JOB NO.: TCS00881/18 & TCS00944/18

SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM, CREMATORIUM AND RELATED FACILITIES AT SANDY RIDGE CEMETERY

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (NO.58) – MAY 2023

PREPARED FOR
HSIN CHONG TSUN YIP JOINT VENTURE &
SANG HING CIVIL CONTRACTORS CO., LTD

Date	Reference No.	Prepared By	Certified By
14 Jun 2023	TCS00881/18/600/R0756v2		
		Nicola Hon (Environmental Consultant)	Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	9 June 2023	First Submission
2	14 June 2023	Amended according to IEC's comment

Our Ref: TCS00881/18/300/L0757

Civil Engineering and Development Department
2/F, Civil Engineering and Development Building,
101 Princess Margaret Rd,
Homantin, Kowloon

Attn: Mr. SHUM Ngai Hung, Steven

14 June 2023
By e-mail

Dear Sirs,

Re: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery Monthly Environmental Monitoring & Audit Report (No.58) – May 2023

We confirmed that the captioned report has complied with the requirement set out in the EM&A Manual, we hereby certify the captioned report pursuant to Specific Condition 3.4 of the Environmental Permit No. FEP-01/534/2017/A and EP-534/2017/A.

Should you have any queries, please feel free to contact the undersigned at Tel: 2959-6059 or Fax: 2959-6079 or Email: twtam@fordbusiness.com.

Yours sincerely,
For and on Behalf of
Action-United Environmental Services & Consulting (AUES)

T. W. Tam
Environmental Team Leader
TW/nh

cc

	ARUP (RE of Contracts 1 and 2)	Mr. Anthony Lau	by e-mail
.	HCTY-JV (Contractor of Contract 1)	Mr. Ho Man To	by e-mail
	Sang Hing (Contractor of Contract 2)	Mr. Elvin Lam	by e-mail
	Acuity (IEC)	Mr. Jacky Leung	by e-mail

Our Ref.: PL-202306018

Hsin Chong Tsun Yip Joint Venture (CV/2016/10)
Hsin Chong Centre
107 – 109 Wai Yip Street
Kwun Tong, Kowloon
Hong Kong

Attention: Mr. HO Man-to

14 June 2023

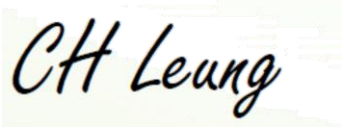
Dear Sir,

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Monthly Environmental Monitoring and Audit Report (No. 58) May 2023

I refer to the email of the ET regarding the captioned Monthly Report. According to Section 3.4 of the EP-534/2017/A and the FEP-01/534/2017/A, I hereby verify the Monthly EM&A Report for May 2023 (Version 2) with Ref. No. TCS00881/18/600/R0756v2.

You are required to follow up the comments from EPD and IEC on the relevant EPs requirement and provide supplementary information of this report for our further review as soon as possible.

Yours faithfully,



Leung CH Jacky
Independent Environmental Checker

EXECUTIVE SUMMARY

ES.01. This is the **58th** Monthly Environmental Monitoring and Audit (EM&A) Report summarizing the monitoring results and inspection findings under the Project for the period from **1st** to **31st May 2023** (the Reporting Month).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02. In the Reporting Month, the major construction works under the Project included Contract CV/2016/10 (hereinafter named "Contract 1") and Contract CV/2017/02 (hereinafter named "Contract 2"). Environmental monitoring activities under the EM&A programme in this Reporting Month are summarized in the following table.

Table ES-1 Summary of EM&A Programme in the Reporting Month

Issues	Environmental Monitoring Parameters / Inspection	Monitoring Locations		Total Occasions/ dates
		CV/2016/10	CV/2017/02	
Air Quality	1-hour TSP	ASR-1	ASR-2 ASR-3	45
	24-hour TSP			18
Construction Noise	$L_{eq\ (30min)}$ Daytime	CN-1 CN-2	CN-3 CN-4	15
Water Quality	In-situ measurement and Water sampling	M3	M1, M2 and M4	14
Ecology	Sensitive Habitat	Transect within site area of CV/2016/10	Transect within site area of CV/2017/02	18th May
Landscape & Visual	Site Inspection	Site area of CV/2016/10	Site area of CV/2017/02	31st May
Inspection & Audit	Environmental Team (ET) Regular Environmental Site Inspection	Site area of CV/2016/10	Site area of CV/2017/02	4
	Independent Environmental Checker (IEC) Monthly Environmental Site Audit			1

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.03. In the Reporting Month, no exceedance of air quality and noise monitoring was recorded. For water quality monitoring, there were ***8*** Limit level non-project related exceedances recorded and Notification of Exceedance (NOE) has been issued by ET. The statistics of environmental exceedance and investigation of exceedance are summarized in the following table.

Table ES-2 Breach of Action and Limit (A/L) Levels in the Reporting Month

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action	
				Investigation Findings	Corrective Actions
Air Quality	1-hour TSP	0	0	-	-
	24-hour TSP	0	0	-	-
Construction Noise	Leq_{30min} Daytime	0	0	-	-
Water Quality	DO	0	0	-	-
	Turbidity	0	**4**	Not project-related	The Contractor was reminded to fully implement the water quality mitigation measures
	Suspended Solids (SS)	0	**4**		

ES.04. In the Reporting Month, a total of ***8*** Limit level water quality exceedances, namely **4** exceedances of turbidity and **4** exceedances of SS were recorded. According to the weather data from Observatory, there were successive rainstorms on 7 and 8 May 2023. Due to the impact of rain, the water quality of seasonal watercourse was inevitably affected by the sediment stirred up from the surrounding environment, even beyond the boundaries of the construction site. Weekly site inspection revealed that water quality mitigation measures were in place and the site conditions were generally in order.

It was concluded that the exceedances were likely related to the impact of the Severe Tropical Storm and not caused by the work under the project.

ES.05. Monthly ecological monitoring for sensitive habitat for area of Contract 1 and Contract 2 were undertaken on ***18th May 2023***. After analysing survey results in May from 2019 to 2023 for Contract 1, the species richness and abundance for wetland habitat were unstable and a rapid rebound from 2022 was recorded recently. This could be benefited by some positive factors such as the major construction works were completed and most of the PME has been removed from site. For Contract 2, after analysing survey results in May from 2019 to 2023, records in species richness and abundance for wetland and non-wetland habitats are unstable, this may due to natural fluctuation. According to the recent on-site observation, there are new built workshops by others situated on both sides of Lin Ma Hang Road so the disturbance to fauna species from construction works could be increased. Due to the cause was not related to this project, remedial action to remove or reduce source of disturbance is limited.

ES.06. Besides, compensation planting works have been conducted in early Jan 2023. Therefore, disturbance to fauna species from construction works have been largely minimised. In addition, woodland compensation and grassland reinstatement would be implemented in the second and third quarter of 2023. Hence, the habitat of fauna species would be gradually recovered and expectation of increase in the species richness and abundance for wetland habitat is high.

ES.07. In the Reporting Period, there was no vegetation clearance for both Contract 1 and Contract 2, and precautionary check for the presence of nesting birds was not required to carry out.

ES.08. Landscape and visual inspection at both Contracts were undertaken on ***31st May 2023***. The Contractor was reminded to prevent the construction material pile within Tree Protection Zone and ensure no works is allowed within the TPZ.

ENVIRONMENTAL COMPLAINT

ES.09. No environmental complaint was recorded in this Reporting Month. The statistics of summons or successful prosecutions are summarized in the following tables.

Table ES-3 Environmental Complaint Summaries in the Reporting Month

Reporting Month		Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
1st – 31st May 2023	Contract 1	0	2	(1) Air Quality (1) Noise
	Contract 2	0	5	(1) Water (2) Air Quality (1) Noise (1) soil/ muddy water

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.010. No environmental summons or successful prosecution was recorded in this Reporting Month. The statistics of summons or successful prosecutions are summarized in the following tables.

Table ES-4 Environmental Summons Summaries in the Reporting Month

Reporting Month		Environmental Summons Statistics		
		Frequency	Cumulative	Summons Nature
1st – 31st May 2023	Contract 1	0	0	NA
	Contract 2	0	0	NA

Table ES-5 Environmental Prosecution Summaries in the Reporting Month

Reporting Month		Environmental Prosecution Statistics		
		Frequency	Cumulative	Prosecution Nature
1st – 31st May 2023	Contract 1	0	0	NA
	Contract 2	0	0	NA

ES.011. In addition, no complaint and emergency event relating to violation of environmental legislation for illegal dumping and landfilling was received.

REPORTING CHANGE

ES.012. No reporting change was made in the Reporting Month.

SITE INSPECTION

ES.013. In the Reporting Month, joint site inspections for Contract 1 to evaluate the site environmental performance were carried out by the Resident Engineer, ET and the Contractor of the Contract 1 on ***4th, 11th, 18th and 25th May 2023***. Moreover, joint site inspections for Contract 2 by the RE, ET and the Contractor of Contract 2 were carried out ***4th, 11th, 18th and 25th May 2023***. IEC attended joint site inspection for both Contracts on ***18th May 2023***. No non-compliance was noted during the site inspections.

FUTURE KEY ISSUES

ES.014. During wet season, water quality mitigation measures as recommended in the EM&A Manual should be fully implemented, in particular to prevent surface runoff and other pollutants from flowing to local stream and Conservation Area.

ES.015. The Contractors are reminded to pay special attention on the air quality mitigation measures such as wheel wash facilities, watering of haul roads, loose soil construction surface and covering of dusty materials with tarpaulin sheet should be implemented as far as practicable.

ES.016. Construction noise would be a key environmental issue during construction phase of the Project. Noise mitigation measures such as using quiet plants and mobile noise barriers should be implemented in accordance with the EM&A requirement.

Table of Contents

LIST OF TABLES

LIST OF APPENDICES

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department (CEDD) is the Project Proponent for the Project *"Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery"*. The Project is a Designated Project to be implemented under Environmental Permit No. EP-534/2017/A and FEP-01/534/2017/A. The layout plan of the Project is shown in ***Appendix A***. Major works to be executed under the Project shall include to the following:

Designated Works under EP-534/2017/A

(i) Site formation of about 5.5 hectares of land and associated drainage, sewerage and landscape works for development of Columbarium and Crematorium facilities at the Sandy Ridge Cemetery;
(ii) Construction of a new road (about 800m) connecting the Crematorium and Man Kam To Road and the pick-up/drop-off point at Man Kam To Road;
(iii) Widening two sections of the existing Sha Ling Road (about 900m and 500m respectively);
(iv) Widening of about 1.4km of the existing Lin Ma Hang Road; and
(v) Improvement works to the existing barging point at Siu Lam (the barging point is rejected by Tuen Mun DC and no improvement works required)

Designated Works under FEP-01/534/2017/A

(i) Site formation works for a formed platform of about 1.8 hectares and associated drainage, sewerage and landscape works for development of Columbarium at the Sandy Ridge Cemetery;
(ii) Construction of the pick-up/drop-off point at Man Kam To Road;
(iii) Widening of 900m of the existing Sha Ling Road;
(iv) Improvement works to the existing barging point at Siu Lam (the barging point is rejected by Tuen Mun DC and no improvement works required)

1.1.2 To facilitate the Project management, the Project works were separated into three Contracts to be executed which are described in below sub-sections.

1.1.3 *Contract No. CV/2016/10 – Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery* (hereinafter named "Contract 1"):-

- Site formation of about 1.77 ha of land for the proposed pick-up and drop-off area for shuttle bus operation;
- Upgrading of a section of 900m existing Sha Ling Road from 3m wide carriageway to 7.3m wide carriageway with footpath at both sides;
- Construction of one EVA with a total length of about 160m;
- Construction of noise barriers along Sha Ling Road;
- Modification of junction between Man Kam To Road and Sha Ling Road;
- Construction of a new pick up / drop off point at Man Kam To Road;
- Relocation and construction of a new refuse collection point near junction between Man Kam To Road and Sha Ling Road;
- Associated geotechnical works including cut and fill slopes, soil nailing works and retaining structures;
- Associated drainage, sewerage and waterworks along Sha Ling Road; and
- Associated landscaping works.

1.1.4 *Contract No. CV/2017/02 – Infrastructural Works at Man Kam To Road and Lin Ma Hang Road for Development of Columbarium at Sandy Ridge Cemetery* (hereinafter named "Contract 2"):-

- Construction of a new road connecting Columbarium site to Crematorium site;
- Construction of one EVA with a total length of about 300m;
- Widening of a section of 1.4 km long Lin Ma Hang Road (between Man Kam To Road and Ping Yuen River) from 6m wide carriageway to 7.3m with 2m width footpath on both sides;
- Provision of a pair of lay-by at Lin Ma Hang Road;
- Construction of a new vehicular access connecting the Sheung Shui Landmark North PTI and Lung Sum Avenue;

- Construction of covered walkway along Fanling Station Road;
- Removal of planters and central divider along Fanling Station Road and San Wan Road;
- Associated drainage, sewerage, waterworks and utility works along Man Kam To Road and Lin Ma Hang Road;
- Associated geotechnical works including cut and fill slopes, soil nailing works and retaining structures; and
- Associated landscaping works.

1.1.5 *CEDD Contract No. (to be confirmed)*:-

- Site Formation for the platform of the columbarium site;
- Construction of two 2 at-grade access roads;
- Construction of road junction between Man Kam To Road and the new access road;
- Associated drainage, sewerage and waterworks along the two new access roads;
- Associated geotechnical works including cut and fill slopes, soil nailing works and retaining structures; and
- Associated landscaping works

1.1.6 Hsin Chong Tsun Yip Joint Venture (hereafter referred as "HCTYJV") has been awarded Contract 1 on 5 December 2017. According to the Contract requirement, HCTYJV shall take over the responsibility for part of the Environmental Permit No. EP-534/2017 for ease of management, therefore application for Further Environmental Permit was submitted by HCTYJV to EPD on 26 January 2018 and Further Environmental Permit No. FEP-01/534/2017 was granted to HCTYJV by EPD on 23 February 2018. Furthermore, EPD issued Environmental Permit No. FEP-01/534/2017/A on 24 December 2018.

1.1.7 Sang Hing Civil Contractors Company Limited (hereinafter referred as "Sang Hing") was awarded Contract 2 on 23 May 2018. The Contract Works is a Designated Project as under Environmental Permit (EP) No. EP-534/2017. Furthermore, EPD issued Environmental Permit No. EP-534/2017/A on 24 December 2018.

1.1.8 Action-United Environmental Services & Consulting (AUES) has been commissioned by the Contractors as an Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme in accordance with the approved EM&A Manual as well as the associated duties. As part of the EM&A programme, baseline monitoring to determine the ambient environmental conditions was completed before construction work commencement. The Baseline Monitoring Report (air, noise and water) certified by ET Leader (ETL) and verified by Independent Environmental Checker (IEC) was submitted to Environmental Protection Department (EPD) and it was approved by EPD on 25 October 2018.

1.1.9 Major construction work of Contract 1 and Contract 2 was commenced on 16 August 2018 and 5 November 2018 respectively.

1.1.10 This is the **58th** Monthly EM&A Report summarizing the monitoring results and inspection findings for the period from **1st** to **31st May 2023**.

1.2 REPORT STRUCTURE

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

Section 1 *Introduction*
Section 2 *Project Organization and Construction Progress*
Section 3 *Summary of Monitoring Requirements*
Section 4 *Air Quality Monitoring Results*
Section 5 *Noise Monitoring Results*
Section 6 *Water Quality Monitoring Results*
Section 7 *Ecology Monitoring Results*
Section 8 *Landscape & Visual*
Section 9 *Waste Management*
Section 10 *Site Inspections*

2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 CONSTRUCTION CONTRACT PACKAGING

2.1.1 To facilitate the project management and implementation, the Project was divided by the following contracts:

- Contract 1 (Contract No. CV/2016/10)
- Contract 2 (Contract No. CV/2017/02)
- Contract 3 (Contract No. TBA)

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

2.2 CONSTRUCTION PROGRESS

2.2.1 As the construction works under C1 have been completed. There is no updated three months rolling programme of C1. The three-month rolling construction programme Contract 2 is enclosed in ***Appendix C***. Construction activities of the Contract 1 and Contract 2 undertaken in the Reporting Month are presented below.

Contract 1 (CV/2016/10)

- Planting works

Contract 2 (CV/2017/02)

- Construction of footpath at Lin Ma Hang Road
- Planting works at Sandy Ridge and Lin Ma Hang Road

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

Table 2-1 Status of Environmental Licenses and Permits for Contract 1

Item	Description	License/ Permit ref no.	License/ Permit Status
1	Air Pollution Control (Construction Dust) Regulation	Ref. no. 428909 Acknowledged by EPD on 20/12/2017	Valid
2	Chemical waste Producer Registration	WPN: 5231-641-H3937-01 Issued by EPD on 27/03/2018	Valid
3	Water Pollution Control Ordinance	License no. WT00030795-2018 Issued date: 9/5/2018 Expire Date: 31/5/2023	Valid
4	Billing Account for Disposal of Construction Waste	Account no.: 7029769	Valid

Table 2-2 Status of Environmental Licenses and Permits for Contract 2

Item	Description	License/ Permit ref no.		License/ Permit Status
1	Air Pollution Control (Construction Dust) Regulation	Ref. no. 440406 Acknowledged by EPD on 14/12/2018	Man Kam To Road (near Sha Ling Road to Kong Nga Po Road	Valid
		Ref. no. 440405 Acknowledged by EPD on 14/12/2018	Fanling Station Road	Valid
		Ref. no. 440404 Acknowledged by EPD on 14/12/2018	Sa Ling Road (Sandy Ridge Cemetery)	Valid
		Ref. no. 440401	Lin Ma Hang Road	Valid

Item	Description	License/ Permit ref no.		License/ Permit Status
		Acknowledged by EPD on 14/12/2018	(San Uk Ling – Muk Wu Nga Yiu)	
		Ref. no. 440402 Acknowledged by EPD on 14/12/2018	Lung Sum Avenue (near Landmark North)	Valid
2	Chemical waste Producer Registration	WPN: 5213-641-S4151-01 Issued by EPD on 04/02/2019		Valid
3	Water Pollution Control Ordinance	License no: WT00032936-2018 Issued date: 16/01/2019 Expire Date: 31/01/2024	Man Kam To Road & Lin Ma Hang Road, Man Kam To	Valid
		License no: WT00033335-2019 Issued date: 29/03/2019 Expire Date: 31/03/2024	Columbarium at Sandy Ridge Cemetery	Valid
		License no: WT00034717-2019 Issued date: 9/10/2019 Expire Date: 31/10/2024	Fanling Station Road	Valid
4	Billing Account for Disposal of Construction Waste	Account no.: 7031098		Valid

2.4 SUMMARY OF SUBMISSION UNDER THE ENVIRONMENTAL PERMIT REQUIREMENTS

2.4.1 *Tables 2-3 to 2-4* summarized the submission status under the EP and/or FEP stipulation in the Reporting Month.

Table 2-3 Status of Submission as under FEP

Item	EP and / or FEP Stipulation	Description	Status
1	Condition 2.10 of FEP	Management organization of : i) the main construction companies; ii) ET; and iii) IEC and the supporting team	Submitted and no approval is required.
2	Condition 2.11 of FEP	i) Detailed phasing programme of all construction works; and ii) Location plan of all construction works	Submitted and no approval is required.
3	Condition 2.12 of FEP	Contamination Assessment Plan (CAP)	Approved by EPD on 27 May 2019
4	Condition 2.13 of FEP	Grassland Reinstatement Plan	Approved by EPD on 18 April 2023
5	Condition 2.14 to 2.16 of FEP	Vegetation Survey Report and Vegetation Transplantation Proposal for Contract 1	Approved by EPD on 12 October 2018
6	Condition 2.17 of FEP	Woodland Compensation Plan (Rev.05) Woodland Compensation Plan (Rev.09)	Approved by EPD on 30 Jun 2020 Approved by EPD on 4 May 2023
7	Condition 2.18 of FEP	Monitoring and Survey Plan for Golden-headed Cisticola for Contract 1 (Rev.02)	Approved by EPD on 22 Oct 2019
8	Condition 2.20 of FEP	Landscape & Visual Mitigation and Tree Preservation Plan(s) Contract 1 (Rev.04)	Pending approval
9	Condition 2.22 of FEP	Traffic Noise Mitigation Plan Contract 1 (Rev. 4)	Pending approval
10	Condition 3.3 of the FEP	Baseline Monitoring Report (Air,	Approved by EPD on 25

Item	EP and / or FEP Stipulation	Description	Status
		Noise and Water)	October 2018
11	Condition 4.2 of the FEP	The Contract Internet website	Internet website address has notified EPD on 15 Jun 2018 and no approval is required.

Table 2-4 Status of Submission as under EP

Item	EP and / or FEP Stipulation	Description	Status
1	Condition 2.10 of EP	Management organization of : i) the main construction companies; ii) ET; and iii) IEC and the supporting team	Submitted and no approval is required.
2	Condition 2.11 of EP	i) Detailed phasing programme of all construction works; and ii) Location plan of all construction works	Submitted and no approval is required.
3	Condition 2.12 of EP	Layout Plan for the proposed footpath at Lin Ma Hang Road	Approved by EPD on 25 April 2022
4	Condition 2.13 of EP	Contamination Assessment Plan (CAP)	Approved by EPD on 27 May 2019
5	Condition 2.14 of EP	Grassland Reinstatement Plan	Approved by EPD on 18 April 2023
6	Condition 2.15 to 2.17 of EP	Vegetation Survey Report and Vegetation Transplantation Proposal under Contract 2	Approved by EPD on 15 June 2022
7	Condition 2.18 of EP	Woodland Compensation Plan (Rev.05) Woodland Compensation Plan (Rev.09)	Approved by EPD on 30 Jun 2020 Approved by EPD on 4 May 2023
8	Condition 2.19 of EP	Monitoring and Survey Plan for Golden-headed Cisticola Contract 2	Approved by EPD on 9 Nov 2022
9	Condition 2.21 – 2.22 of EP	Landscape & Visual Mitigation and Tree Preservation Plan(s) Contract 2	Pending approval
10	Condition 2.23 of EP	Traffic Noise Mitigation Plan Contract 2	Pending approval
11	Condition 3.3 of the EP	Baseline Monitoring Report (Air, Noise and Water)	Approved by EPD on 25 October 2018
12	Condition 4.2 of the EP	The Contract Internet website	Internet website address has notified EPD on 15 June 2018 and no approval is required.

3. SUMMARY OF IMPACT MONITORING REQUIREMENT

3.1 GENERAL

3.1.1 The EM&A requirements are set out in the Approved EM&A Manual. Environmental issues such as air quality, construction noise, water quality and ecology were identified as the key issues during the construction phase of the Project.

3.1.2 A summary of construction phase EM&A requirements are presented in the sub-sections below.

3.2 MONITORING PARAMETERS

3.2.1 The EM&A impact monitoring shall cover the following environmental aspect:

- Air quality;
- Construction noise;
- Water quality;
- Ecology; and
- Landscape and visual

3.2.2 A summary of the monitoring parameters is presented in ***Table 3-1*** below

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 1-hour TSP; • 24-hour TSP
Noise	• $Leq_{(30min)}$ during normal working hours.; and • $Leq_{(15min)}$ during the construction works undertaken in Restricted Hours
Water Quality	**In-situ Measurements** • Dissolved Oxygen Concentration (mg/L) & Saturation (%); • Temperature (°C); • Turbidity (NTU); • Salinity (ppm) • pH unit; • Water depth (m); and • Stream Flow Velocity (m/sec).
	Laboratory Analysis • Suspended Solids (mg/L)
Ecology	Ecologically sensitive habitats (wetland habitats and non-wetland habitats)

3.3 MONITORING LOCATIONS

3.3.1 According to the Approved EM&A Manual of the Project – *Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery*, the designated monitoring locations for air quality, noise, water quality and ecology under the monitoring programme, is shown in ***Appendix D***.

3.3.2 Since the Project was divided into three Works Contracts and all Contracts will be commenced at different time, the construction phase impact monitoring will only be performed at the Contract-related monitoring stations upon commencement of each Contract Works.

Air Quality

3.3.3 There were three (3) designated air quality monitoring stations recommended in the Approved EM&A Manual Section 5.6.1.1. There was proposed relocation of air quality monitoring location ASR-3 in October 2018 since the landlord refused to set up the HVS at his premises and nearby Conservation Area due to noise nuisance and Muk Wu Nga Yiu House No. 2A was proposed as alternative location ASR-3a. The proposal dated on 9 November 2018 which verified by IEC was submitted to EPD for approval. Based on rationale in Section 3.3.2, the Contract-related air quality monitoring location for construction phase were summarized in ***Table 3-2*** and illustrated in ***Appendix D***.

Table 3-2 Designated Air Quality Monitoring Location under the Project

Location ID	Description in EM&A Manual	Location	Related Work Contract
ASR-1	Village House along Man Kam To Road	Sha Ling Village House No.6	Contract 1
ASR-2	Village House at San Uk Ling	San Uk Ling Village House No.1	Contract 2
ASR-3	Village House at Muk Wu Nga Yiu	Muk Wu Nga Yiu House No.28	Contract 2
ASR-3a (#)	Village House at Muk Wu Nga Yiu	Muk Wu Nga Yiu House No.2A	Contract 2

Remark: (#) There was proposed relocation of air quality monitoring location ASR-3 in October 2018. The proposal dated on 9 November 2018 after verified by IEC was submitted to EPD for approval.

3.3.4 If the designated monitoring location is required to relocate, alternative monitoring location shall agree with IEC and seek for EPD approval which shall meet the following criteria:

i) Be at the site boundary or such locations close to the major dust emission source;
ii) Close to the sensitive receptors;
iii) Take into account the prevailing meteorological conditions;
iv) For monitoring location located in the vicinity of the ASRs, care shall be taken to cause minimal disturbance to the occupants during monitoring.
v) When positioning the HVS, the following points shall be noted:
   a. a horizontal platform with appropriate support to secure the samples against gusty wind shall be provided;
   b. no two samplers shall be placed less than 2m apart;
   c. the distance between the HVS and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the HVS;
   d. a minimum of 2 m separation from walls, parapets and penthouses is required for HVS at the rooftop;
   e. a minimum of 2 m separation from any supporting structure, measures horizontally is required;
   f. no furnace or incinerator flue is nearby;
   g. airflow around the sampler is unrestricted;
   h. the HVS is more than 20 m from the dripline;
   i. any wire fence and gate to protect the HVS, shall not cause any obstruction during monitoring;
   j. permission must be obtained to set up the HVS and to obtain access to the monitoring stations; and
   k. a secured supply of electricity is needed to operate the HVS.

Construction Noise

3.3.5 There were four (4) designated noise monitoring locations recommended in the Approved EM&A Manual Section 6.5.1.1. Based on rationale in Section 3.3.2, the Contract-related noise quality monitoring location for construction phase were summarized in ***Table 3-3*** and illustrated in ***Appendix D***.

Table 3-3 Designated Construction Noise Monitoring Location under the Project

Location ID	Description in EM&A Manual	Location	Related Work Contract
CN-1	Village house to the west of Sha Ling Road	Village house to the west of Sha Ling Road (free field condition)	Contract 1
CN-2	Village house to the north of Man Kam To Road	Sha Ling Village House No. 25 (free field condition)	Contract 1 & 3
CN-3	Village house near San Uk Ling	San Uk Ling Village House No. 18 (free field condition)	Contract 2
CN-4	Village house of Muk Wu	Muk Wu Village House No. 267 (1m façade from the building)	Contract 2

Water Quality

3.3.6 There were four (4) water quality monitoring locations recommended in the Approved EM&A Manual Section 7.6.1.2. The locations and coordinates of water quality monitoring were listed in ***Table 3-4***. Based on rationale in Section 3.3.2, the Contract-related water quality monitoring location for construction phase were summarized in ***Table 3-4*** and illustrated in ***Appendix D***.

Table 3-4 Designated Water Quality Monitoring Stations under the Project

Proposed Location ID	Co-ordinates		Description	Related Work Contract
	North	East		
M1	843 431	831 308	Midstream of Nam Hang Stream	Contract 2
M2	843 840	831 101	Downstream of Nam Hang Stream	Contract 2
M3	843 509	830 040	Wetland in the Conservation Area near Yuen Leng Chai	Contract 1
M4	843 997	831 783	Watercourse across Lin Ma Hang Road, running from east of San Uk Ling to Man Kam To Boundary Control Point	Contract 2

3.4 MONITORING FREQUENCY AND PERIOD

3.4.1 The requirements of impact monitoring were stipulated in *Sections 5.8.1.1, 6.7.1.1* and *7.8.1.4* of the approved *EM&A Manual* and presented as follows.

Air Quality Monitoring

3.4.2 Monitoring frequency for air quality impact monitoring is as follows:

- 1-Hour TSP — 3 sets of 1-hour TSP monitoring shall be carried out once every six days during construction periods
- 24-Hour TSP — 24-hour TSP monitoring shall be carried out every six days during construction periods

Noise Monitoring

3.4.3 Noise impact monitoring shall be carried out once per week during construction periods. The noise measurement for the time period between 0700 and 1900 hours shall be measured in terms of L_{eq} (30 minutes) or 6 sets of L_{eq} (5mins).

Water Quality Monitoring

3.4.4 The monitoring frequency shall be 3 days per week during construction phase and the interval between two sets of monitoring shall not be less than 36 hours.

3.5 MONITORING EQUIPMENT

3.5.1 The monitoring equipment using for the EM&A program as proposed by the ET shall be verified by the IEC.

Air Quality Monitoring

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

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

3.5.4 All equipment used by ET for air quality monitoring is listed in ***Table 3-5***.

Table 3-5 Air Quality Monitoring Equipment

Equipment	Model
24-hour TSP	
High Volume Air Sampler (HVAS)	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
1-Hour TSP	
Portable Dust Meter	Laser Dust Monitor, Model AM510

Equipment	Model
	/ Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter

Wind Data Monitoring Equipment

3.5.5 According to the approved EM&A Manual, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:

1) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
2) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
3) The wind data monitoring equipment should be re-calibrated at least once every six months.
4) Wind direction should be divided into 16 sectors of 22.5 degrees each.

3.5.6 ET has liaised with the premises owners/ landlords to grant the permission for the HVS installation. However, they rejected to set up wind data monitoring equipment installation in their premises.

3.5.7 Under this situation, the ET proposed to obtain representative wind data from the Hong Kong Observatory Ta Kwu Ling Weather Station. Ta Kwu Ling Station is located near the Project site which situated at the sea level above 15mPD and the wind data monitoring equipment is installed 10 m above the existing ground.

Noise Monitoring

3.5.8 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms^{-1} before each noise monitoring event. Noise measurements should not be made in fog, rain, wind with a steady speed exceeding 5 m s^{-1} or wind with gusts exceeding 10 m s^{-1}.

3.5.9 Noise monitoring equipment used for impact monitoring is listed in ***Table 3-6***.

Table 3-6 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL-52 Sound Level Meter
Calibrator	Rion NC-73 Acoustical Calibrator
Portable Wind Speed Indicator	Testo Anemometer

3.5.10 Sound level meters listed above comply with the *International Electrotechnical Commission Publications 651:1979 (Type 1)* and *804:1985 (Type 1)* specifications, as recommended in TM issued under the NCO.

Water Quality Monitoring

3.5.11 Water quality parameters include dissolved oxygen, water temperature & depth, turbidity, salinity, pH and stream flow velocity shall be measured *in-situ*, and suspended solids shall be analyzed by a HOKLAS-accredited testing laboratory.

Dissolved Oxygen and Temperature Measurement

3.5.12 The dissolved oxygen (DO) measuring instruments should be portable and weatherproof. The equipment should also complete with cable and sensor, and DC power source. It should be capable of measuring:

- A DO level in the range of 0 – 20 mg/L and 0 – 200% saturation; and

- A temperature of 0 – 45 degree Celsius.

3.5.13 The equipment should have a membrane electrode with automatic temperature compensation complete with a cable.

3.5.14 Should salinity compensation not be built-in to the DO equipment, in-situ salinity should be measured to calibrate the DO measuring instruments prior to each measurement.

Turbidity Measurement

3.5.15 The turbidity measuring instruments should be a portable and weatherproof with DC power source. It should have a photoelectric sensor capable of measuring turbidity level between 0–1000 NTU (for example, Hach model 2100Q or an approved similar instrument).

Salinity Measurement

3.5.16 A portable salinometer capable of measuring salinity in the range of 0–40 parts per thousand (ppt) should be provided for measuring salinity of the water at each monitoring location.

pH Measurement

3.5.17 A portable pH meter capable of measuring a range between 0.0 and 14.0 should be provided to measure pH under the specified conditions accordingly to the APHA Standard Methods.

Water Depth Measurement

3.5.18 A portable, battery-operated echo sounder or an approved similar instrument should be used for water depths determination at each designated monitoring station.

Stream Flow Velocity Equipment

3.5.19 Since the EM&A Manuals do not specified instrument to use stream flow velocity measurement, the monitoring of stream flow velocity is therefore proposed to be conducted by using a flow probe which is a digital water velocity meter.

Water Sampling Equipment

3.5.20 A water sampler is required for suspended solid (SS) monitoring. A water sampler e.g. Kahlsico Water Sampler, which is a transparent PVC cylinder with capacity not less than 2 litres, will be used for water sampling if water depth over than 0.5m.

