8	52.5	56.5	54.7	53.5-70.9 (mean:56.7)	≤ Baseline Level	nil.	Traffic	70
		19:05	54.8	53.0	56.0						
		19:10	54.6	53.0	56.0						
		19:15	55.1	53.0	57.0						
		19:20	55.0	53.0	57.0						
		19:25	53.5	51.5	55.0						
14-07-2023	Fine	19:25	56.5	55.0	57.5	54.7	53.5-70.9 (mean:56.7)	≤ Baseline Level	nil.	Traffic	70
		19:30	54.9	51.0	57.0						
		19:35	54.5	51.0	57.0						
		19:40	53.8	50.5	56.0						
		19:45	54.0	51.0	56.5						
		19:50	53.9	51.0	56.0						
20-07-2023	Fine	19:30	57.1	54.5	59.0	56.7	53.5-70.9 (mean:56.7)	≤ Baseline Level	nil.	Traffic	70
		19:35	57.0	54.0	59.0						
		19:40	56.3	53.5	58.0						
		19:45	56.0	53.0	58.0						
		19:50	56.7	53.5	59.0						
		19:55	57.1	53.0	59.5						
26-07-2023	Fine	19:00	52.9	50.0	55.0	53.0	53.5-70.9 (mean:56.7)	≤ Baseline Level	nil.	Traffic	70
		19:05	53.5	50.5	55.5						
		19:10	53.2	50.5	55.5						
		19:15	52.7	50.0	55.0						
		19:20	52.7	49.5	55.0						
		19:25	52.9	50.5	55.0						

Remarks:

1) Noise results were calculated by +3 dB (A) correction for free-field measurement.

Night Time (2300 - 0700hrs on next day)

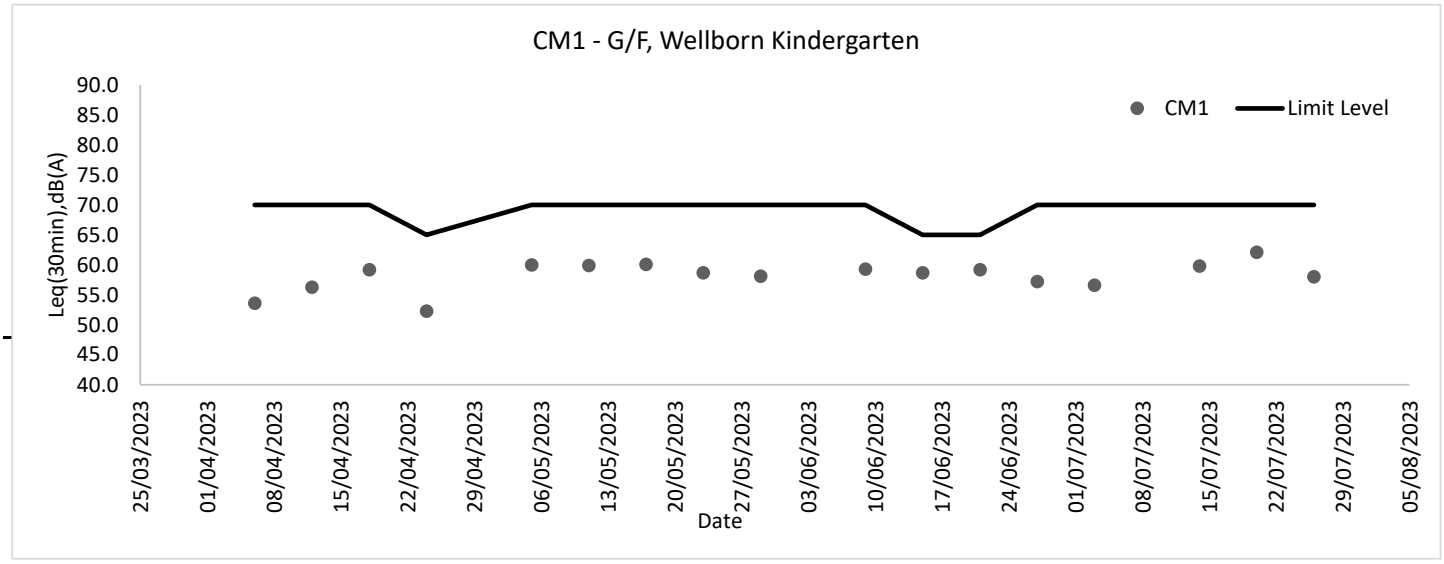
Monitoring Location : **CM4 - G/F, Ah Kung Kok Fishermen Village**

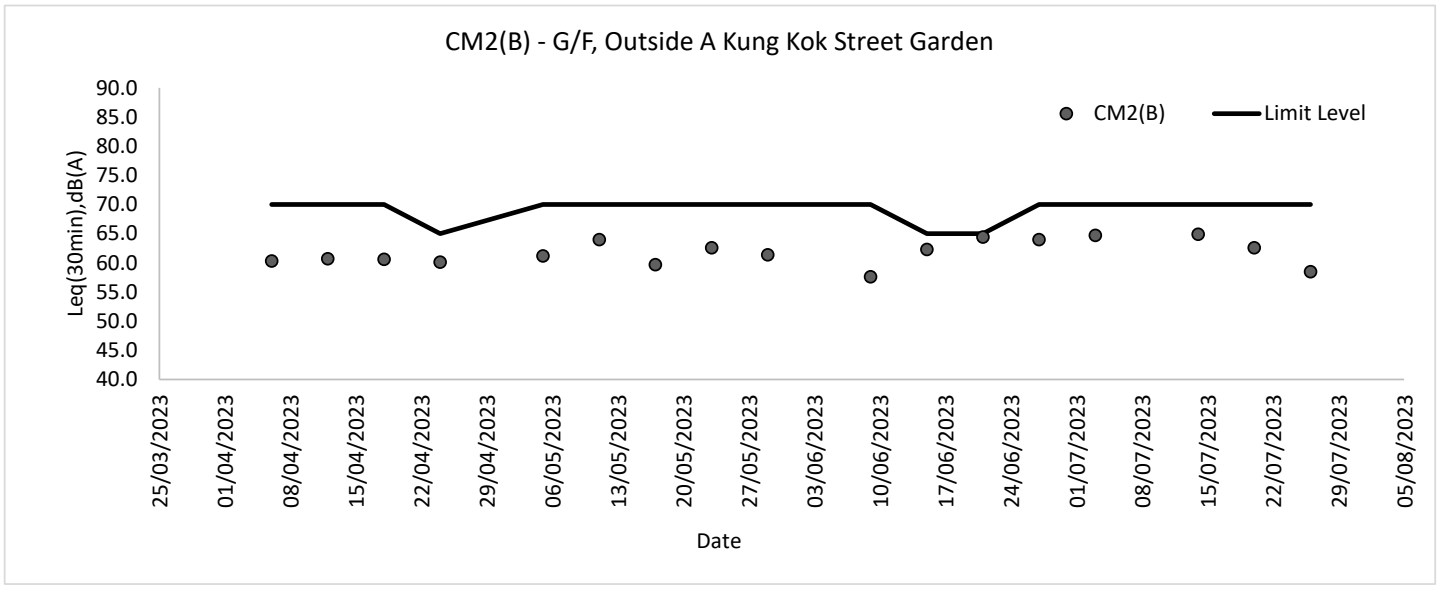
Date	Weather	Start Time	Noise Monitoring 5min in dB(A)			Mean Noise Level[2]	Baseline Level Range (mean level)	Construction Noise Level (Baseline correction)	Major Construction Noise Source(s)	Other Noise Source(s)	Limit Level
			Leq[1]	L90	L10	Leq (5min) in dB(A)					dB(A)
03-07-2023	Fine	23:00	51	47.5	53.5	51.3	45.6-63.2 (mean 52.8)	≤ Baseline Level	nil.	Traffic	55
		23:05	51.1	48.5	53.0						
		23:10	51.3	49.0	53.0						
		23:15	51.6	48.0	54.0						
		23:20	50.8	48.0	52.5						
		23:25	51.9	48.5	54.5						
14-07-2023	Fine	23:00	51.9	49.0	54.0	51.7	45.6-63.2 (mean 52.8)	≤ Baseline Level	nil.	Traffic	55
		23:05	51.0	48.0	53.5						
		23:10	52.0	47.5	55.0						
		23:15	52.2	48.5	54.5						
		23:20	51.5	48.5	53.5						
		23:25	51.7	47.5	54.5						
21-07-2023	Fine	0:35	54.0	51.0	56.5	53.6	45.6-63.2 (mean 52.8)	45.8	nil.	Traffic	55
		0:40	54.8	52.0	57.0						
		0:45	53.7	50.0	56.0						
		0:50	53.4	49.0	56.0						
		0:55	52.8	49.0	55.0						
		1:00	52.4	48.5	55.0						
26-07-2023	Fine	23:00	48.9	45.5	51.0	49.0	45.6-63.2 (mean 52.8)	≤ Baseline Level	nil.	Traffic	55
		23:05	49.2	45.5	51.5						
		23:10	49.5	45.5	52.0						
		23:15	49.1	45.5	52.0						
		23:20	48.7	45.5	51.5						
		23:25	48.4	45.0	51.0						

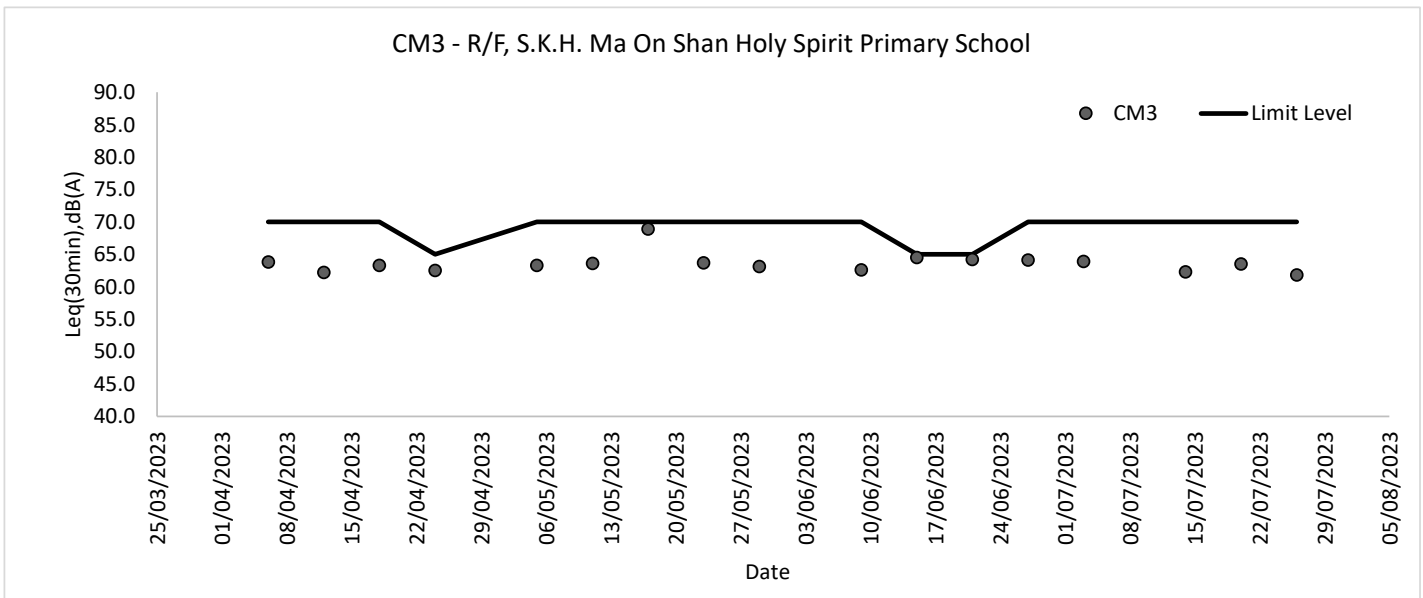
Remarks:

1) Noise results were calculated by +3 dB (A) correction for free-field measurement.