3.5.21 For sampling from very shallow water depths e.g. <0.5 m, water sample will be collected from water surface below 100mm using plastic bottle to avoid inclusion of bottom sediment or humus. Moreover, Teflon/stainless steel bailer or self-made sampling buckets maybe used for water sampling. The equipment used for sampling will be depended the sampling location and depth situations.

Sample Containers and Storage

3.5.22 Water samples for suspended solid should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory within 24 hours of collection and be analyzed as soon as possible after collection.

3.5.23 Analysis of suspended solids should be carried out in a HOKLAS or other accredited laboratory. Water samples of about 1L should be collected at the monitoring stations for carrying out the laboratory suspended solids determination. The SS determination work should start within 24 hours after collection of the water samples. The SS analyses should follow the *APHA Standard Methods 2540D* with Limit of Reporting of 2 mg/L.

3.5.24 Details of the equipment used for water quality monitoring are listed in ***Table 3-7*** below.

Table 3-7 Water Quality Monitoring Equipment

Equipment	Model
Water Depth Detector	Tape measures
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends or Teflon/stainless steel bailer or self-made sampling bucket
Thermometer & DO meter	YSI Professional DSS
pH meter	YSI Professional DSS
Turbidimeter	YSI Professional DSS
Salinometer	YSI Professional DSS
Stream Flow Velocity	FP211 Global Flow Probe
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-litter plastic cool box with Ice pad

3.5.25 Furthermore, Suspended Solids (SS) analysis was carried out by *ALS Technichem (HK) Pty Ltd*. Which is one a local HOKLAS-accredited laboratory

3.6 EQUIPMENT CALIBRATION

3.6.1 The HVAS is operated and calibrated on a regular basis in accordance with the manufacturer's instruction using Tisch Calibration Kit Model TE-5025A. Calibration would carry out at fortnightly interval. The calibration data are properly documented and the records are maintained by ET for future reference. Furthermore, Tisch Calibration Kit will be calibrated by the manufacturer in yearly basis.

3.6.2 The 1-hour TSP meter calibrated by a local HOKLAS-accredited laboratory would be undertaken in yearly basis. Zero response of the equipment was checked before and after each monitoring event.

3.6.3 The sound level meter and acoustic calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.

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

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

3.7 DATA MANAGEMENT AND DATA QA/QC CONTROL

3.7.1 The impact monitoring data are handled by the ET's systematic data recording and management, which complies with in-house Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.

3.7.2 The monitoring data recorded in the equipment e.g. 1-hour TSP meter, noise meter and Multi-parameter Water Quality Monitoring System are downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data. For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

3.8 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.8.1 The baseline monitoring results form the basis for determining the environmental acceptance criteria for the impact monitoring. The air quality, construction noise and water quality criteria, namely Action and Limit levels were established according to Approved EM&A Manual, and they are listed in ***Tables 3-8, 3-9*** and ***3-10*** below.

Table 3-8 Action and Limit Levels for Air Quality Monitoring

Monitoring Station	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
ASR-1	331	181	500	260

Monitoring Station	Action Level (μg /m³)		Limit Level (μg/m³)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
ASR-2	316	165	500	260
ASR-3	307	160	500	260

Table 3-9 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
CN-1,CN-2, CN-3, CN-4	When one or more documented complaints are received	75 dB(A)

*Note: * Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.*

Table 3-10 Action and Limit Levels for Water Quality

Parameter	Performance criteria	Monitoring Location			
		M1	M2	M3	M4
DO (mg/L)	Action Level	3.03	4.99	4.58	3.62
	Limit Level	2.97	4.90	4.49	3.52
Turbidity (NTU)	Action Level	7.1	39.7	5.6	5.4
	Limit Level	7.6	42.2	5.9	5.9
SS (mg/L)	Action Level	8.5	29.0	9.3	4.8
	Limit Level	10.1	31.0	9.5	5.0

Notes:
- *For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits*
- *For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.*

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

4. AIR QUALITY

4.1 MONITORING RESULTS

4.1.1 In the Reporting Month, air quality monitoring was performed at all designated locations. Impact monitoring schedule provided to all relevant parties was shown in ***Appendix G***.

4.1.2 In this Reporting Month, there were ***5*** sessions of 24-hour TSP and ***15*** sessions of 1-hour TSP undertaken at each designated station for air quality monitoring. The air quality monitoring results are summarized in ***Tables 4-1*** to ***4-3***. The database of 24-hour TSP is shown in ***Appendix H*** and the graphical plots of monitoring result are shown in ***Appendix I***.

Table 4-1 Summary of Air Quality Monitoring Results at ASR-1 under Contract 1

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
4 May 23	36	5-May-23	13:00	91	88	93
10 May 23	22	11-May-23	13:00	79	82	85
16 May 23	43	17-May-23	9:08	63	53	46
22 May 23	32	23-May-23	13:08	68	70	73
27 May 23	38	29 May 23	13:20	77	86	81
Average (Range)	**34 (22 – 43)**	Average (Range)		**76 (46 – 93)**		

Table 4-2 Summary of Air Quality Monitoring Results at ASR-2 under Contract 2

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
4 May 23	58	5 May 23	13:03	88	90	92
10 May 23	55	11 May 23	13:10	91	85	89
16 May 23	43	17 May 23	9:13	62	50	43
22 May 23	36	23 May 23	13:15	70	67	73
27 May 23	44	29 May 23	13:25	91	95	86
Average (Range)	**47 (36 – 58)**	Average (Range)		**78 (43 – 95)**		

Table 4-3 Summary of Air Quality Monitoring Results at ASR-3a under Contract 2

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
4 May 23	48	5 May 23	13:07	86	89	92
10 May 23	18	11 May 23	13:25	85	82	89
16 May 23	20	17 May 23	9:17	56	50	48
22 May 23	29	23 May 23	13:24	70	73	69
27 May 23	28	29 May 23	13:36	81	76	85
Average (Range)	**29 (18 – 48)**	Average (Range)		**75 (48 – 92)**		

4.2 AIR MONITORING EXCEEDANCE

4.2.1 As shown in ***Tables 4-1 to 4-3***, the monitoring results of 24-hour and 1-hour TSP monitoring in the Reporting Month were below the Action/ Limit Level. No Notification of Exceedance (NOE) of air quality monitoring criteria was issued and therefore corrective action was not required. The meteorological data during the impact monitoring days are summarized in ***Appendix J***.

5. CONSTRUCTION NOISE

5.1 MONITORING RESULTS

5.1.1 In the Reporting Month, noise monitoring was performed at all designated locations. Impact monitoring schedule provided to all relevant parties was shown in ***Appendix G***.

5.1.2 In this Reporting Month, ***5*** sessions of noise monitoring were undertaken at each designated noise monitoring location. The sound level were set in a free field situation for CN1, CN2 and CN3 and therefore a façade correction of +3dB(A) has been added according to acoustical principles and EPD guidelines. The monitoring result of noise monitoring is show in ***Tables 5-1 and 5-2*** and the graphical plots are shown in ***Appendix I***.

Table 5-1 Summary of Construction Noise Monitoring Results under Contract 1

Construction Noise Level ($L_{eq30min}$), dB(A)				
Date	**Start Time**	**CN1(*)**	**Start Time**	**CN2(*)**
5 May 23	13:00	66	13:33	60
11 May 23	13:15	66	13:55	65
17 May 23	14:56	67	14:18	61
23 May 23	13:10	67	13:46	58
29 May 23	13:15	64	13:49	67
Limit Level	**75 dB(A)**			

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

Table 5-2 Summary of Construction Noise Monitoring Results under Contract 2

Construction Noise Level ($L_{eq30min}$), dB(A)				
Date	**Start Time**	**CN3 (*)**	**Start Time**	**CN4**
5 May 23	14:07	64	14:41	64
11 May 23	11:15	63	10:30	63
17 May 23	13:40	64	13:03	62
23 May 23	14:26	65	15:09	61
29 May 23	14:26	61	15:02	62
Limit Level	**75 dB(A)**			

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

5.1.3 Prior and after noise monitoring, the accuracy of the sound level meter has been checked by an acoustic calibrator to ensure the measurement within acceptance range of ±0.5dB. Moreover, wind speed checked by portable wind speed meter has been performed before noise monitoring. No noise measurement was performed in fog, rain, wind with a steady speed exceeding 5 m s^{-1} or wind with gusts exceeding 10 m s^{-1}.

5.2 NOISE MONITORING EXCEEDANCE

5.2.1 As shown in ***Tables 5-1 and 5-2***, no noise complaint (which triggered Action Level) and Limit Level exceedance for noise monitoring exceedance was recorded in the Reporting Month.

6. WATER QUALITY

6.1 MONITORING RESULTS

6.1.1 In the Reporting Month, water quality monitoring was performed at all designated locations. Impact monitoring schedule provided to all relevant parties was shown in ***Appendix G***.

6.1.2 In the Reporting Month, a total of ***14*** monitoring days were carried out for water quality impact monitoring. The monitoring result of key parameters including Dissolved Oxygen, Turbidity and Suspended Solids are summarized in ***Tables 6-1*** and ***6-2***. Detailed monitoring results including in-situ measurements and laboratory analysis data are shown in ***Appendix H*** and graphical plots for monitoring result are shown in ***Appendix I***.

Table 6-1 Summary of Water Quality Monitoring Results – M3 under Contract 1

Date	Parameters		
	DO (Averaged) (mg/L)	Turbidity (Averaged) (NTU)	Suspended Solids (Averaged) (mg/L)
2 May 23	7.23	2.2	2.5
4 May 23	7.02	5.1	6.5
6 May 23	6.90	3.9	5.5
8 May 23	7.14	**22.3**	**27.0**
10 May 23	7.12	2.9	3.5
12 May 23	7.23	4.9	4.0
15 May 23	7.28	2.5	6.0
17 May 23	7.28	1.9	6.0
19 May 23	7.08	2.1	4.5
22 May 23	7.03	1.5	4.0
24 May 23	7.03	1.8	4.5
27 May 23	6.96	5.4	2.5
29 May 23	6.65	5.3	5.0
31 May 23	7.30	3.0	2.0

Remark: Bold and underlined figure indicate that it exceeds Limit Level

Table 6-2 Summary of Water Quality Monitoring Results (M1, M2 and M4) under Contract 2

Date	Parameters								
	DO (Averaged) (mg/L)			Turbidity (Averaged) (NTU)			Suspended Solids (Averaged) (mg/L)		
	M1	M2	M4	M1	M2	M4	M1	M2	M4
2 May 23	7.48	7.50	5.80	3.5	2.9	3.0	4.5	4.0	4.5
4 May 23	7.20	7.41	6.60	3.0	7.2	4.8	6.5	6.5	4.5
6 May 23	7.11	7.40	6.41	3.2	6.5	4.1	7.5	7.5	4.0
8 May 23	7.48	7.59	7.10	**151.0**	**52.5**	**41.3**	**115.0**	**51.0**	**35.0**
10 May 23	7.16	7.48	7.22	6.7	1.9	4.5	7.0	3.5	3.5
12 May 23	7.56	7.72	7.38	3.3	4.2	3.1	3.0	6.5	3.5
15 May 23	8.29	7.94	7.32	6.6	2.8	2.4	8.0	6.5	4.0
17 May 23	7.51	7.86	7.02	6.7	3.3	5.0	7.0	7.5	4.5
19 May 23	7.57	7.58	6.76	3.1	2.9	3.1	7.0	5.5	3.0
22 May 23	7.46	7.45	6.41	4.5	2.8	3.9	7.5	4.5	3.5
24 May 23	6.99	7.38	6.56	3.1	2.9	4.7	4.5	2.5	4.5
27 May 23	7.05	7.45	6.90	2.6	2.2	2.7	4.5	2.0	4.5
29 May 23	7.38	7.42	6.83	3.4	2.5	3.6	4.0	2.5	3.0
31 May 23	7.22	7.17	6.44	2.6	4.7	4.2	3.5	2.0	4.0

Remark: Bold and underlined figure indicate that it exceeds Limit Level

6.1.3 During the Reporting Month, field measurements including temperature of stream water, salinity concentrations, pH values and the stream flow velocity for all monitoring locations are summarized in ***Table 6-3.***

Table 6-3 Summary of Field Measurements for Water Quality

Monitoring Location	Parameters of field measurements							
	pH (Averaged) (unit)		Salinity (Averaged) (ppt)		Temp (Averaged) (ºC)		Water Flow (Averaged) (m/s)	
	min	max	min	max	min	max	min	max
M1	7.2	8.0	0.03	0.10	22.7	28.8	<0.1	<0.1
M2	7.3	7.8	0.03	0.10	22.8	29.0	<0.1	<0.1
M3	7.0	7.8	0.01	0.05	22.6	28.9	<0.1	<0.1
M4	7.0	7.5	0.04	0.09	22.9	29.2	<0.1	<0.1

6.2 WATER QUALITY MONITORING EXCEEDANCE

6.2.1 In this Reporting Month, no water quality exceedances were recorded. The summary of non-compliance of water quality performance is shown in ***Table 6-4***.

Table 6-4 Action and Limit (A/L) Levels Exceedance Record

Station	DO		Turbidity		SS		Total Exceedance		Project Related exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
M1	0	0	0	**1**	0	**1**	0	**2**	0	0
M2	0	0	0	**1**	0	**1**	0	**2**	0	0
M3	0	0	0	**1**	0	**1**	0	**2**	0	0
M4	0	0	0	**1**	0	**1**	0	**2**	0	0

6.2.1 Notification of Exceedance and the investigation for exceedance in the Reporting Month is summarized in ***Table 6-5***.

Table 6-5 Summary of Investigation of Water Quality Exceedance in the Reporting Month

Date of Exceedance	Exceeded Location	Exceeded Parameter	Cause of Water Quality Exceedance
8 May 2023	M1, M2 & M4	Turbidity & Suspended Solids	According to the site information provided by the Contractor, there were no construction activities carried out on 8 May 2023 due to heavy rain. Major construction activities under the project were completed. According to the weather data from Observatory, there were successive rainstorms on 7 and 8 May 2023. Due to the impact of rain, the water quality of seasonal watercourse was inevitably affected by the sediment stirred up from the surrounding environment, even beyond the boundaries of the construction site. Site inspection by ET was conducted on 4 May 2023 to audit the site environmental performance and implementation of mitigation measures. In view of the geographical location of Contract 2, M1 is located at upstream of Nam Hang Stream and outside site boundary of Contract 2, it acts as upstream of M2 and there was no works carried out near M1. There were no construction work conducted near M4 on Lin Ma Hang Road. Most of area on Sandy Ridge was hard paved and no adverse water quality impact was observed after rainy day. Contribution of polluted water to Nam Hang Road to M2 through seasonal channel was unlikely . In our investigation, there were no active work conducted near M1 and no adverse water quality impact observed at site areas during site inspection. In view of the current site condition, it was considered that all the exceedances were

Date of Exceedance	Exceeded Location	Exceeded Parameter	Cause of Water Quality Exceedance
			likely related to the impact of rainstorm and not caused by the work under the project.
8 May 2023	M3	Turbidity & Suspended Solids	According to the site information provided by the Contractor (HCTY-JV), there were no construction activities carried out on 8 May 2023 due to heavy rain. Major construction activities under the project were completed. The site area was either hard paved or hydroseeded and generation of muddy water from the site was unlikely. Joint site inspection among the HCTY-JV and ET was conducted on 4 May 2023 to audit the site environmental performance and implementation of mitigation measures. The site area on Sandy Ridge was hard paved and generation of muddy runoff from the site was unlikely. Hydroseeding was applied on the exposed slope to prevent generation of muddy runoff. Hydroseeding was applied on the finished slope and permeant u-channel has been constructed to collect runoff, generation of muddy runoff from the site was unlikely. In our investigation, HCTY-JV had implemented water quality mitigation measures. In view of current site condition, generation of muddy runoff from the site was unlikely. The site was generally in good order and no water quality impact was observed. It is considered that the exceedances were likely caused by impact of rain and not related to the works under the Project. Since the exceedances were concluded as not project-related, increase of monitoring frequency is not required according to EM&A Manual 7.8.1.3. Nevertheless, the Contractor should continually implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

7. ECOLOGY MONITORING

7.1 REQUIREMENT

7.1.1 According to approved EIA report (AEIAR-198/2016), habitat types within project boundary comprise of watercourse, grassland, upland grassland, plantation, woodland and developed area. Natural habitats were of moderate ecological value in terms of species diversity, species rarity, species abundance, ecological linkage as well as nursery. Moreover, 0.3ha of wet woodland on the northern side of Sandy Ridge was deemed habitat with high ecological value. Four types of habitats were regarded as ecologically sensitive habitats, namely wet woodland, watercourses, upland grassland and woodland. Considering human disturbance in upcoming construction and operation phases, ecologically sensitive habitats shall be monitored in accordance with EM&A Manual.

7.1.2 The objective of ecologically sensitive habitats monitoring is to evaluate the effectiveness of measures to minimize impacts on concerned habitats from disturbance and pollution. In order to monitor the effectiveness of the measures to the minimize impact on ecologically sensitive habitats from disturbance and pollution, monthly monitoring during construction and operation phases is required as specified in EM&A Manual. Standard faunal transect and sampling surveys cover both wetland habitats (*wet woodland and watercourse*) and non-wetland habitats (*upland grassland and woodland*).

7.2 METHODOLOGY

7.2.1 Wetland habitats include wet woodland and watercourses. Monitoring surveys using standardized quantitative methodology will conduct at fixed points. For seasonal watercourse, the survey will be conducted whenever the habitat appears. Measures to respond to decreases in numbers of aquatic fauna using the wetland habitats and Action/Limit levels to trigger these measures are detailed in ***Table 7-1***.

Table 7-1 Action and Limit Levels for Wet Woodland Habitats Monitoring

Action Level	Response	Limit Level	Response
Reduction in taxa diversity by 30%	Investigate cause and if cause identified as related to the project instigate remedial action to remove or reduce source of disturbance.	Reduction in taxa diversity by 50%	Investigate cause and if cause identified as related to the project instigate remedial action.

Remarks: Action and Limit Levels and Responses to Evidence of Declines in Aquatic Fauna

7.2.2 Non-wetland habitats consist of upland grassland and woodland. Monthly quantitative surveys of non-aquatic fauna will be conducted using standard route transect counts. Measures to respond to decreases in numbers of non-aquatic fauna using the non-wetland habitats and Action/Limit levels to trigger these measures are detailed in ***Table 7-2***.

Table 7-2 Action and Limit Levels for Non-Wet Woodland Habitats Monitoring

Action Level	Response	Limit Level	Response
Reduction in species diversity by 30%	Investigate cause and if cause identified as related to the project instigate remedial action to remove or reduce source of disturbance.	Reduction in species diversity by 50%	Investigate cause and if cause identified as related to the project instigate remedial action.

Remarks: Action and Limit Levels and Responses to Evidence of Declines in Non-Aquatic Fauna

7.2.3 The ecological survey includes all taxa being investigated in accordance with EIA report. Schedule of faunal surveys in each year during construction phase is presented in ***Table 7-3***.

Table 7-3 Schedule of Faunal Surveys in each year During Construction Phase

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mammals	√	√	√	√	√	√	√	√	√	√	√	√
Birds (day)	√	√	√	√	√	√	√	√	√	√	√	√

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Birds (night)				√	√	√	√	√	√	√		
Herpetofauna				√	√	√	√	√	√	√		
Dragonflies			√	√	√	√	√	√	√	√		
Butterflies			√	√	√	√	√	√	√	√		
Aquatic fauna	√	√	√	√	√	√	√	√	√	√	√	√

Mammal Survey

7.2.4 Mammal surveys will be conducted along the proposed transects (shown in ***Appendix K*** - Ecological Survey Reports) in during both daytime and night time periods. Along with direct observations, other field signs, such as scats and tracks, will be searched and recorded if present.

Bird Survey

7.2.5 Bird surveys will be conducted along the transects (shown in ***Appendix K*** - Ecological Survey Reports) during the surveys, species and their vocalizing individuals recorded will be enumerated and recorded according to the habitat(s) they are utilizing.

Herpetofauna Survey

7.2.6 Reptile and amphibian surveys will be conducted along transects (shown in ***Appendix K*** - Ecological Survey Reports) during surveys careful searches of appropriate microhabitats and refugia for reptiles and their vocalizing individuals will be undertaken and all reptiles observed will be identified and counted.

Dragonfly and Butterfly Survey

7.2.7 Dragonfly and Butterfly surveys will be conducted along transects (shown in ***Appendix K*** - Ecological Survey Reports) during surveys all dragonflies and Butterflies seen will be identified and counted as accurately as possible.

Aquatic Fauna Survey

7.2.8 Freshwater fishes and macro-invertebrates will be recorded by direct observation. All species trapped/recorded will be enumerated and identified (to the lowest taxonomic level possible), and the species of conservation importance photographed.

7.2.9 After each ecological monitoring survey, a monthly report of the survey result and data collected will be provided with reference to EM&A Manual. An annual analysis of data will be carried out in order to study if there is any significant reduction in taxa diversity and abundance.

7.3 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 1)

7.3.1 In the Reporting Month, ecological monitoring was undertaken on ***18th May 2023***, a sunny day. The day and night survey covered wetland and non-wetland areas. The survey was conducted by transect and at fixed points. All species seen would be identified and counted as accurately as possible. Results of the monitoring survey are presented below:

Monitoring Result for Contract 1

Mammal

7.3.2 There was no mammal species recorded in the monitoring area.

Birds

7.3.3 There were a total of 56 bird individuals from 15 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey. Three species of conservation interests were recorded in this survey: Lesser Coucal (Centropus bengalensis) 小鴉鵑, Greater Coucal (Centropus sinensis) 褐翅鴉鵑, Asian Barred Owlet (Glaucidium cuculoides) 斑頭鴗鶹, White-throated Kingfisher (Halcyon smyrnensis) 白胸翡翠

Herpetofauna

7.3.4 There was no reptile species recorded in monitoring area. There was no amphibian species recorded in the monitoring area.

Butterfly

7.3.5 There were a total of 9 butterfly individuals from 3 species recorded in the monitoring area.

Dragonfly

7.3.6 There were a total of 9 dragonfly individuals from 2 specie recorded in the monitoring area.

Aquatic Fauna Survey (Freshwater communities)

7.3.7 There was no freshwater community recorded in the monitoring area.

7.3.8 The summaries of faunal survey result are shown in ***Tables 7-4*** and ***7-5***.

Table 7-4 Result of Faunal Survey under Contract 1

Scientific Name	Common / Engineer Name	Chinese Name	Conservation Status	Non-wetland		Wetland		
				UG	WL	MA	WW	WC
Mammal Survey								
--	--	--	--	--	--	--	--	--
Avifauna Survey								
Centropus bengalensis	Lesser Coucal	小鴉鵑	Class 2 Protected Animal of China;China Red Data Book Status: (Vulnerable)	4				
Centropus sinensis	Greater Coucal	褐翅鴉鵑	Class 2 Protected Animal of China;China Red Data Book Status: (Vulnerable)	1				
Caprimulgus affinis	Savanna Nightjar	林夜鷹		3				
Glaucidium cuculoides	Asian Barred Owlet	斑頭鴷鶹	Class 2 Protected Animal of China; Appendix 2 of CITES	1				
Spilopelia chinensis	Spotted Dove	珠頸斑鳩		4				
Eudynamys scolopaceus	Asian Koel	噪鵑		1				
Hierococcyx sparverioides	Large Hawk Cuckoo	大鷹鵑		1				
Apus nipalensis	House Swift	小白腰雨燕		10				
Halcyon smyrnensis	White-throated Kingfisher	白胸翡翠	Fellowes et al. (2002): LC	2				
Corvus macrorhynchos	Large-billed Crow	大嘴烏鴉		1				
Pycnonotus jocosus	Red-whiskered Bulbul	紅耳鵯						12
Pycnonotus sinensis	Chinese Bulbul	白頭鵯		2				4
Pycnonotus aurigaster	Sooty-headed Bulbul	白喉紅臀鵯		2				
Prinia flaviventri	Yellow-bellied Prinia	黃腹鷦鶯		2				1
Orthotomus sutorius	Common Tailorbird	長尾縫葉鶯		2				3
Reptile Survey								
N/A	--	--	--	--	--	--	--	--
Amphibian Survey								
N/A	--	--	--	--	--	--	--	--
Butterfly Survey								
Acytolepis puspa	Common Hedge	鈕灰蝶		2				

Scientific Name	Common / Engineer Name	Chinese Name	Conservation Status	Non-wetland		Wetland		
				UG	WL	MA	WW	WC
	Blue							
Mycalesis mineus	Dark Brand Bush Brown	小眉眼蝶		2			1	
Abisara echerius	Plum Judy	蛇目褐蜆蝶		4				
Odonate Survey								
Orthetrum pruinosum	Common Red Skimmer	赤褐灰蜻						3
Pseudothemis zonata	Pied Skimmer	玉帶蜻						6

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 7-5 Result of Freshwater Communities Survey under Contract 1

Scientific Name	Common Name	Chinese Name	Conservation Status	Non-wetland		Wetland		
				UG	WL	MA	WW	WC
N/A	--	--	--	--	--	--	--	--

Discussion

7.3.9 After analysing survey results in May from 2019 to 2023, the species richness and abundance for wetland habitat were unstable. A rapid rebound from 2022 was recorded recently. This could be benefited by some positive factors such as the major construction works were completed and most of the PME has been removed from site. Besides, compensation planting works have been conducted in early Jan 2023. Therefore, disturbance to fauna species from construction works have been largely minimised. In addition, woodland compensation and grassland reinstatement would be implemented in the second and third quarter of 2023. Hence, the habitat of fauna species would be gradually recovered and expectation of increase in the species richness and abundance for wetland habitat is high.

7.3.10 Yet, good site practice during construction, with reference to EM&A Manual, is still required to prevent or alleviate environmental impacts. Continuous monitoring is also recommended to inspect any changes in species diversity.

7.4 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 2)

7.4.1 In the Reporting Month, ecological monitoring was undertaken at work area of Contract 2 on ***18th May 2023***, a sunny day. The day and night survey covered wetland and non-wetland areas. The survey was conducted by transect and at fixed point. All species seen would be identified and counted as accurately as possible. Results of the monitoring survey are presented below:

Monitoring Result for Contract 2

Mammal

7.4.2 There was no mammal recorded in the monitoring area

Birds

7.4.3 There were a total of 18 bird individuals from 6 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey.

Herpetofauna

7.4.4 There was no reptile recorded in the monitoring area. There was no amphibian recorded in the monitoring area.

Butterfly

7.4.5 There were total of 8 butterfly individuals from 4 species recorded in the monitoring area.

Dragonfly

7.4.6 There were total of 12 dragonfly individuals from 3 specie recorded in the monitoring area.

Aquatic Fauna Survey (Freshwater communities)

7.4.7 There were 2 species of freshwater fish were recorded in the monitoring area.

7.4.8 The summaries of faunal survey result are shown in ***Tables 7-6*** and ***7-7***.

Table 7-6 Result of Faunal Survey under Contract 2

Scientific Name	Common / Engineer Name	Chinese Name	Conservation Status	Non-wetland		Wetland		
				UG	WL	MA	WW	WC
Mammal Survey								
--	--	--	--	--	--	--	--	--
Avifauna Survey								
Spilopelia chinensis	Spotted Dove	珠頸斑鳩		2				
Amaurornis phoenicurus	White-breasted Waterhen	白胸苦惡鳥				1		
Pycnonotus jocosus	Red-whiskered Bulbul	紅耳鵯		2			6	
Prinia flaviventris	Yellow-bellied Prinia	黃腹鷦鶯				2		
Orthotomus sutorius	Common Tailorbird	長尾縫葉鶯			4			
Acridotheres cristatellus	Crested Myna	八哥		1				
Reptile Survey								
--	--	--	--	--	--	--	--	--
Amphibian Survey								
--	--	--	--	--	--	--	--	--
Butterfly Survey								
Papilio polytes	Common Mormon	玉帶鳳蝶		1				
Graphium sarpedon	Common Bluebottle	青鳳蝶			2			
Eurema hecabe	Common Grass Yellow	寬邊黃粉蝶		2		2		
Pieris canidia	Indian Cabbage White	東方菜粉蝶			1			
Odonate Survey								
Copera marginipes	Yellow Featherlegs	黃狹扇蟌				2		
Pseudothemis zonata	Pied Skimmer	玉帶蜻				4		
Pantala flavescens	Wandering Glider	黃蜻				6		

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 7-7 Result of Freshwater Communities Survey under Contract 2

Scientific Name	Common Name	Chinese Name	Conservation Status	Non-wetland		Wetland		
				UG	WL	MA	WW	WC
Gambusia affinis	Mosquito fish	食蚊魚						+
Puntius semifasciolatus	Chinese Barb	五線無鬚鮭						+

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse
+: Species appeared but uncountable.

Discussion

7.4.9 After analysing survey results in May from 2019 to 2023, records in species richness and abundance for wetland and non-wetland habitats are unstable, this may due to natural fluctuation. According to

the recent on-site observation, there are new built workshops by others situated on both sides of Lin Ma Hang Road so the disturbance to fauna species from construction works could be increased. Due to the cause was not related to this project, remedial action to remove or reduce source of disturbance is limited.

7.4.10 Nevertheless, the situation could be benefited by some positive factors such as the major construction works in this contract were completed and most of the PME has been removed from site. Besides, compensation planting works have been conducted in early Jan 2023. Therefore, disturbance to fauna species from construction works have been largely minimized internally. In addition, woodland compensation and grassland reinstatement would be implemented in the second and third quarter of 2023. Hence, the habitat of fauna species would be gradually recovered and expectation of increase in the species richness and abundance for wetland habitat is high.

7.4.11 Still, a good site practice during construction, with reference to EM&A Manual, is required to prevent or alleviate environmental impacts. For instance, the size of work areas should be minimized and disturbed areas should be reinstated immediately after completion of construction works. In addition, implementing proper waste disposal is necessary to reduce contamination to water and soil. Continuous monitoring is also recommended to inspect any significant decrease in species diversity.

7.4.12 The detailed Ecological Survey Reports for Contract 1 and Contract 2 are attached in ***Appendix K***.

7.4.13 The tentative ecology inspection and monitoring in the next Reporting Month (June 2023) is scheduled on ***13th June 2023***.

7.5 MONITORING OF FLORA SPECIES OF CONSERVATION INTEREST UNDER CONTRACT 1

7.5.1 According to the approved vegetation survey report and transplantation proposal under FEP-01/534/2017/A, an individual of flora species of conservation interest (the transplanted T-2928) was identified and transplanted to the receptor site.

7.5.2 According to approved vegetation survey report and transplantation proposal, post-transplantation monitoring was conducted once per week in the first three months after the transplantation in Oct 2018 and once in each of the following month in the remaining establishment period for 12 month. During the remaining construction phase of the project, the transplanted T-2928 would be monitored on quarterly basis.

7.5.3 A landscape sub-contractor was employed by the Contractor to monitor the health condition of transplanted species and provide advice on necessary weeding, fertilizing and pest control. The monitoring records were submitted to ET and IEC for review and record. Moreover, inspection of the transplanted T-2928 was undertaken by ET as part of the weekly site inspection. No construction activity and disturbance were observed at the location of the transplanted T-2928. The health condition of the transplanted T-2928 was fair with normal foliage color and density.

7.6 MEASURE FOR PROTECTION OF NESTING BIRD

7.6.1 Pursuant to FEP-01/534/2017/A condition 2.19 and EP-534/2017/A condition 2.20, precautionary checks for the presence of nesting birds shall be carried out in the breeding season (February to July) before vegetation clearance.

7.6.2 In the Reporting Period, there was no vegetation clearance for both Contract 1 and Contract 2, and precautionary check for the presence of nesting birds was not required to carry out.

8. LANDSCAPE AND VISUAL

8.1 REQUIREMENT

8.1.1 The EIA has recommended EM&A for landscape and visual resources to be undertaken during the design, construction and operational stages of the project. The design, implementation and maintenance of landscape mitigation measures is a key aspect of this and should be checked to ensure that they are fully realized and that potential conflicts between the proposed landscape measures and any other project works let its are resolved at the earliest possible date and without compromise to the intention of the mitigation measures. In addition, implementation of the mitigation measures recommended by the EIA will be monitored through the site audit programme.

8.1.2 A number of mitigation measures to ameliorate the landscape and visual impacts of the Project implementation is summarized in the EMIS of ***Appendix 13.1*** of the EIA Report.

8.1.3 The landscape and visual mitigation measures proposed should be incorporated in the landscape and engineering design. Mitigation measures to be implemented during construction should be adopted from the start of construction and be in place throughout the entire construction period. Mitigation measures to be implemented during operation should be integrated into the detailed design and built as part of the construction works so that they are in place on commissioning of the Project. Tree transplantation and compensatory planting should be carried out as early as possible in the Project with transplantation carried out prior to construction starting in any particular area.

8.1.4 During construction phase, Landscape & Visual Monitoring of the contractor's operations should be conducted monthly and reported by ET, and countersigned by IEC.