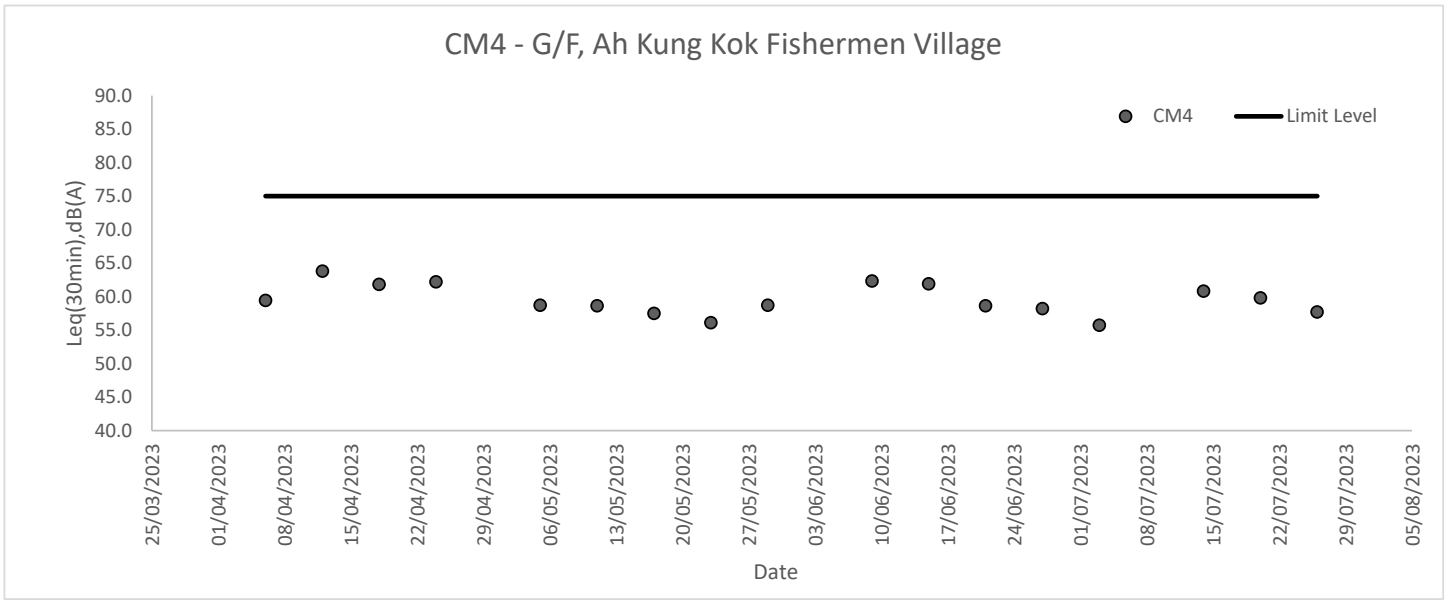
Graphic Presentation of Noise Monitoring Result
Day Time (0700 - 1900hrs on normal weekdays)

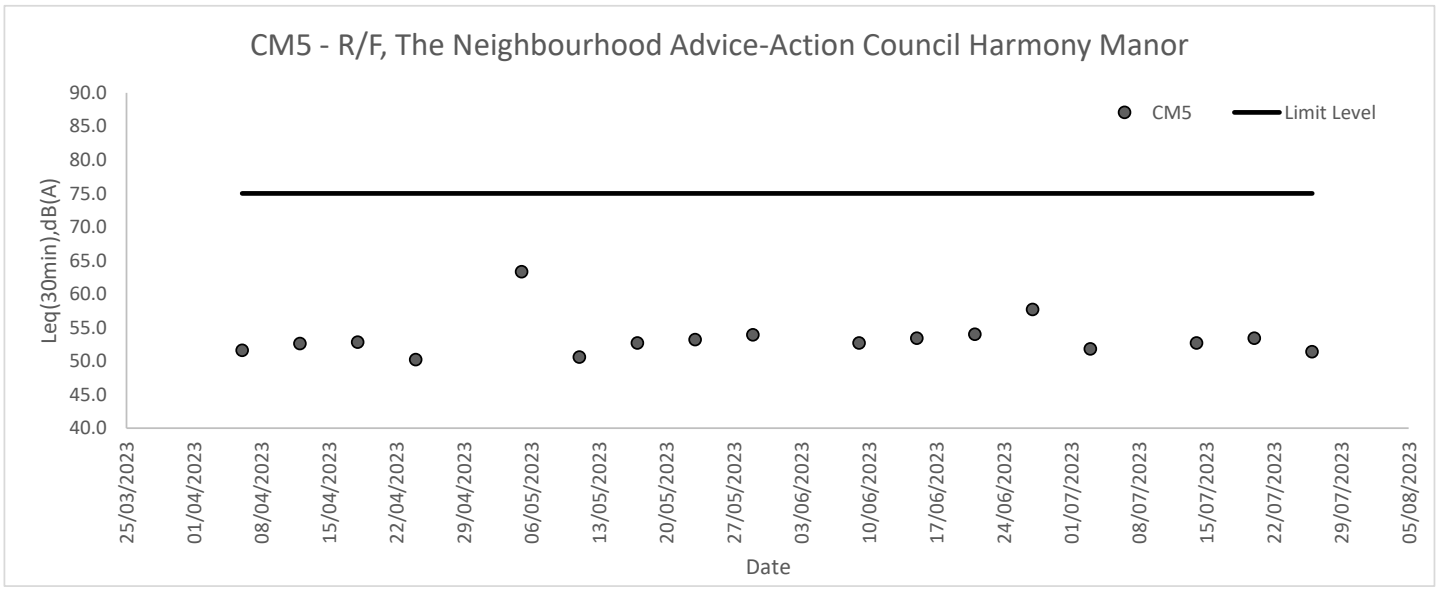




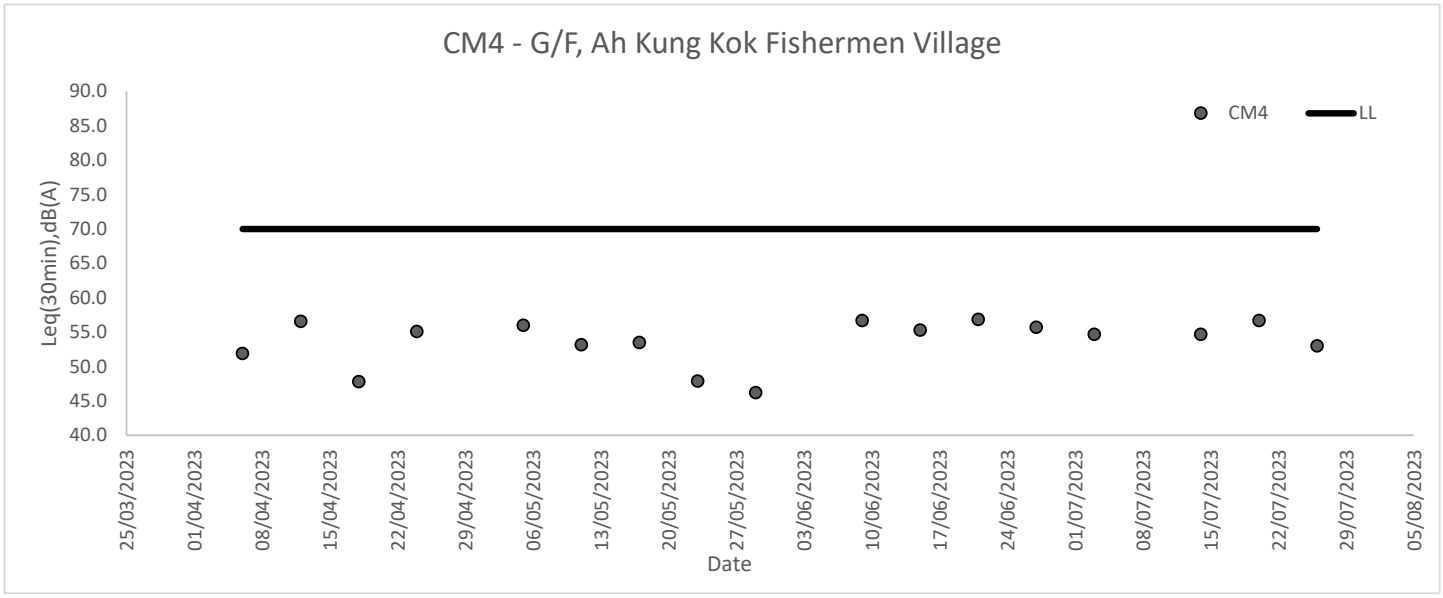


Graphic Presentation of Noise Monitoring Result
Day Time (0700 - 1900hrs on normal weekdays)

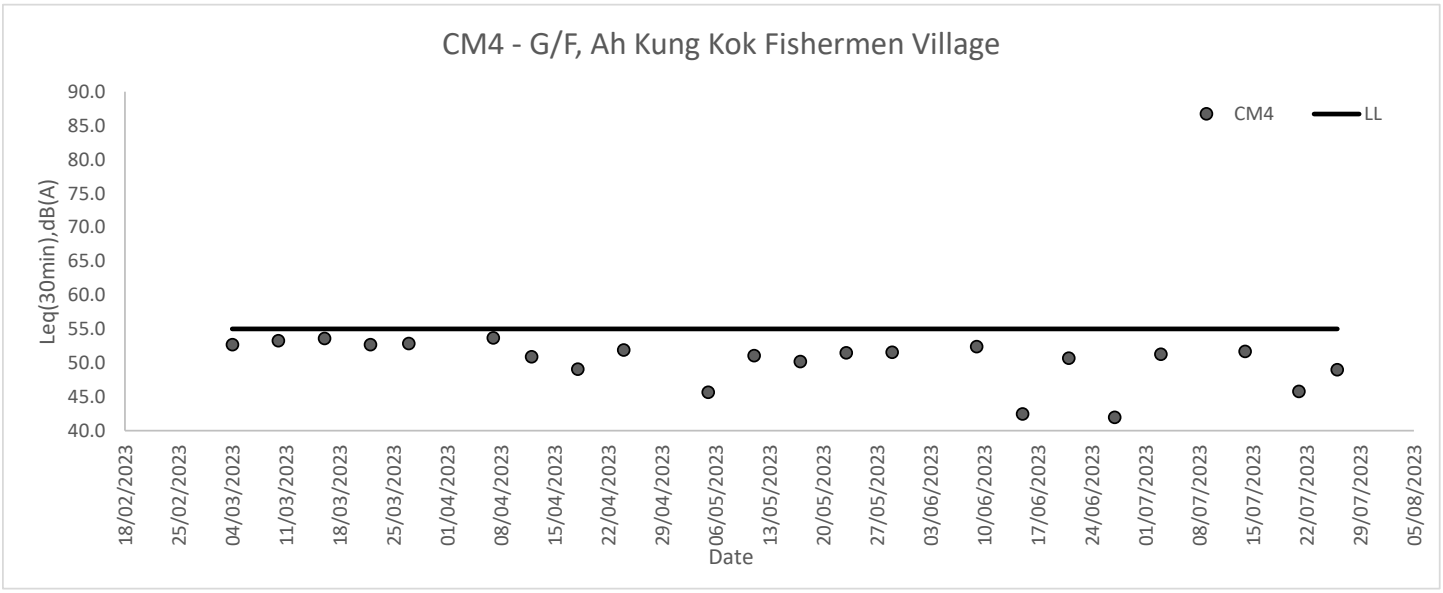




Graphic Presentation of Noise Monitoring Result
Evening Time (1900 - 2300hrs on normal weekdays)



Graphic Presentation of Noise Monitoring Result
Night Time (2300 - 0700hrs on normal weekdays)



Appendix 5.4

APS Performance Test Result

Location	Date and Time	Indoor NO_2 Conc. ($\mu g/m^3$) [1]	Outdoor NO_2 Conc. ($\mu g/m^3$) [1]	NO_2 Removal Efficiency (%)
Nana Café [2]	7/21/2023 13:00	27.7	27.3	29.7
	7/21/2023 14:00	27.3	28.1	
	7/21/2023 15:00	35.8	37.5	
	7/21/2023 16:00	37.5	40.0	
	7/21/2023 17:00	44.8	48.0	
	7/21/2023 18:00	55.1	65.2	
	7/21/2023 19:00	43.0	64.6	
	7/21/2023 20:00	37.1	61.2	
	7/21/2023 21:00	33.9	56.8	
	7/21/2023 22:00	31.9	54.9	
	7/21/2023 23:00	27.7	48.8	
	7/22/2023 0:00	26.8	47.6	
	7/22/2023 1:00	26.0	48.4	
	7/22/2023 2:00	25.6	48.0	
	7/22/2023 3:00	24.9	44.9	
	7/22/2023 4:00	22.6	40.9	
	7/22/2023 5:00	20.1	38.1	
	7/22/2023 6:00	20.5	39.8	
	7/22/2023 7:00	23.5	38.8	
	7/22/2023 8:00	24.7	35.0	
	7/22/2023 9:00	24.3	33.3	
	7/22/2023 10:00	22.6	27.7	
	7/22/2023 11:00	31.7	29.8	
	7/22/2023 12:00	27.3	22.6	
	24-hr Average	30.1	42.8	

Notes:

(1) Conversion factor of 1.9125 was applied for NO_2 from ppb to $\mu g/m^3$ at 20°C and at 1 atm.

(2) One unit of APS was deployed for NO_2 measurements at indoor and outdoor each simultaneously.

Location	Date and Time	Indoor NO_2 Conc. ($\mu g/m^3$) [(1)]	Outdoor NO_2 Conc. ($\mu g/m^3$) [(1)]	NO_2 Removal Efficiency (%)
Model Train Shop [(2)]	7/20/2023 13:00	2.9	27.9	95.5
	7/20/2023 14:00	3.8	26.4	
	7/20/2023 15:00	4.0	32.7	
	7/20/2023 16:00	4.4	35.0	
	7/20/2023 17:00	3.6	44.8	
	7/20/2023 18:00	3.3	52.2	
	7/20/2023 19:00	1.9	53.9	
	7/20/2023 20:00	1.5	50.1	
	7/20/2023 21:00	0.6	46.9	
	7/20/2023 22:00	0.2	42.3	
	7/20/2023 23:00	0.6	40.5	
	7/21/2023 0:00	0.4	41.5	
	7/21/2023 1:00	0.4	40.7	
	7/21/2023 2:00	1.0	43.6	
	7/21/2023 3:00	0.6	39.0	
	7/21/2023 4:00	0.8	36.0	
	7/21/2023 5:00	0.6	33.1	
	7/21/2023 6:00	0.8	27.9	
	7/21/2023 7:00	0.8	33.1	
	7/21/2023 8:00	0.4	31.7	
	7/21/2023 9:00	1.0	24.7	
	7/21/2023 10:00	1.0	28.1	
	7/21/2023 11:00	1.9	37.5	
	7/21/2023 12:00	4.2	35.0	
	24-hr Average	1.7	37.7	

Notes:

(1) Conversion factor of 1.9125 was applied for NO_2 from ppb to $\mu g/m^3$ at 20°C and at 1 atm.

(2) One unit of APS was deployed for NO_2 measurements at indoor and outdoor each simultaneously.

Location	Date and Time	Indoor NO_2 Conc. ($\mu g/m^3$) [(1)]	Outdoor NO_2 Conc. ($\mu g/m^3$) [(1)]	NO_2 Removal Efficiency (%)
Workshop Office [(2)]	7/20/2023 12:00	23.9	34.0	46.2
	7/20/2023 13:00	26.0	32.1	
	7/20/2023 14:00	23.9	27.9	
	7/20/2023 15:00	23.1	20.7	
	7/20/2023 16:00	19.5	23.1	
	7/20/2023 17:00	20.3	42.3	
	7/20/2023 18:00	26.4	53.4	
	7/20/2023 19:00	26.4	54.3	
	7/20/2023 20:00	22.8	49.2	
	7/20/2023 21:00	21.8	46.5	
	7/20/2023 22:00	18.7	43.6	
	7/20/2023 23:00	19.3	43.0	
	7/21/2023 0:00	18.6	43.0	
	7/21/2023 1:00	15.5	36.5	
	7/21/2023 2:00	10.3	29.5	
	7/21/2023 3:00	9.4	31.9	
	7/21/2023 4:00	10.5	35.4	
	7/21/2023 5:00	9.9	35.6	
	7/21/2023 6:00	11.9	34.2	
	7/21/2023 7:00	17.4	34.0	
	7/21/2023 8:00	22.4	33.5	
	7/21/2023 9:00	20.8	26.0	
	7/21/2023 10:00	19.3	18.0	
	7/21/2023 11:00	23.3	28.9	
	24-hr Average	19.2	35.7	

Notes:

(1) Conversion factor of 1.9125 was applied for NO_2 from ppb to $\mu g/m^3$ at 20°C and at 1 atm.

(2) One unit of APS was deployed for NO_2 measurements at indoor and outdoor each simultaneously.

Location	Date and Time	Indoor NO_2 Conc. ($\mu g/m^3$) [(1)]	Outdoor NO_2 Conc. ($\mu g/m^3$) [(1)]	NO_2 Removal Efficiency (%)
Lantau Link Visitor Centre [(2)]	7/19/2023 13:00	10.3	31.7	75.6
	7/19/2023 14:00	11.9	31.4	
	7/19/2023 15:00	11.3	36.0	
	7/19/2023 16:00	9.8	36.7	
	7/19/2023 17:00	9.0	34.8	
	7/19/2023 18:00	9.6	41.1	
	7/19/2023 19:00	9.6	34.8	
	7/19/2023 20:00	8.0	37.5	
	7/19/2023 21:00	8.6	34.8	
	7/19/2023 22:00	7.3	32.7	
	7/19/2023 23:00	3.3	30.6	
	7/20/2023 0:00	3.8	26.2	
	7/20/2023 1:00	4.4	25.4	
	7/20/2023 2:00	3.8	23.0	
	7/20/2023 3:00	3.8	29.5	
	7/20/2023 4:00	4.0	28.9	
	7/20/2023 5:00	4.4	19.3	
	7/20/2023 6:00	3.3	23.9	
	7/20/2023 7:00	4.4	29.1	
	7/20/2023 8:00	8.4	39.4	
	7/20/2023 9:00	10.9	34.6	
	7/20/2023 10:00	10.7	39.6	
	7/20/2023 11:00	14.3	40.0	
	7/20/2023 12:00	14.0	35.6	
	24-hr Average	7.9	32.4	

Notes:

(1) Conversion factor of 1.9125 was applied for NO_2 from ppb to $\mu g/m^3$ at 20°C and at 1 atm.

(2) One unit of APS was deployed for NO_2 measurements at indoor and outdoor each simultaneously.

Appendix 5.5

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table

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

Monthly Summary Waste Flow Table for July 2023 [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-23	0.333	0.007	0.000	0.137	0.189	0.000	0.000	0.000	0.000	43.610
Feb-23	5.173	0.021	3.267	1.596	0.289	0.000	0.300	0.000	0.000	28.380
Mar-23	0.695	0.000	0.000	0.357	0.338	0.000	0.000	0.000	0.000	56.250
Apr-23	0.703	0.100	0.000	0.189	0.414	0.000	0.750	0.000	0.000	31.000
May-23	1.173	0.213	0.000	0.462	0.499	0.000	0.200	0.000	0.000	18.830
Jun-23	0.538	0.081	0.000	0.410	0.047	0.000	0.250	0.000	0.000	30.210
Sub-total	8.616	0.423	3.267	3.150	1.776	0.000	1.500	0.000	0.000	208.280
Jul-23	1.810	0.000	0.000	0.557	1.254	0.000	0.300	0.000	0.000	34.31
Total	10.426	0.423	3.267	3.707	3.030	0.000	1.800	0.000	0.000	242.590

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 and 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, ER, and EPD; 3 Repeat measurement to confirm finding; 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 Amend proposal as appropriate. 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 EC, 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)	Measures	Action Level	Limit Level	Follow-up action
-	-	-	-	-	-	-	-

Appendix 8.1

Summary of Environmental Inspections

Date	Reminders/Observations	Action taken by Contractor	Outcome
Follow action(s) of last reporting month			
29/06/2023	Reminder 1: Stagnant water was observed at the u-channel near the coast. Desilting and bunding works should be conducted to prevent overflow of untreated water to the sea. (WA3)	Rectified.	Completion as observed on 6 July 2023 during site inspection.
Weekly Site Inspection			
06/07/2023	Observation 1: Construction site surface runoff should be reused for water spray on haul road or stockpile for dust control. (WA3) Reminder 1: Leakage of water pipe should be fixed. (WA3) Reminder 2: Tarpaulin cover or water spray should be provided for stockpile on dust suppression. (WA3)	Rectified.	Completion as observed on 13 July 2023 during site inspection.
13/07/2023	Observation 1: Accumulated wastes were observed without proper sorting. (Portion 6) Observation 2: Chemical container was observed without providing a drip tray. (Portion 6A)	Rectified.	Completion as observed on 20 July 2023 during site inspection.
20/07/2023	Reminder 1: It was observed that watering was applied during the unloading of aggregates to the barge. To increase the efficiency of dust suppression, the contractor was reminded to wet the aggregates before loading to the barge. (WA3)	Rectified.	Completion as observed on 27 July 2023 during site inspection.
27/07/2023	Observation 1: Chemical container was observed without providing a drip tray. (WA3) Reminder 1: The Contractor was reminded to provide tarpaulin sheets for the concrete breaker to prevent leakage. (WA3) Reminder 2: The Contractor was reminded to provide labels and rubbish container at waste collection point. (WA3)	Pending.	On-going.
Landscape Site Audit			
11/07/2023	No particular findings.	NIL.	NIL.
25/07/2023	Observation 1: The hanger in one of the transplanted trees should be pruned. (Portion 11) Reminder 1: White Popinac (Leucaena leucocephala) around the planting site including those which grow near one of the Paper-bark Tree (Melaleuca cajuputi) should be removed. (Portion 11)	Pending.	On-going.
Ecology Site Audit			
11/07/2023	No particular findings.	NIL.	NIL.

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	29/07/2019	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	12/11/2020	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 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	Interim investigation report was issue on 14 December 2020

					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 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	27/01/2021	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 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.	Interim investigation report was issue on 7 February 2021

20211201	01/12/2021	AECOM	Construction Area at Portion 12 (The Neighbourhood Advice-Action Council Harmony Manor)	Noise	A public complaint regarding construction noise referred by AECOM on 3 December 2021 was subsequently received by ET on 3 December 2021. The complainant reported to 1823 online dated on 1 December 2021 that the construction noise (heavy vehicle and drilling works) generated from the construction site at A Kung Lok Shan Road was causing noise nuisance to complainant's son. According to the relevant site information provided by the Contractor of DC/2020/05, preparation works for sheet pile driving, which included machinery and materials mobilization, were carried out on 1 December 2021. Sheet pile work was commenced on 2 December 2021. Based on review on noise monitoring data, no exceedances were recorded at the noise monitoring station CM5 - R/F, The Neighbourhood Advice-Action Council Harmony Manor (located nearest to the concerned area) during the scheduled Leq30 min noise monitoring in November 2021. ET conducted regular noise monitoring on 3 December 2021, no exceedances was record at the noise monitoring stations CM5 - R/F, The Neighbourhood Advice-Action Council Harmony Manor. Weekly noise monitoring was conducted on 7 December 2021, no exceedances was recorded at the noise monitoring station CM5 - R/F, The Neighbourhood Advice-Action Council Harmony Manor. Site inspection was conducted on 8 December 2021, it is observed that breaking /drilling works by other contractor was conducted next to The Neighbourhood Advice-Action Council Harmony Manor. No heavy vehicles passing by A Kung Lok Shan Road during noise monitoring. After receiving the complaint, additional noise mitigation measures, including wrapping up the breaker tip with acoustic mat and deploying of temporary noise barrier have been implemented by the Contractor of DC/2020/05. The Contractor of DC/2020/05 was reminded to enhance the noise mitigation measures by providing sufficient temporary noise barrier. Contractor is advised to make good communication with The Neighbourhood AdviceAction Council Harmony Manor and consider scheduling the time of sheet pilling and machinery / materials mobilization in order to avoid further complaint.	Interim investigation report was issue on 10 December 2021
20220506	06/05/2022	Contractor	Construction Area at Portion 10 (Next to the Chevalier Garden)	Noise	A public complaint regarding construction noise referred by the Contractor was received by ET on 12 May 2022. The complainant reported to 1823 Call Centre (ICC) dated on 6 May 2022 that the construction noise (rock-breaking and excavation) generated from the construction site of Portion 10 at Mui Tsz Lam Road was causing noise nuisance to complainant. According to the relevant site information provided by the Contractor of DC/2020/05, rock-breaking and excavation works were conducted during the concerned period. Based on review on noise monitoring data, no exceedances were recorded at the noise monitoring stations CM1 - G/F, Wellborn Kindergarten and CM2(B) - G/F, Outside A Kung Kok Street Garden (located within the Chevalier Garden) during the scheduled Leq30 min noise monitoring in April 2022. ET conducted regular noise monitoring on 6 May 2022, no exceedances were recorded at the noise monitoring stations CM1 - G/F, Wellborn Kindergarten and CM2(B) - G/F, Outside A Kung Kok Street Garden. Site inspection was conducted on 5 &12 May 2022, it is observed that rock-breaking was conducted at the construction site of Portion 10. Ad-hoc noise monitoring at	Interim investigation report was issue on 13 May 2022

					CM1 - G/F, Wellborn Kindergarten and CM2(B) - G/F, Outside A Kung Kok Street Garden on 13 May 2022, no exceedances were recorded. During execution of rock breaking works, below noise mitigation measures had been implemented by the Contractor of DC/2020/05 • Erection of 8m height noise barrier • Wrapping up the breaker tip with acoustic material • Upgrade the existing hoarding to perform as noise barrier by affixing a layer of sound absorption material to the hoarding surface • Voluntary to late start of rock breaking work at 0900hrs instead of 0700hrs, which is allowed under the Regulation. Contractor of DC/2020/05 also carried out self-noise monitor for the rock-breaking works on 4, 5 & 6 May 2022, All results show the construction noise levels are below the 75dB(A). ET would continue to monitor the adequacy of mitigation measures and review the monitoring data of the monitoring stations of CM1 - G/F, Wellborn Kindergarten and CM2(B) - G/F, Outside A Kung Kok Street Garden. The Contractor is recommend to review the construction operation to erect the temporary noise barriers, if feasible and ensure all idled PME are shut down to minimize potential noise emanation at the concerned works area to avoid potential nuisance.	
20220816	16/08/2022	Contractor	WA3 (Ngau Kok Wan, Tsing Yi)	Air Quality	A public complaint suspecting improper operation of mineral works without relevant environmental permits/licenses and dust mitigation measures at WA3 referred by the Contractor was received by ET on 17 August 2022. The complaint was made via email to the relevant authorities, including Environmental Protection Department (EPD) and Drainage Services Department (DSD), on 16 August 2022, the complainant suspected a mineral site near Tsing Yi North Coastal Road and Ting Kau Bridge was in operation without relevant environmental permits/licenses, the complainant also stated no dust mitigation measures, such as covering and water spraying for dusty stockpile and conveyor belts; and provision of wheel washing facility, were implemented based on his observation. The location where the complaint refers to is one of the works areas for the Project (i.e. WA3 at Ngau Kok Wan, Tsing Yi) for the proposed rock crushing operation as the location for such operation under the Environmental Permit (EP) (EP-533/2017/A) issued on 11 August 2022, and the Specified Process License (SPL) for the category of mineral works (stone crushing works) under Air Pollution Control (Specified Processes) Regulations for such operation has been applied since April 2022 and the associated application result was pending from EPD at the time of the complaint received. The works activities at WA3 between 12 and 17 August 2022 were reviewed. As advised by the Contractor, the works activities undertaken during the period mainly included i) assembly and adjustment of the rock crushing machineries; ii) provision of training for workers on the operation of machineries for rock crushing activities; and iii) import of rocks from the main site (i.e. works areas of Cavern at Ma On Shan) on land logistics by dump trucks for construction of a loading platform and temporary storage at WA3. Relevant mitigation measures for air quality impacts were implemented on site during the period including i) water spraying on haul roads; ii) water	Interim investigation report was issue on 31 August 2022

spraying for the temporary stockpile of dusty materials; iii) covering dusty materials with use of impervious sheeting; and iv) installation of dust enclosure and misting system for conveyor systems, etc. In addition, regular site inspections were carried out by the ET at WA3 on 12 and 17 August 2022, with no particular observations associated with air quality recorded and wheel washing facilities were in place for subsequent use, during the site inspections except a verbal reminder on proper covering for the stockpiles being idle on site was given to the Contractor on 17 August 2022 for improvement.