8.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH

8.2.1 In the Reporting Month, landscape & visual inspection was carried out by the Registered Landscape Architect for works area of Contract 1 and Contract 2 on ***31st May 2023***. The findings / reminders recorded during the inspection are presented in ***Tables 8-1 and 8-2.***

Table 8-1 Landscape & Visual Inspection Finding for Contract 1

Date	Findings and Reminder	Follow-Up Status
31st May 2023	1. The Contractor is reminded to set up TPZ of proper size and with appropriate material around retain trees according to approved method statement.	• Reminded only
	2. The Contractor is reminded to prevent the construction material pile within TPZ and ensure no works is allowed within the TPZ.	• Reminder only
	3. Transplanted tree T2465 and T2928 were in fair health condition with normal foliage color and density. Contractor is reminded to provide proper maintenance according to the method statement.	• Reminder only

Table 8-2 Landscape & Visual Inspection Finding for Contract 2

Date	Findings and Reminder	Follow-Up Status
31st May 2023	1. Contractor is reminded to set up TPZ of proper size and with appropriate material around retain trees according to approved method statement. Contractor should prevent any construction material pile within TPZ and ensure no works is allowed within the TPZ.	• Reminder only

8.2.2 Inspection checklist of Landscape & Visual signed by RLA is attached in ***Appendix L***.

9. WASTE MANAGEMENT

9.1 General Waste Management

9.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time in accordance with the Waste Management Plan (WMP).

9.2 Records of Waste Quantities

9.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

9.2.2 The quantities of waste for disposal in this Reporting Month are summarized in ***Table 9-1*** and ***9-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix M***. Whenever possible, materials were reused on-site as far as practicable.

Table 9-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Contract 1		Contract 2	
	Quantity	Disposal Location	Quantity	Disposal Location
Total generated C&D Materials (Inert) ('000m^3)	0.160	--	44.900 **(#)**	--
Reused in this Contract (Inert) ('000m^3)	0	--	0	--
Reused in other Projects (Inert) ('000m^3)	0	--	0	--
Disposal as Public Fill (Inert) ('000m^3)	0.160	Tuen Mun Area 38	44.900 **(#)**	Tuen Mun Area 38

Remark: the unit is '000kg

Table 9-2 Summary of Quantities of C&D Wastes

Type of Waste	Contract 1		Contract 2	
	Quantity	Disposal Location	Quantity	Disposal Location
Recycled Metal ('000kg)	0	--	0	--
Recycled Paper / Cardboard Packing ('000kg)	0	--	0	--
Recycled Plastic ('000kg)	0	--	0	--
Chemical Wastes ('000kg)	0	--	0	--
General Refuses ('000m^3)	0.015	NENT Landfill	3.300 **(#)**	NENT Landfill

Remark: (#) the unit is in '000kg

9.2.3 Since canteen and/or kitchen are not allowed setting on the Project site, no domestic wastewater was generated from the Project.

10. SITE INSPECTION

10.1 REQUIREMENT

10.1.1 According to the approved EM&A Manual, environmental site inspection should be led by RE and attended by the Contractor and ET at least once per week. Regular environmental site inspections shall be carried out to assess the environmental performance.

10.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH

Contract 1

10.2.1 In the Reporting Month, joint site inspections for Contract 1 to evaluate the site environmental performance were carried out by the RE, ET and the Contractor on ***4th, 11th, 18th and 25th May*** and IEC attended joint site inspection on ***18th May 2023***. No non-compliance was noted in the Reporting Month. The findings / deficiencies that observed during the weekly site inspection are listed in ***Table 10-1***.

Table 10-1 Site Observations for the Works of Contract 1

Date	Findings / Deficiencies	Follow-Up Status
4th May 2023	• No adverse environmental issue was observed.	N/A
11th May 2023	• No adverse environmental issue was observed.	N/A
18th May 2023	• No adverse environmental issue was observed.	N/A
25th May 2023	• No adverse environmental issue was observed.	N/A

Contract 2

10.2.2 In the Reporting Month, joint site inspections for Contract 2 to evaluate the site environmental performance carried out by the RE, ET and the Contractor was on ***4th, 11th, 18th and 25th May*** and IEC attended joint site inspection on ***18th May 2023***. No non-compliance was noted in the Reporting Month. The findings / deficiencies that observed during the weekly site inspection are listed in ***Table 10-2***.

Table 10-2 Site Observations for the Works of Contract 2

Date	Findings / Deficiencies	Follow-Up Status
4th May 2023	• No adverse environmental issue was observed.	N/A
11th May 2023	• No adverse environmental issue was observed.	N/A
18th May 2023	• No adverse environmental issue was observed.	N/A
25th May 2023	• No adverse environmental issue was observed.	N/A

11. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

11.1.1 In the Reporting Month, no environmental complaint was received for the project. No summons and prosecution was lodged for the Contract. The statistical summary table of the environmental complaint, summons and prosecution are presented in ***Tables 11-1, 11-2*** and ***11-3***. The complaint log for the Project is shown in ***Appendix N.***

Table 11-1 Statistical Summary of Environmental Complaints

Reporting Month		Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
1st – 31st May 2023	Contract 1	0	2	(1) Air Quality (1) Noise
1st – 31st May 2023	Contract 2	0	5	(1) Water (2) Air Quality (1) Noise (1) Soil / muddy water

Table 11-2 Statistical Summary of Environmental Summons

Reporting Month		Environmental Summons Statistics		
		Frequency	Cumulative	Complaint Nature
1st – 31st May 2023	Contract 1	0	0	NA
1st – 31st May 2023	Contract 2	0	0	NA

Table 11-3 Statistical Summary of Environmental Prosecution

Reporting Month		Environmental Prosecution Statistics		
		Frequency	Cumulative	Complaint Nature
1st – 31st May 2023	Contract 1	0	0	NA
1st – 31st May 2023	Contract 2	0	0	NA

11.1.2 In addition, no complaints received and emergency event relating to violation of environmental legislation for illegal dumping and landfilling were received.

12. IMPLEMENTATION STATUS OF MITIGATION MEASURES

12.1 GENERAL REQUIREMENTS

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

12.1.2 The Works of Contract 1 and Contract 2 under the Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual subject to the site condition. Environmental mitigation measures implemented in this Reporting Month is summarized in ***Table 12-1***. The status of the Environmental mitigation measures are presented in ***Appendix O***.

Table 12-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Provided efficient silt removal facilities to reduce SS level before effluent discharge. • Provided ditches, earth bunds or sand bag barriers to minimize polluted runoff. • Temporary drainage was provided to prevent runoff going through site surface and minimize polluted runoff. • Provided perimeter cut-off drains at site boundaries to intercept storm runoff from crossing the site. • Exposed slopes surface were compacted and covered with tarpaulin or similar means. • Provided portable chemical toilets on site.
Air Quality	• Maintain damp / wet surface on access road. • Maintain low vehicular speed within the works areas. • Provided vehicle wheel washing facilities at each construction site exit; • Provided water spraying every hour for all active works area. • Stockpiles of dusty material were covered with impervious sheeting. • Provided workers to clear dusty materials at the vehicle entrance or exit regularly. • Stockpile more than 20 bags of cement or dry pulverized fuel ash (PFA) has been covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.
Noise	• Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants. • Placed noisy plants away from residence and school. • Provided noise barriers or hoarding to enclose the noisy plants or works. • Shut down the plants when not in used.
Waste and Chemical Management	• Provided on-site sorting prior to disposal. • Followed requirements and procedures of the “Trip-ticket System” • Predicted required quantity of concrete accurately. • Collected the unused fresh concrete at designated locations in the sites for subsequent disposal.
Ecology	• Implementing water control measures (ETWB TCW No. 5/2005) to avoid direct or indirect impacts any watercourses and impact to any aquatic fauna during the construction phase. • Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic. • The construction work and site formation have been phased in order to reduce overall noise disturbance impacts in particular areas. • Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas.
General	• The site was generally kept tidy and clean. • Environmental Permit was displayed at site entrance.

12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

12.2.1 According to the information provided by HCTYJV, the forthcoming construction activities for Contract 1 are listed below:

- Planting works
- Hydroseeding work

12.2.2 According to the information provided by Sang Hing, the forthcoming construction activities for Contract 2 are listed below:

- Construction of footpath at Lin Ma Hang Road
- Planting works at Sandy Ridge and Lin Ma Hang Road

12.3 KEY ISSUES FOR THE COMING MONTH

12.3.1 The construction activities are illustrated in ***Appendix P***. Key issues to be considered in the coming month for the works of Contract 1 and 2 shown in ***Table 12-2*** and ***Table 12-3***.

Table 12-2 Work Undertaken and Illustrations of Mitigation Measures for Contract 1

Description of Construction Activities	Used on PME	Environmental Mitigation Measures
Planting works	● Excavator	● Provided efficient silt removal facilities to reduce SS level before effluent discharge. ● Exposed slopes surface were compacted and covered with tarpaulin or similar means. ● Maintain damp / wet surface on access road. ● Maintain low vehicular speed within the works areas. ● Provided vehicle wheel washing facilities at each construction site exit; ● Stockpiles of dusty material were covered with impervious sheeting. ● Provided workers to clear dusty materials at the vehicle entrance or exit regularly. ● Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. ● Keep good maintenance of plants. ● Provided noise barriers or hoarding to enclose the noisy plants or works. ● Shut down the plants when not in used. ● Provided on-site sorting prior to disposal. ● Followed requirements and procedures of the "Trip-ticket System" ● Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas. ● The site was generally kept tidy and clean.

Table 12-3 Work Undertaken and Illustrations of Mitigation Measures for Contract 2

Construction Activities	Used on PME	Environmental Mitigation Measures
Construction of footpath at Lin Ma Hang Road	● Dump truck ● Excavator	● Provided efficient silt removal facilities to reduce SS level before effluent discharge. ● Exposed slopes surface were compacted and covered with tarpaulin or similar means. ● Maintain damp / wet surface on access road. ● Maintain low vehicular speed within the works areas. ● Provided vehicle wheel washing facilities at each construction site exit. ● Provided water spraying for all active works area, in particular for the soil nail works. ● Stockpiles of dusty material were covered with impervious
Planting works at Sandy Ridge and	● Excavator ● Roller	

Construction Activities	Used on PME	Environmental Mitigation Measures
Lin Ma Hang Road	● Dump truck	sheeting. ● Provided workers to clear dusty materials at the vehicle entrance or exit regularly. ● Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. ● Keep good maintenance of plants. ● Placed noisy plants away from residence and school. ● Provided noise barriers or hoarding to enclose the noisy plants or works. ● Shut down the plants when not in used. ● Provided on-site sorting prior to disposal. ● Followed requirements and procedures of the "Trip-ticket System" ● Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic. ● Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas. ● The site was generally kept tidy and clean.

12.3.2 The Contractors are reminded to pay special attention on water quality mitigation measures and should fully implement the measures as recommended in the EM&A Manual, in particular to prevent surface runoff and other pollutants from flowing to local stream and Conservation Area.

13. CONCLUSIONS AND RECOMMENTATIONS

13.1 CONCLUSIONS

13.1.1 This is the **58th** Monthly EM&A Report presenting the monitoring results and inspection findings for the period of **1st** to **31st May 2023**.

13.1.2 In the Reporting Month, no 24-hour or 1-hour TSP monitoring result that triggered the Action or Limit Levels was recorded. No NOEs or the associated corrective action was therefore required.

13.1.3 In the Reporting Month, no noise complaint (which triggered Action Level) was received and no Limit Level exceedance for noise monitoring exceedance was recorded.

13.1.4 In the Reporting Month, a total of ***8*** Limit level water quality exceedances, namely **4** exceedances of turbidity and **4** exceedances of SS were recorded. According to the weather data from Observatory, there were successive rainstorms on 7 and 8 May 2023. Due to the impact of rain, the water quality of seasonal watercourse was inevitably affected by the sediment stirred up from the surrounding environment, even beyond the boundaries of the construction site. Weekly site inspection revealed that water quality mitigation measures were in place and the site conditions were generally in order. It was concluded that the exceedances were likely related to the impact of the Severe Tropical Storm and not caused by the work under the project.

13.1.5 Monthly ecological monitoring for sensitive habitat for area of Contract 1 and Contract 2 were undertaken on ***18th May 2023***. After analysing survey results in May from 2019 to 2023 for Contract 1, the species richness and abundance for wetland habitat were unstable and a rapid rebound from 2022 was recorded recently. This could be benefited by some positive factors such as the major construction works were completed and most of the PME has been removed from site. For Contract 2, after analysing survey results in May from 2019 to 2023, records in species richness and abundance for wetland and non-wetland habitats are unstable, this may due to natural fluctuation. According to the recent on-site observation, there are new built workshops by others situated on both sides of Lin Ma Hang Road so the disturbance to fauna species from construction works could be increased. Due to the cause was not related to this project, remedial action to remove or reduce source of disturbance is limited.

13.1.6 Besides, compensation planting works have been conducted in early Jan 2023. Therefore, disturbance to fauna species from construction works have been largely minimised. In addition, woodland compensation and grassland reinstatement would be implemented in the second and third quarter of 2023. Hence, the habitat of fauna species would be gradually recovered and expectation of increase in the species richness and abundance for wetland habitat is high.

13.1.7 In the Reporting Period, there was no vegetation clearance for both Contract 1 and Contract 2, and precautionary check for the presence of nesting birds was not required to carry out.

13.1.8 Landscape and visual inspection at both Contracts were undertaken on ***31st* May *2023***. The Contractor was reminded to prevent the construction material pile within Tree Protection Zone and ensure no works is allowed within the TPZ.

13.1.9 In the Reporting Month, no environmental complaints, summons and prosecution were received. In addition, no complaints received and emergency events relating to violation of environmental legislation for illegal dumping and landfilling were received.

13.1.10 In the Reporting Month, joint site inspections for Contract 1 to evaluate the site environmental performance were carried out by the Resident Engineer, ET and the Contractor of the Contract 1 on ***4th, 11th, 18th and 25th May 2023.*** Moreover, joint site inspections for Contract 2 by the RE, ET and the Contractor of Contract 2 were carried out on ***4th, 11th, 18th and 25th May 2023***. IEC attended the both Contract joint site inspection on ***18th May 2023***. No non-compliance was noted during the site inspections.

13.2 RECOMMENDATIONS

13.2.1 During wet season, water quality mitigation measures as recommended in the EM&A Manual should be fully implemented, in particular to prevent surface runoff and other pollutants from flowing to local stream and Conservation Area.

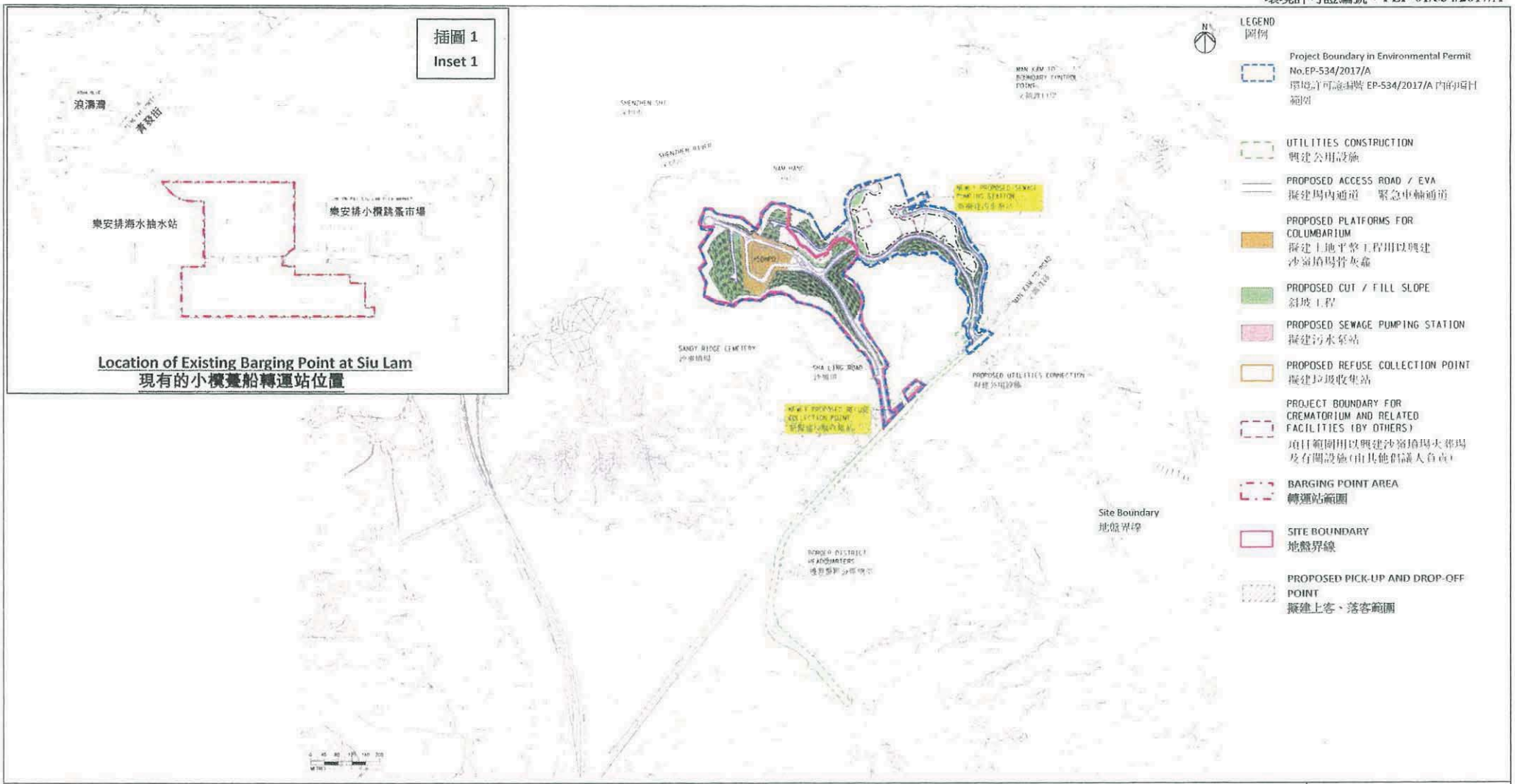
13.2.2 The Contractors are reminded to pay special attention on the air quality mitigation measures such as wheel wash facilities, watering of haul roads, loose soil construction surface and covering of dusty materials with tarpaulin sheet should be implemented as far as practicable.

13.2.3 Construction noise would be a key environmental issue during construction phase of the Project. Noise mitigation measures such as using quiet plants and mobile noise barriers should be implemented in accordance with the EM&A requirement.

Appendix A

Layout Plan of the Project

Layout Plan of Contract CV/2016/10

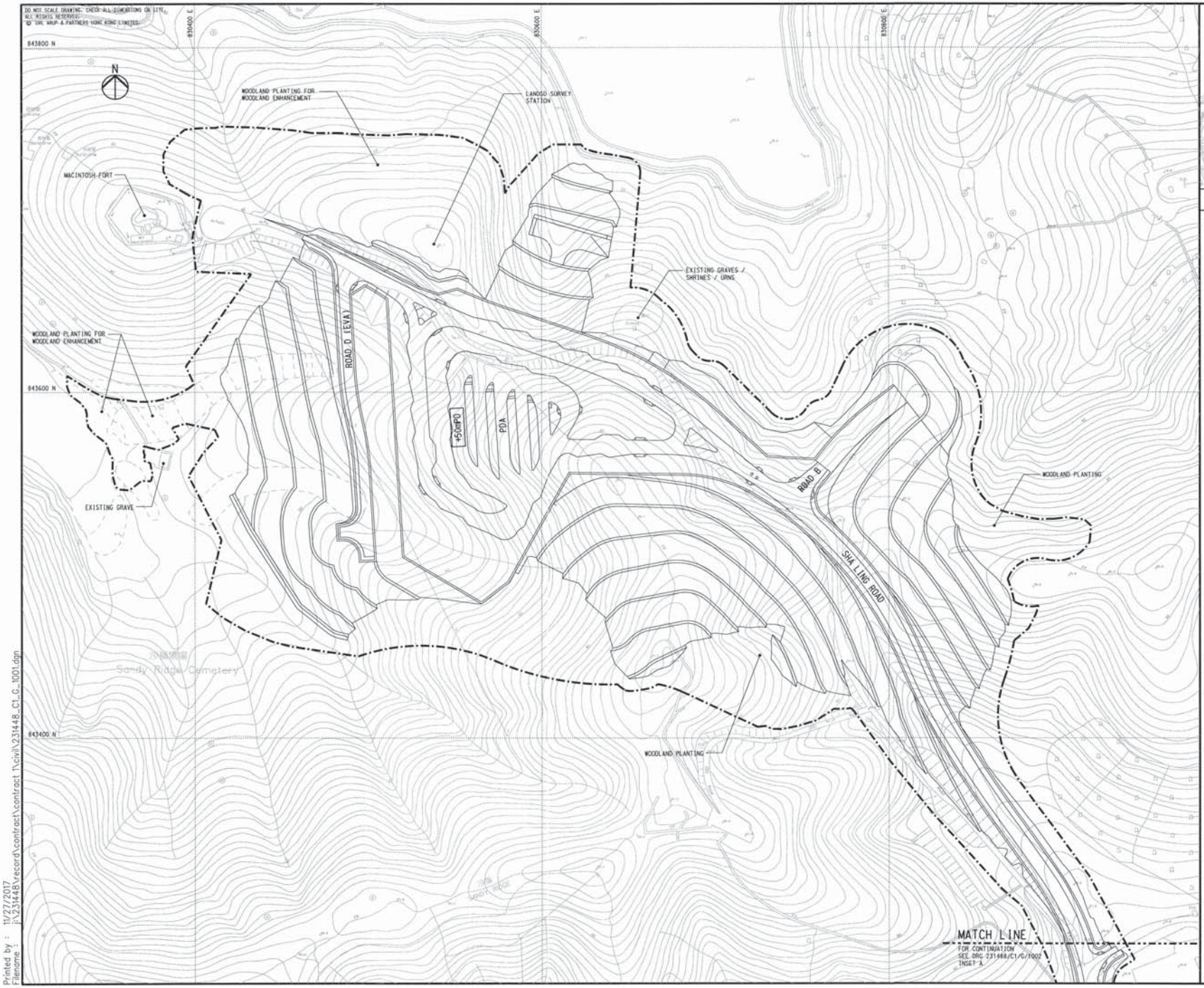


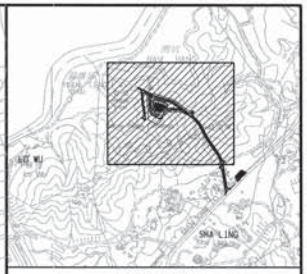
Project Title: Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
工程名稱：沙嶺墳場興建骨灰龕的工地平整及相關基建工程

Figure 1: Project Location Plan
圖 1：項目位置圖
(This figure was prepared based on Figure 1 attached to the VEP Application No. VEP-555/2018 and Figures 1.3 of the Approved EIA Report No. AEIAR-198/2016)
(本圖是根據更改環境許可証申請文件編號：VEP-555/2018 所隨附的圖 1 和環境影響評估報告編號 AEIAR-198/2016 圖 1.3 編制)

Environmental Permit No.: FEP-01/534/2017/A
環境許可證編號：FEP-01/534/2017/A

EIAO EPD





KEY PLAN

LEGEND:

PROPOSED WORKS SITE

+50mPD SITE FORMATION LEVEL

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

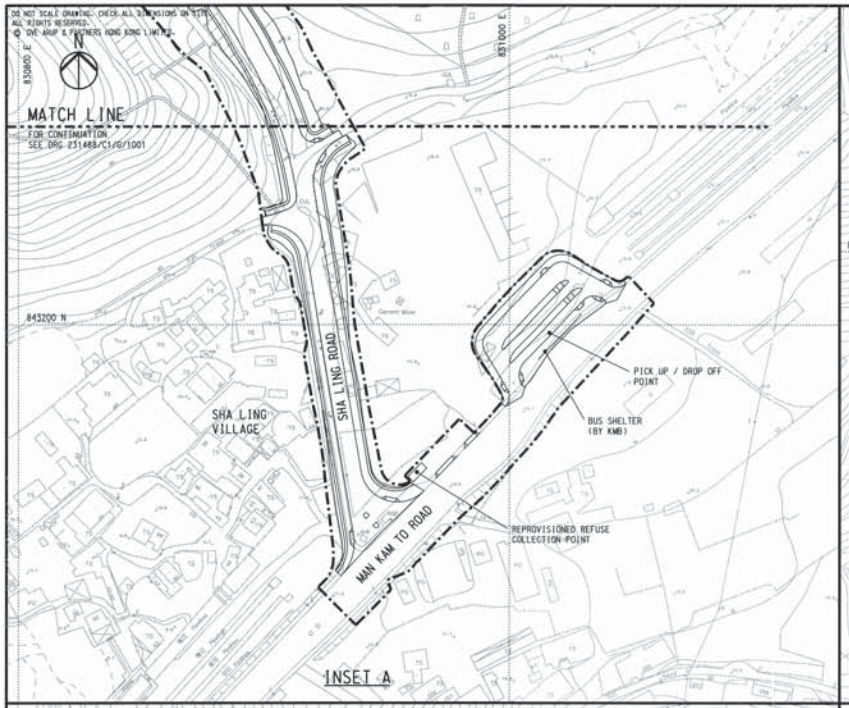
Drawing title

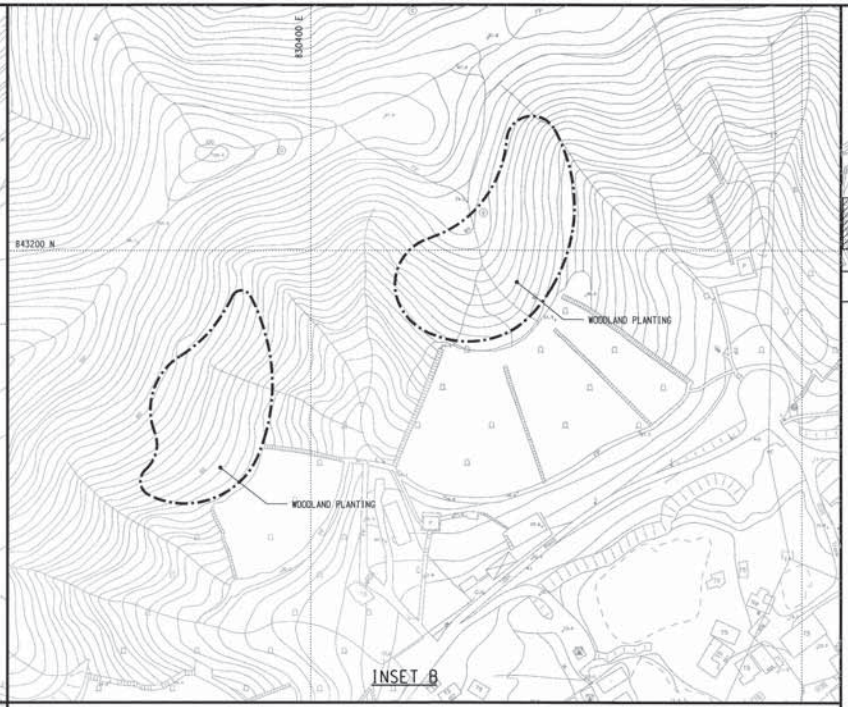
GENERAL LAYOUT
(SHEET 1 OF 3)

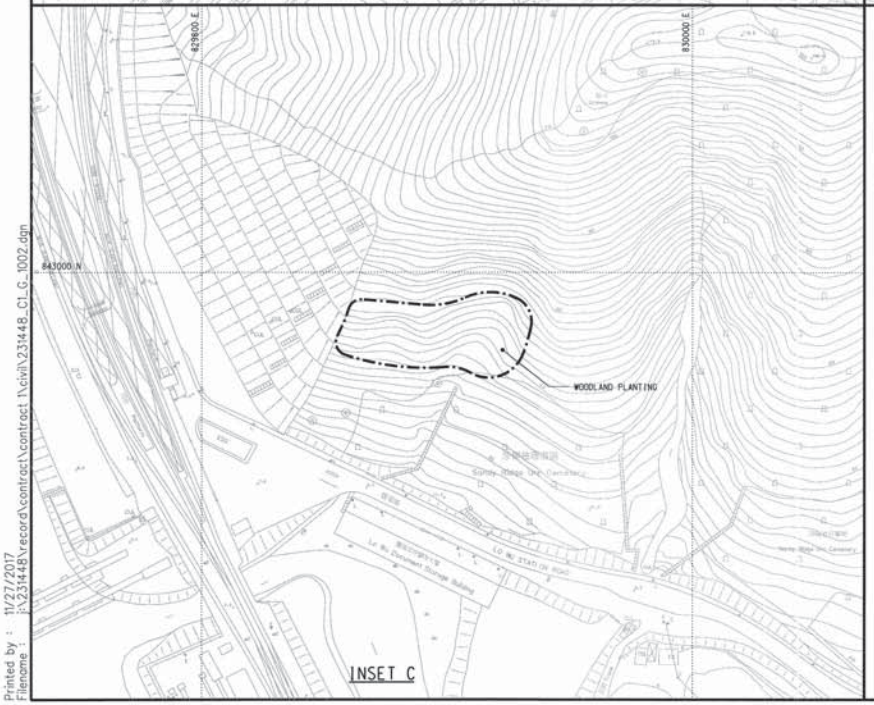
Drawing no.			Rev.
231448/C1/G/1001			-
Drawn: WM	Date: 12/16	Checked: AW	Approved: DL
Scale: 1:1000 @A1		Status: CONTRACT	

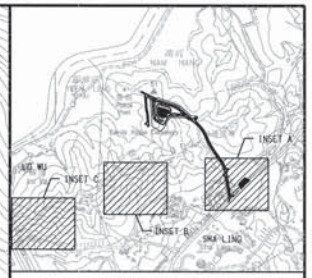
CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 11/27/2017
Filename : j:\231448\record\contract\contract 1\civil\231448_C1_G_1001.dgn









KEY PLAN

LEGEND:

PROPOSED WORKS SITE

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

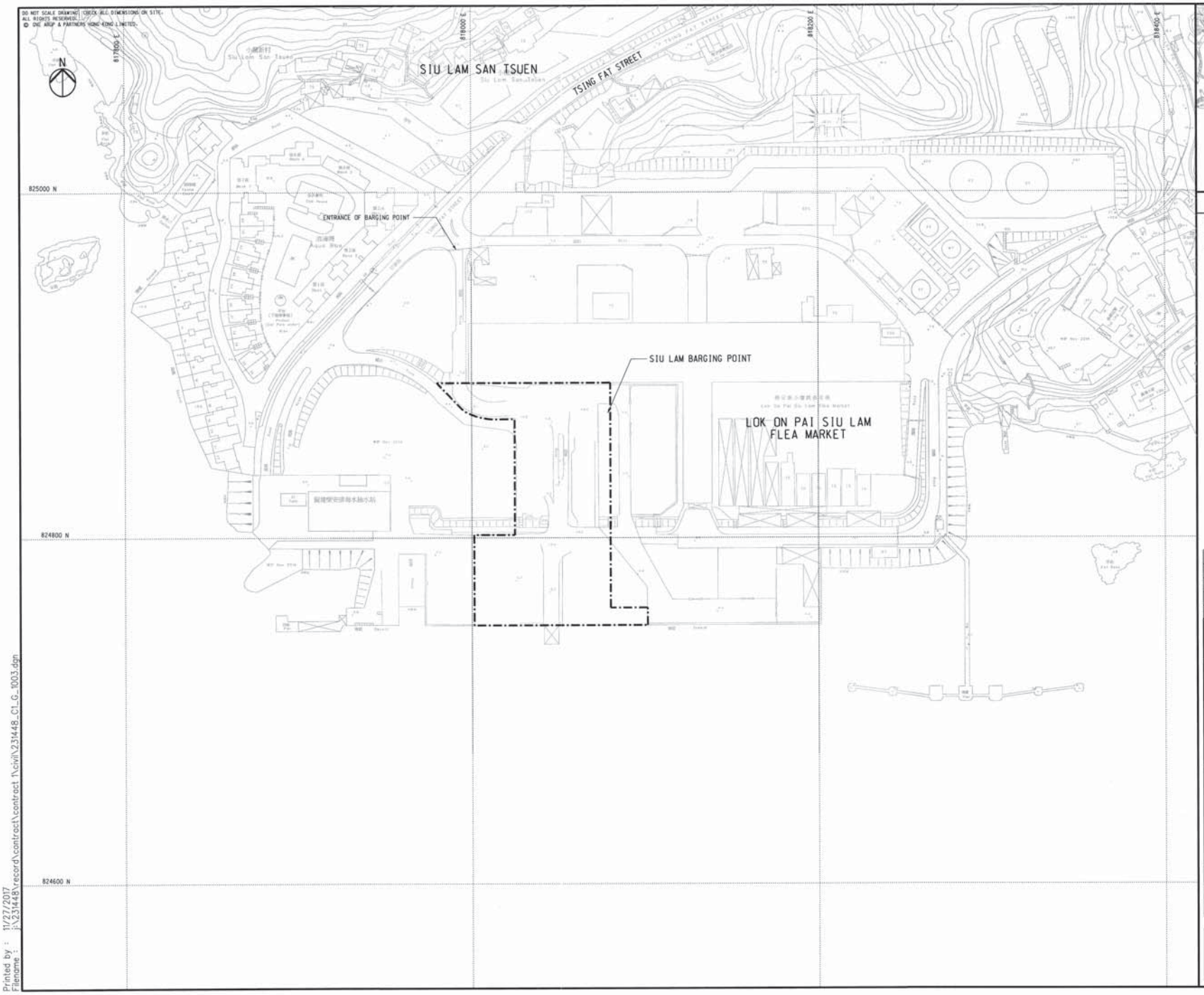
Drawing title

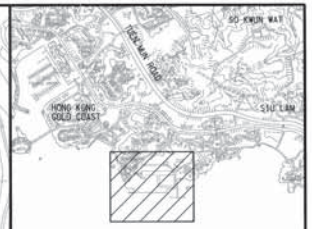
GENERAL LAYOUT
(SHEET 2 OF 3)