As referred to the Air Pollution Control Plan (APCP) attached to the application of SPL, the proposed rock crushing operation with maximum output capacity of 1,400 tonnes per hour by two operation lines (i.e. output capacity of 700 tonnes per hour for each) for the rocks being processed as aggregates of about 3M tonnes was mentioned and 12 hours a day (7:00 to 19:00) was assumed for the rock crushing operation taken in the air quality modelling assessment except Sundays and public holidays whereas, as advised by the Contractor, about 2,000 tonnes of rock were processed in the training sessions for the workers during the period (i.e. 12 to 17 August 2022), which is below the allowed maximum output for the rock crushing operation (i.e. 100,800 tonnes) during the period. Moreover, relevant monitoring data in relation to suspended particulates were not available for review as a result of the fact that the application result for SPL is pending from EPD and actual rock crushing operation has not been commenced at the time of the complaint received such that the corresponding total suspended particulates (TSP) and respirable suspended particulates as required by the SPL, and 1-hr TSP as recommended in the Environmental Review Report (ERR) for the application of variation of EP (i.e. EP-533/2017/A), respectively, had not been monitored at the time of the complaint received.

Based on the investigation above, the works activities at WA3 did not result in any unacceptable environmental impacts to the surrounding environment as reviewed with the relevant environmental requirements under EP-533/2017/A and the associated APCP for application of SPL for the Project.

Though works activities at WA3 did not result in any unacceptable environmental impacts to the surrounding environment, the Contractor was reminded to properly maintain the implementation of recommended mitigation measures for air quality impacts as recommended in the approved EIA Report, EP (i.e. EP-533/2017/A), the Updated EM&A Manual and/or ERR/APCP for the Project, and all mitigation measures as stated in the APCP for obtaining the SPL approved by EPD.

An ad-hoc site inspection was also carried out by the ET at WA3 on 19 August 2022 noting that fugitive dust emission was observed during breaking of artificial hard material by a backhoe equipped with hydraulic breaker without effective mitigation measures for air quality impacts (e.g. water spraying) implemented properly, and the Contractor was subsequently reminded to follow up on this for improvement. The ET will continue carrying out site inspections on a regular basis to check that appropriate environmental protection and pollution control mitigation measures are properly implemented in accordance with the environmental documents mentioned.

20230317	17/03/2023	DSD	Construction site entrance at Ma On Shan Road (Portion 4) and Mui Tsz Lam Road (Portion 6)	Air Quality	A notice of complaints from Environmental Protection Department (EPD) referred by AECOM was subsequently received by ET on 17 March 2023. Based on the information provided by the Contractor, no construction activity and performs as an access road for construction vehicles at Portion 6 and fill the access road for retaining wall and slope, Footing & wall construction, removal of the temporary stockpile of soil and performs as an access road for construction vehicles at Portion 6. Moreover, the existing dust mitigation measures were implemented at portion 4 and 6 by Contractor in February 2023. According to the Main Contractor, enhanced mitigation measures were implemented after the complaint and summarized as below: <u>Portion 4</u> ・Arrange workers and water tanker to spray water for the section of Ma On Shan Road connecting to the site entrance one hour earlier than before, i.e. at 0700 hrs. ・Rent a road sweeper to clean the section of Ma On Shan Road connecting to the site entrance at Portion 4 once a week. ・Upgrade the number of sprinklers from 6 to 8 to increase the water spraying area on 17 March 2023. <u>Portion 6</u> ・Increase the frequency of watering and road sweeping to the works area and Mui Tsz Lam Road roundabout to maintain it clean and free of dust. According to the ET regular air quality monitoring results in February 2023, no exceedance for all monitoring stations including the nearest stations AM1 and AM3(B) was found in reporting month. An ad-hoc air quality monitoring was conducted at nearest station AM1 and AM3(B) by the ET on 22 March 2023 and no exceedance was recorded. Nevertheless, in view of the public concern, the Contractor of DC/2018/05 was reminded to increase the frequency of watering the haul roads in dry weather and dry seasons, appropriate speed control shall be adopted for the vehicles on construction sites haul roads and all the use of vehicle wheel and body washing facilities and the water sprinklers should be regularly reviewed and maintained that make sure they are functioning properly.	Interim investigation report was issue on 24 March 2023
20230525	05/06/2023	ET	The outfall outside construction site at Mui Tsz Lam Nullah.	Water Quality	A notice of complaints from Environmental Protection Department (EPD) letter dated on 25 May 2023 was subsequently received by ET on 5 June 2023. One complaint to EPD on 8 May 2023 regarding muddy water discharge from construction site to Mui Tsz Lam Nullah and finally direct to Shing Mun River. As mentioned in EPD's complaint letter, muddy water appeared at the outfall located in Portion 3. According to Contractor Discharge Licence (Licence No.: WT00040534-2022) provided, the effluent from the wastewater treatment system in Portion 4, Portion 6 and the Caverns are permitted to be discharged to the stormwater drain and come out at this outfall. Also, by reviewing the drainage record, this outfall is also connected to further upstream from A Kung Kok catchment areas.	Interim investigation report was issue on 16 June 2023.

Other Works Area:

Portion 4: Wastewater produced in Portion 4 generally came from wheel washing at its site entrance. The treated wastewater was recirculated and consumed internally for road dust suppression and considered as seldom discharged.

Portion 6 and Portion 9: Two wastewater treatment systems with 80m3/hr treatment capacity are deployed at Portion 6 and Portion 9 (the Main Access Tunnel) respectively. As advised by Contractor, a full-time worker has been appointed responsible for the daily operation and maintenance of each of the wastewater treatment facilities.

Tunnel: A Filtration System was installed and connected to the wastewater treatment system inside the tunnel which can further reduce the suspended particulate of the effluent from the existing treatment system and is able to monitor the pH and SS value of the effluent and generate an alert when it exceeds the standard.

Contractor Self-Monitoring: According to the discharge licence (Licence No.: WT00040534-2022) part B2, The Contractor shall carry out self-monitoring monthly and recording of the constituents. A water sampling (6 samples in total were collected) was carried out on 9 May 2023 and no exceedance was recorded in May 2023.

Contractor Daily Observation: Muddy water appeared at the outfall each time when the tidal is low, even though the Contractor's discharging was clear enough at the time. Besides, there are two manholes in Portion 4 and a layer of muddy sediment is identified at the bottom of the drain. The contractor believes that the sediment was exposed to the air during low tidal and it was eroded by the water flow especially when we discharged or there was rainfall. It is the reason why muddy water appeared when the tide is low at the outfall of Portion 3.

Ad-hoc Inspection: An ad-hoc inspection was conducted by the representative of ET, RSS and Contractor representative on 8 June 2023. According to ET's field observations, there is no evidence to prove that the muddy water discharged from the outfall area is project related.

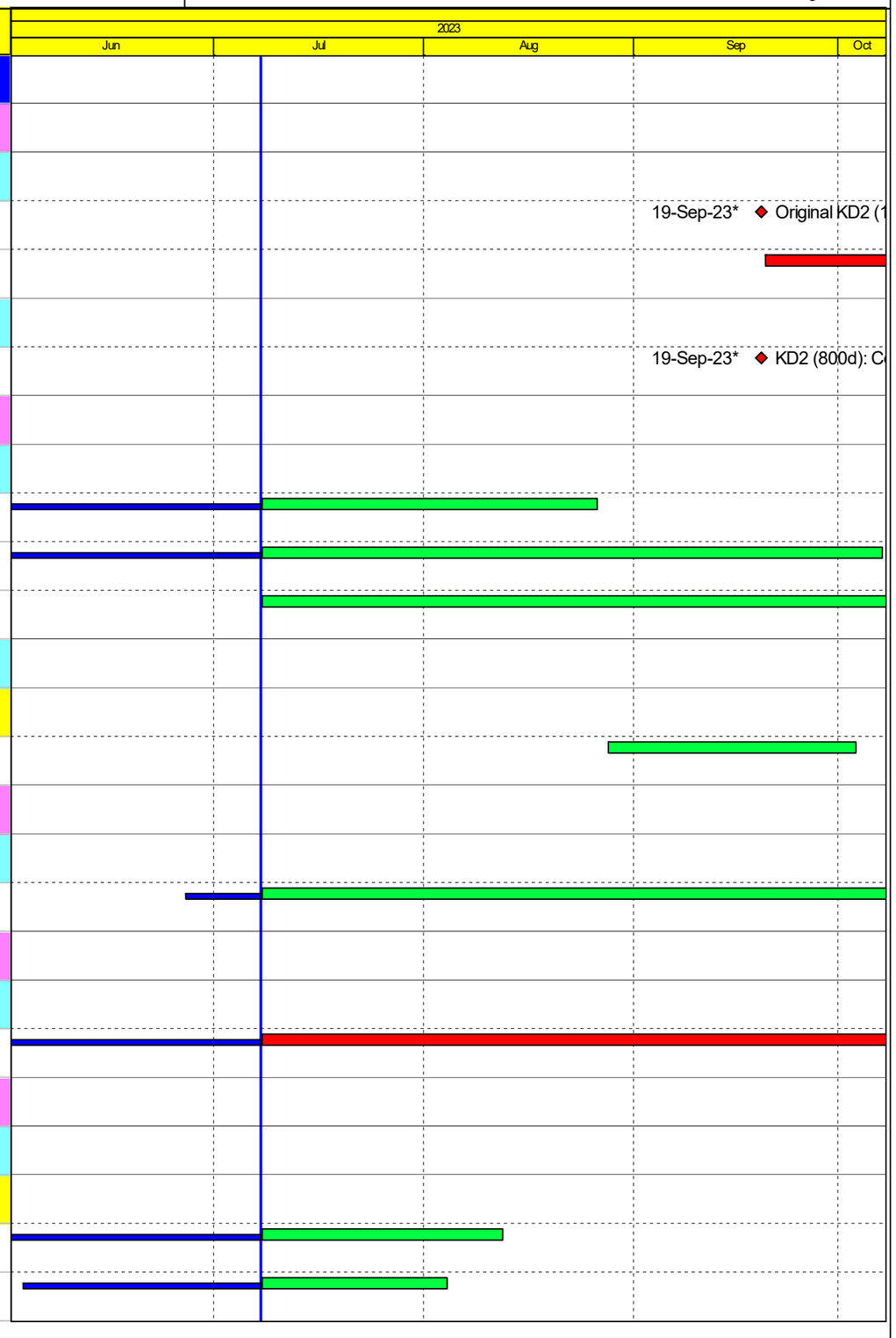
Although there was no evidence to indicate that the muddy water being discharged from the outfall was related to the project, AECOM has proposed a proactive approach by instructing CSAJV to clean up a section of the storm drain adjacent to the last manhole to safeguard the water body along the Mui Tsz Lam culvert. The proposal is currently in progress.

The ET will continue to carry out site inspections on a regular basis to check that appropriate environmental protection and pollution control mitigation measures are properly implemented in accordance with the environmental documents mentioned.

Appendix 10.1

Construction Programme of Individual Contracts

Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
DC/2020/05, Relocation of STST to Caverns - Main Caverns Construction					
Contract Particulars, Key Dates, Section of Completions, Access Dates					
Impact due to Suspension of Blasting Operation by Mines Division					
A25560	Original KD2 (19 Sep 23)	0%	0d		19-Sep-23*
A25560-imp10	impact to KD2 by suspension & revocation of blasting works (39wd + 74wd = 113wd; 132cd)	0%	113d	20-Sep-23	05-Feb-24
Contract Key Date					
C-KD2	KD2 (800d): Complete Top-Heading Excavation Works of Branch Driveway 3 (BD3) [19 Sep 23]	0%	0d		19-Sep-23*
Preliminary Works & Preparation Works					
Design for Overhead Ventilation Duct (OHVD)					
A25060	Design for Tunnel internal r.c. structure - Prepare and submit detail design review	50%	43d	28-Apr-23 A	26-Aug-23
A25070	Design for Tunnel internal r.c. structure - PM 1st comment / accept detail design	10%	92d	23-May-23 A	07-Oct-23
A25080	Design for Tunnel internal r.c. structure - Review and re-submit detail design	0%	84d	08-Jul-23	16-Oct-23
Off-Site Fabrication for Cavern Complex					
Off-site Fabrication of Lining Shutter for Cavern Complex					
A20335	Subletting period	0%	30d	28-Aug-23	03-Oct-23
BIM Management [PS App 29.1]					
BIM Training					
A24880	BIM Training - Liaise with CIC for schedule of training courses	5%	127d	27-Jun-23 A	07-Dec-23
General Site Preparation Works					
Tree Preservation and Protection					
C1050	Preservation and Protection of Existing Trees	36.34%	1032d	05-Jul-21 A	07-Jan-27
Main Portal Area and Main Access Tunnel (MAT, MATE, MATW)					
Main Portal Area - Site Formation for Main Portal					
Main Portal Area - Retaining Wall RMP7					
A10610	RMP7 - Prebored H pile (PL20-47)	68%	31d	14-May-23 A	12-Aug-23
A10620	RMP7 - Prebored H pile (PL48-73)	70%	23d	03-Jun-23 A	04-Aug-23