Drawing no.			Rev.
231448/C1/G/1002			–
Drawn: WM	Date: 12/16	Checked: AW	Approved: DL
Scale: 1:1000 @A1		Status: CONTRACT	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 11/27/2017
Filename : j:\231448\record\vcontract\contract 1\civil\231448_C1_G_1002.dgn





KEY PLAN

LEGEND:

PROPOSED WORKS SITE

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Drawing title

GENERAL LAYOUT
(SHEET 3 OF 3)

Drawing no.	Rev.
231448/C1/G/1003	-

Drawn	Date	Checked	Approved
WM	12/16	AN	DL

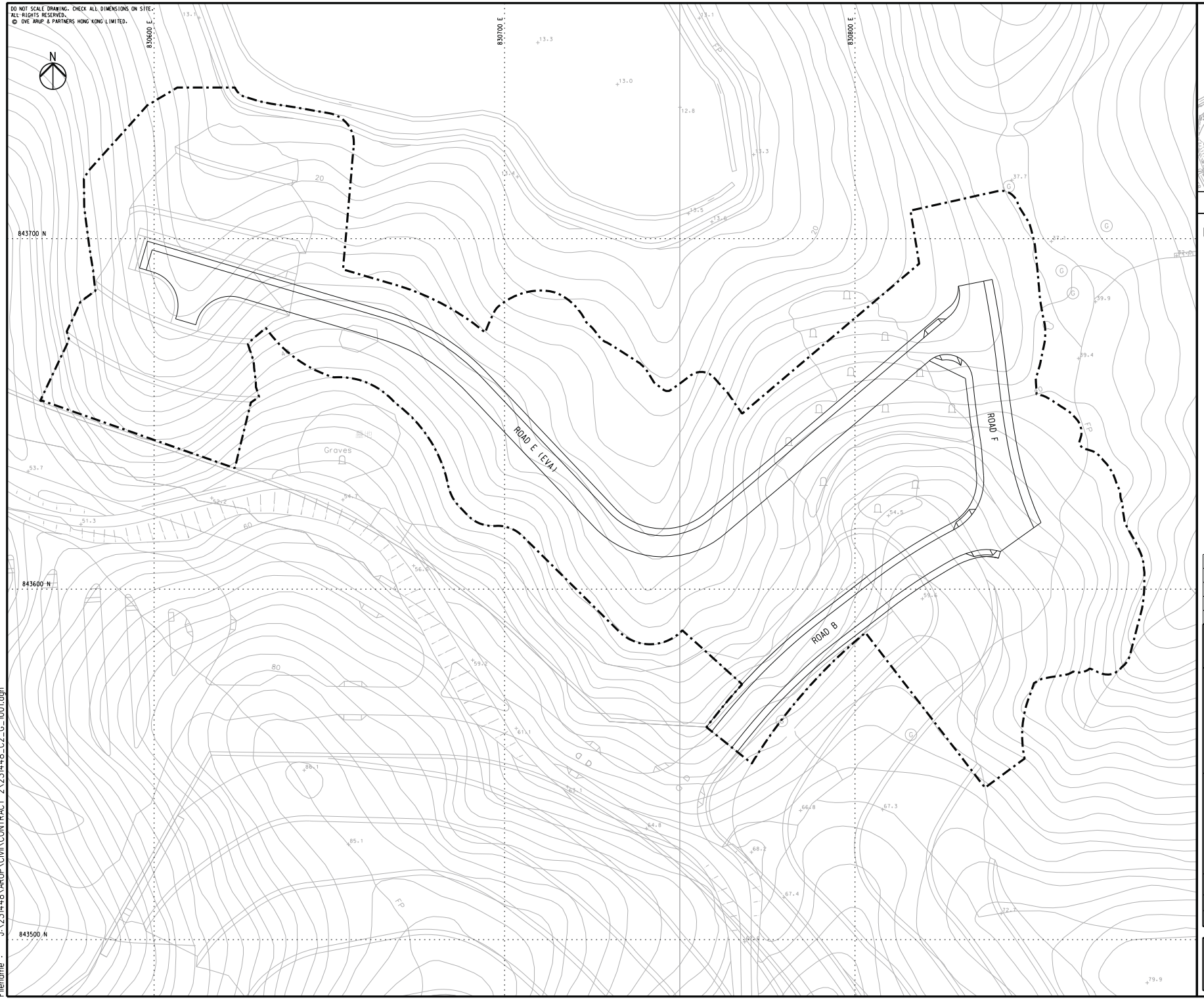
Scale: 1:1000 @A1

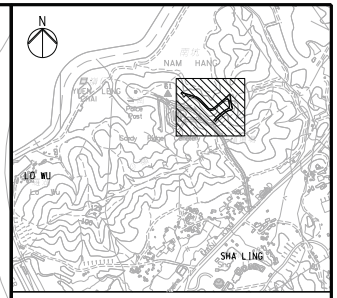
Status: CONTRACT

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 11/27/2017
Filename : i:\231448\record\contract\contract 1\civil\231448_C1_G_1003.dgn

Layout Plan of Contract CV/2017/02





KEY PLAN

LEGEND:

SITE BOUNDARY

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

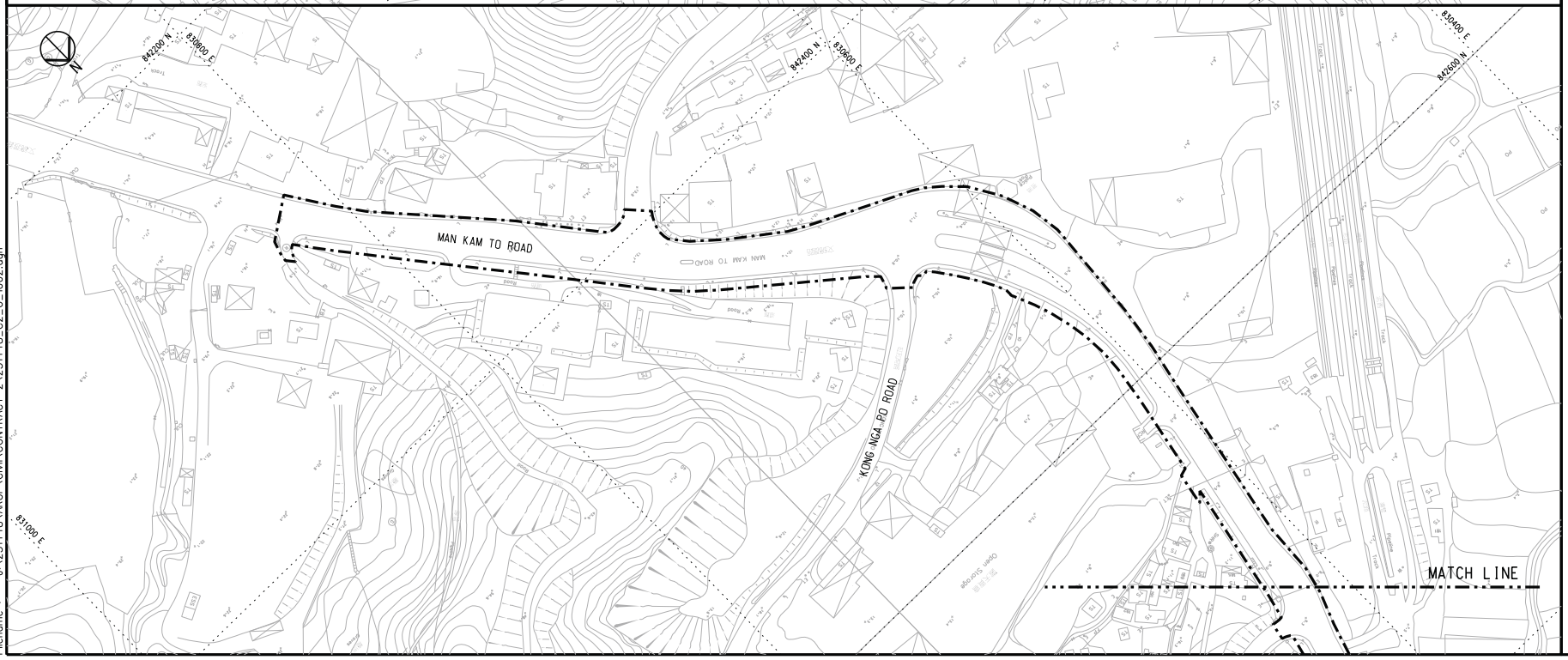
Drawing title

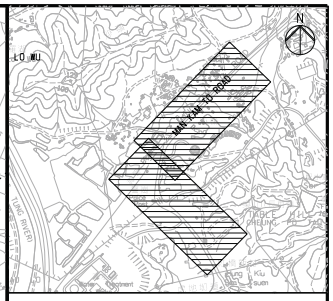
GENERAL LAYOUT
(SHEET 1 OF 5)

Drawing no.			Rev.
231448/C2/G/1001			-
Drawn	Date	Checked	Approved
MM	07/17	AW	DL
Scale		Status	
1:500 @A1		TENDER	

CEDD 土木工程拓展署
Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1001.dgn





KEY PLAN

LEGEND:

SITE BOUNDARY

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

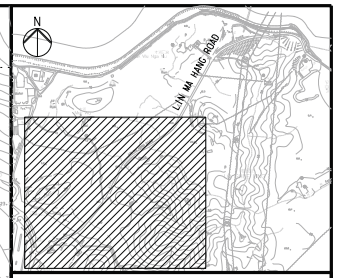
Drawing title

GENERAL LAYOUT (SHEET 2 OF 5)

Drawing no.			Rev.
231448/C2/G/1002			-
Drawn	Date	Checked	Approved
MW	07/17	AW	DL
Scale		Status	
1:1000 @A1		TENDER	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1002.dgn



KEY PLAN

LEGEND:

SITE BOUNDARY

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

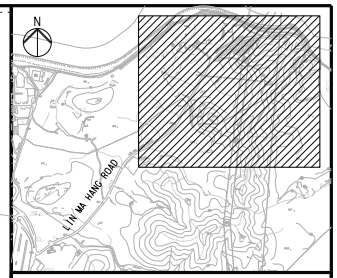
Drawing title

GENERAL LAYOUT
(SHEET 3 OF 5)

Drawing no.			Rev.
231448/C2/G/1003			-
Drawn	Date	Checked	Approved
MW	07/17	AW	DL
Scale		Status	
1:1000 @A1		TENDER	

CEDD 土木工程拓展署
Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1003.dgn



KEY PLAN

LEGEND:

SITE BOUNDARY

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

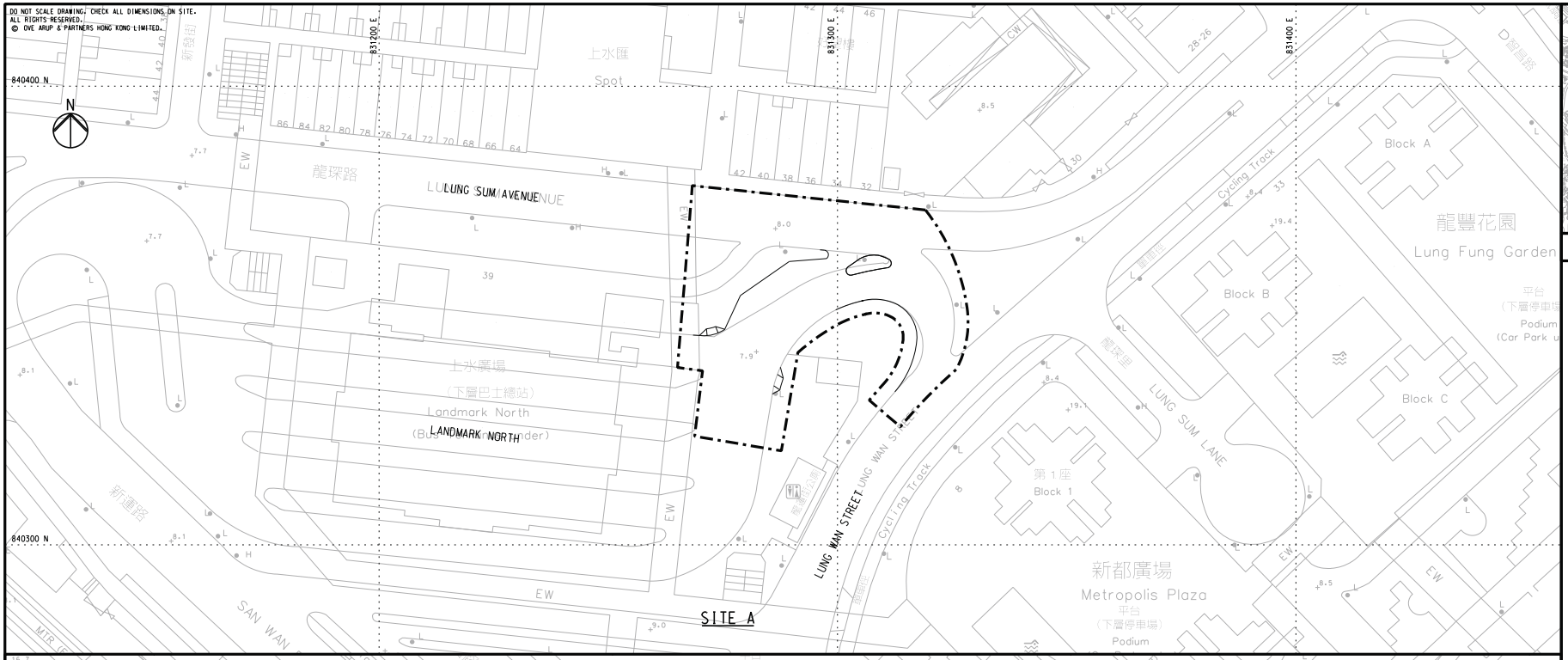
Drawing title

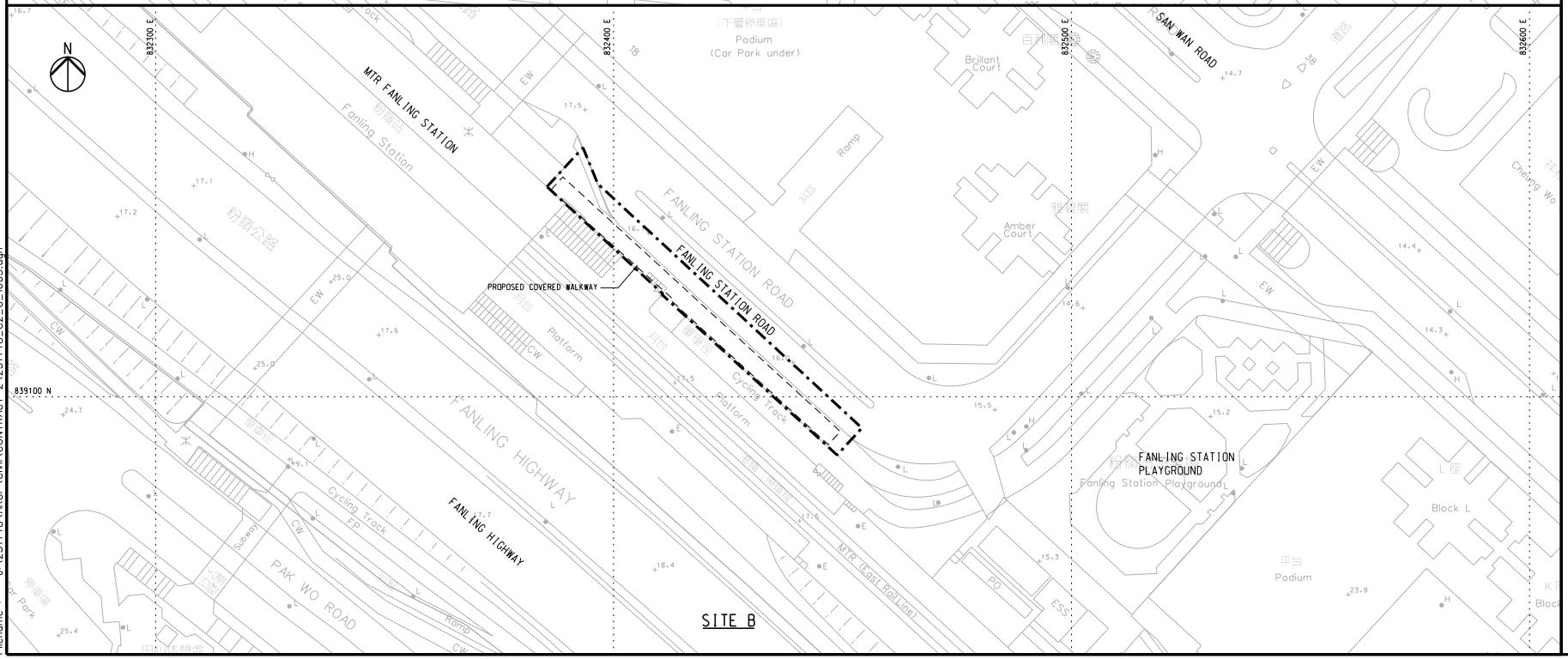
GENERAL LAYOUT (SHEET 4 OF 5)

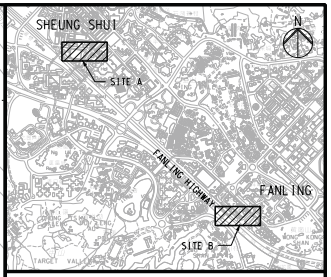
Drawing no.			Rev.
231448/C2/G/1004			-
Drawn	Date	Checked	Approved
MW	07/17	AW	DL
Scale		Status	
1:1000 @A1		TENDER	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1004.dgn







KEY PLAN

LEGEND:

SITE BOUNDARY

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

Drawing title

GENERAL LAYOUT
(SHEET 5 OF 5)

Drawing no.	Rev.
231448/C2/G/1005	-

Drawn	Date	Checked	Approved
MW	07/17	AW	DL

Scale: 1:500 @A1

Status: TENDER

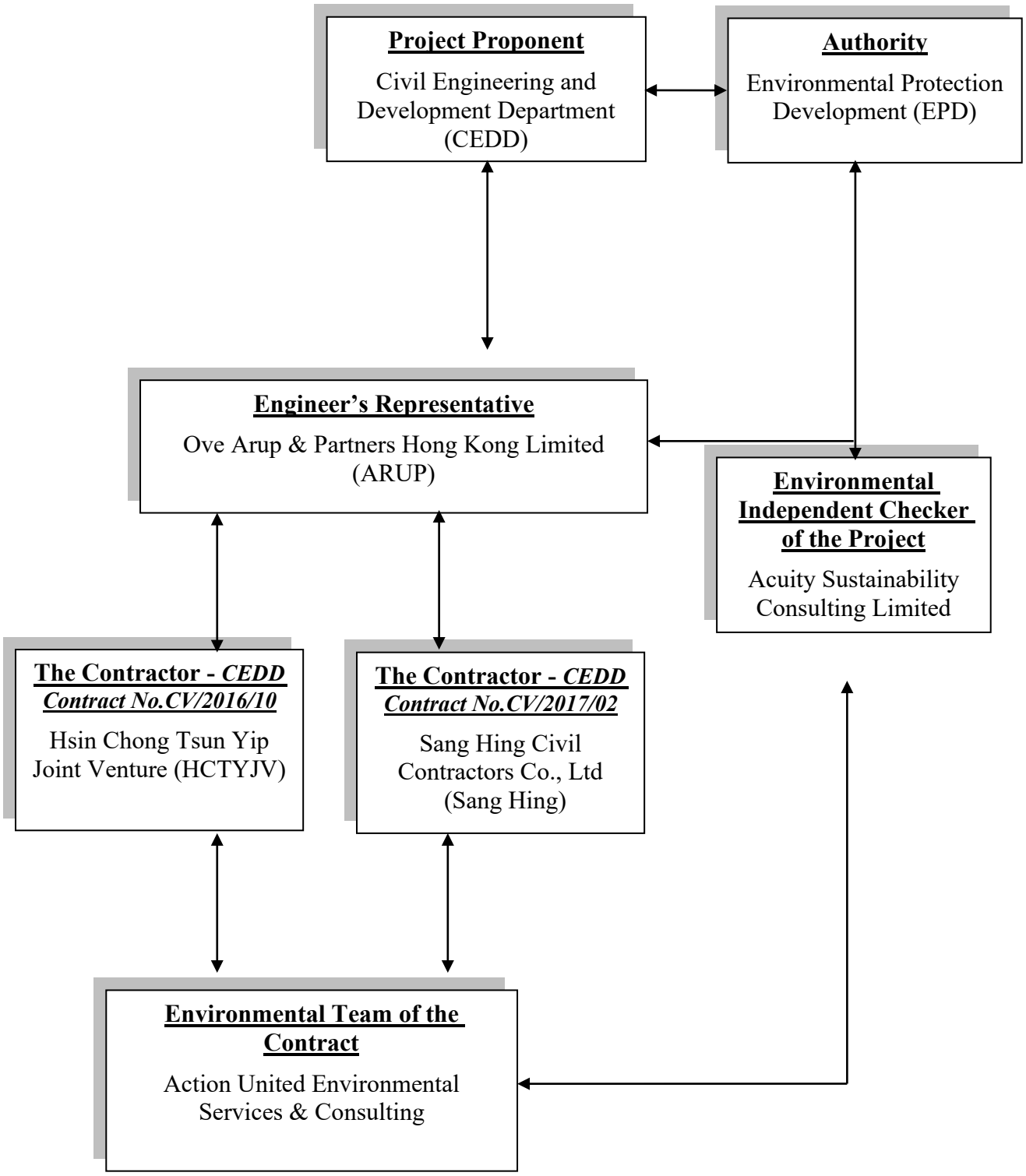
CEDD 土木工程拓展署
Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1005.dgn

Appendix B

Organization Structure and Contact Details of Relevant Parties

The Contract's Environmental Management Organization



Contact Details of Key Personnel for CV/2016/10 (Contract 1)

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Employer	BOK Kwok-ming, Aaron	2762-5624	2714-0695
ARUP	Engineer's Representative	Steve Tang	6190-1513	2268-3950
ACUITY	Independent Environmental Checker	Mr. Leung CH Jacky	2698-6833	2698-9383
HCTYJV	Project Director	Mr. Keniel Kwong	9495-2408	2633-4691
HCTYJV	Construction Manager	Mr. Ho Man To	9620-9794	2633-4691
HCTYJV	Environmental Officer	To be advised		
HCTYJV	Environmental supervisor	Mr. Leung Pak Sum	9437-3606	2633-4691
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Mr. Ben Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959-6059	2959-6079
AUES	Environmental Site Inspector	Mr. Martin Li	2959-6059	2959-6079
AUES	Qualified Ecologist	Mr. Leung Wing Keung, Mike	2959-6059	2959-6079
AUES	Qualified Ecologist	Mr. Keith L.W. Kei	2959-6059	2959-6079
AUES	Registered Landscape Architect	Mr. Shui Yau Bun, Ivan	2959-6059	2959-6079

Legend:

CEDD (Employer) – Civil Engineering and Development Department

ARUP (Engineer) – Ove Arup & Partners Hong Kong Limited

HCTYJV (Main Contractor) – Hsin Chong Tsun Yip Joint Venture

ACUITY (IEC) – Acuity Sustainability Consulting Limited

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

Contact Details of Key Personnel for CV/2017/02 (Contract 2)

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Employer	BOK Kwok-ming, Aaron	2762-5624	2714-0695
ARUP	Engineer's Representative	Anthony Lau	6190-1513	2268-3950
ACUITY	Independent Environmental Checker	Ir. Leung CH Jacky	2698-6833	2698-9383
SANG HING	Project Director	Edwin Au	9208-7329	2403-1162
SANG HING	Construction Manager	Raymond Wong	9272-1831	2403-1162
SANG HING	Site Agent	Elvin Lam	6285-0803	2403-1162
SANG HING	Environmental Officer	Keibi Chan	6090-0183	2403-1162
SANG HING	Environmental Supervisor	Kenny Chan	6115-0120	2403-1162
AUES	Environmental Team Leader	Mr. T.W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Mr. Ben Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959-6059	2959-6079
AUES	Environmental Site Inspector	Mr. Martin Li	2959-6059	2959-6079
AUES	Qualified Ecologist	Mr. Leung Wing Keung, Mike	2959-6059	2959-6079
AUES	Qualified Ecologist	Mr. Keith L.W. Kei	2959-6059	2959-6079
AUES	Qualified Ecologist	Mr. N.L Lam, Alan	2959-6059	2959-6079
AUES	Registered Landscape Architect	Mr. Shui Yau Bun, Ivan	2959-6059	2959-6079

Legend:

CEDD (Employer) – Civil Engineering and Development Department

ARUP (Engineer) – Ove Arup & Partners Hong Kong Limited

Sang Hing (Main Contractor) –Sang Hing Civil Contractors Co., Ltd

ACUITY (IEC) – Acuity Sustainability Consulting Limited

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

Appendix C

Three Months Rolling Programme

Three Months Rolling Programme of

Contract CV/2016/10

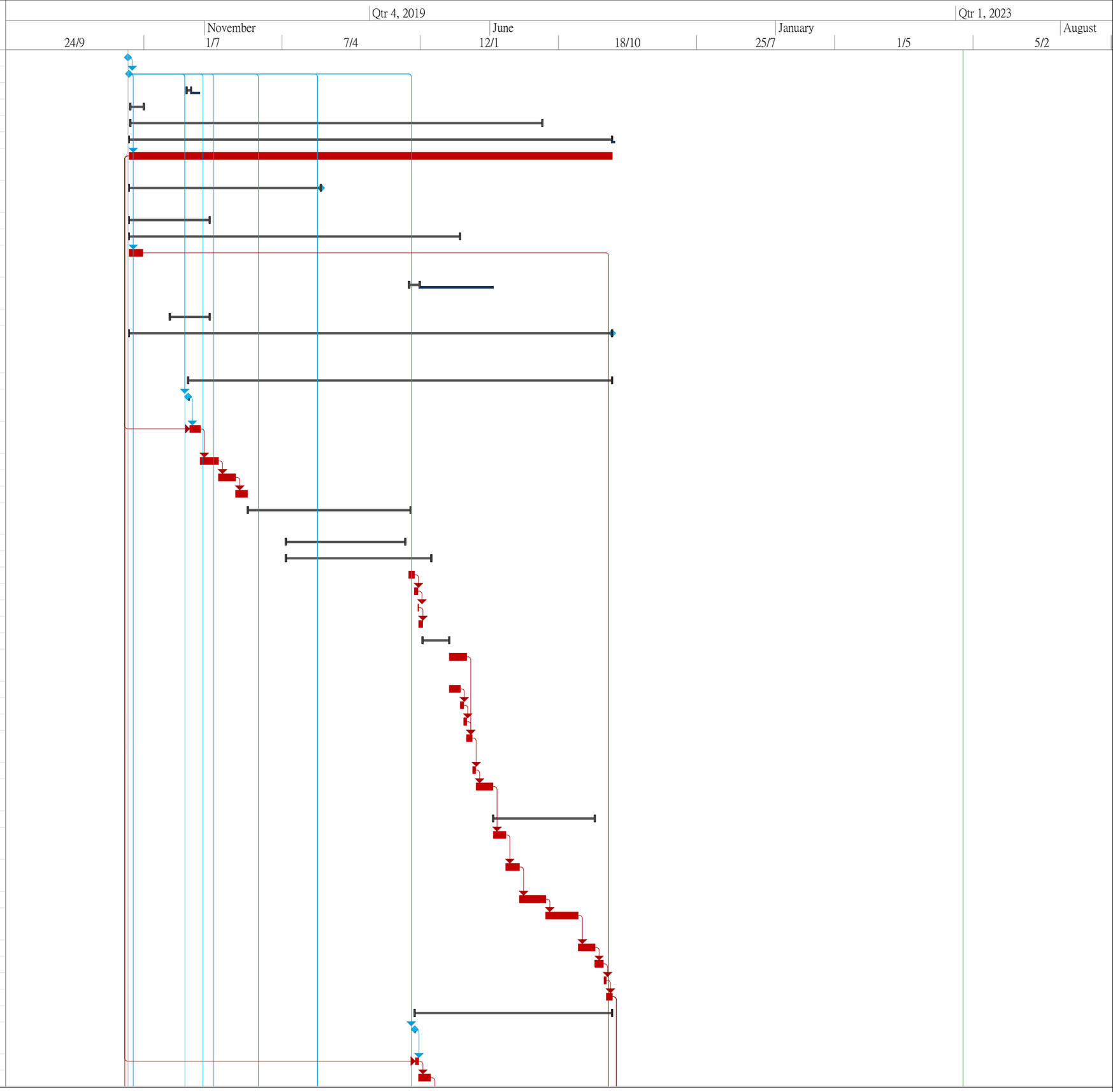
(Not used)

Three Months Rolling Programme of

Contract CV/2017/02

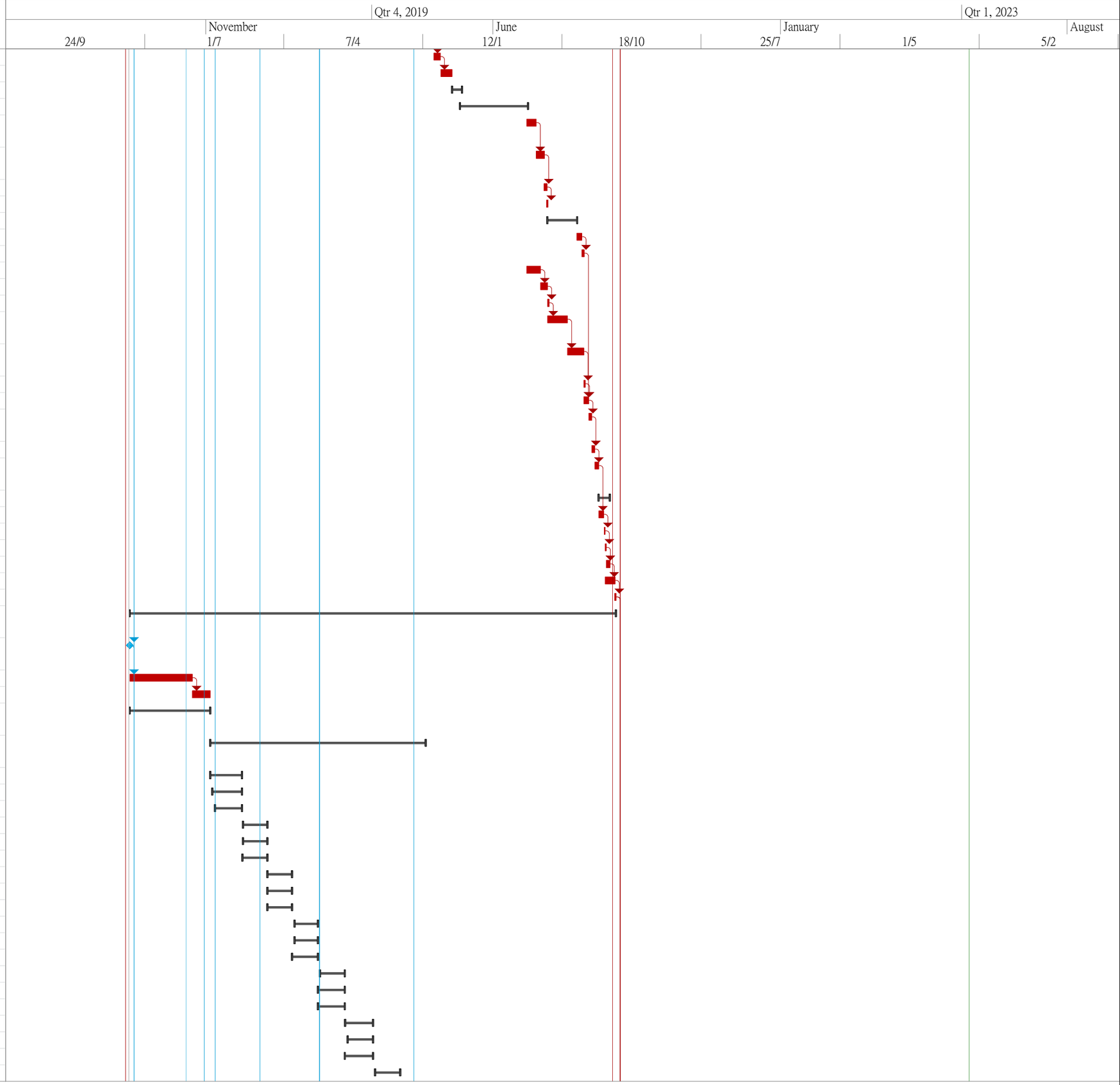
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
1	1	**Letter of Acceptance**	0 days	30/5/2018	30/5/2018
2	2	**Starting Date**	0 days	31/5/2018	31/5/2018
3	3	ET Submissions	9 days	26/9/2018	5/10/2018
12	4	Applications to Government Department	27 days	4/6/2018	30/6/2018
20	5	Submissions & acceptances	835 days	4/6/2018	15/9/2020
44	6	Liaison with Utility Undertakers	979 days	1/6/2018	3/2/2021
47	7	Liaison with Contract CV/2016/01 regarding Parts A1 to A4 (refer PS Appendix A1)	979 days	1/6/2018	3/2/2021
48	8	Liaison Meeting with Interface and associated contractors	389 days	1/6/2018	24/6/2019
53	9	Tree Survey Reporting	164 days	1/6/2018	11/11/2018
58	10	Street Lighting Designs by the Contractor	671 days	1/6/2018	1/4/2020
66	11	Provision of Project Manager's Site Accommodation (PS1.08A(b) & 1.49)	28 days	1/6/2018	28/6/2018
67	12	Design of irrigation system within the Sandy Ridge Cemetery (LS/2021, 2041, 2042, W/1041,1011)	21 days	20/12/2019	10/1/2020
70	13	Condition Survey	81 days	23/8/2018	11/11/2018
77	**14**	**section 1 of the works - Completion of all works within Parts A1, A2 and B of the Site except Establishment works**	979 days	31/5/2018	3/2/2021
78	14.1	**Parts A1**	859 days	28/9/2018	3/2/2021
79	14.1.1	*access date for section 1 (Parts A1) - not more than 120 days after the starting date*	0 days	28/9/2018	28/9/2018
80	14.1.2	form temporary haul road from the south side to Parts A1	14 days	2/10/2018	22/10/2018
81	14.1.3	general site clearance	30 days	23/10/2018	28/11/2018
82	14.1.4	initial survey	27 days	29/11/2018	2/1/2019
83	14.1.5	construction of temporary drainage	21 days	3/1/2019	26/1/2019
84	**14.1.6**	Site Formation works for Cut Slope CS22 (in Parts A1)	258 days	28/1/2019	23/12/2019
101	14.1.7	A1) Construction of Retaining Wall RW13 (bays	192 days	15/4/2019	12/12/2019
125	**14.1.8**	Site Formation works for Fill Slope FS18	231 days	15/4/2019	3/2/2020
136	14.1.9	CS21 - slope cutting	7 days	20/12/2019	30/12/2019
137	14.1.10	install instrument for CS21	5 days	31/12/2019	6/1/2020
138	14.1.11	placement of erosion control mat/ hydroseeding	2 days	7/1/2020	8/1/2020
139	14.1.12	minor cutting CS26 (Parts A1) (for Road E)	7 days	9/1/2020	16/1/2020
140	14.1.13	Drainage works at Road E	43 days	17/1/2020	10/3/2020
143	14.1.14	Waterworks at Road E	24 days	11/3/2020	14/4/2020
144	14.1.15	CS23 - slope cutting & 300U channel	17 days	11/3/2020	1/4/2020
145	14.1.16	install instrument for CS23	5 days	2/4/2020	8/4/2020
146	14.1.17	placement of erosion control mat/ hydroseeding	2 days	9/4/2020	14/4/2020
147	14.1.18	backfilling of pipe trench to formation (including SRT test)	9 days	15/4/2020	25/4/2020
148	14.1.19	300U channel behind RW13	4 days	27/4/2020	2/5/2020
149	14.1.20	300U channel and planter wall at south side of Road E	30 days	4/5/2020	6/6/2020
150	14.1.21	Roadworks of Road E (A1-ch66-243)	164 days	8/6/2020	30/12/2020
151	14.1.21.1	ducting for road lighting (RD/2091) & construction of irrigation system	20 days	8/6/2020	2/7/2020
152	14.1.21.2	kerbing, sub-base (include subbase SRT test) & cross road duct (RD/2061, 2081)	24 days	3/7/2020	30/7/2020
153	14.1.21.3	concrete pavement	45 days	31/7/2020	21/9/2020
154	14.1.21.4	traffic signs, directional signs, type 2 railing, emergency crash gate, beam barriers	48 days	22/9/2020	26/11/2020
155	14.1.21.5	concrete footpath	27 days	27/11/2020	30/12/2020
156	14.1.22	street lighting (Drg/ RD/2091)	14 days	31/12/2020	16/1/2021
157	14.1.23	landscaping (hydroseeding)	5 days	18/1/2021	22/1/2021
158	14.1.24	landscaping (shrub planting)	10 days	23/1/2021	3/2/2021
159	14.2	**Parts A2**	400 days	31/12/2019	3/2/2021
160	**14.2.1**	*access date for section 1 (Parts A2) - not more than 580 days after the starting date*	0 days	31/12/2019	31/12/2019
161	14.2.2	form temporary haul road to Parts A2	6 days	2/1/2020	8/1/2020
162	14.2.3	general site clearance	18 days	9/1/2020	1/2/2020



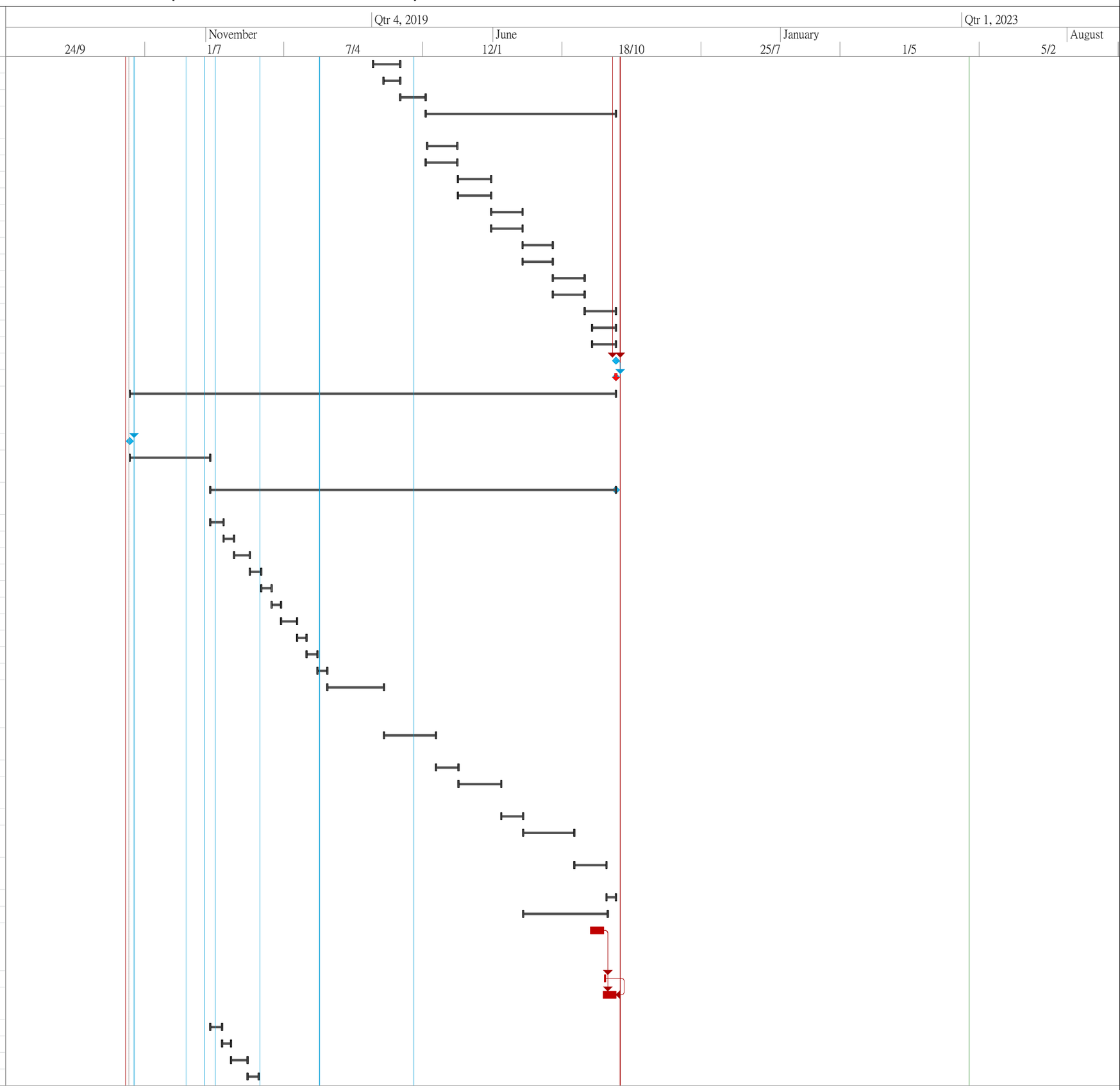
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
163	14.2.4	initial survey	12 days	3/2/2020	15/2/2020
164	14.2.5	construction of temporary drainage	20 days	17/2/2020	10/3/2020
165	14.2.6	Site Formation works for Cut Slope CS22 (in P	15 days	11/3/2020	30/3/2020
174	14.2.7	Construction of Retaining Wall RW13 Bay 6 to	107 days	27/3/2020	10/8/2020
199	14.2.8	(west) drainage works at Road E (ch250 to 300)	16 days	8/8/2020	26/8/2020
200	14.2.9	(west) waterworks at Road E (ch250 to 300)	15 days	27/8/2020	12/9/2020
201	14.2.10	construction of Irrigation System	5 days	12/9/2020	17/9/2020
202	14.2.11	U channel for Road E	3 days	17/9/2020	19/9/2020
203	14.2.12	Roadworks of Road E (A2-ch243-300)	42 days	19/9/2020	17/11/2020
209	14.2.13	street lighting for Road E (Drg/ RD/2091)	9 days	17/11/2020	26/11/2020
210	14.2.14	landscaping (shrub planting)	4 days	27/11/2020	1/12/2020
211	14.2.15	site formation works for Cut Slope CS26 (A2)	24 days	8/8/2020	4/9/2020
212	14.2.16	site formation works for Cut Slope CS25 (A2)	12 days	5/9/2020	18/9/2020
213	14.2.17	placement of erosion control mat/ hydroseedin	2 days	19/9/2020	21/9/2020
214	14.2.18	drainage works at Road B & sewerage works at Road B	28 days	19/9/2020	28/10/2020
215	14.2.19	waterworks at Road B	25 days	29/10/2020	30/11/2020
216	14.2.20	backfill formation for Road B	3 days	1/12/2020	3/12/2020
217	14.2.21	street lighting ducts and drawpits at Road B	9 days	1/12/2020	10/12/2020
218	14.2.22	arrange Town Gas to lay cables (NOT YET AGREED)	5 days	11/12/2020	16/12/2020
219	14.2.23	planter wall for Road B	5 days	17/12/2020	22/12/2020
220	14.2.24	arrange HKT to lay PCCW cables (NOT YET AGREED)	5 days	23/12/2020	30/12/2020
221	14.2.25	Roadworks of Road B (A2-ch28.5-90)	19 days	31/12/2020	22/1/2021
222	14.2.25.1	kerbing & sub-base (include sub-base SRT t	8 days	31/12/2020	9/1/2021
223	14.2.25.2	DBM (Roadbase)	2 days	11/1/2021	12/1/2021
224	14.2.25.3	base course and wearing course	2 days	13/1/2021	14/1/2021
225	14.2.25.4	directional sign, roadmarkings & footpath	7 days	15/1/2021	22/1/2021
226	14.2.26	landscaping (hydroseeding)	17 days	13/1/2021	1/2/2021
227	14.2.27	landscaping (shrub planting)	3 days	1/2/2021	3/2/2021
228	14.3	**Parts B - refer Appendix MKTR01A & Appendix MKTR01B**	979 days	31/5/2018	3/2/2021
229	14.3.1	*access date for section 1 (Parts B) - the starting date*	0 days	31/5/2018	31/5/2018
230	14.3.2	Initial Survey	104 days	1/6/2018	4/10/2018
231	14.3.3	utility detection and submit reports	30 days	5/10/2018	9/11/2018
232	14.3.4	Temporary Traffic Arrangement (TTA) Scheme for Man Kam Road	134 days	1/6/2018	9/11/2018
236	14.3.5	Construction of Fresh Water Mains (DN400)-refer to Drawings No. MKTR	352 days	10/11/2018	17/1/2020
237	14.3.5.1	Phase 1: TTA 1s	52 days	10/11/2018	12/1/2019
246	14.3.5.2	Phase 1: TTA 8s	49 days	14/11/2018	12/1/2019
255	14.3.5.3	Phase 1: TTA 15s	44 days	20/11/2018	12/1/2019
264	14.3.5.4	Phase 2: TTA 2s	39 days	15/1/2019	4/3/2019
273	14.3.5.5	Phase 2: TTA 9s	39 days	15/1/2019	4/3/2019
282	14.3.5.6	Phase 2: TTA 16s	40 days	14/1/2019	4/3/2019
291	14.3.5.7	Phase 3: TTA3s	39 days	5/3/2019	23/4/2019
300	14.3.5.8	Phase 3: TTA10s	39 days	5/3/2019	23/4/2019
309	14.3.5.9	Phase 3: TTA17s	39 days	5/3/2019	23/4/2019
318	14.3.5.10	Phase 4: TTA4s	38 days	29/4/2019	14/6/2019
327	14.3.5.11	Phase 4: TTA11s	38 days	29/4/2019	14/6/2019
336	14.3.5.12	Phase 4: TTA18s	42 days	24/4/2019	14/6/2019
345	14.3.5.13	Phase 5: TTA5s	42 days	19/6/2019	7/8/2019
354	14.3.5.14	Phase 5: TTA12s	45 days	15/6/2019	7/8/2019
363	14.3.5.15	Phase 5: TTA19s	45 days	15/6/2019	7/8/2019
372	14.3.5.16	Phase 6: TTA6s	46 days	9/8/2019	3/10/2019
381	14.3.5.17	Phase 6: TTA13s	42 days	14/8/2019	3/10/2019
390	14.3.5.18	Phase 6: TTA20s	47 days	8/8/2019	3/10/2019
399	14.3.5.19	Phase 7: TTA7s	44 days	8/10/2019	27/11/2019



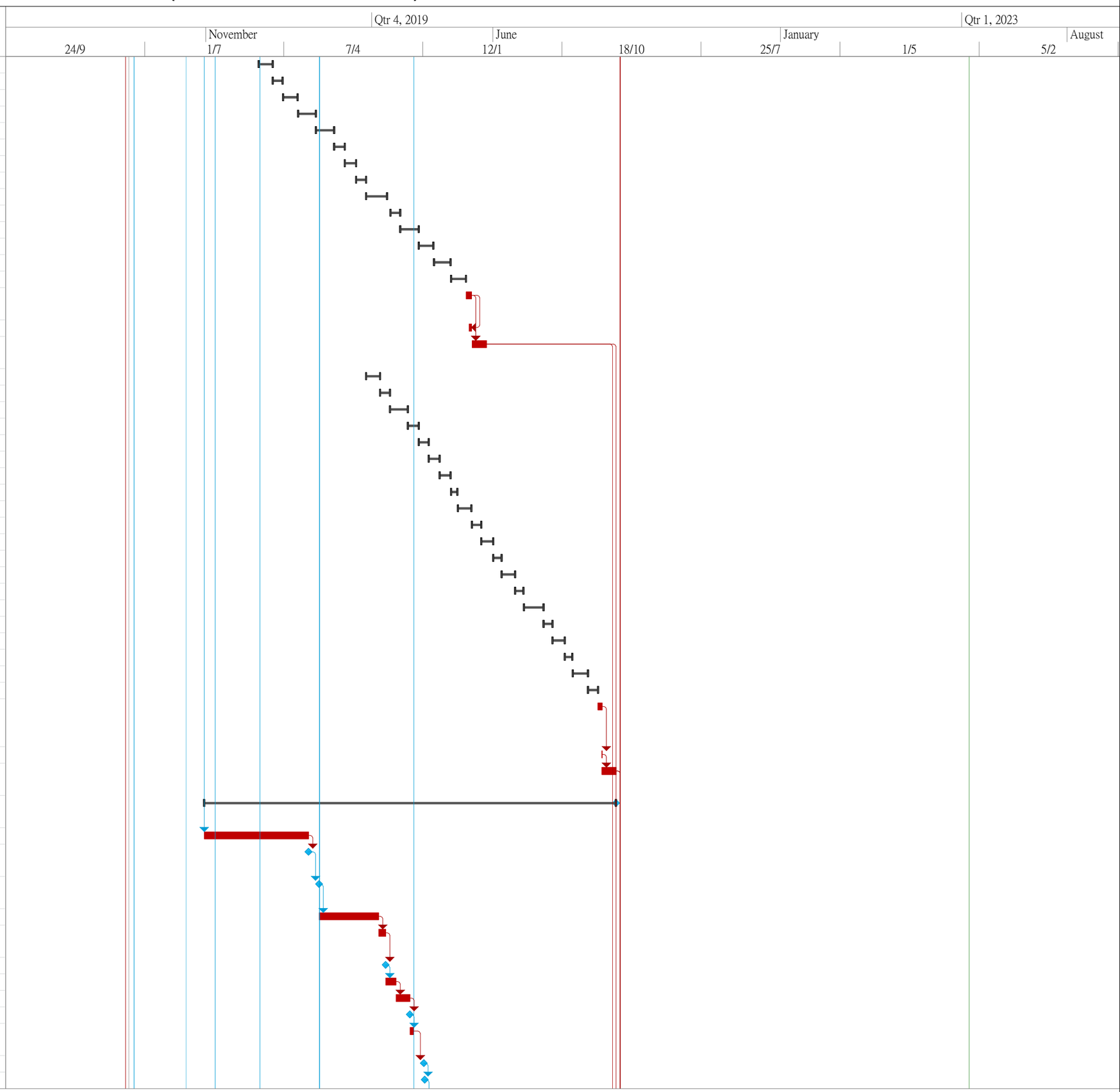
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
408	14.3.5.20	Phase 7: TTA14s	46 days	4/10/2019	27/11/2019
417	14.3.5.21	Phase 7: additional TTA21s	29 days	24/10/2019	27/11/2019
427	14.3.5.22	additional Phase 8: additional TTA 0s	41 days	27/11/2019	17/1/2020
437	14.3.6	Construction of Sewerage (DN630) - refer to Drawing No. MKTR Programme/DR/001	311 days	18/1/2020	3/2/2021
438	14.3.6.1	Phase A: TTA 1n	50 days	21/1/2020	21/3/2020
447	14.3.6.2	Phase A: TTA 7n	52 days	18/1/2020	21/3/2020
456	14.3.6.3	Phase B: TTA 2n	52 days	23/3/2020	28/5/2020
465	14.3.6.4	Phase B: TTA 8n	52 days	23/3/2020	28/5/2020
474	14.3.6.5	Phase C: TTA 3n	52 days	29/5/2020	30/7/2020
483	14.3.6.6	Phase C: TTA 9n	52 days	29/5/2020	30/7/2020
492	14.3.6.7	Phase D: TTA 4n	52 days	31/7/2020	29/9/2020
501	14.3.6.8	Phase D: TTA 10n	52 days	31/7/2020	29/9/2020
510	14.3.6.9	Phase E: TTA 5n	52 days	30/9/2020	2/12/2020
519	14.3.6.10	Phase E: TTA 11n	52 days	30/9/2020	2/12/2020
528	14.3.6.11	Phase F: TTA 6n	51 days	3/12/2020	3/2/2021
537	14.3.6.12	Phase F: additional TTA 12s	38 days	18/12/2020	3/2/2021
546	14.3.6.13	Phase F: additional TTA 0n	38 days	18/12/2020	3/2/2021
555	15	Planned Completion for section 1 of the works	0 days	3/2/2021	3/2/2021
556	16	Completion Date for section 1 of the works	0 days	3/2/2021	3/2/2021
557	17	**section 2 of the works - Completion of all works within Parts C1 and C2 of the Site except Establishment works**	979 days	31/5/2018	3/2/2021
558	17.1	*access date for section 2 (Part C1)*	0 days	31/5/2018	31/5/2018
559	17.2	Temporary Traffic Arrangement (TTA) Scheme for Lin Ma Hang Road	162 days	1/6/2018	9/11/2018
565	17.3	works at Lin Ma Hang Road (section 2 Part C1) refer Appendice LMHR01a to d	817 days	10/11/2018	3/2/2021
566	17.3.1	Phase I (stage 1)-south lane (chainage 240-28	23 days	10/11/2018	6/12/2018
577	17.3.2	Phase I (stage 2)-north lane (chainage 240-28	16 days	7/12/2018	27/12/2018
587	17.3.3	Phase I (stage 3)-south lane (chainage 283-33	26 days	28/12/2018	28/1/2019
598	17.3.4	Phase I (stage 4)-north lane (chainage 283-33	17 days	29/1/2019	20/2/2019
608	17.3.5	Phase I (stage 5)-south lane (chainage 335-38	18 days	21/2/2019	13/3/2019
618	17.3.6	Phase I (stage 6)-north lane (chainage 335-38	16 days	14/3/2019	1/4/2019
627	17.3.7	Phase I (stage 7)-south lane (chainage 380-43	23 days	2/4/2019	3/5/2019
638	17.3.8	Phase I (stage 8)-north lane (chainage 380-43	15 days	4/5/2019	22/5/2019
648	17.3.9	Phase I (stage 9)-south lane (chainage 190-24	18 days	23/5/2019	13/6/2019
659	17.3.10	Phase I (stage 10)-north lane (chainage 190-24	16 days	14/6/2019	3/7/2019
669	17.3.11	Phase II (stage 1)-south lane (chainage 32-85)-Noise Barrier MM6 (bays 1-3) & MM7 (bays 1-2)	95 days	4/7/2019	25/10/2019
703	17.3.12	Phase II (stage 2)-north lane (chainage 32-85)-Noise Barrier MM9 (bays 1-4)	84 days	26/10/2019	7/2/2020
735	17.3.13	Phase II (stage 3)-south lane (chainage 85-138	38 days	8/2/2020	23/3/2020
746	17.3.14	Phase II (stage 4)-north lane (chainage 85-138)-Noise Barrier MM10 (bays 1-4)	68 days	24/3/2020	17/6/2020
776	17.3.15	Phase II (stage 5)-south lane (chainage 138-19	36 days	18/6/2020	31/7/2020
787	17.3.16	Phase II (stage 6)-north lane (chainage 138-190)-Noise Barrier MM10 (bays 5-9)	85 days	1/8/2020	11/11/2020
818	17.3.17	Phase II (stage 7)-south lane (chainage 0-32)-Noise Barrier MM5 (bays 1-2)	53 days	12/11/2020	15/1/2021
851	17.3.18	Phase II (stage 8)-north lane (chainage 0-32)	16 days	16/1/2021	3/2/2021
862	17.3.19	Noise Barrier MM8 (bays 1-3)	140 days	1/8/2020	18/1/2021
891	17.3.20	Street lighting (drawpits, abandon existing public lighting & cable, 100uPVC ducts) (ch0-435)	21 days	14/12/2020	9/1/2021
892	17.3.21	tree planting	3 days	11/1/2021	13/1/2021
893	17.3.22	Street furniture & construction of footpath (ch0-435)	22 days	9/1/2021	3/2/2021
894	17.3.23	Phase Ia (stage 101)-south lane (chainage 633	20 days	10/11/2018	3/12/2018
904	17.3.24	Phase Ia (stage 102)-north lane (chainage 633	16 days	4/12/2018	21/12/2018
914	17.3.25	Phase Ia (stage 103)-south lane (chainage 685	25 days	22/12/2018	23/1/2019
925	17.3.26	Phase Ia (stage 104)-north lane (chainage 685	17 days	24/1/2019	15/2/2019



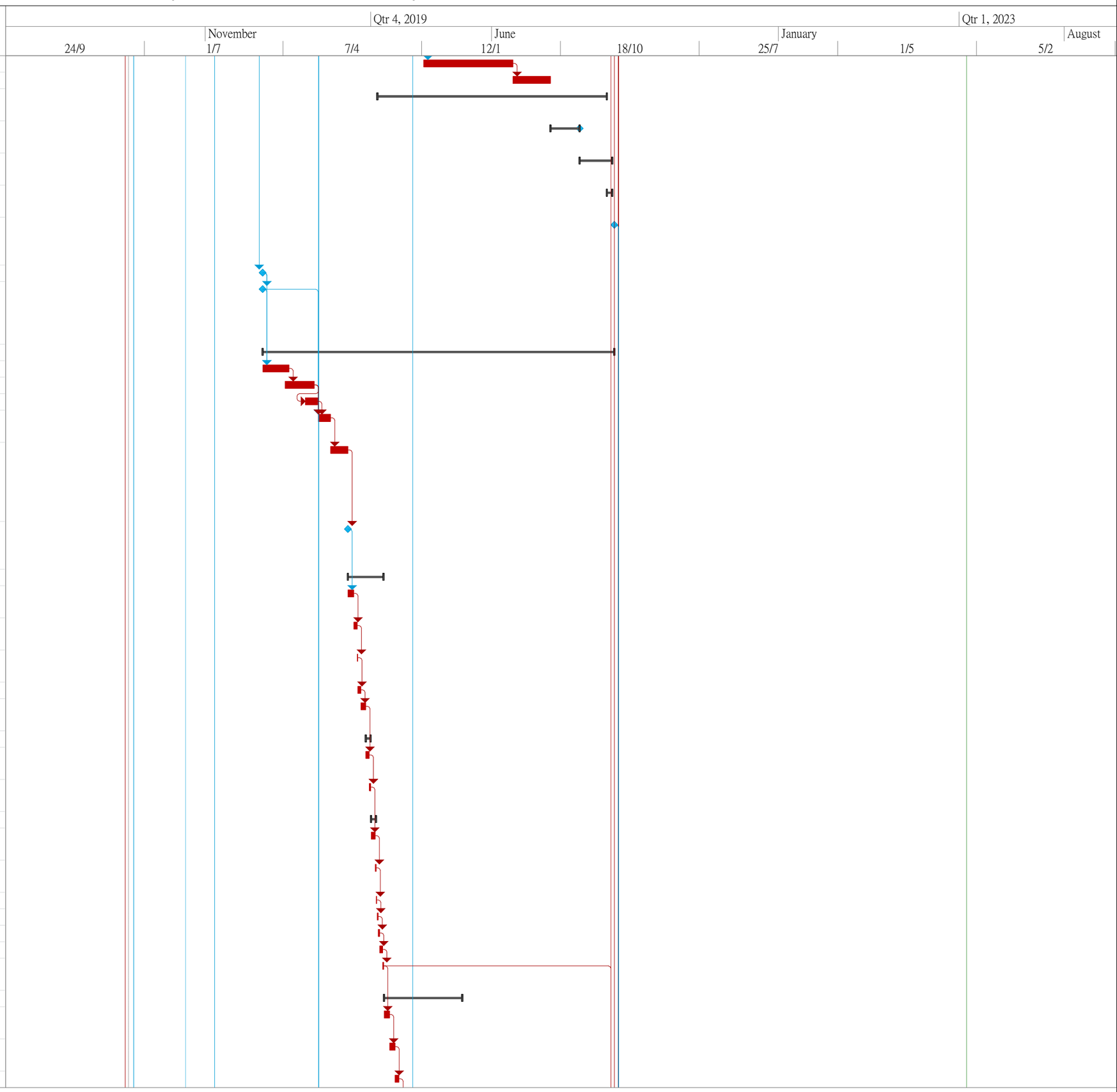
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
934	17.3.27	Phase Ia (stage 105)-south lane (chainage 740	24 days	16/2/2019	15/3/2019
945	17.3.28	Phase Ia (stage 106) north lane (chainage 740-	17 days	16/3/2019	4/4/2019
955	17.3.29	Phase Ia stage 107)-south lane (chainage 790-	21 days	6/4/2019	4/5/2019
966	17.3.30	Phase Ia (stage 108)-north lane (chainage 790	29 days	6/5/2019	10/6/2019
976	17.3.31	Phase Ia (stage 109)-south lane (chainage 840	31 days	11/6/2019	17/7/2019
988	17.3.32	Phase Ia (stage 110)-north lane (chainage 840	18 days	18/7/2019	7/8/2019
998	17.3.33	Phase III (stage 1)-south lane (chainage 435-4	20 days	8/8/2019	30/8/2019
1009	17.3.34	Phase III (stage 2)-north lane (chainage 435-4	16 days	31/8/2019	19/9/2019
1019	17.3.35	Phase III (stage 3)-south lane (chainage 490-5	34 days	20/9/2019	31/10/2019
1030	17.3.36	Phase III (stage 4)-north lane (chainage 490-5	17 days	8/11/2019	27/11/2019
1039	17.3.37	Phase III (stage 5)-south lane (chainage 540-5	29 days	28/11/2019	3/1/2020
1049	17.3.38	Phase III (stage 6)-north lane (chainage 540-5	22 days	4/1/2020	1/2/2020
1059	17.3.39	Phase III (stage 7)-south lane (chainage 590-6	29 days	4/2/2020	7/3/2020
1069	17.3.40	Phase III (stage 8)-north lane (chainage 590-6	25 days	9/3/2020	7/4/2020
1079	17.3.41	Street lighting (drawpits, abandon existing public lighting & cable, 100uPVC ducts)	7 days	8/4/2020	18/4/2020
1080	17.3.42	tree planting	5 days	14/4/2020	18/4/2020
1081	17.3.43	Street furniture & construction of footpath (ch435-890)	23 days	20/4/2020	18/5/2020
1082	17.3.44	Phase IV (stage 1)-south lane (chainage 890-9	22 days	20/9/2019	17/10/2019
1093	17.3.45	Phase IV (stage 2)-north lane (chainage 890-9	17 days	18/10/2019	6/11/2019
1103	17.3.46	Phase IV (stage 3)-south lane (chainage 940-9	31 days	7/11/2019	12/12/2019
1113	17.3.47	Phase IV (stage 4)-north lane (chainage 940-9	16 days	13/12/2019	3/1/2020
1122	17.3.48	Phase V (stage 1)-south lane (chainage 983-1	17 days	4/1/2020	23/1/2020
1132	17.3.49	Phase V (stage 2)-north lane (chainage 983-10	16 days	24/1/2020	14/2/2020
1141	17.3.50	Phase V (stage 3)-south lane (chainage 1035-	19 days	15/2/2020	7/3/2020
1151	17.3.51	Phase V (stage 4)-north lane (chainage 1035-1	12 days	9/3/2020	21/3/2020
1160	17.3.52	Phase V (stage 5)-south lane (chainage 1087-	20 days	23/3/2020	18/4/2020
1170	17.3.53	Phase V (stage 6)-north lane (chainage 1087-1	15 days	20/4/2020	8/5/2020
1179	17.3.54	Phase V (stage 7)-south lane (chainage 1139-	20 days	9/5/2020	1/6/2020
1189	17.3.55	Phase V (stage 8)-north lane (chainage 1139-1	15 days	2/6/2020	18/6/2020
1198	17.3.56	Phase VI (stage 1)-south lane (chainage 1190-	21 days	19/6/2020	15/7/2020
1208	17.3.57	Phase VI (stage 2)-north lane (chainage 1190-	15 days	16/7/2020	1/8/2020
1217	17.3.58	Phase VI (stage 3)-south lane (chainage 1240-	34 days	3/8/2020	10/9/2020
1228	17.3.59	Phase VI (stage 4)-north lane (chainage 1240-	15 days	11/9/2020	28/9/2020
1237	17.3.60	Phase VI (stage 5)-south lane (chainage 1286-	20 days	29/9/2020	23/10/2020
1247	17.3.61	Phase VI (stage 6) - north lane (chainage 1286	12 days	24/10/2020	7/11/2020
1254	17.3.62	Phase VI (stage 7)-south lane (chainage 1332-	27 days	9/11/2020	9/12/2020
1266	17.3.63	Phase VI (stage 8)-north lane (chainage 1332-	15 days	10/12/2020	29/12/2020
1275	17.3.64	Street lighting (drawpits, abandon existing public lighting & cable, 100uPVC ducts) (ch890-1377)	7 days	29/12/2020	6/1/2021
1276	17.3.65	tree planting	1 day	6/1/2021	6/1/2021
1277	17.3.66	Street furniture & construction of footpath (ch890-1377)	25 days	6/1/2021	3/2/2021
1278	17.4	Noise Barrier works above the concrete substructure of the noise barrier (section 2 Part	674 days	29/10/2018	3/2/2021
1279	17.4.1	seek specialist subcontractor to design and bui	210 days	29/10/2018	26/5/2019
1280	17.4.2	propose specialist subcontractor to PM for acceptance	0 days	26/5/2019	26/5/2019
1281	17.4.3	acceptance of propose specialist subcontractor by Project Manager	0 days	16/6/2019	16/6/2019
1282	17.4.4	prepare design & liaise with designer & PM	120 days	17/6/2019	14/10/2019
1283	17.4.5	submit a proposal detailing the changes to PM's design, if any	14 days	15/10/2019	28/10/2019
1284	17.4.6	submit 1st design for PM's comment	0 days	28/10/2019	28/10/2019
1285	17.4.7	PM's comments	21 days	29/10/2019	18/11/2019
1286	17.4.8	revise design	28 days	19/11/2019	16/12/2019
1287	17.4.9	re-submit design for PM's acceptance	0 days	16/12/2019	16/12/2019
1288	17.4.10	submit 3 sample panels for each type & colour for acceptance	7 days	17/12/2019	23/12/2019
1289	17.4.11	PM's & relevant authorities' acceptance	0 days	13/1/2020	13/1/2020
1290	17.4.12	ordering of noise barrier panel	0 days	15/1/2020	15/1/2020