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

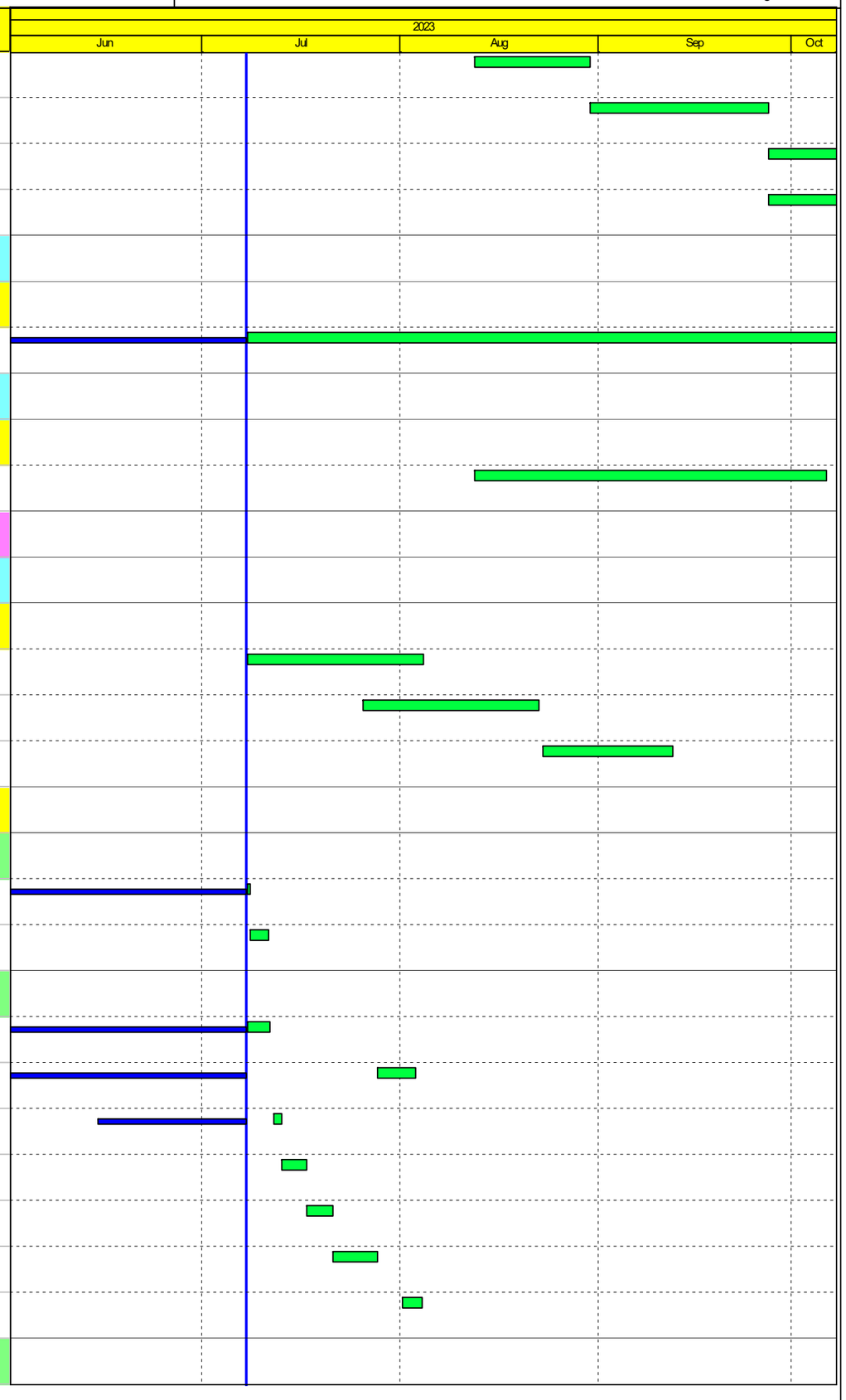
Project File: C2-MP007-08Jul23
Layout: MPR - 3M Rolling Prog (submission)
Data Date: 08-Jul-23
Page 1 of 10

Contract No. DC/2020/05
Relocation of STST to Caverns - Main Caverns Construction

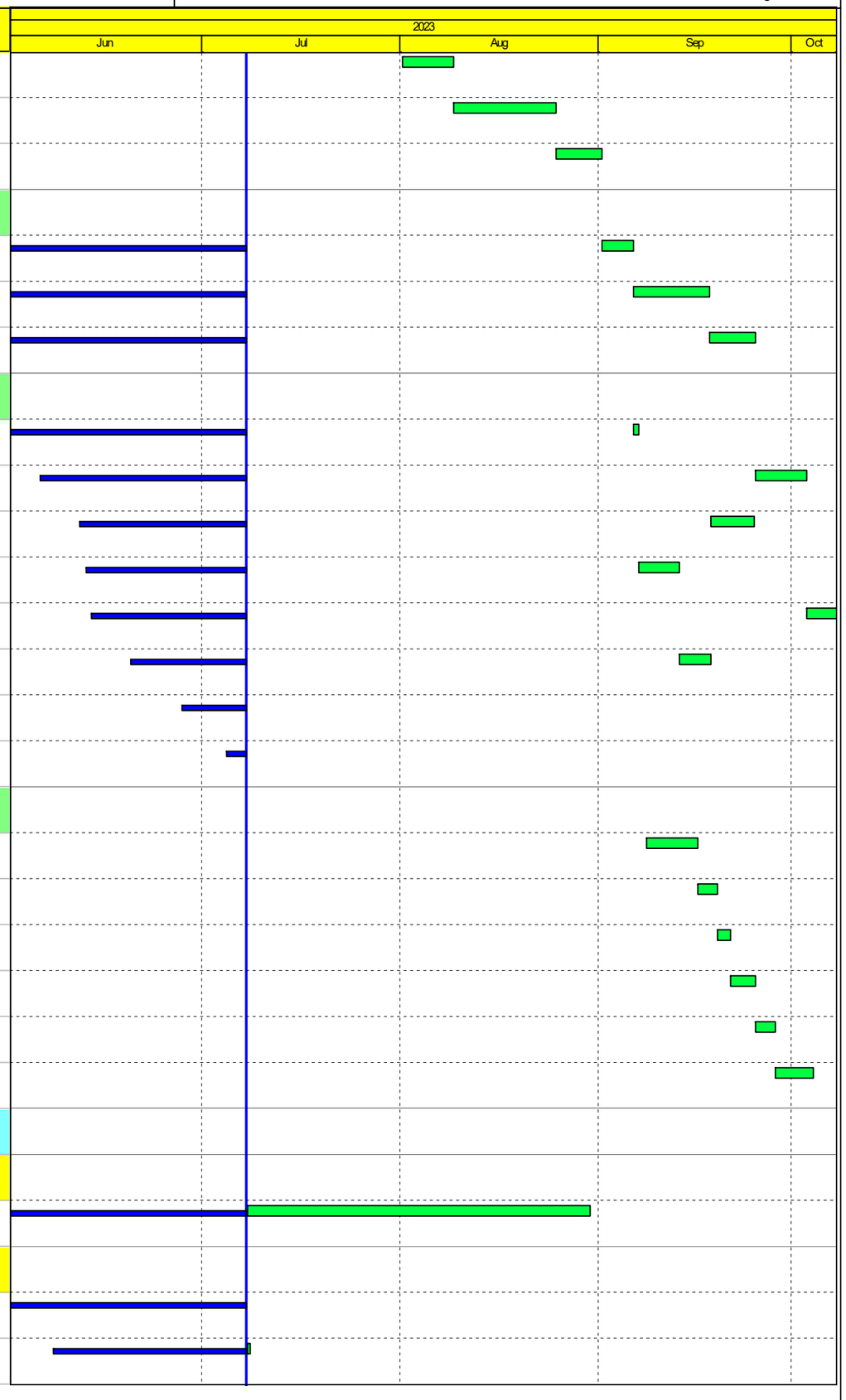
3 Months Rolling Programme (Jul to Sep 2023)

China State – Alchmex Joint Venture

Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
A25220	RMP7 - Mass concrete at PL73	0%	15d	12-Aug-23	30-Aug-23
A10630	RMP7 - Excavation at (PL1-9)	0%	24d	30-Aug-23	27-Sep-23
A10650	RMP7 - Excavation & tie-back nail at (PL10-73)	0%	90d	27-Sep-23	17-Jan-24
A25190	RMP7 - Skin wall and capping beam (PL1-9)	0%	18d	27-Sep-23	20-Oct-23
	Effluent Pipelines and Connection Chamber				
	Effluent Pipeline - TBM Tunneling and Pipe Jacking				
A17260	Effluent Pipe - Pipe Jacking and install pipe for E101 (Ch718 - 386; @2m/d)	10%	149d	30-May-23 A	05-Jan-24
	Diversion of Steel Bridge				
	Steel Bridge - Design Preparation, Submission, Approval				
A11670	Main Portal West - Steel Bridge - Design preparation and submission	0%	45d	12-Aug-23	06-Oct-23
	Secondary Portal Area and Secondary Access Tunnel (SAT)				
	Secondary Portal Area - Site Formation & Landscaping for Secondary Portal				
	Secondary Portal Area - Rigid Barrier RB1				
A11500	Rigid Barrier RB1 - Gabion wall - RB1	0%	24d	08-Jul-23	04-Aug-23
A11510	Rigid Barrier RB1 - Maintenance staircase - RB1	0%	24d	26-Jul-23	22-Aug-23
A11520	Rigid Barrier RB1 - Hand rail - RB1	0%	18d	23-Aug-23	12-Sep-23
	Secondary Portal Area - Slope SSP1 - Cut Slope and Soil Nail (+76mPD to +13.5mPD)				
	Slope SSP1 - Stage 2 (+50mPD to +48.4mPD)				
A25710	Slope SSP1 - area 2 (50 to 48.4mPD) - construct soil nail head for J26 to J36	80%	1d	31-May-23 A	08-Jul-23
A25720	Slope SSP1 - area 2 (50 to 48.4mPD) - lay erosion control mat & wire mesh for	0%	2d	08-Jul-23	11-Jul-23
	Slope SSP1 - Stage 2 (+48.4mPD to +40.9mPD)				
A25810	Slope SSP1 - area 2 (48.4 to 40.9mPD) - soil nail works for G40 to G57 @+42.5mPD [18 nos.]	50%	3d	11-May-23 A	11-Jul-23
A25870	Slope SSP1 - area 2 (48.4 to 40.9mPD) - construct soil nail head for Row G, H, I	45%	5d	31-May-23 A	03-Aug-23
A25830	Slope SSP1 - area 2 (48.4 to 40.9mPD) - excavate for soil nail G31 to G40	70%	2d	15-Jun-23 A	13-Jul-23
A25840	Slope SSP1 - area 2 (48.4 to 40.9mPD) - soil nail works for G31 to G39 @+42.5mPD [9 nos.]	0%	3d	13-Jul-23	17-Jul-23
A25850	Slope SSP1 - area 2 (48.4 to 40.9mPD) - install raking drain @+42.5mPD	0%	4d	17-Jul-23	21-Jul-23
A25860	Slope SSP1 - area 2 (48.4 to 40.9mPD) - construct u-channel & berm platform @+40.9mPD	0%	6d	21-Jul-23	28-Jul-23
A25880	Slope SSP1 - area 2 (48.4 to 40.9mPD) - lay erosion control mat & wire mesh	0%	3d	01-Aug-23	04-Aug-23
	Slope SSP1 - Stage 2 (+40.9mPD to +33.4mPD)				