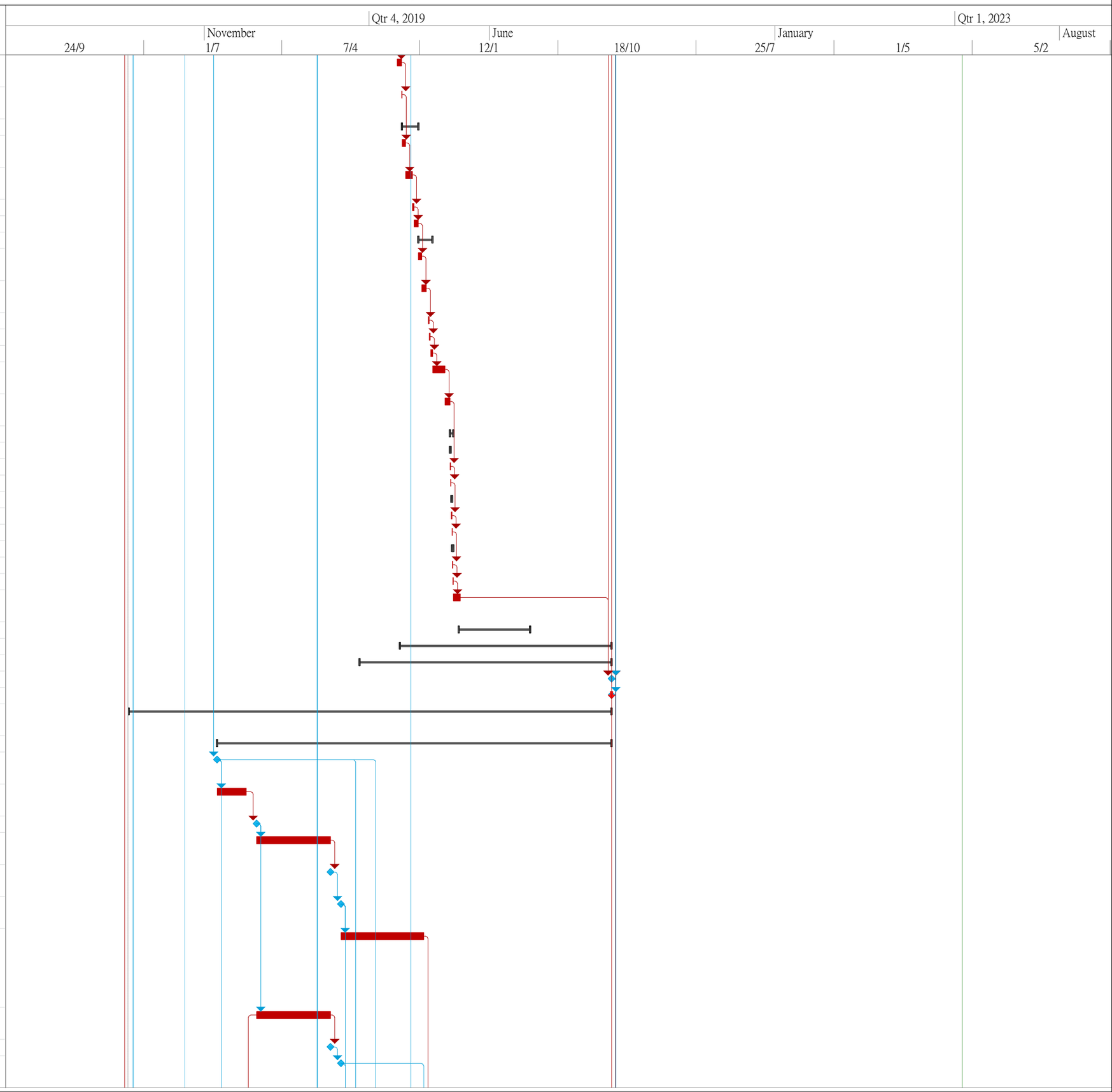
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
1291	17.4.13	fabricating of panel and steelworks	180 days	16/1/2020	13/7/2020
1292	17.4.14	delivery of panel and steelworks on site	76 days	14/7/2020	27/9/2020
1293	17.4.15	completion of concrete curing of substructure of Nosie Barriers	463 days	14/10/2019	19/1/2021
1301	17.4.16	construction works above the concrete substructure of the noise barrier MM6, MM7 &	48 days	28/9/2020	25/11/2020
1308	17.4.17	construction works above the concrete substructure of the noise barrier MM10 (app.	54 days	26/11/2020	30/1/2021
1315	17.4.18	construction works above the concrete substructure of the noise barrier MM5 & MM8	10 days	20/1/2021	30/1/2021
1322	17.4.19	submit as-built drawings & design calculation & 2 sets of velographs for noise barrier works	0 days	3/2/2021	3/2/2021
1323	17.5	*access date for section 2 (Part C2)*	0 days	24/2/2019	24/2/2019
1324	17.6	**additional site possession for areas outside site boundary {for 3NW-C/C470 (existing D-DH7), C224 (existing D-DH11) & C225 new drillholes DHA1,A2 & A3 }**	0 days	24/2/2019	24/2/2019
1325	17.7	**Slope Upgrading works (section 2 Part C2)**	578 days	25/2/2019	3/2/2021
1326	17.7.1	general site clearance	45 days	25/2/2019	18/4/2019
1327	17.7.2	Initial topographic survey	45 days	11/4/2019	8/6/2019
1328	17.7.3	utility detection and submit reports	21 days	22/5/2019	15/6/2019
1329	17.7.4	drilling of verification boreholes DHA1,A2 & A3	21 days	17/6/2019	11/7/2019
1330	17.7.5	baseline monitoring for 3NW-C/C230 (DH15 & 16) & C225 (DH3 & 17) on existing drillholes & 3NW-C/C470 (existing D-DH7), C224 (existing D-DH11) & C225 proposed verification drillholes DHA1,A2 & A3	30 days	12/7/2019	15/8/2019
1331	17.7.6	submit 4 sets of initial readings of baseline monitoring and preliminary logs to the Project Manager to the Project Manager	0 days	15/8/2019	15/8/2019
1332	17.7.7	**Slopeworks: 3NW-C/C470 (ch490-540S/B)**	59 days	16/8/2019	26/10/2019
1333	17.7.7.1	removal of existing trees	10 days	16/8/2019	27/8/2019
1334	17.7.7.2	hoarding & fencing	6 days	28/8/2019	3/9/2019
1335	17.7.7.3	slope excavation works	1 day	4/9/2019	4/9/2019
1336	17.7.7.4	temporary scaffolding	5 days	5/9/2019	10/9/2019
1337	17.7.7.5	proposed slope stripping for mapping or rock and relict discontinuities (AS5-A,B,	8 days	11/9/2019	20/9/2019
1338	17.7.7.6	Phase I	8 days	21/9/2019	30/9/2019
1339	17.7.7.6.1	install test nail PN02 & pull out test	6 days	21/9/2019	27/9/2019
1340	17.7.7.6.2	drill, install steel bars and grout soil nails (B01-12)	2 days	28/9/2019	30/9/2019
1341	17.7.7.7	Phase II	8 days	2/10/2019	11/10/2019
1342	17.7.7.7.1	install test nail PN01 & pull out test	6 days	2/10/2019	9/10/2019
1343	17.7.7.7.2	drill, install steel bars and grout soil nails (A01-17)	2 days	10/10/2019	11/10/2019
1344	17.7.7.8	raking drains	1 day	12/10/2019	12/10/2019
1345	17.7.7.9	TDR Test (including test & wait issue result)	2 days	14/10/2019	15/10/2019
1346	17.7.7.10	soil nail head works	3 days	16/10/2019	18/10/2019
1347	17.7.7.11	UC & catchpit (38m & 1 nr)	5 days	19/10/2019	24/10/2019
1348	17.7.7.12	biodegradable erosion control mat with hydroseeding	2 days	25/10/2019	26/10/2019
1349	17.7.8	**Slopeworks: - 3NW-C/C230 (ch1240-1330S/I**	130 days	28/10/2019	2/4/2020
1350	17.7.8.1	removal of existing trees	10 days	28/10/2019	7/11/2019
1351	17.7.8.2	hoarding & fencing	9 days	8/11/2019	18/11/2019
1352	17.7.8.3	temporary scaffolding	7 days	19/11/2019	26/11/2019



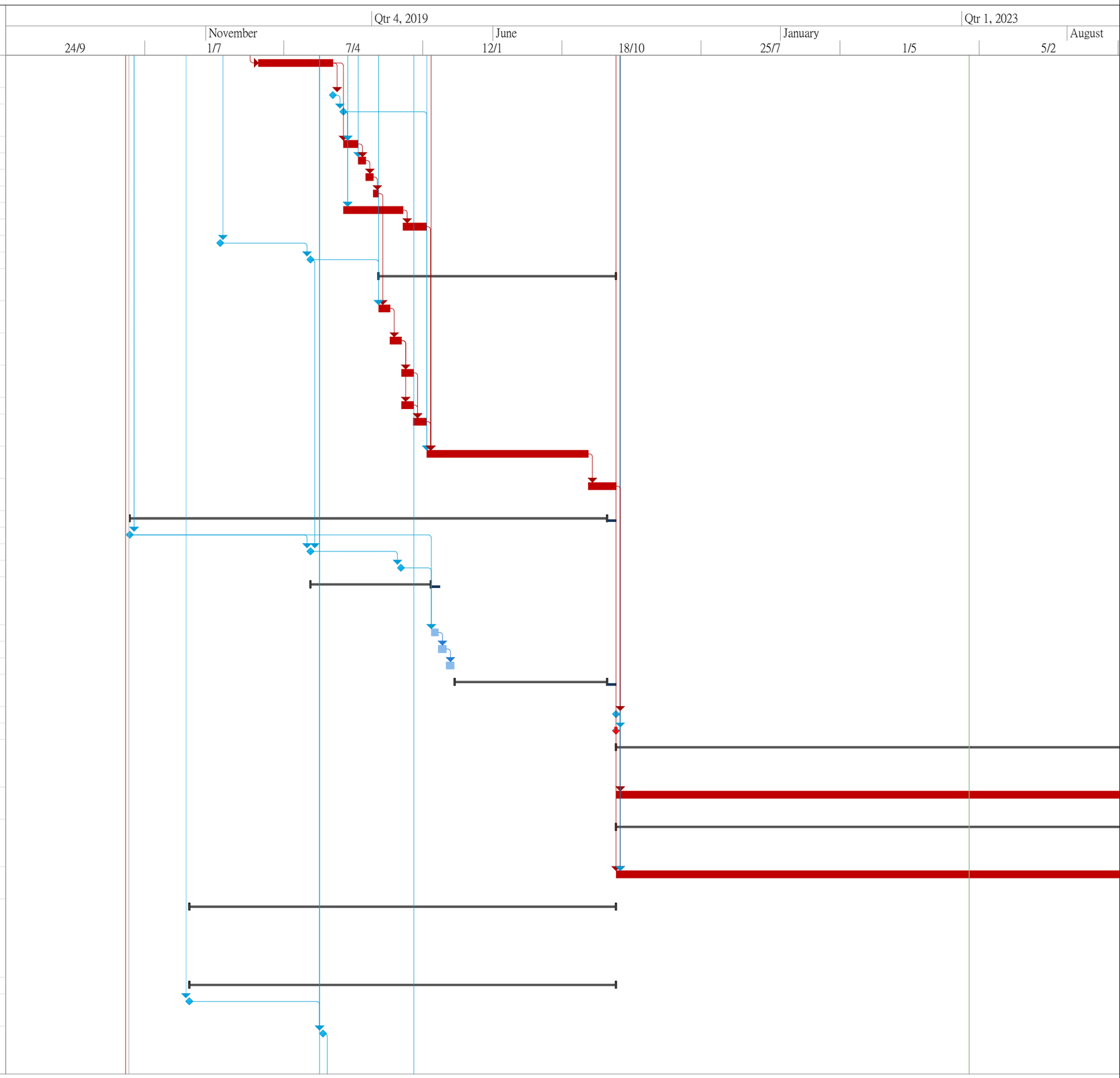
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
1353	17.7.8.4	proposed slope stripping for mapping or rock and relict discontinuities (AS3-A,B,	8 days	27/11/2019	5/12/2019
1354	17.7.8.5	slope excavation works	1 day	6/12/2019	6/12/2019
1355	17.7.8.6	Phase I	25 days	7/12/2019	8/1/2020
1356	17.7.8.6.1	install test nail PN22 & pull out test	6 days	7/12/2019	13/12/2019
1357	17.7.8.6.2	drill, install steel bars and grout soil nails (K01-22, N01-05, M01-11, J01-25)	10 days	14/12/2019	27/12/2019
1358	17.7.8.6.3	TDR Test (including test & wait issue resu	2 days	28/12/2019	30/12/2019
1359	17.7.8.6.4	soil nail head works	7 days	31/12/2019	8/1/2020
1360	17.7.8.7	Phase II	22 days	9/1/2020	6/2/2020
1361	17.7.8.7.1	install test nail PN21 & pull out test	6 days	9/1/2020	15/1/2020
1362	17.7.8.7.2	drill, install steel bars and grout soil nails (H01-25, L01-16)	8 days	16/1/2020	24/1/2020
1363	17.7.8.7.3	raking drains	2 days	29/1/2020	30/1/2020
1364	17.7.8.7.4	TDR Test (including test & wait issue resu	2 days	31/1/2020	1/2/2020
1365	17.7.8.7.5	soil nail head works	4 days	3/2/2020	6/2/2020
1366	17.7.8.8	225UC, 300SC & catchpits	21 days	7/2/2020	2/3/2020
1367	17.7.8.9	600mm width concrete maintenance staircase with handrailing	9 days	3/3/2020	12/3/2020
1368	17.7.8.10	soil replacement by no-fines concrete	6 days	13/3/2020	19/3/2020
1369	17.7.8.10.1	stage 1	2 days	13/3/2020	14/3/2020
1370	17.7.8.10.1	temporary cut & excavation of soil	1 day	13/3/2020	13/3/2020
1371	17.7.8.10.1	placement of no-fine concrete	1 day	14/3/2020	14/3/2020
1372	17.7.8.10.2	stage 2	2 days	16/3/2020	17/3/2020
1373	17.7.8.10.2	temporary cut & excavation of soil	1 day	16/3/2020	16/3/2020
1374	17.7.8.10.2	placement of no-fine concrete	1 day	17/3/2020	17/3/2020
1375	17.7.8.10.3	stage 3	2 days	18/3/2020	19/3/2020
1376	17.7.8.10.3	temporary cut & excavation of soil	1 day	18/3/2020	18/3/2020
1377	17.7.8.10.3	placement of no-fine concrete	1 day	19/3/2020	19/3/2020
1378	17.7.8.11	biodegradable erosion control mat with hydroseeding & shrub planting	12 days	20/3/2020	2/4/2020
1379	17.7.9	**Slopeworks: - 3NW-C/C224 (ch1040-1120N/I**	117 days	31/3/2020	22/8/2020
1404	17.7.10	**Slopeworks: - 3NW-C/C225 (ch1300-1376N/I**	348 days	3/12/2019	3/2/2021
1438	17.7.11	**Slopeworks: - 3NW-C/C231 (ch1220-1240N/I**	415 days	12/9/2019	3/2/2021
1505	18	Planned Completion for section 2 of the works	0 days	3/2/2021	3/2/2021
1506	19	Completion Date for section 2 of the works	0 days	3/2/2021	3/2/2021
1507	20	**section 3 of the works - Completion of all works within Parts D and E of the Site**	797 days	31/5/2018	3/2/2021
1508	20.1	**Parts D**	800 days	26/11/2018	3/2/2021
1509	20.1.1	*access date for section 3 (Parts D) - not more than 180 days after the starting date*	0 days	26/11/2018	26/11/2018
1510	20.1.2	seek specialist for design, supply and installation of the covered walkway	59 days	27/11/2018	24/1/2019
1511	20.1.3	acceptance of specialist	0 days	14/2/2019	14/2/2019
1512	20.1.4	design for approval for lighting system for the covered walkway	150 days	15/2/2019	14/7/2019
1513	20.1.5	submit for approval for lighting system for the covered walkway	0 days	14/7/2019	14/7/2019
1514	20.1.6	acceptance of lighting system for the covered walkway	0 days	4/8/2019	4/8/2019
1515	20.1.7	Coordination with CLP to obtain the electricity supply for the street lighting system (Design for Road B, Road E, Road F(part), Lin Ma Hang Road and Sheung Shui Landmark PTI & Lighting system for the covered walkway)	168 days	5/8/2019	19/1/2020
1516	20.1.8	design for glazing system of the proposed covered walkway at Fanling Station Road	150 days	15/2/2019	14/7/2019
1517	20.1.9	submission of glazing system	0 days	14/7/2019	14/7/2019
1518	20.1.10	acceptance of glazing system and fall arrest system by Project Manager	0 days	4/8/2019	4/8/2019



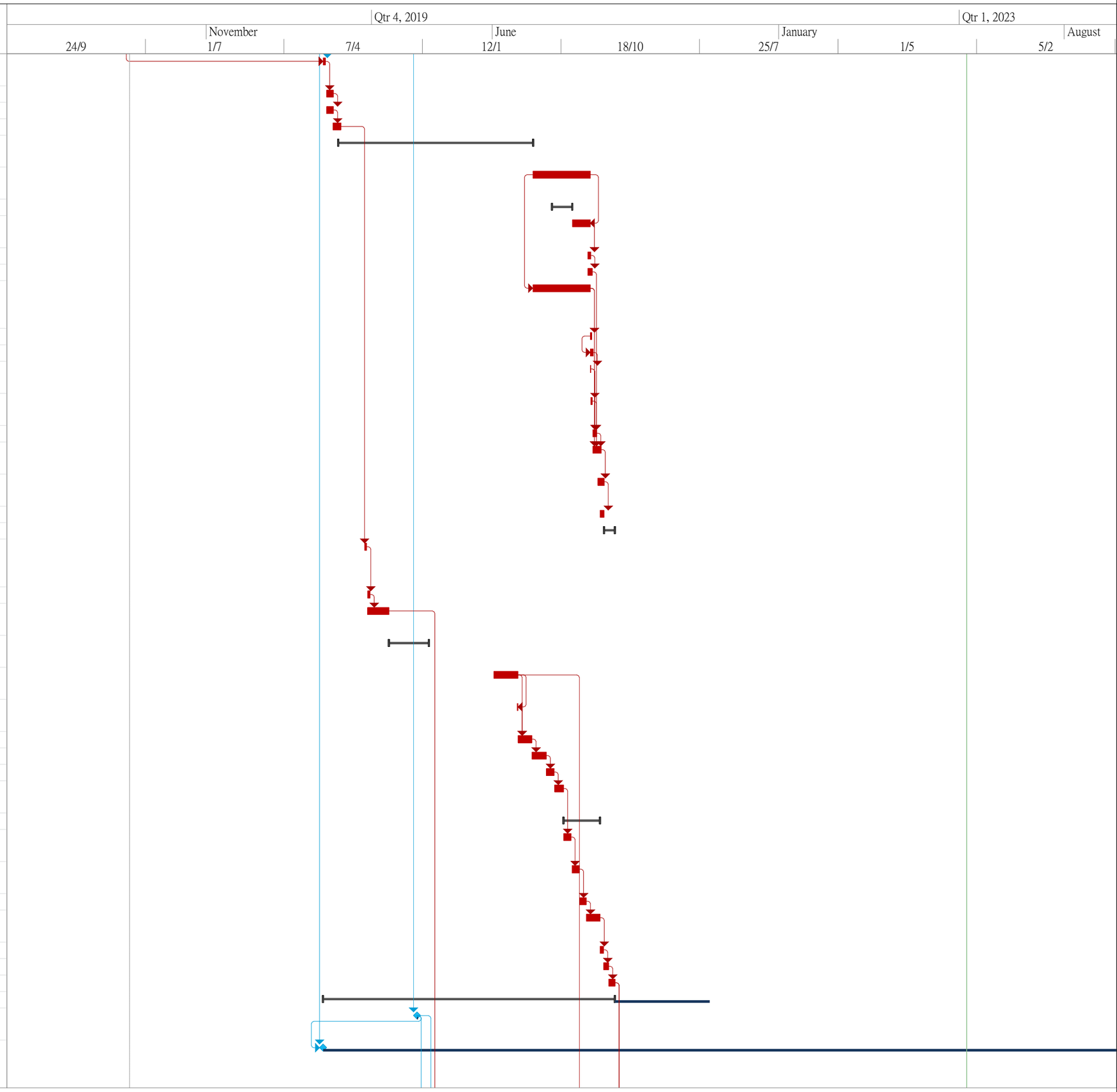
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
1519	20.1.11	design for fall arrest system of the proposed covered walkway at Fanling Station Road	150 days	15/2/2019	14/7/2019
1520	20.1.12	submission of fall arrest system	0 days	14/7/2019	14/7/2019
1521	20.1.13	acceptance of fall arrest system by Project Manager	0 days	4/8/2019	4/8/2019
1522	20.1.14	Liaison with MTRC for the works arrangement	30 days	5/8/2019	3/9/2019
1523	20.1.15	general site clearance	12 days	4/9/2019	18/9/2019
1524	20.1.16	initial survey	12 days	19/9/2019	3/10/2019
1525	20.1.17	utility detection and submit reports	8 days	4/10/2019	14/10/2019
1526	20.1.18	Fabrication of Steelworks & glass panel	100 days	5/8/2019	2/12/2019
1527	20.1.19	delivery steelworks & glass panel to site	38 days	3/12/2019	18/1/2020
1528	20.1.20	application of XP (for Parts D)	0 days	29/11/2018	29/11/2018
1529	20.1.21	acceptance of XP (for Parts D)	0 days	30/5/2019	30/5/2019
1530	20.1.22	Construction of Covered Walkway at Fanling Station	390 days	15/10/2019	3/2/2021
1531	20.1.22.1	construct the concrete foundation of covered walkway (first 20m)	20 days	15/10/2019	6/11/2019
1532	20.1.22.2	construct the concrete foundation of covered walkway (2nd 20m)	20 days	7/11/2019	29/11/2019
1533	20.1.22.3	construct the concrete foundation of covered walkway (3rd 20m)	20 days	30/11/2019	23/12/2019
1534	20.1.22.4	demolished existing planter (drg.WY/1051)	20 days	30/11/2019	23/12/2019
1535	20.1.22.5	construct the concrete foundation of covered walkway (4th 20m)	20 days	24/12/2019	18/1/2020
1536	20.1.22.6	construction of covered walkway including steelworks, glass panel and electrical works	265 days	20/1/2020	9/12/2020
1537	20.1.22.7	Reinstatement of the pavement and street furniture	45 days	10/12/2020	3/2/2021
1538	20.2	**Parts E**	782 days	31/5/2018	16/1/2021
1539	20.2.1	*access date for section 3 (Parts E)*	0 days	31/5/2018	31/5/2018
1540	20.2.2	application of XP (for Parts E)	0 days	30/5/2019	30/5/2019
1541	20.2.3	acceptance of XP (for Parts E)	0 days	28/11/2019	28/11/2019
1542	20.2.4	Temporary Traffic Arrangement (TTA) Scheme for Sheung Shui Landmark North PTI and Fanling Station Road	242 days	31/5/2019	27/1/2020
1546	20.2.5	general site clearance	12 days	29/1/2020	11/2/2020
1547	20.2.6	initial Survey	14 days	12/2/2020	27/2/2020
1548	20.2.7	utility detection and submit reports	14 days	28/2/2020	14/3/2020
1549	20.2.8	Road Improvement works at Sheung Shui Landmark North PTI	250 days	16/3/2020	16/1/2021
1559	21	Planned Completion for section 3 of the works	0 days	3/2/2021	3/2/2021
1560	22	Completion Date for section 3 of the works	0 days	3/2/2021	3/2/2021
1561	23	**section 4 of the works - Completion of Establishment works for the Landscape Softworks within Parts A1, A2 and B of the Site**	1095 days	4/2/2021	3/2/2024
1562	23.1	Establishment works for the Landscape Softworks within Parts A1, A2 and B of the Site	1095 days	4/2/2021	3/2/2024
1565	26	**section 5 of the works - Completion of Establishment works for the Landscape Softworks within Parts C1 and C2 of the Site**	1095 days	4/2/2021	3/2/2024
1566	26.1	Establishment works for the Landscape Softworks within Parts C1 and C2 of the Site	1095 days	4/2/2021	3/2/2024
1569	29	**section 6 of the works (section Subject to Excision) - Completion of all works within Parts A3 and A4 of the Site except Establishment works. Extent of works under section 6 of the works is defined in Drawing No.:**	859 days	28/9/2018	3/2/2021
1570	29.1	**Parts A3**	859 days	28/9/2018	3/2/2021
1571	29.1.1	*access date for section 6 (Part A3) - not more than 120 days after the starting date*	0 days	28/9/2018	28/9/2018
1572	29.1.2	The time for ordering the "section Subject to Excision" for section 6 and 7 is within 390 days commencing from and including the starting	0 days	24/6/2019	24/6/2019



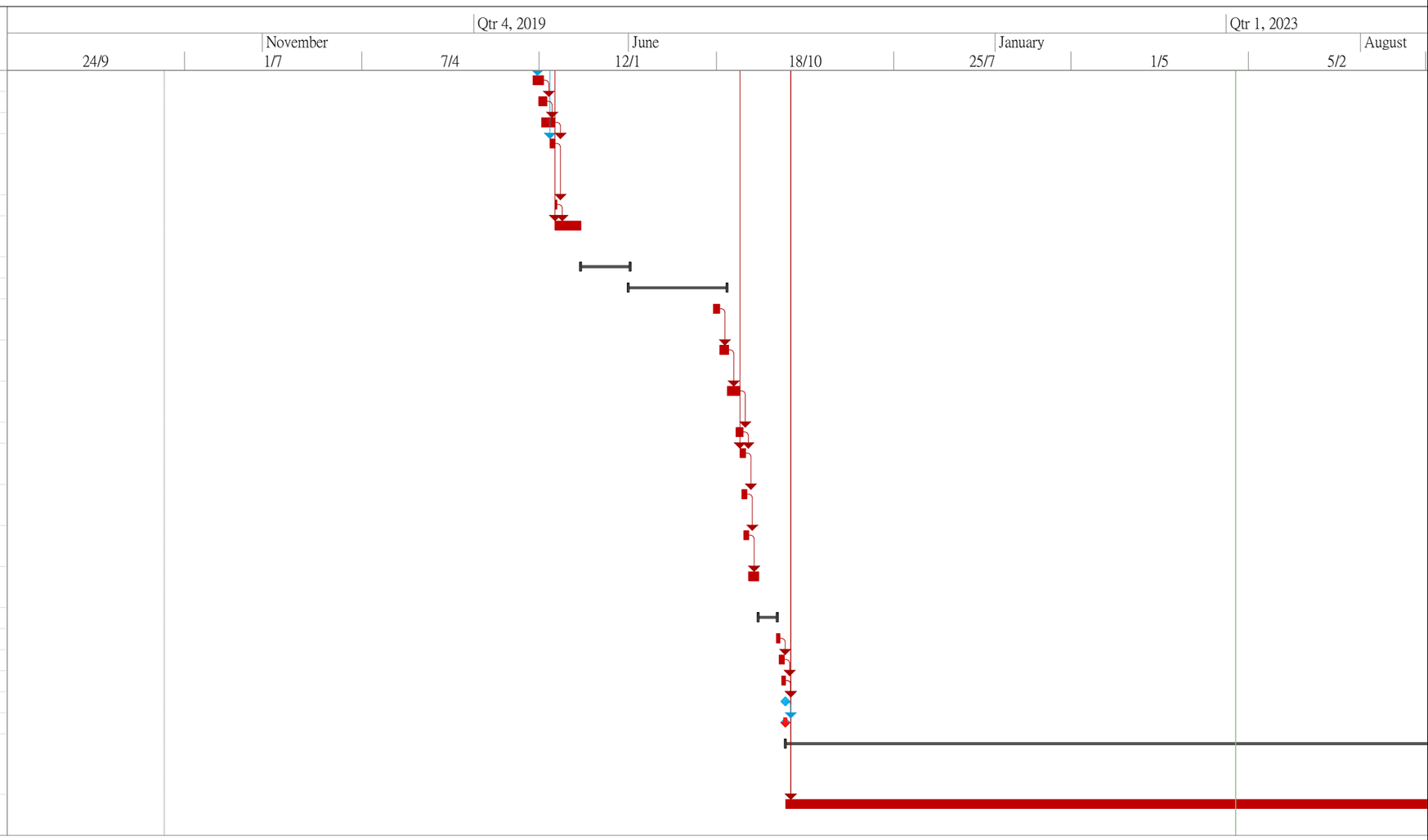
3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
1573	29.1.3	form temporary haul road from the south side to Parts A3	5 days	25/6/2019	29/6/2019
1574	29.1.4	general site clearance & tree felling	12 days	2/7/2019	15/7/2019
1575	29.1.5	initial survey	12 days	2/7/2019	15/7/2019
1576	29.1.6	construction of temporary drainage	14 days	15/7/2019	30/7/2019
1577	29.1.7	**Construction of Retaining Wall RW14 (Bay 1-Bay 6)**	312 days	26/7/2019	22/8/2020
1602	29.1.8	backfilling works behind Retaining Wall RW14 (bay1 to 6) (include SRT tests)	90 days	22/8/2020	15/12/2020
1603	29.1.9	Construction of Retaining Wall RW14 Bay 7	27 days	30/9/2020	9/11/2020
1613	29.1.10	backfilling works behind RW14 (bay 7) (include SRT tests)	30 days	10/11/2020	15/12/2020
1614	29.1.11	install instrument for RW14	5 days	11/12/2020	16/12/2020
1615	29.1.12	construct 300U channel & catchpit in front of R'	8 days	11/12/2020	19/12/2020
1616	29.1.13	site formation works for fill slope FS19 and FS20 (including in "backfilling works behind Retaining Wall RW14 (bay1 to 6)")	90 days	22/8/2020	15/12/2020
1617	29.1.14	300U channel & stepped channel for FS19 & 2	3 days	16/12/2020	18/12/2020
1618	29.1.15	install instrument for FS19 & FS20	5 days	16/12/2020	21/12/2020
1619	29.1.16	minor site formation works for cut slope CS25	1 day	16/12/2020	16/12/2020
1620	29.1.17	minor site formation works for cut slope CS26	3 days	17/12/2020	19/12/2020
1621	29.1.18	install instruments for CS25 & CS26	5 days	21/12/2020	28/12/2020
1622	29.1.19	waterworks at Road E	12 days	21/12/2020	6/1/2021
1623	29.1.20	drainage works at Road E	10 days	31/12/2020	12/1/2021
1624	29.1.21	U channels at Road E	7 days	5/1/2021	12/1/2021
1625	29.1.22	Roadworks of Road E (ch20-60)	19 days	13/1/2021	3/2/2021
1631	29.1.23	Site Formation works for Cut Slope CS24 (include temporary cutting from top of RW12 to toe of CS24) (for RW12 bays 1-3)	4 days	17/9/2019	20/9/2019
1632	29.1.24	install instrument for CS24	5 days	23/9/2019	27/9/2019
1633	29.1.25	temporary soil nails between CS20 & RW12 (for RW12 bays 1-3)	30 days	23/9/2019	4/11/2019
1634	29.1.26	**Construction of Retaining Wall RW12 CH 0-20**	67 days	5/11/2019	24/1/2020
1657	29.1.27	backfilling along Retaining Wall RW12	40 days	4/6/2020	22/7/2020
1658	29.1.28	Completion of Site Formation works for Cut Slope 25	2 days	21/7/2020	22/7/2020
1659	29.1.29	Waterworks at Road F	24 days	23/7/2020	19/8/2020
1660	29.1.30	Drainage works at Road F	25 days	20/8/2020	17/9/2020
1661	29.1.31	planter wall for Road E and Road F in Parts A3	12 days	18/9/2020	3/10/2020
1662	29.1.32	UU-Arrange Town Gas & PCCW to lay across Road F (not yet agree)	14 days	5/10/2020	22/10/2020
1663	29.1.33	Roadworks of Road F (60m)	55 days	23/10/2020	4/1/2021
1664	29.1.33.1	kerbing and cross road duct (RD/2061, 2081)	10 days	23/10/2020	6/11/2020
1665	29.1.33.2	ducting for road lighting & construction of irrigation system	12 days	9/11/2020	23/11/2020
1666	29.1.33.3	bituminous pavement	12 days	24/11/2020	7/12/2020
1667	29.1.33.4	traffic signs, directional signs, type 2 railing & footpath	21 days	8/12/2020	4/1/2021
1668	29.1.34	street lighting (Drg/ RD/2091)	6 days	5/1/2021	11/1/2021
1669	29.1.35	landscaping (hydroseeding)	9 days	12/1/2021	21/1/2021
1670	29.1.36	landscaping (shrub planting)	11 days	22/1/2021	3/2/2021
1671	29.2	**Parts A4**	590 days	24/6/2019	3/2/2021
1672	29.2.1	*access date for section 6 (Parts A4) - not more than 580 days after the starting date*	0 days	31/12/2019	31/12/2019
1673	29.2.2	The time for ordering the "section Subject to Excision" for section 6 and 7 is within 390 days commencing from and including the starting	0 days	24/6/2019	24/6/2019