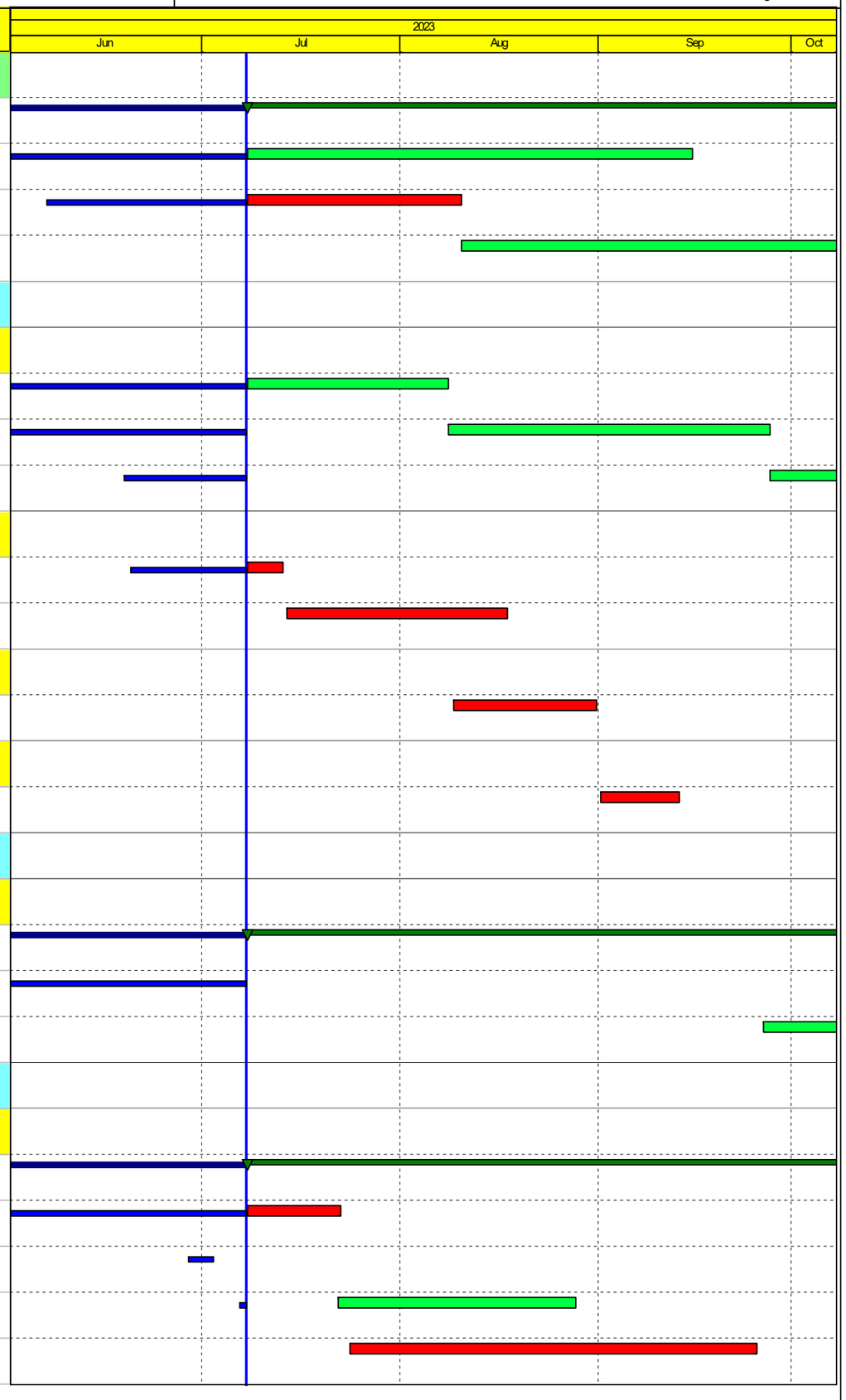


Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
A25890	Slope SSP1 - area 2 (40.9 to 33.4mPD) - drainage & access	0%	7d	01-Aug-23	09-Aug-23
A25900	Slope SSP1 - area 2 (40.9 to 33.4mPD) - excavate to form slope profile	0%	14d	09-Aug-23	25-Aug-23
A25910	Slope SSP1 - area 2 (40.9 to 33.4mPD) - construct u-channel & beam platform @+33.4mPD	0%	6d	25-Aug-23	01-Sep-23
Slope SSP1 - Stage 1 & 2 (+33.4mPD to +25.9mPD)					
A25920	Slope SSP1 - area 2 (33.4 to 25.9mPD) - drainage & access	50%	4d	15-Apr-23 A	06-Sep-23
A25930	Slope SSP1 - area 2 (33.4 to 25.9mPD) - excavate to form slope profile	30%	10d	20-Apr-23 A	18-Sep-23
A25940	Slope SSP1 - area 2 (33.4 to 25.9mPD) - construct u-channel & beam platform @+25.9mPD	30%	6d	20-May-23 A	25-Sep-23
Slope SSP1 - Stage 1 & 2 (+25.9mPD to +19.5mPD)					
A25950	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - drainage & access	90%	1d	25-Apr-23 A	07-Sep-23
A25990	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - excavate for soil nail E15 to E54	37.5%	5d	06-Jun-23 A	03-Oct-23
A25980	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - construct soil nail head for F15 to F42	10%	5d	12-Jun-23 A	25-Sep-23
A25960	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - excavate for soil nail F15 to F42	32.01%	5d	13-Jun-23 A	13-Sep-23
A26000	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - soil nail works for E15 to E54 @+23mPD [40 nos.]	37.5%	6d	14-Jun-23 A	10-Oct-23
A25970	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - soil nail works for F15 to F42 @+25mPD [28 nos.]	32.01%	4d	20-Jun-23 A	18-Sep-23
A26020	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - excavate for soil nail D16 to D57	36.01%	8d	28-Jun-23 A	30-Oct-23
A26030	Slope SSP1 - area 1&2 (25.9 to 19.5mPD) - soil nail works for D16 to D57 @+21mPD [42 nos.]	36%	6d	05-Jul-23 A	31-Oct-23
Slope SSP1 - Stage 3 (+63mPD to +55.9mPD)					
A26170	Slope SSP1 - area 3 (63 to 55.9mPD) - drainage & access	0%	7d	08-Sep-23	16-Sep-23
A26180	Slope SSP1 - area 3 (63 to 55.9mPD) - excavate for soil nail O1 to O4	0%	2d	16-Sep-23	19-Sep-23
A26190	Slope SSP1 - area 3 (63 to 55.9mPD) - soil nail works for O1 to O4 @+61.5mPD [4 nos.]	0%	2d	19-Sep-23	21-Sep-23
A26200	Slope SSP1 - area 3 (63 to 55.9mPD) - excavate for soil nail N1 to N10	0%	3d	21-Sep-23	25-Sep-23
A26210	Slope SSP1 - area 3 (63 to 55.9mPD) - soil nail works for N1 to N10 @+59.5mPD [10 nos.]	0%	3d	25-Sep-23	28-Sep-23
A26220	Slope SSP1 - area 3 (63 to 55.9mPD) - excavate for soil nail M1 to M14	0%	3d	28-Sep-23	04-Oct-23
Secondary Access Tunnel (SAT)					
SAT - General Works					
A20130	SAT - Application of CNP	11.54%	46d	07-Mar-23 A	30-Aug-23
SAT - Hard Rock Excavation (Drill & Blast) (Ch187 - 388) - Top Heading					
B10050	SAT - Top Heading Permanent Sprayed Concrete (ch140-ch387; 247m)	22%	23d	17-Apr-23 A	02-Jan-24
NT12180	SAT(T) - Ch303.4 - 253.9, 4.95m Pull, 10 blasts	90%	1d	08-Jun-23 A	08-Jul-23



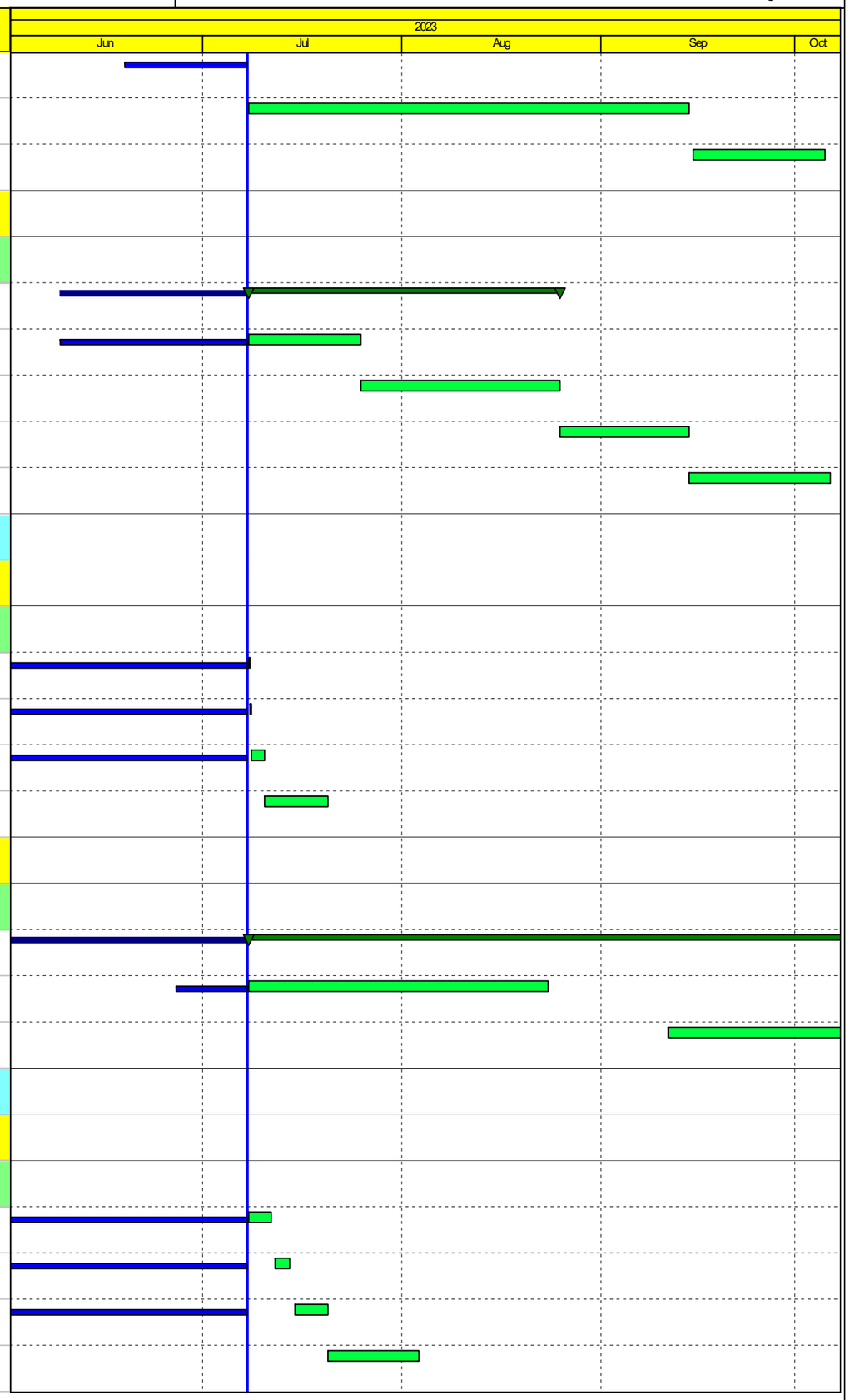
Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
NT12190	SAT(T) - Ch253.9 - 215.9, 3.45m Pull, 11 blasts	0%	23d	10-Jul-23	04-Aug-23
NT12200	SAT(T) - Ch215.9 - 197.4, 1.85m Pull, 10 blasts	0%	28d	05-Aug-23	06-Sep-23
NT12210	SAT(T) - Ch197.4 - 184.2, 1.32m Pull, 10 blasts	0%	26d	07-Sep-23	09-Oct-23
SAT - Permanent Lining					
A12202	SAT - Design submission of permanent lining formwork	0%	45d	10-Jul-23	30-Aug-23
A12204	SAT - Design approval of permanent lining formwork	0%	18d	31-Aug-23	20-Sep-23
A12206	SAT - Permanent lining formwork procurement, fabrication and delivery	0%	90d	21-Sep-23	10-Jan-24
Cavern Complex					
Main Access Tunnel, MAT (ch288 - 297)					
MAT - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14401	MAT - Top Permanent Support - (R103, Ch288 - 297) - Bolt and spray concrete [9m]- stage 2	98.83%	1d	30-Sep-22 A	10-Jul-23
MAT - Hard Rock Excavation (Drill & Blast) - Bottom Bench					
NT12520	MAT(B) - Ch288 - 297, -4.5m Pull, 2 blasts	0%	6d	02-Aug-23	08-Aug-23
A25580	xxxxx commencement of bench excavation xxxxx	0%	0d	02-Aug-23*	
PA14410	MAT - Bottom Permanent Support - (R103, Ch288 - 297) - Bolt and spray concrete [9m]	0%	10d	09-Aug-23	19-Aug-23
Main Driveway MD					
Main Driveway MD - Zone 1 (ch123 - 213)					
MD - Zone 1 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14502	MD - Zone 1 - Top Permanent Support - (MD, ch123 - 213) - Bolt and spray concrete [90m] - Stage 2	76%	26d	16-Jan-23 A	07-Aug-23
MD - Zone 1 - Hard Rock Excavation (Drill & Blast) - Bottom Bench					
NT10928-20	MD(B) - remove temp ramp	0%	26d	18-Aug-23	16-Sep-23
PA14510	MD - Zone 1 - Bottom Permanent Support - (MD, ch123 - 213) - Bolt and spray concrete [90m] - Stage 1	0%	97d	18-Sep-23	15-Jan-24
NT10930	MD(B) - Ch100 - 125, -5m Pull, 5 blasts	0%	26d	18-Sep-23	19-Oct-23
Main Driveway MD - Zone 2 (ch213 - 392)					
MD - Zone 2 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14520-10	MD - Zone 2 - Top Permanent Support - (MD, ch239 - 281; 42m) - Bolt and spray concrete - Stage 2	25%	21d	27-Mar-23 A	01-Aug-23
PA14520-20	MD - Zone 2 - Top Permanent Support - (MD, ch281 - 337; 56m) - Bolt and spray concrete - Stage 2	0%	28d	02-Aug-23	02-Sep-23
PA14520-30	MD - Zone 2 - Top Permanent Support - (MD, ch337 - 392; 55m) - Bolt and spray concrete [55m] - Stage 2	0%	28d	04-Sep-23	07-Oct-23
Main Driveway MD - Zone 3 (ch392 - 480)					

Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
	MD - Zone 3 - Hard Rock Excavation (Drill & Blast) - Top Heading				
PA14540	MD - Zone 3 - Top Permanent Support - (MD, ch408 - 480) - Bolt and spray concrete [72m] - Stage 1	0%	127d	27-Jan-23 A	06-Dec-23
NT10880	MD(T LHS) - Ch439.9 - 478.9, -2.44m Pull, 11 blasts	37%	60d	01-Jun-23 A	15-Sep-23
NT10910	MD(T RHS) - Ch430.4 - 455.6, -1.2m Pull, 8 blasts	60%	29d	07-Jun-23 A	10-Aug-23
NT10920	MD(T RHS) - Ch455.6 - 479.6, -1.2m Pull, 20 blasts	0%	98d	10-Aug-23	06-Dec-23
	Branch Driveway BD4				
	BD4 - Hard Rock Excavation (Drill & Blast) - Top Heading				
PA14420-10	BD4 - Top Permanent Support - Bolt and spray concrete (ch100-215) [115m] - Stage 2	50%	27d	08-Feb-23 A	08-Aug-23
PA14420-20	BD4 - Top Permanent Support - Bolt and spray concrete (ch215-ch330) [115m] - Stage 2	18%	43d	10-Apr-23 A	27-Sep-23
PA14420-30	BD4 - Top Permanent Support - Bolt and spray concrete (ch330-ch444) [114m] - Stage 2	30%	37d	19-Jun-23 A	14-Nov-23
	BD4 - Trimming Blast Excavation above MD - Top Heading				
NT10160-1	MD(Trim) - Ch120 - 150, -5.08m Pull, 6 blasts	82.76%	5d	20-Jun-23 A	13-Jul-23
NT10160-11	BD4 - Junction 4 heading permanent support - bolt and spray concrete	0%	30d	14-Jul-23	17-Aug-23
	BD4 - Hard Rock Excavation (Drill & Blast) - Middle Bench				
NT10080	BD4(MB) - Ch123 - 150, -4.5m Pull, 6 blasts	0%	20d	09-Aug-23	31-Aug-23
	BD4 - Hard Rock Excavation (Drill & Blast) - Bottom Bench				
NT12230	BD4(B) - form rock face for effluent tunnel TBM breakthrough, 3 blasts	0%	11d	01-Sep-23	13-Sep-23
	Branch Driveway BD3				
	BD3 - Hard Rock Excavation (Drill & Blast) - Top Heading				
PA14440	BD3 - Top Permanent Support - Bolt and spray concrete - Stage 1	0%	167d	01-Sep-22 A	25-Jan-24
PA14440-20	BD3 - Top Permanent Support - Bolt and spray concrete (ch205-ch262, ch292-ch339) [104m] - Stage 2	31%	31d	15-May-23 A	29-Dec-23
PA14440-10	BD3 - Top Permanent Support - Bolt and spray concrete (ch100-ch205) [105m] - Stage 2	0%	45d	26-Sep-23	21-Nov-23
	Branch Driveway BD2				
	BD2 - Hard Rock Excavation (Drill & Blast) - Top Heading				
PA14460	BD2 - Top Permanent Support - Bolt and spray concrete - Stage 1	32.04%	183d	30-Jan-23 A	20-Feb-24
NT10330	BD2(T) - Ch205 - 250, -5m Pull, 9 blasts [BDrill]	60.61%	13d	26-May-23 A	22-Jul-23
NT10370	BD2(T) - Ch419.9 - 443.5, -5m Pull, 3 blasts [SF]	100%	0d	29-Jun-23 A	03-Jul-23 A
NT10360	BD2(T) - Ch372 - 419.9, -4.79m Pull, 10 blasts [SF]	10%	32d	07-Jul-23 A	28-Aug-23
NT10340	BD2(T) - Ch250 - 317, -5m Pull, 8 blasts [JV]	0%	55d	24-Jul-23	25-Sep-23

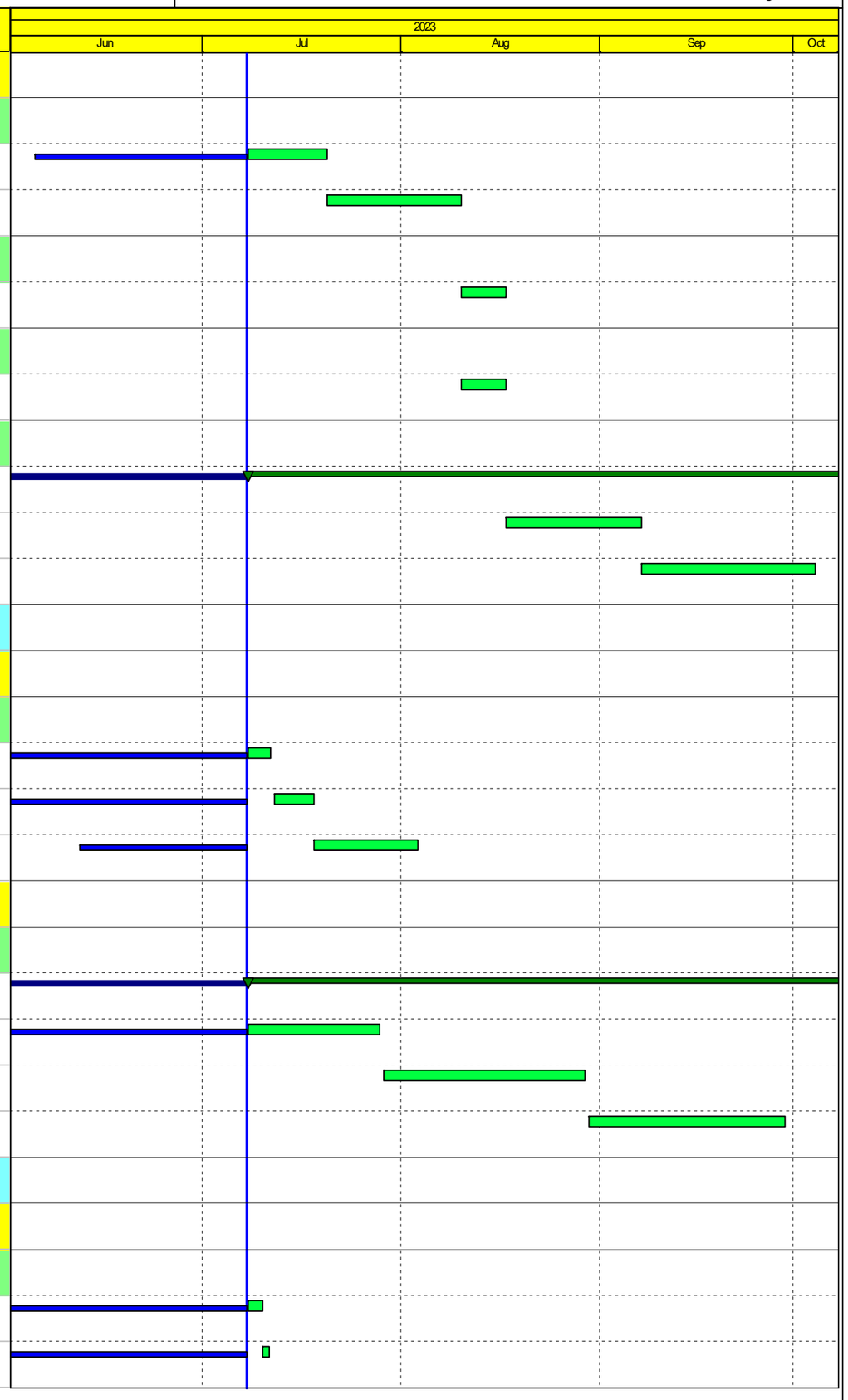


Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
NT10350-1	BD2(T) - Ch350 - 372, -5m Pull, 4 blasts [SF]	0%	12d	28-Aug-23	11-Sep-23
NT10350	BD2(T) - Ch317 - 350, -5m Pull, 7 blasts [JV]	0%	21d	26-Sep-23	21-Oct-23
BD2 - Hard Rock Excavation (Drill & Blast) - Bottom Bench					
PA14470	BD2 - Bottom Permanent Support - Bolt and spray concrete - Stage 1	0%	354d	10-Aug-23	23-Oct-24
NT10380	BD2(B) - Ch124 - 150, -5.2m Pull, 5 blasts [BDrill]	0%	12d	10-Aug-23	24-Aug-23
NT10390	BD2(B) - Ch150 - 175, -5m Pull, 5 blasts (11 blasts)	0%	19d	24-Aug-23	15-Sep-23
Branch Driveway BD1					
BD1 - Hard Rock Excavation (Drill & Blast) - Top Heading					
NT10560	BD1(T) - Ch397.65 - 429.8, -4.59m Pull, 7 blasts [SF]	0%	24d	29-Jul-23	25-Aug-23
PA14990	BD1 - Top Permanent Support - Bolt and spray concrete- Stage 1 (Ch347-430)	0%	51d	29-Jul-23	26-Sep-23
PA14480	BD1 - Top Permanent Support - Bolt and spray concrete- Stage 1 (Ch100-234)	0%	231d	25-Aug-23	12-Jun-24
NT10455-10	BD1(T) - Ch150 - 180 (CAV1 PST1 ch100 - 90), -5m Pull, 2 blasts [BDrill - stg.1]	0%	6d	25-Aug-23	01-Sep-23
NT10550	BD1(T) - Ch370.65 - 397.65, -4.5m Pull, 6 blasts [SF]	0%	15d	26-Aug-23	12-Sep-23
NT10460	BD1(T) - Ch180 - 246, -5m Pull, 8 blast [BDrill - stg.2]	0%	27d	01-Sep-23	05-Oct-23
NT10540	BD1(T) - Ch347 - 370.65, -3.94m Pull, 6 blasts [SF]	0%	12d	13-Sep-23	26-Sep-23
PA15000	BD1 - Top Permanent Support - Bolt and spray concrete (Ch347-444; 97m) - Stage 2	0%	18d	27-Sep-23	19-Oct-23
BD1 - Trimming Blast Excavation above MD - Top Heading					
NT10790	SD(Trim) - Ch425 - 443.5, -4.54m Pull, 21 blasts	0%	21d	27-Sep-23	24-Oct-23
Cavern 1 - DAF1, MBBR1, PST1					
Cavern 1 - DAF1					
Cavern 1 - DAF1 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14560-10	CAV1 - DAF1 - Top Permanent Support - Bolt and spray concrete (ch100-130) [30m]- Stage 2	97%	0d	17-Apr-23 A	08-Jul-23
PA14560-30	CAV1 - DAF1 - Top Permanent Support - Bolt and spray concrete (ch145-ch160) [15m]- Stage 2	93.99%	1d	17-Apr-23 A	10-Jul-23
PA14560-40	CAV1 - DAF1 - Top Permanent Support - Bolt and spray concrete (ch160-ch190) [30m]- Stage 2	93.99%	1d	17-Apr-23 A	11-Jul-23
PA14560-20	CAV1 - DAF1 - Top Permanent Support - Bolt and spray concrete (ch130-ch145) [15m]- Stage 2	98%	0d	15-May-23 A	08-Jul-23
Cavern 1 - MBBR1					
Cavern 1 - MBBR1 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14580	CAV1 - MBBR1 - Top Permanent Support - Bolt and spray concrete - stage 1	52.53%	75d	14-Nov-22 A	05-Oct-23
NT11100-1	Cav1-MBBR1(T) - Ch196 - 182.05, 4.5m Pull, 3 blasts	100%	0d	27-May-23 A	05-Jul-23 A