3 Month Rolling Programme
(from 26/12/2022 to 25/2/2023)

ID	WBS	Task Name	Duration	Start Date	Completion Date
1674	29.2.3	general site clearance	15 days	2/1/2020	18/1/2020
1675	29.2.4	initial survey	11 days	11/1/2020	23/1/2020
1676	29.2.5	construction of temporary drainage	15 days	16/1/2020	5/2/2020
1677	29.2.6	Site Formation works for Cut Slope CS24 (include temporary cutting from top of RW12 to toe of CS24) (for RW12 bays 4-6)	7 days	29/1/2020	5/2/2020
1678	29.2.7	install instrument for CS24	3 days	6/2/2020	8/2/2020
1679	29.2.8	temporary soil nails between CS20 & RW12 (for RW12 bays 4-6)	35 days	6/2/2020	17/3/2020
1680	29.2.9	Construction of Retaining Wall RW12 CH 21-4(	58 days	18/3/2020	3/6/2020
1703	29.2.10	Site Formation works for Cut Slope CS20	125 days	1/6/2020	3/11/2020
1737	29.2.11	Site Formation works for Cut Slope CS26 (A4)	8 days	13/10/2020	22/10/2020
1738	29.2.12	Site Formation works for Cut Slope CS25 (A4)	9 days	23/10/2020	5/11/2020
1739	29.2.13	complete the construction of U channel at CS 25 and 26	15 days	4/11/2020	23/11/2020
1740	29.2.14	planter wall	10 days	18/11/2020	28/11/2020
1741	29.2.15	Waterworks at Road B	8 days	24/11/2020	2/12/2020
1742	29.2.16	Sewerage works at Road B	7 days	27/11/2020	4/12/2020
1743	29.2.17	Drainage works at Road B	7 days	30/11/2020	7/12/2020
1744	29.2.18	UU - Arrange Town Gas & PCCW to lay cables (not agreed yet)	14 days	8/12/2020	23/12/2020
1745	29.2.19	Roadworks of Road B (A4-ch90-130)	23 days	23/12/2020	21/1/2021
1750	29.2.20	street lighting (Drg/ RD/2091)	4 days	21/1/2021	25/1/2021
1751	29.2.21	landscaping (hydroseeding)	7 days	25/1/2021	1/2/2021
1752	29.2.22	landscaping (shrub planting)	5 days	29/1/2021	3/2/2021
1753	30	Planned Completion for section 6 of the works	0 days	3/2/2021	3/2/2021
1754	31	Completion Date for section 6 of the works	0 days	3/2/2021	3/2/2021
1755	32	**section 7 of the works (section Subject to Excision) - Completion of Establishment works for the Landscape Softworks within Parts A3**	1095 days	4/2/2021	3/2/2024
1756	32.1	Establishment works for the Landscape Softworks within Parts A3 and A4 of the Site	1095 days	4/2/2021	3/2/2024



Appendix D

Monitoring Locations

Air Quality Monitoring Location

Legend

- Project Boundary
- Utilities Construction
- Proposed Air Monitoring Stations

Sha Ling Road

ASR-1

Proposed Pick-up and Drop-off Point

Man Kam To Road

Location ID	Description
ASR-1	Village House along Man Kam To Road

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

0 25 50 METRES

Printed by : 2/26/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final\Figure 5.1.2 - Locations of Construction Dust Monitoring (Sheet 2 of 4).dgn

Man Kam To Boundary Control Point

HVS shifted to outside premises of San Uk Ling Village House No.1 for impact air quality monitoring

Lin Ma Hang Road

ASR-2

San Uk Ling

HVS placed inside premises of San Uk Ling Village House No.1 during baseline air quality monitoring

Location ID	Description
ASR-2	Village House at San Uk Ling

Legend

- Project Boundary
- Existing Air Monitoring Stations

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Figure 1
Air Quality Monitoring Location (ASR-2)

Printed by : 2/26/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final\Figure 5.1.3 - Locations of Construction Dust Monitoring (Sheet 3 of 4).dgn

Location ASR-3 at Muk Wu Nga Yiu House No. 28 during baseline monitoring

Proposed Location ASR-3a at Muk Wu Nga Yiu House No. 2A for impact monitoring

ASR-3a

ASR-3

100m

Muk Wu Nga Yiu

Lin Ma Hang Road

SHAM CHUN RIVER (SHENZHEN HE)

SHENZHEN SHI

深圳市

LO SHUE LING

N

0 25 50 METRES

Location ID	Description
ASR-3	Village House at Muk Wu Nga Yiu

Legend

- Project Boundary
- Existing Air Monitoring Station
- Proposed Air Monitoring Station

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Figure 2
Air Quality Monitoring Location (ASR-3)

Printed by : 2/26/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final\Figure 5.1.4 - Locations of Construction Dust Monitoring (Sheet 4 of 4).dgn

Noise Monitoring Location

Sha Ling Road

Proposed Pick-up and Drop-off Point

CN-1

Man Kam To Road

Legend

- Project Boundary
- Utilities Construction
- 300m Assessment Area
- Proposed Construction Noise Monitoring Locations

Location ID	Description
CN-1	Village house to the west of Sha Ling Road

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

0 25 50
METRES

Printed by : 2/29/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final_v1\Figure 6.2.2 - Locations of Proposed Construction Noise Monitoring (Sheet 2 of 4).dgn

Legend

- Project Boundary
- Utilities Construction
- 300m Assessment Area
- Proposed Construction Noise Monitoring Locations

CN-2

Man Kam To Road

Sandy Ridge Cemetery

Location ID	Description
CN-2	Village house to the north of Man Kam To Road

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Printed by : 2/29/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final_v1\Figure 6.2.3 - Locations of Proposed Construction Noise Monitoring (Sheet 3 of 4).dgn

Man Kam To Boundary Control Point

CN-4

CN-3

Lin Ma Hang Road

San Uk Ling

N

0 25 50
METRES

Legend

- Project Boundary
- 300m Assessment Area
- Proposed Construction Noise Monitoring Locations

Location ID	Description
CN-3	Village house near San Uk Ling
CN-4	Village house of Muk Wu

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

Contract No. and Title:

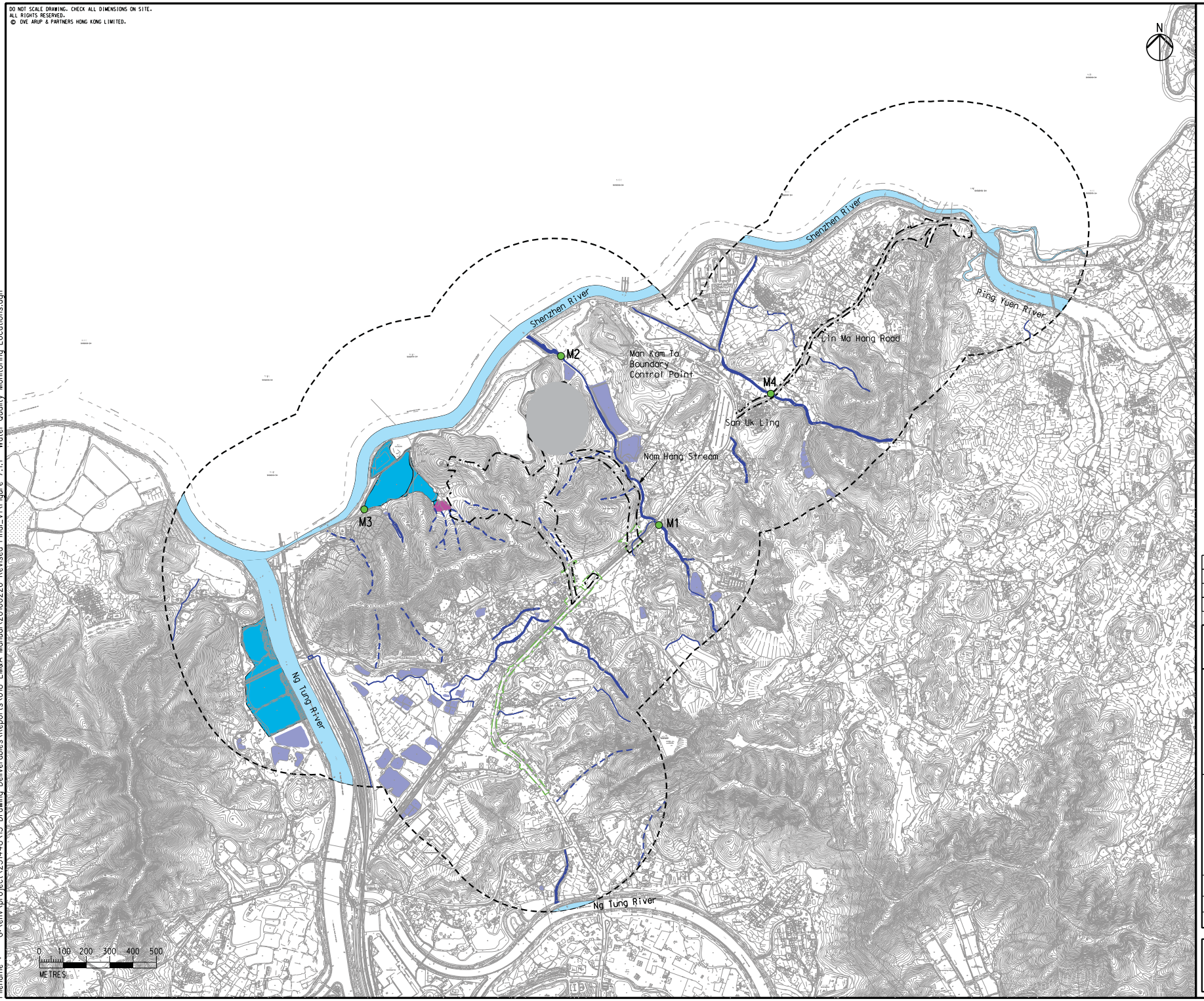
Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Printed by : 2/29/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final_v1\Figure 6.2.4 - Locations of Proposed Construction Noise Monitoring (Sheet 4 of 4).dgn

Water Quality Monitoring Station



Legend

- Project Boundary
- Utilities Construction
- 500m Assessment Area
- Channelized River
- Pond
- Watercourse
- Conservation Area (CA)
- Wet Woodland
- Seasonal Watercourse
- Baseline Monitoring Station

Rev	Description	By	Date
E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	12/15
C	THIRD ISSUE	GL	10/15
B	SECOND ISSUE	GL	02/15

Consultant

ARUP

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Water Quality Monitoring Locations

Drawing no.	Rev.
Figure 7.1.1	E

Drawn	Date	Checked	Approved
GL	02/16	EL	ST

Scale: AS SHOWN

Status: PRELIMINARY

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 2/29/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final_v1\Figure 7.1.1 - Water Quality Monitoring Locations.dgn

Appendix E

Calibration Certificate of Monitoring Equipment and Laboratory Certificate

CALIBRATION CERTIFICATES FOR MONITORING EQUIPMENT USED IN THE REPORTING MONTH

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1a	Air	TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-1	3 May 2023	17 May 2023
1b		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-1	20 May 2023	3 Jun 2023
2a		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2	3 May 2023	17 May 2023
2b		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2	20 May 2023	3 Jun 2023
3a		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a	3 May 2023	17 May 2023
3b		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a	20 May 2023	3 Jun 2023
4		Calibration Kit TISCH Model TE-5025A Orifice ID 4064 and Rootsmeter S/N 438320	15 Dec 22	15 Dec 23
5		Laser Dust Monitor, Model LD-3B (Serial No. 366407) – EQ107	13 Feb 23	13 Feb 24
6		Laser Dust Monitor, Model LD-3B (Serial No. 366418) – EQ108	13 Feb 23	13 Feb 24
7		Laser Dust Monitor, Model LD-3B (Serial No. 366410) – EQ110	13 Feb 23	13 Feb 24
9	Noise	Rion NL-52 Sound Level Meter (Serial No. 00921191) – EQ013	19 Nov 22	19 Nov 23
10		Rion NL-52 Sound Level Meter (Serial No. 00142581) – EQ015	19 Nov 22	19 Nov 23
11		Rion NC-73 Acoustical Calibrator (Serial No. 10655561) – EQ085	20 Aug 22	20 Aug 23
12	Water	YSI Professional DSS (Serial No.17B102764)	18 Apr 23	18 Jul 23
13		Global Water FP211 Flow Meter (Serial No. 22B106785)	2 May 23	2 May 24

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Sha Ling Village House No.6
Location ID : ASR-1
Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 3 May 23
Next Calibration Date: 17 May 23
Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa)	1005.8	Corrected Pressure (mm Hg)	754.35
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Serial # ->	4064		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6.40	6.40	12.8	1.700	53	52.36
13	5.20	5.20	10.4	1.534	46	45.45
10	4.00	4.00	8.0	1.348	38	37.54
7	2.70	2.70	5.4	1.111	32	31.62
5	1.60	1.60	3.2	0.859	25	24.70

LINEAR REGRESSION

Slope =	32.4897
Intercept =	-4.2447
Corr. coeff. =	0.9926

Calculations :

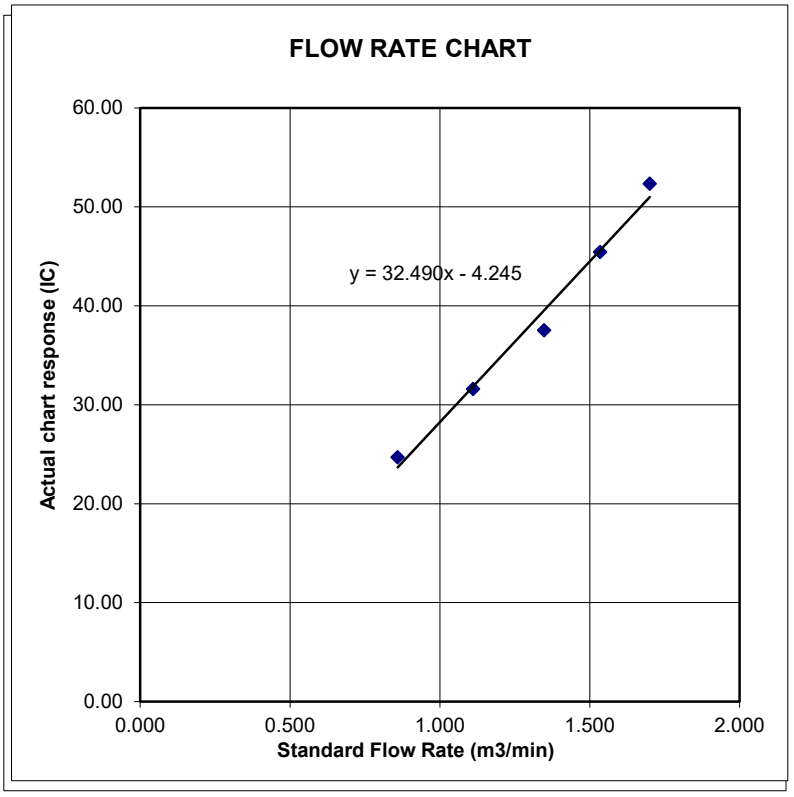
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : San Uk Ling Village House No.1 — Date of Calibration: 3 May 23
Location ID : ASR-2 — Next Calibration Date: 17 May 23
Name and Model: TISCH HVS Model TE-5170 — Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa)	1005.8	Corrected Pressure (mm Hg)	754.35
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Serial # ->	4064		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6.40	6.40	12.8	1.700	53	52.36
13	5.20	5.20	10.4	1.534	46	45.45
10	4.00	4.00	8.0	1.348	41	40.51
7	2.60	2.60	5.2	1.090	34	33.59
5	1.50	1.50	3.0	0.832	27	26.68

LINEAR REGRESSION

Slope =	28.7966
Intercept =	2.2499
Corr. coeff. =	0.9965

Calculations :

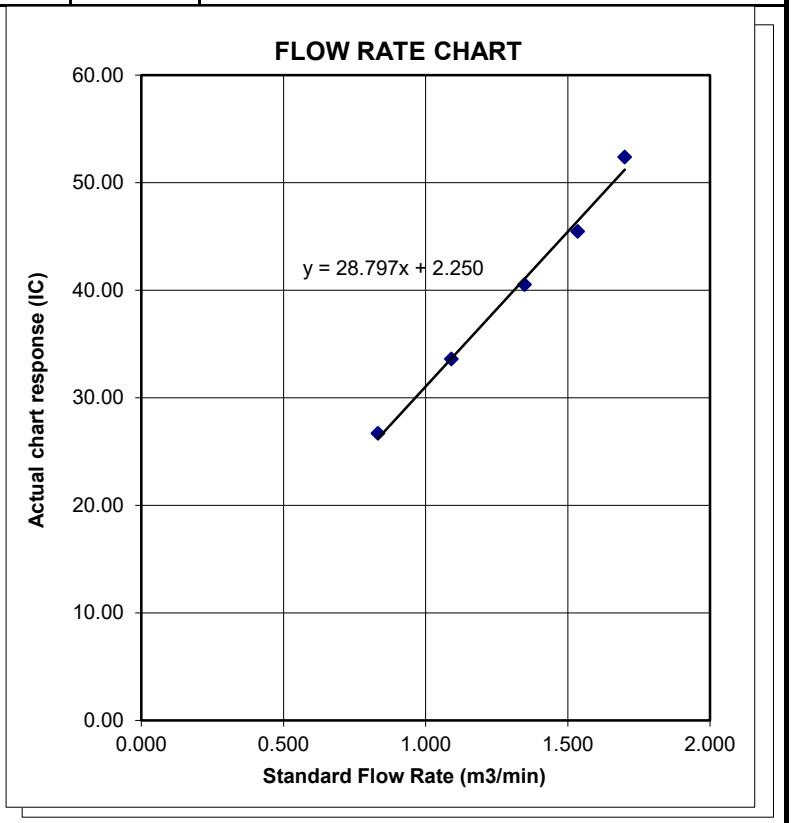
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Muk Wu Nga Yiu House No.2A
Location ID : ASR-3a
Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 3 May 23
Next Calibration Date: 17 May 23
Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa)	1005.8	Corrected Pressure (mm Hg)	754.35
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Serial # ->	4064		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.40	6.40	12.8	1.700	54	53.35	Slope = 30.5141
13	5.10	5.10	10.2	1.520	46	45.45	Intercept = 0.1363
10	3.90	3.90	7.8	1.331	40	39.52	Corr. coeff. = 0.9943
7	2.50	2.50	5.0	1.069	34	33.59	
5	1.50	1.50	3.0	0.832	26	25.69	

Calculations :

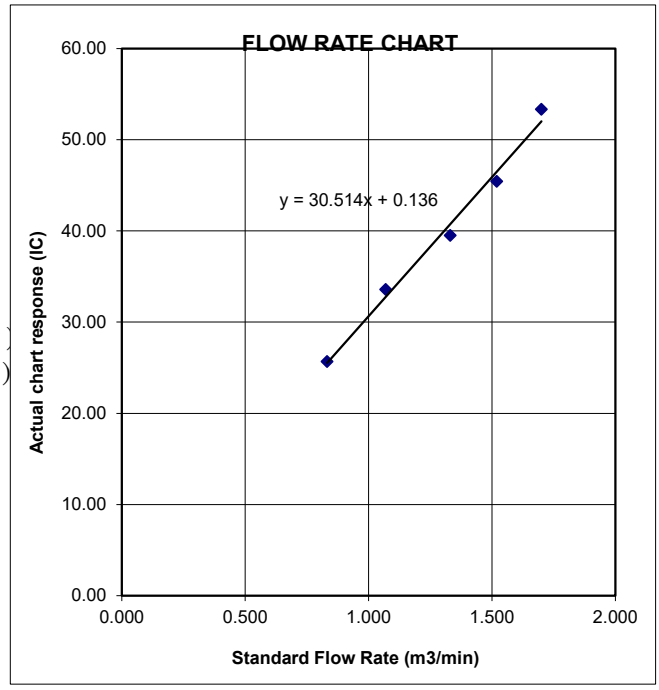
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Sha Ling Village House No.6 — Date of Calibration: 20 May 23
Location ID : ASR-1 — Next Calibration Date: 3 Jun 23
Name and Model: TISCH HVS Model TE-5170 — Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa)	1005.8	Corrected Pressure (mm Hg)	754.35
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Serial # ->	4064		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.40	6.40	12.8	1.700	54	53.35	Slope = 34.0216
13	5.20	5.20	10.4	1.534	47	46.44	Intercept = -5.5456
10	3.90	3.90	7.8	1.331	39	38.53	Corr. coeff. = 0.9961
7	2.70	2.70	5.4	1.111	32	31.62	
5	1.60	1.60	3.2	0.859	25	24.70	

Calculations :

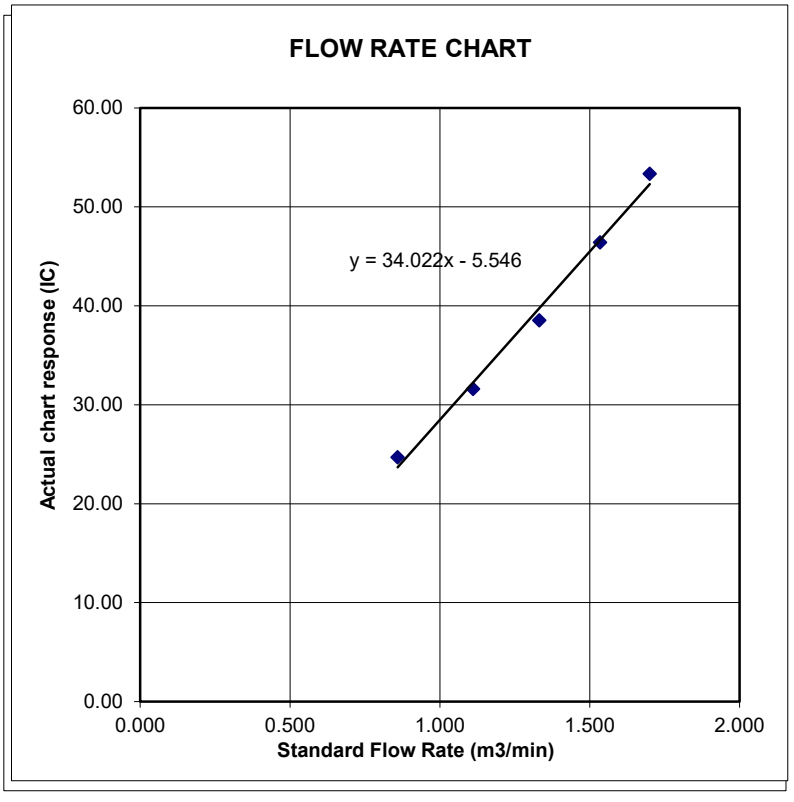
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : San Uk Ling Village House No.1 Date of Calibration: 20 May 23
Location ID : ASR-2 Next Calibration Date: 3 Jun 23
Name and Model: TISCH HVS Model TE-5170 Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa)	1005.8	Corrected Pressure (mm Hg)	754.35
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Serial # ->	4064		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6.40	6.40	12.8	1.700	52	51.38
13	5.20	5.20	10.4	1.534	46	45.45
10	3.90	3.90	7.8	1.331	40	39.52
7	2.40	2.40	4.8	1.048	32	31.62
5	1.50	1.50	3.0	0.832	27	26.68

LINEAR REGRESSION

Slope = 28.3319
Intercept = 2.3973
Corr. coeff. = 0.9976

Calculations :

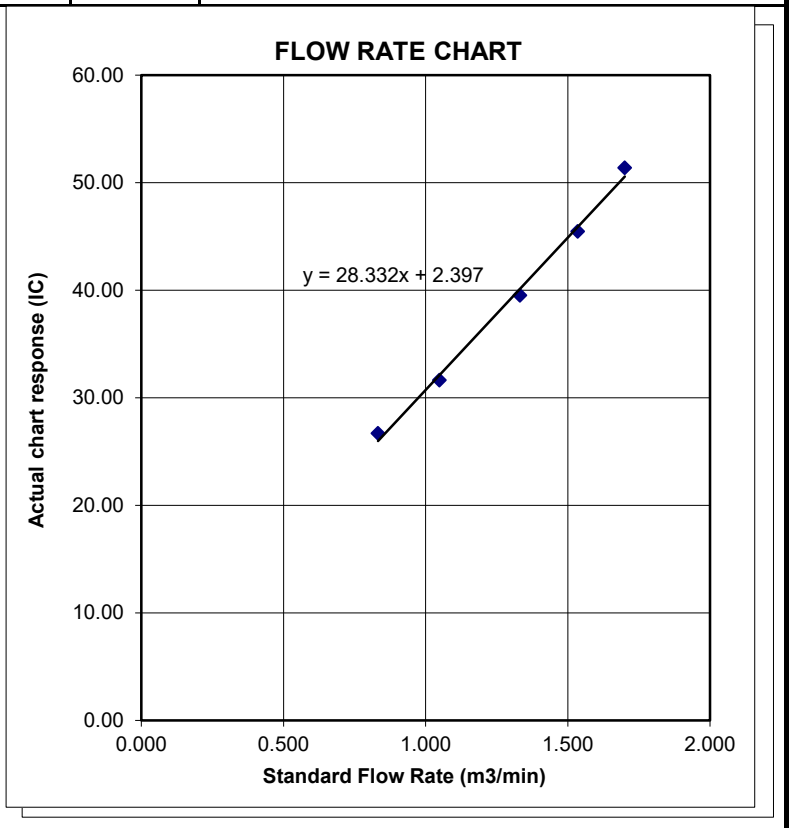
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Muk Wu Nga Yiu House No.2A
Location ID : ASR-3a
Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 20 May 23
Next Calibration Date: 3 Jun 23
Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa)	1005.8	Corrected Pressure (mm Hg)	754.35
Temperature (°C)	27.5	Temperature (K)	301

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Serial # ->	4064		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.40	6.40	12.8	1.700	55	54.34	Slope = 33.1088
13	5.00	5.00	10.0	1.505	47	46.44	Intercept = -2.8048
10	3.80	3.80	7.6	1.314	40	39.52	Corr. coeff. = 0.9967
7	2.50	2.50	5.0	1.069	34	33.59	
5	1.50	1.50	3.0	0.832	25	24.70	

Calculations :

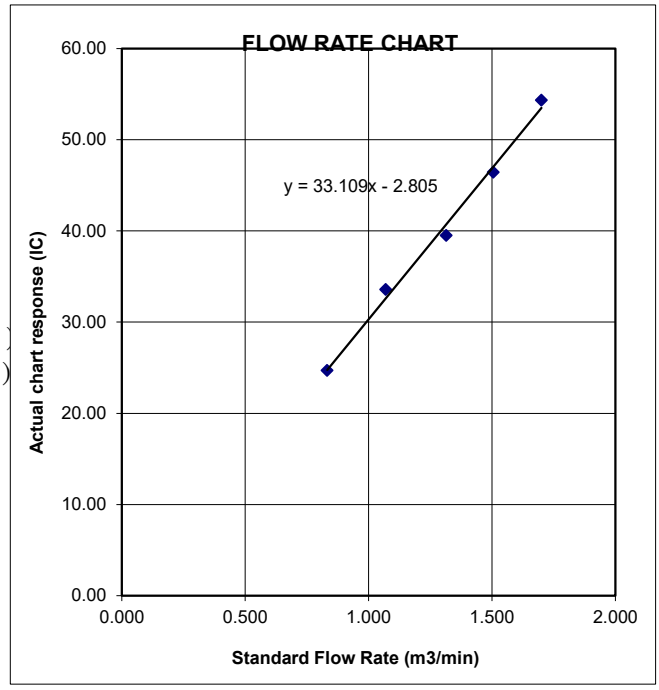
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2307087**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 20-FEB-2023
		DATE OF ISSUE	: 27-FEB-2023
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Kwai Tsing Hong Kong

WORK ORDER : HK2307087
SUB-BATCH : 1
CLIENT : ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2307087-001	S/N: 366407	AIR	20-Feb-2023	S/N: 366407

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366407
Equipment Ref:	EQ107

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018 & HVS 019
Last Calibration Date:	14 December 2022 & 10 January 2023

Equipment Verification Results:

Verification Date: 10, 11 &12 January 2023

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
10-Jan-23	2hr1min	14:41 ~ 16:42	18.2	1018.8	7.6	613	5.1
11-Jan-23	2hr01min	13:16 ~ 15:17	18.1	1017.6	25.2	1786	14.8
11-Jan-23	2hr01min	15:25 ~ 17:26	18.1	1017.6	15.8	1206	10.0
12-Jan-23*	61mins	09:31 ~ 10:32	18.8	1014.5	112.8	3679	60.1
12-Jan-23*	61mins	10:36 ~ 11:37	18.8	1014.5	81.5	2077	33.9

(*) Suspended particle was added into calibration room of HVS019 for high concentration test.

Sensitivity Adjustment Scale Setting (Before Calibration) 565 (CPM)

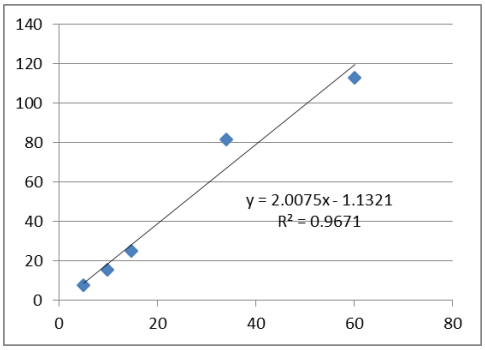
Sensitivity Adjustment Scale Setting (After Calibration) 565 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0075 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9834

Date of Issue 13 February 2023



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0075 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature : Date : 13 February 2023

QC Reviewer : Ben Tam Signature : Date : 13 February 2023

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	14-Dec-22
Location ID :	Calibration Room(HVS 018)	Next Calibration Date:	14-Mar-23

CONDITIONS

Sea Level Pressure (hPa)	1021.4	Corrected Pressure (mm Hg)	766.05
Temperature (°C)	12.5	Temperature (K)	286

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	1.99838
Model->	5025A	Qstd Intercept ->	-0.00903
Calibration Date->	27-Dec-21	Expiry Date->	27-Dec-22

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.783	54	55.39	Slope = 29.6312
13	4.8	4.8	9.6	1.595	48	49.23	Intercept = 2.5287
10	3.8	3.8	7.6	1.420	44	45.13	Corr. coeff. = 0.9991
8	2.5	2.5	5.0	1.152	36	36.93	
5	1.5	1.5	3.0	0.894	28	28.72	

Calculations :

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

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

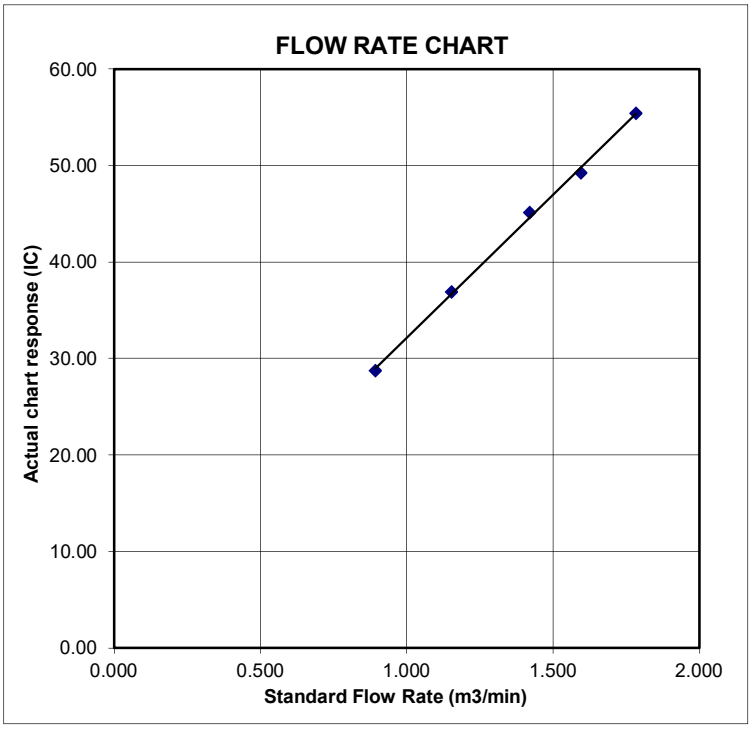
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

Certificate of Calibration

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

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

Data Tabulation

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

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

RECALIBRATION

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	10-Jan-23
Location ID :	Calibration Room(HVS 019)	Next Calibration Date:	9-Apr-23

CONDITIONS

Sea Level Pressure (hPa)	1018.8	Corrected Pressure (mm Hg)	764.1
Temperature (°C)	18.2	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.683	55	55.79	Slope = 31.4802
13	4.9	4.9	9.8	1.523	48	48.69	Intercept = 1.9499
10	3.9	3.9	7.8	1.361	44	44.63	Corr. coeff. = 0.9967
8	2.4	2.4	4.8	1.071	36	36.52	
5	1.5	1.5	3.0	0.851	28	28.40	

Calculations :

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

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

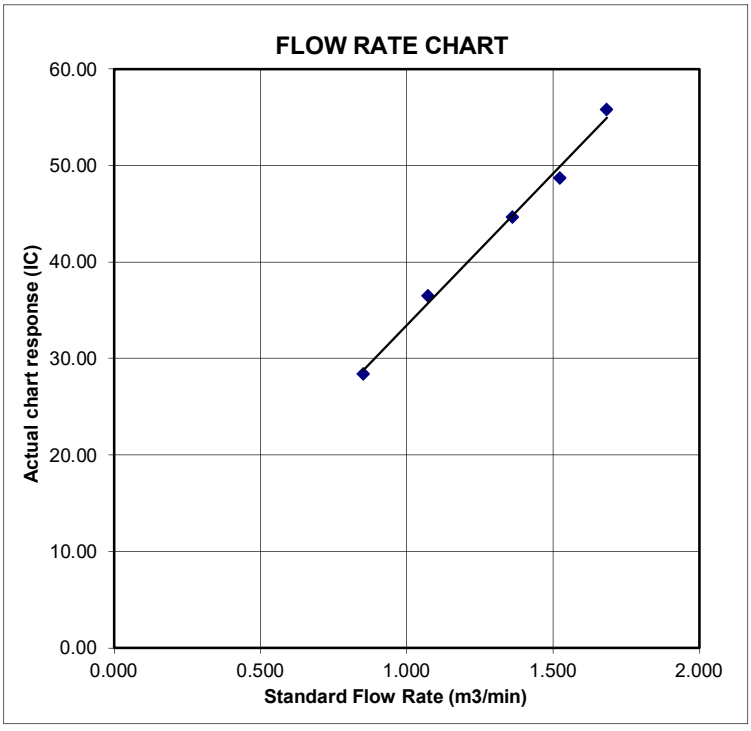
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2023

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2022	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.0	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **4064**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4430	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7210	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9900	0.6861	1.4101	0.9957	0.6900	0.8881
0.9858	0.9655	1.9943	0.9914	0.9711	1.2560
0.9838	1.0728	2.2296	0.9894	1.0790	1.4042
0.9826	1.1255	2.3385	0.9882	1.1320	1.4728
0.9772	1.3554	2.8203	0.9829	1.3632	1.7762
QSTD	**m=**	**2.10977**	**QA**	**m=**	**1.32110**
	b=	**-0.03782**		**b=**	**-0.02382**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

RECALIBRATION

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2307088**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 20-FEB-2023
		DATE OF ISSUE	: 27-FEB-2023
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Kwai Tsing Hong Kong

WORK ORDER	:	HK2307088
SUB-BATCH	:	1
CLIENT	:	ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT	:	----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2307088-001	S/N: 366418	AIR	20-Feb-2023	S/N: 366418

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366418
Equipment Ref:	EQ108

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018 & HVS 019
Last Calibration Date:	14 December 2022 & 10 January 2023

Equipment Verification Results:

Verification Date: 10, 11 &12 January 2023

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
10-Jan-23	2hr1min	14:41 ~ 16:42	18.2	1018.8	7.6	584	4.8
11-Jan-23	2hr01min	13:16 ~ 15:17	18.1	1017.6	25.2	1677	13.9
11-Jan-23	2hr01min	15:25 ~ 17:26	18.1	1017.6	15.8	1106	9.1
12-Jan-23*	61mins	09:31 ~ 10:32	18.8	1014.5	112.8	3546	57.9
12-Jan-23*	61mins	10:36 ~ 11:37	18.8	1014.5	81.5	2110	34.5

(*) Suspended particle was added into calibration room of HVS019 for high concentration test.