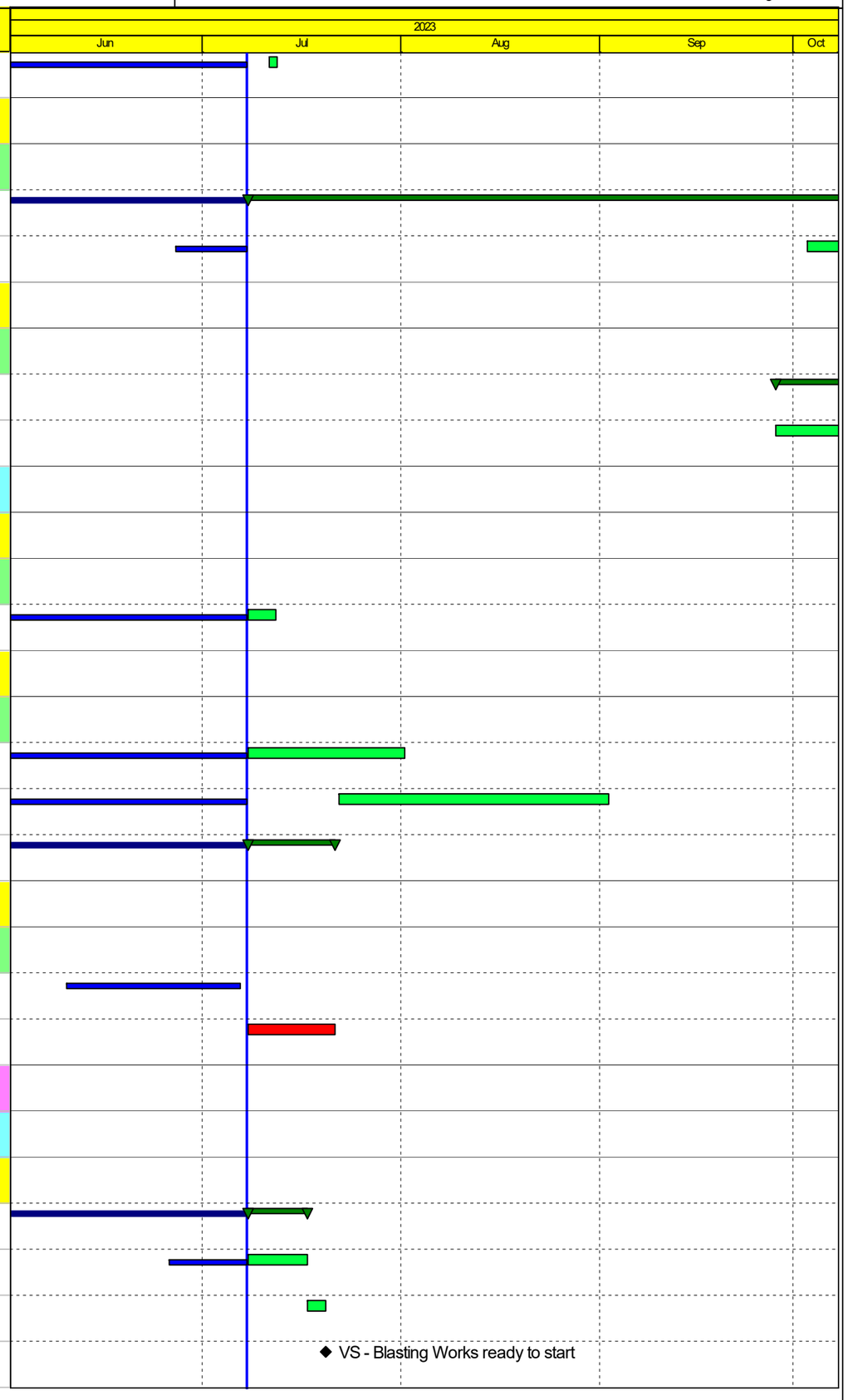
Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
PA14580-40	CAV1 - MBBR1 - Top Permanent Support - Bolt and spray concrete (ch229-ch272) [43m] - stage 2	29%	16d	19-Jun-23 A	13-Jan-24
NT11110	Cav1-MBBR1(T) - Ch182.05 - 137.05, 4.5m Pull, 10 blasts	0%	59d	08-Jul-23	14-Sep-23
NT11120	Cav1-MBBR1(T) - Ch137.05 - 100, 4.63m Pull, 8 blasts	0%	16d	15-Sep-23	05-Oct-23
Cavern 1 - PST1					
Cavern 1 - PST1 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14600	CAV1 - PST1 - Top Permanent Support - Bolt and spray concrete - stage 1	32.74%	42d	09-Jun-23 A	25-Aug-23
NT11130	Cav1-PST1(T) - Ch167.7 - 136.2, 4.5m Pull, 7 blasts	58%	15d	09-Jun-23 A	25-Jul-23
NT11140	Cav1-PST1(T) - Ch136.2 - 100, 4.53m Pull, 8 blasts	0%	27d	25-Jul-23	25-Aug-23
PA14600-10	CAV1 - PST1 - Top Permanent Support - Bolt and spray concrete (ch100-ch134) [34m] - stage 2	0%	17d	25-Aug-23	14-Sep-23
PA14600-20	CAV1 - PST1 - Top Permanent Support - Bolt and spray concrete (ch134-ch168) [34m] - stage 2	0%	17d	14-Sep-23	06-Oct-23
Cavern 2 - DAF2, MBBR2, PST2					
Cavern 2 - DAF2					
Cavern 2 - DAF2 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14620-20	CAV2 - DAF2 - Top Permanent Support - Bolt and spray concrete (ch172-ch154) [18m]- Stage 2	98.01%	0d	11-Apr-23 A	08-Jul-23
PA14620-30	CAV2 - DAF2 - Top Permanent Support - Bolt and spray concrete (ch154-ch136) [18m]- Stage 2	95%	0d	11-Apr-23 A	08-Jul-23
PA14620-40	CAV2 - DAF2 - Top Permanent Support - Bolt and spray concrete (ch136-ch118) [18m]- Stage 2	87.5%	1d	11-Apr-23 A	10-Jul-23
PA14620-50	CAV2 - DAF2 - Top Permanent Support - Bolt and spray concrete (ch118-ch100) [18m]- Stage 2	0%	9d	10-Jul-23	20-Jul-23
Cavern 2 - MBBR2					
Cavern 2 - MBBR2 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14640	CAV2 - MBBR2 - Top Permanent Support - Bolt and spray concrete- Stage 1	14.29%	132d	30-Dec-22 A	12-Dec-23
NT11260	Cav2-MBBR2(T) - Ch227.05 - 182.05, 4.5m Pull, 10 blasts	20%	40d	27-Jun-23 A	23-Aug-23
NT11270	Cav2-MBBR2(T) - Ch182.05 - 137.05, 4.5m Pull, 10 blasts	0%	41d	11-Sep-23	31-Oct-23
Cavern 3 - ELC2, STC, ELC1					
Cavern 3 - ELC2					
Cavern 3 - ELC2 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14680-10	CAV3 - ELC2 - Top Permanent Support - Bolt and spray concrete (ch190-167.5) [22.5m]- Stage 2	75%	3d	27-Mar-23 A	11-Jul-23
PA14680-20	CAV3 - ELC2 - Top Permanent Support - Bolt and spray concrete (ch167.5-ch145) [22.5m]- Stage 2	75%	3d	15-May-23 A	14-Jul-23
PA14680-30	CAV3 - ELC2 - Top Permanent Support - Bolt and spray concrete (ch145-ch122.5) [22.5m]- Stage 2	60%	5d	15-May-23 A	20-Jul-23
PA14680-40	CAV3 - ELC2 - Top Permanent Support - Bolt and spray concrete (ch122.5-100) [22.5m]- Stage 2	0%	12d	20-Jul-23	03-Aug-23



Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
Cavern 3 - STC					
Cavern 3 - STC - Hard Rock Excavation (Drill & Blast) - Incline					
NT11500	Cav3-STC(T Inc) - Ch247.5 - 202.5, 4.5m Pull, 10 blasts	60%	10d	05-Jun-23 A	20-Jul-23
NT11510	Cav3-STC(T Inc) - Ch202.5 - 171, 4.5m Pull, 7 blasts	0%	18d	20-Jul-23	10-Aug-23
Cavern 3 - STC - Hard Rock Excavation (Drill & Blast) - LHS					
NT11480	Cav3-STC(T LHS) - Ch171 - 162, 4.5m Pull, 2 blasts	0%	6d	10-Aug-23	17-Aug-23
Cavern 3 - STC - Hard Rock Excavation (Drill & Blast) - RHS					
NT11520	Cav3-STC(T RHS) - Ch171 - 162, 4.5m Pull, 2 blasts	0%	6d	10-Aug-23	17-Aug-23
Cavern 3 - STC - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14700	CAV3 - STC - Top Permanent Support - Bolt and spray concrete - Stage 1	18.72%	178d	20-Feb-23 A	07-Feb-24
NT11460	Cav3-STC(T) - Ch162 - 130.5, 4.5m Pull, 7 blasts	0%	18d	17-Aug-23	07-Sep-23
NT11470	Cav3-STC(T) - Ch130.5 - 100, 4.36m Pull, 7 blasts	0%	21d	07-Sep-23	04-Oct-23
Cavern 4 - DAF3, MBBR3, PST3					
Cavern 4 - DAF3					
Cavern 4 - DAF3 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14740-10	CAV4 - DAF3 - Top Permanent Support - Bolt and spray concrete (ch190-ch160) [30m] - Stage 2	80%	3d	10-Feb-23 A	11-Jul-23
PA14740-20	CAV4 - DAF3 - Top Permanent Support - Bolt and spray concrete (ch160-ch130) [30m] - Stage 2	64%	5d	17-Apr-23 A	18-Jul-23
PA14740-30	CAV4 - DAF3 - Top Permanent Support - Bolt and spray concrete (ch130-ch100) [30m] - Stage 2	5%	14d	12-Jun-23 A	03-Aug-23
Cavern 4 - MBBR3					
Cavern 4 - MBBR3 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14760	CAV4 - MBBR3 - Top Permanent Support - Bolt and spray concrete - Stage 1	20.18%	91d	23-May-23 A	25-Oct-23
NT11680	Cav4-MBBR3(T) - Ch272.2 - 227.05, 4.52m Pull, 10 blasts	40%	18d	23-May-23 A	28-Jul-23
NT11690	Cav4-MBBR3(T) - Ch227.05 - 182.05, 4.5m Pull, 10 blasts	0%	27d	29-Jul-23	29-Aug-23
NT11700	Cav4-MBBR3(T) - Ch182.05 - 137.05, 4.5m Pull, 10 blasts	0%	27d	30-Aug-23	29-Sep-23
Cavern 5 - DAF4, MBBR4, PST4					
Cavern 5 - DAF4					
Cavern 5 - DAF4 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14800-10	CAV5 - DAF4 - Top Permanent Support - Bolt and spray concrete (ch100-ch130) [30m] - Stage 2	91%	1d	08-Mar-23 A	10-Jul-23
PA14800-20	CAV5 - DAF4 - Top Permanent Support - Bolt and spray concrete (ch130-ch160) [30m] - Stage 2	93%	1d	11-Apr-23 A	11-Jul-23



Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
PA14800-30	CAV5 - DAF4 - Top Permanent Support - Bolt and spray concrete (ch160-ch190) [30m] - Stage 2	90%	2d	11-Apr-23 A	12-Jul-23
Cavern 5 - MBBR4					
Cavern 5 - MBBR4 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14820	CAV5 - MBBR4 - Top Permanent Support - Bolt and spray concrete - Stage 1	0%	202d	10-Mar-23 A	14-Mar-24
NT11840-1	Cav5-MBBR4(T) - Ch265.5 - 227.05, 4.52m Pull, 9 blasts	20%	35d	27-Jun-23 A	14-Nov-23
Cavern 5 - PST4					
Cavern 5 - PST4 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14840	CAV5 - PST4 - Top Permanent Support - Bolt and spray concrete - Stage 1	0%	97d	28-Sep-23	25-Jan-24
NT11880	Cav5-PST4(T) - Ch167.7 - 136.2, 4.5m Pull, 7 blasts	0%	41d	28-Sep-23	17-Nov-23
Secondary Driveway (SD)					
Secondary Driveway (SD) - Zone 1 (ch418 - 488)					
SD - Zone 1 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14861	SD - Zone 1 - Top Permanent Support - (SD ch418 - 488) - Bolt and spray concrete [70m] - Stage 2	90%	4d	27-Mar-23 A	12-Jul-23
Secondary Driveway (SD) - Zone 2 (ch488 - 675)					
SD - Zone 2 - Hard Rock Excavation (Drill & Blast) - Top Heading					
PA14881	SD - Zone 2 - Top Permanent Support - (SD ch578 - 594) - Bolt and spray concrete [76m] - Stage 2	60%	21d	24-Apr-23 A	01-Aug-23
PA14960	SD - Zone 2 - Top Permanent Support - (SD ch594 - 764) - Bolt and spray concrete [76m] - Stage 2	30%	36d	24-Apr-23 A	02-Sep-23
PA14950	SD - Zone 2 - Top Permanent Support - (SD ch594 - 764) - Bolt and spray concrete [76m] - Stage 1	87.15%	12d	08-May-23 A	21-Jul-23
Secondary Driveway (SD) - Zone 3 (ch675 - 792)					
SD - Zone 3 - Hard Rock Excavation (Drill & Blast) - Top Heading					
NT12050	SD(T) - Ch702.75 - 752.75, -5m Pull, 10 blasts	100%	0d	10-Jun-23 A	07-Jul-23 A
NT12060	SD(T) - Ch752.75 - 791.4, -4.83m Pull, 8 blasts	0%	12d	08-Jul-23	21-Jul-23
Ventilation Shaft and Ventilation Adit					
Ventilation Shaft (VS)					
VS - CBAR3 Blasting Permit					
A18600	[Summary] VS - Blasting Permit License - review by Mines Department & issue Permit/license	98.24%	7d	13-Dec-21 A	17-Jul-23
A23110	VS - CBAR3 Blasting Permit - pre-licencing inspection, preparation, interview contractor & consultant and issue Permit	70%	7d	26-Jun-23 A	17-Jul-23
A23120	VS - CBAR3 Blasting Permit - order explosive	0%	3d	17-Jul-23	20-Jul-23
A18650	VS - Blasting Works ready to start	0%	0d	20-Jul-23	



Activity ID	Activity Name	% Complete	Remaining Duration	Start	Finish
VS - Off-site Fabrication of Travelling Formworks for Ventilation Shaft					
A20365	Sub-letting for Traveling formork	0%	30d	08-Jul-23	11-Aug-23
A20370	Travelling Formwork - Design preparation, review and accept by PM	0%	40d	12-Aug-23	27-Sep-23
A20380	Travelling Formwork - Place Order, Factory Fabrication and Delivery	0%	60d	28-Sep-23	09-Dec-23
VS - Hard Rock Excavation (Drill & Blast)					
NT12430	V-Shaft(F) - Ch168 - 154, 1.4m Pull, 10 blasts	0%	30d	20-Jul-23	24-Aug-23
NT12440	V-Shaft(F) - Ch154 - 130, 2.4m Pull, 10 blasts	0%	30d	24-Aug-23	28-Sep-23
NT12450	V-Shaft(F) - Ch130 - 106.7, 2.91m Pull, 8 blasts	0%	24d	28-Sep-23	30-Oct-23
Ventilation Adit (VA)					
VA - CBAR4 Blasting Permit					
A23200	CBAR4 - Summary of Blasting Permit Application	41.75%	113d	25-Nov-22 A	20-Nov-23
VA - CBAR4 Blasting Method Statement					
A23160	VA - CBAR4 Blasting Method Statement (BMS) - Prepare & submit to PM	80%	5d	20-Feb-23 A	13-Jul-23
A23210	CBAR4 - Summary of Blasting Method Statement (BMS) Submission and approval	9%	91d	20-Feb-23 A	25-Oct-23
A23220	VA - CBAR4 Blasting Method Statement (BMS) - PM review and comment	0%	20d	14-Jul-23	05-Aug-23
A23230	VA - CBAR4 Blasting Method Statement (BMS) - response to PM's comments	0%	18d	07-Aug-23	26-Aug-23
A23240	VA - CBAR4 Blasting Method Statement (BMS) - Formal submit BMS to Mines	0%	1d	28-Aug-23	28-Aug-23
A23250	VA - CBAR4 Blasting Method Statement (BMS) - Mines review BMS	0%	28d	29-Aug-23	25-Sep-23
A23260	VA - CBAR4 Blasting Method Statement (BMS) - response Mines comments on BMS	0%	23d	26-Sep-23	25-Oct-23
VA - Blasting Door Installation					
A15090	VA - Installation of Blasting Door	0%	45d	29-Aug-23	21-Oct-23