Sensitivity Adjustment Scale Setting (Before Calibration) 685 (CPM)

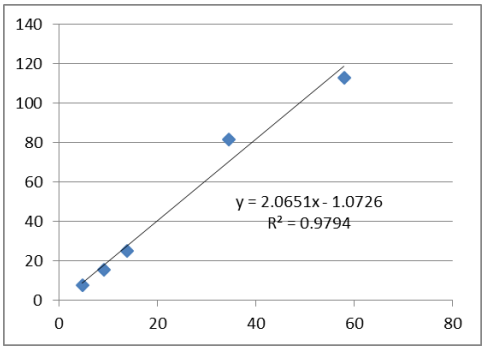
Sensitivity Adjustment Scale Setting (After Calibration) 685 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0651 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9896

Date of Issue 13 February 2023



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0651 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature : Date : 13 February 2023

QC Reviewer : Ben Tam Signature : Date : 13 February 2023

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	14-Dec-22
Location ID :	Calibration Room(HVS 018)	Next Calibration Date:	14-Mar-23

CONDITIONS

Sea Level Pressure (hPa)	1021.4	Corrected Pressure (mm Hg)	766.05
Temperature (°C)	12.5	Temperature (K)	286

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	1.99838
Model->	5025A	Qstd Intercept ->	-0.00903
Calibration Date->	27-Dec-21	Expiry Date->	27-Dec-22

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.783	54	55.39	Slope = 29.6312
13	4.8	4.8	9.6	1.595	48	49.23	Intercept = 2.5287
10	3.8	3.8	7.6	1.420	44	45.13	Corr. coeff. = 0.9991
8	2.5	2.5	5.0	1.152	36	36.93	
5	1.5	1.5	3.0	0.894	28	28.72	

Calculations :

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

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

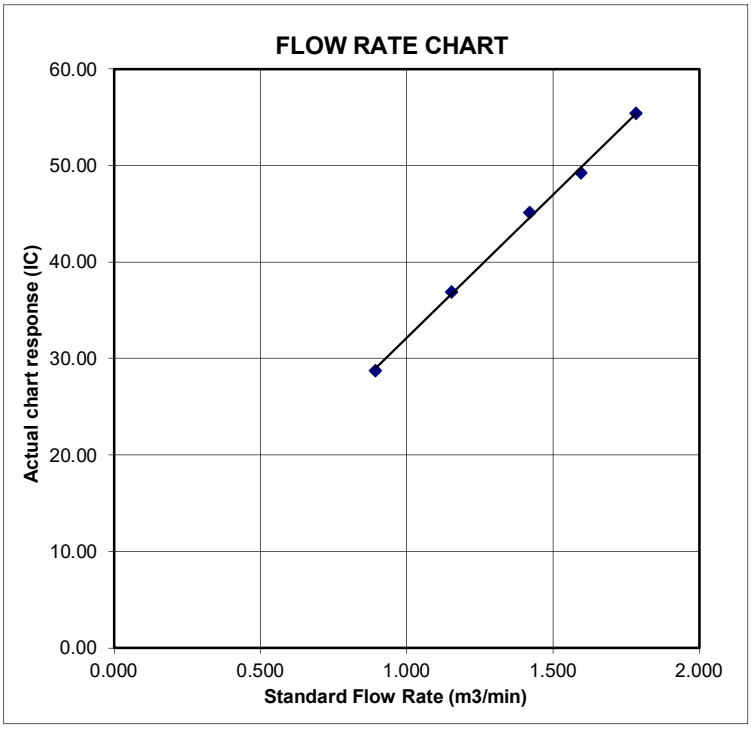
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

Certificate of Calibration

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

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

Data Tabulation

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

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

RECALIBRATION

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	10-Jan-23
Location ID :	Calibration Room(HVS 019)	Next Calibration Date:	9-Apr-23

CONDITIONS

Sea Level Pressure (hPa)	1018.8	Corrected Pressure (mm Hg)	764.1
Temperature (°C)	18.2	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.683	55	55.79	Slope = 31.4802
13	4.9	4.9	9.8	1.523	48	48.69	Intercept = 1.9499
10	3.9	3.9	7.8	1.361	44	44.63	Corr. coeff. = 0.9967
8	2.4	2.4	4.8	1.071	36	36.52	
5	1.5	1.5	3.0	0.851	28	28.40	

Calculations :

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

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

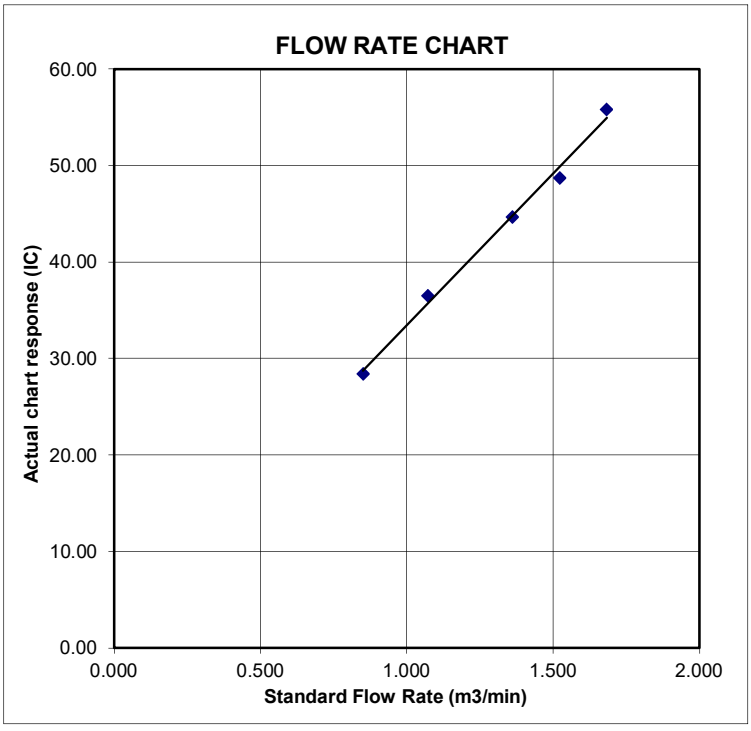
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2023

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2022	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.0	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **4064**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4430	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7210	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9900	0.6861	1.4101	0.9957	0.6900	0.8881
0.9858	0.9655	1.9943	0.9914	0.9711	1.2560
0.9838	1.0728	2.2296	0.9894	1.0790	1.4042
0.9826	1.1255	2.3385	0.9882	1.1320	1.4728
0.9772	1.3554	2.8203	0.9829	1.3632	1.7762
QSTD	**m=**	**2.10977**	**QA**	**m=**	**1.32110**
	b=	**-0.03782**		**b=**	**-0.02382**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

RECALIBRATION

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK2307089**
CLIENT	: **ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING**		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	SUB-BATCH	: 1
		DATE RECEIVED	: 20-FEB-2023
		DATE OF ISSUE	: 27-FEB-2023
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Result(s) of sample(s) is/are reported on as received basis, unless otherwise specified.**
- **Calibration was subcontracted to and analysed by Action United Environmental Services & Consulting.**

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories	*Position*
Richard Fung	Managing Director

This report supersedes any previous report(s) with the same work order number.

All pages of this report have been checked and approved for release.

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Kwai Tsing Hong Kong

WORK ORDER : HK2307089
SUB-BATCH : 1
CLIENT : ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2307089-001	S/N: 366410	AIR	20-Feb-2023	S/N: 366410

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366410
Equipment Ref:	EQ110

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018 & HVS 019
Last Calibration Date:	14 December 2022 & 10 January 2023

Equipment Verification Results:

Verification Date: 10, 11 &12 January 2023

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
10-Jan-23	2hr1min	14:41 ~ 16:42	18.2	1018.8	7.6	584	4.8
11-Jan-23	2hr01min	13:16 ~ 15:17	18.1	1017.6	25.2	1470	12.2
11-Jan-23	2hr01min	15:25 ~ 17:26	18.1	1017.6	15.8	1103	9.1
12-Jan-23*	61mins	09:31 ~ 10:32	18.8	1014.5	112.8	3507	57.3
12-Jan-23*	61mins	10:36 ~ 11:37	18.8	1014.5	81.5	2311	37.8

(*) Suspended particle was added into calibration room of HVS019 for high concentration test.

Sensitivity Adjustment Scale Setting (Before Calibration) 674 (CPM)

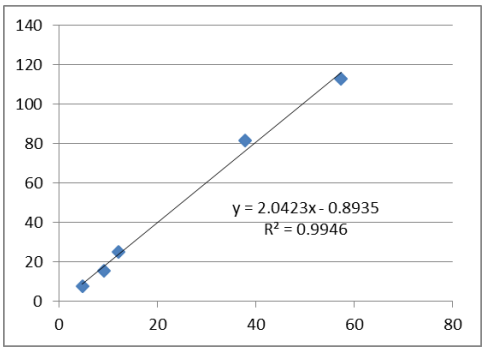
Sensitivity Adjustment Scale Setting (After Calibration) 674 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0423 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9973

Date of Issue 13 February 2023



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.0423 (µg/m^3)/CPM should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Fai So Signature : Date : 13 February 2023

QC Reviewer : Ben Tam Signature : Date : 13 February 2023

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	14-Dec-22
Location ID :	Calibration Room(HVS 018)	Next Calibration Date:	14-Mar-23

CONDITIONS

Sea Level Pressure (hPa)	1021.4	Corrected Pressure (mm Hg)	766.05
Temperature (°C)	12.5	Temperature (K)	286

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	1.99838
Model->	5025A	Qstd Intercept ->	-0.00903
Calibration Date->	27-Dec-21	Expiry Date->	27-Dec-22

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.783	54	55.39	Slope = 29.6312
13	4.8	4.8	9.6	1.595	48	49.23	Intercept = 2.5287
10	3.8	3.8	7.6	1.420	44	45.13	Corr. coeff. = 0.9991
8	2.5	2.5	5.0	1.152	36	36.93	
5	1.5	1.5	3.0	0.894	28	28.72	

Calculations :

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

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

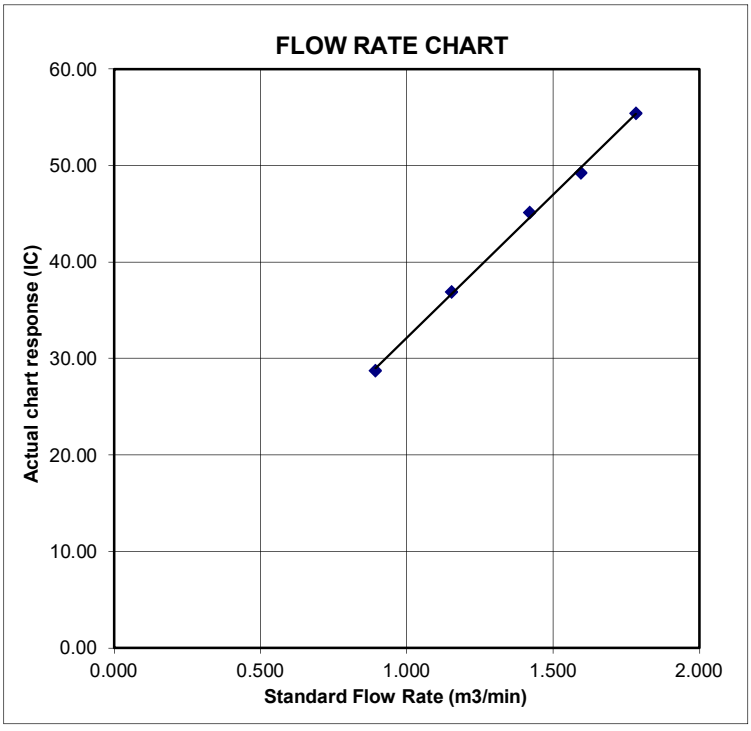
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

Certificate of Calibration

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

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

Data Tabulation

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

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

RECALIBRATION

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	10-Jan-23
Location ID :	Calibration Room(HVS 019)	Next Calibration Date:	9-Apr-23

CONDITIONS

Sea Level Pressure (hPa)	1018.8	Corrected Pressure (mm Hg)	764.1
Temperature (°C)	18.2	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10977
Model->	5025A	Qstd Intercept ->	-0.03782
Calibration Date->	15-Dec-22	Expiry Date->	15-Dec-23

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.683	55	55.79	Slope = 31.4802
13	4.9	4.9	9.8	1.523	48	48.69	Intercept = 1.9499
10	3.9	3.9	7.8	1.361	44	44.63	Corr. coeff. = 0.9967
8	2.4	2.4	4.8	1.071	36	36.52	
5	1.5	1.5	3.0	0.851	28	28.40	

Calculations :

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

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

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

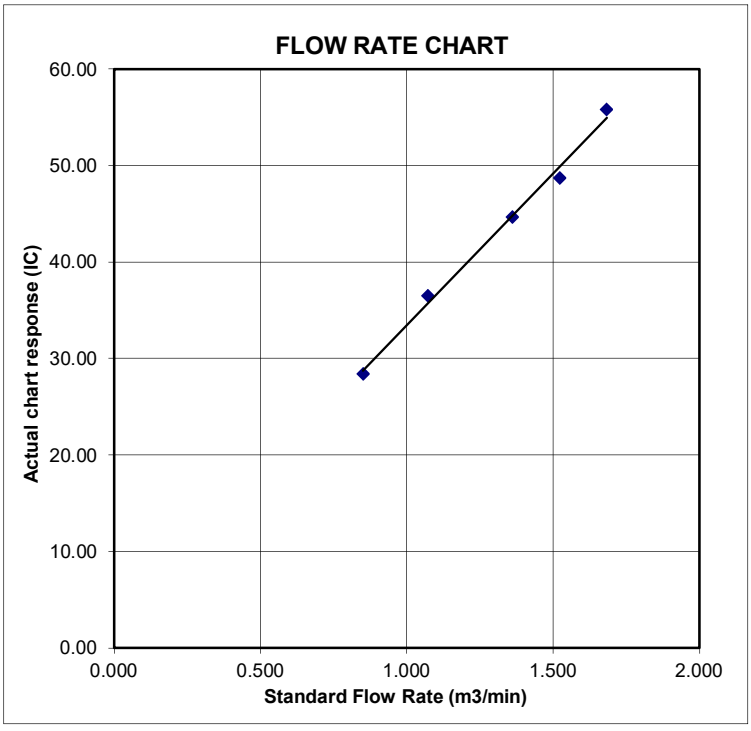
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
December 15, 2023

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	December 15, 2022	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 748.0	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **4064**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4430	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7210	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9900	0.6861	1.4101	0.9957	0.6900	0.8881
0.9858	0.9655	1.9943	0.9914	0.9711	1.2560
0.9838	1.0728	2.2296	0.9894	1.0790	1.4042
0.9826	1.1255	2.3385	0.9882	1.1320	1.4728
0.9772	1.3554	2.8203	0.9829	1.3632	1.7762
QSTD	**m=**	**2.10977**	**QA**	**m=**	**1.32110**
	b=	**-0.03782**		**b=**	**-0.02382**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

RECALIBRATION

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

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

Certificate of Calibration
校正證書

Certificate No. : C226777
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-2282) Date of Receipt / 收件日期 : 8 November 2022

Description / 儀器名稱	:	Sound Level Meter (EQ013)
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-52
Serial No. / 編號	:	00921191
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 November 2022

TEST RESULTS / 測試結果

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

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

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 21 November 2022

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C226777
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.8	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	93.8 (Ref.)
				104.00		103.9
				114.00		113.9

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.8	Ref.
			Slow			93.8	± 0.3

Certificate of Calibration
校正證書

Certificate No. : C226777
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.6	-16.1 ± 1.5
					250 Hz	85.1	-8.6 ± 1.4
					500 Hz	90.5	-3.2 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	95.0	+1.2 ± 1.6
					4 kHz	94.8	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					16 kHz	85.8	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	92.9	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.5
					250 Hz	93.8	0.0 ± 1.4
					500 Hz	93.8	0.0 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	93.0	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					16 kHz	83.9	-8.5 (+3.5 ; -17.0)

Certificate of Calibration
校正證書

Certificate No. : C226777
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 12910

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C226779
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-2282) Date of Receipt / 收件日期 : 8 November 2022

Description / 儀器名稱 : Sound Level Meter (EQ015)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00142581
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 November 2022

TEST RESULTS / 測試結果

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

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

Tested By 測試 : H T Wong, Assistant Engineer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 21 November 2022

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C226779
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C220381
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.8	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	93.8 (Ref.)
				104.00		103.8
				114.00		113.7

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.8	Ref.
			Slow			93.8	± 0.3

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C226779
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.5	-26.2 ± 1.5
					125 Hz	77.6	-16.1 ± 1.5
					250 Hz	85.1	-8.6 ± 1.4
					500 Hz	90.6	-3.2 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	95.0	+1.2 ± 1.6
					4 kHz	94.8	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					16 kHz	85.8	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	92.9	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.5
					250 Hz	93.8	0.0 ± 1.4
					500 Hz	93.8	0.0 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	93.0	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					16 kHz	83.9	-8.5 (+3.5 ; -17.0)

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C226779
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 20044

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	16 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C224779
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-1539) Date of Receipt / 收件日期 : 4 August 2022

Description / 儀器名稱 : Sound Level Calibrator (EQ085)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10655561
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 August 2022

TEST RESULTS / 測試結果

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

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

Tested By 測試 : H T Wong
Assistant Engineer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 23 August 2022

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C224779
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C223647
CL281	Multifunction Acoustic Calibrator	AV210017
TST150A	Measuring Amplifier	C221750

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	User's Spec.	Uncertainty of Measured Value (Hz)
1	0.953	1 kHz ± 6 %	± 1

Remarks : - The user's specified acceptance criteria (user's spec.) is a customer pre-defined operating tolerance of the UUT, suitable for one's own intended use.

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

ALS Technichem (HK) Pty Ltd
11/F., Chung Shun Knitting Centre,
1 - 3 Wing Yip Street,
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK2312949
CLIENT:	ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T.	**SUB-BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	04-Apr-2023
		DATE OF ISSUE:	18-Apr-2023

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Brand Name/ Model No.:	[YSI]/ [Professional DSS]
Serial No./ Equipment No.:	[17B102764/17B100758]/ [EQW019]
Date of Calibration:	18-April-2023

GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2312949

SUB-BATCH: 0
DATE OF ISSUE: 18-Apr-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023 Date of Next Calibration: 18-July-2023

PARAMETERS:

Conductivity **Method Ref: APHA (23rd edition), 2510B**

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	155.6	+5.9
6667	7056	+5.8
12890	13643	+5.8
58670	57773	-1.5
	Tolerance Limit (%)	±10.0

Dissolved Oxygen **Method Ref: APHA (23rd edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.65	2.71	+0.06
5.61	5.59	-0.02
7.08	7.05	-0.03
	Tolerance Limit (mg/L)	±0.20

pH Value **Method Ref: APHA (23rd edition), 4500H: B**

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.86	-0.14
7.0	6.97	-0.03
10.0	10.07	+0.07
	Tolerance Limit (pH unit)	±0.20

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2312949

SUB-BATCH: 0
DATE OF ISSUE: 18-Apr-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023 Date of Next Calibration: 18-July-2023

PARAMETERS:

Turbidity **Method Ref: APHA (23rd edition), 2130B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	-0.04	--
4	4.22	+5.5
40	39.62	-1.0
80	75.70	-5.4
400	397.80	-0.5
800	736.18	-8.0
	Tolerance Limit (%)	±10.0

Salinity **Method Ref: APHA (23rd edition), 2520B**

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.43	+4.3
20	21.18	+5.9
30	32.17	+7.2
	Tolerance Limit (%)	±10.0

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2312949

SUB-BATCH: 0
DATE OF ISSUE: 18-Apr-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 18-April-2023 Date of Next Calibration: 18-July-2023

PARAMETERS:

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

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
6.5	7.2	+0.7
24.5	23.9	-0.6
44.0	43.4	-0.6
	Tolerance Limit (°C)	±2.0

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

ALS Technichem (HK) Pty Ltd
11/F., Chung Shun Knitting Centre,
1 - 3 Wing Yip Street,
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING
ADDRESS: UNIT A ,20/F., GOLD KING INDUSTRIAL BUILDING, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG

WORK ORDER: HK2318969

SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 15-May-2023
DATE OF ISSUE: 22-May-2023

COMMENTS

The calibration of flow rate performed by AUES staff on 02 May 2023.

Scope of Test:	Flow rate
Equipment Type:	Flow Meter
Brand Name:	Global Water
Model No.:	FP211
Serial No.:	22B106785
Equipment No.:	--
Calibration Factor:	318
Date of Calibration:	02 May, 2023

NOTES

This report superseded any previous report(s) with same work order number.

Mr. Fung Lim Chee, Richard
Managing Director - Life Sciences
Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK2318969
Sub-batch: 0
Date of Issue: 22-May-2023
Client: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Reference Equipment:
Model: SonTek IQ Standard
Serial Number : IQ1217004

Equipment to be calibrated:
Equipment Type: Flow Meter
Brand Name: Global Water
Model No.: FP211
Serial No.: 22B106785
Equipment No.: --
Calibration Factor: 318

Date of Calibration: 02 May, 2023

Parameters: The calibration of flow meter is verified with standard flow meter on site by AUES Staff.

Flow rate

Trial	**Reading of Reference Equipment (m/s)** SonTek IQ Standard Serial No: IQ1217004	**Reading of Equipment to be calibrated (m/s)** Global Water FP211 Serial No. 22B106785
1	0.10	0.1
2	0.21	0.2
3	0.39	0.4
4	0.79	0.8
5	1.01	1.0
6	1.09	1.1

Mr. Fung Lim Chee, Richard
Managing Director, Life Sciences
Hong Kong

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

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

is accredited by the Hong Kong Accreditation Service (HKAS) to ISO/IEC 17025:2017
for performing specific laboratory activities as listed in the scope of accreditation within the test category of
獲香港認可處根據ISO/IEC 17025:2017認可
進行載於認可範圍內下述測試類別中的指定實驗所活動

Environmental Testing
環境測試

This accreditation to ISO/IEC 17025:2017 demonstrates technical competence for a defined scope and the implementation of a management system relevant to laboratory operation (see joint IAF-ILAC-ISO Communiqué).
此項 ISO/IEC 17025:2017 的認可資格證明此實驗所具備指定範疇內所須的技術能力並實施一套與實驗所運作相關的管理體系(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of HKAS is affixed hereto by the authority of the HKAS Executive
現經香港認可處執行機關授權在此蓋上香港認可處的印章

SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良
Issue Date : 28 February 2020
簽發日期：二零二零年二月二十八日

Registration Number : HOKLAS 066
註冊號碼：

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

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

L001934

Appendix F

Event and Action Plan of Air Quality, Noise and Water Quality

Event and Action Plan for air quality

Event	Action			
	ET	IEC	ER	Contractor
Action level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 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.	1. Notify Contractor	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the 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 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 and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. 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; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 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 within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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

Event and Action Plan for Construction Noise

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level Exceedance	1. Notify IEC, ER and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the analyzed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 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; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals
Limit Level Exceedance	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 Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 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; 4. Ensure remedial measures properly implemented; 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 within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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

Event and Action Plan for Water Quality

Event	Action			
	ET	IEC	ER	Contractor
Action level exceedance for one sampling day	1. Inform IEC, Contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; and 3. Discuss remedial measures with IEC and Contractor and ER.	1. Discuss with ET, ER and Contractor on the implemented mitigation measures; 2. Review proposals on remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the implemented mitigation measures; 2. Make agreement on the remedial measures to be implemented; 3. Supervise the implementation of agreed remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with ER, ET and IEC and purpose remedial measures to IEC and ER; and 7. Implement the agreed mitigation measures.
Action level exceedance for more than one consecutive sampling days	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss remedial measures with IEC, contractor and ER 5. Ensure remedial measures are implemented	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the proposed mitigation measures; 2. Make agreement on the remedial measures to be implemented ; and 3. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of remedial measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed mitigation measures.
Limit level exceedance for one sampling day	1. Repeat measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Rectify unacceptable practice; 4. Check monitoring data, all plant, 5. equipment and Contractor's working methods; 6. Consider changes of working methods; 7. Discuss mitigation measures with IEC, ER and Contractor; and 8. Ensure the agreed remedial measures are implemented	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; and 4. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed remedial measures.
Limit level exceedance for more than one consecutive sampling days	1. Inform IEC, contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; 3. Discuss mitigation measures with IEC, ER and Contractor; 4. Ensure mitigation measures are implemented; and 5. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; 4. Discuss with ET and IEC on the effectiveness of the implemented mitigation measures; and 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed remedial measures; and 7. As directed by the ER, to slow down or stop all or part of the construction activities until no exceedance of Limit level.

Note: ET – Environmental Team IEC – Independent Environmental Checker ER – Engineer's Representative
Each step of actions required shall be implemented within 1 working day unless otherwise specified or agreed with EPD.

Appendix G

Monitoring Schedules of the Reporting Month and Coming Month

Impact Monitoring Schedule of Air Quality, Noise and Water Quality – May 2023

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

✓	Monitoring Day
	Sunday or Public Holiday

Impact Monitoring Schedule of Air Quality, Noise and Water Quality – June 2023

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

✓	Monitoring Day
	Sunday or Public Holiday

Appendix H

Monitoring Data

- **24-hour TSP Air Quality**
- **Noise**
- **Water Quality**

Air Quality (24-hour TSP)

24-Hour TSP Monitoring Data for ASR-1

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-Hr TSP (μg/m³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m³/min)	(std m³)	INITIAL	FINAL	(g)	
4 May 23	29342	27022.71	27046.71	1440.00	39	39	39.0	27	1008.8	1.32	1907	2.7227	2.7918	0.0691	36
10 May 23	29350	27046.71	27070.71	1440.00	39	39	39.0	23.9	1013.7	1.33	1920	2.7214	2.7644	0.0430	22
16 May 23	29376	27070.71	27094.71	1440.00	39	39	39.0	25.2	1009.6	1.33	1913	2.7247	2.8073	0.0826	43
22 May 23	29385	27094.71	27118.71	1440.00	39	39	39.0	30	1008.1	1.30	1868	2.7314	2.7917	0.0603	32
27 May 23	29513	27118.71	27142.71	1440.00	39	39	39.0	28.8	1010.4	1.30	1873	2.7763	2.8470	0.0707	38

24-Hour TSP Monitoring Data for ASR-2

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-Hr TSP (μg/m³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m³/min)	(std m³)	INITIAL	FINAL	(g)	
4 May 23	29341	24439.36	24463.36	1440.00	42	42	42.0	27	1008.8	1.37	1976	2.7227	2.8371	0.1144	58
10 May 23	29367	24463.36	24487.36	1440.00	42	42	42.0	23.9	1013.7	1.38	1992	2.7030	2.8122	0.1092	55
16 May 23	29375	24487.36	24511.36	1440.00	42	42	42.0	25.2	1009.6	1.38	1983	2.7012	2.7869	0.0857	43
22 May 23	29386	24511.36	24535.36	1440.00	42	42	42.0	30	1008.1	1.38	1990	2.7228	2.7942	0.0714	36
27 May 23	29514	24535.36	24559.36	1440.00	42	42	42.0	28.8	1010.4	1.39	1996	2.7763	2.8642	0.0879	44

24-Hour TSP Monitoring Data for ASR-3a

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-Hr TSP (μg/m³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m³/min)	(std m³)	INITIAL	FINAL	(g)	
4 May 23	29340	18229.11	18253.11	1440.00	39	39	39	27	1008.8	1.27	1824	2.7246	2.8119	0.0873	48
10 May 23	29368	18253.11	18277.11	1440.00	39	39	39	23.9	1013.7	1.28	1838	2.7085	2.7422	0.0337	18
16 May 23	29387	18277.11	18301.11	1440.00	39	39	39	25.2	1009.6	1.27	1830	2.7241	2.7612	0.0371	20
22 May 23	29506	18301.11	18325.11	1440.00	39	39	39	30	1008.1	1.25	1800	2.7744	2.8257	0.0513	29
27 May 23	29515	18325.11	18349.11	1440.00	39	39	39	28.8	1010.4	1.25	1805	2.7818	2.8329	0.0511	28

Noise

Noise Measurement Results (dB(A)) of CN-1																				
Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3rd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq_{30min}	Façade Correction (*)
5 May 23	13:00	63.7	65.4	58.2	62.6	64.4	57.5	63.5	66.2	60.7	62.8	65.2	59.3	60.7	64.8	58.8	61.4	63.9	57.7	63	66
11 May 23	13:15	64.7	68.3	58.3	63.4	67.5	58.1	62.9	66.7	57	63.6	67	57.4	61.8	65.7	57.8	62.9	65.4	58.6	63	66
17 May 23	14:56	62.2	64.5	58.0	63.3	65.0	58.0	61.6	63.5	57.5	64.2	67.5	60.5	65.3	67.5	60.0	63.9	65.5	57.5	64	67
23 May 23	13:10	63.3	65.5	57.5	61.8	63.5	57.0	62.6	65.0	58.0	65.2	68.0	58.5	63.7	66.0	62.0	64.2	66.0	60.5	64	67
29 May 23	13:15	56.5	58.3	55.3	58.8	61.2	56.2	62.2	64.7	57.0	63.1	67.2	58.2	60.2	62.9	55.9	59.9	64.4	54.9	61	64

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

Noise Measurement Results (dB(A)) of CN-2																				
Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3rd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq_{30min}	Façade Correction (*)
5 May 23	13:33	56.4	62.2	52.7	55.8	63.6	53.2	58.3	65.2	50.8	55.2	60	49.7	56.4	59.8	49.5	57.7	61.2	52	57	60
11 May 23	13:55	66.5	68.9	53.4	63.2	65.6	51.2	58.7	61.8	52.5	57.1	61.9	51.7	56.3	60.0	50.4	56.9	60.5	51.2	62	65
17 May 23	14:18	59.2	63.5	56.0	58.3	63.5	56.5	58.2	60.5	53.5	56.8	62.0	52.5	58.9	63.0	52.0	57.6	62.0	53.5	58	61
23 May 23	13:46	54.2	60.5	49.5	53.7	59	48.5	56.6	62	53.5	55.2	63.5	51.5	56.5	63	52	53.3	59	49	55	58
29 May 23	13:49	61.1	63.1	60	61.5	62.7	60.2	63.1	65.8	60.7	64.2	67.5	60.5	65.5	69.2	60.7	65.5	70.8	60.9	64	67

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

Noise Measurement Results (dB(A)) of CN-3																				
Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3rd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq_{30min}	Façade Correction (*)
5 May 23	14:07	60.4	63	58.6	59.7	63.8	57.8	62.2	65.4	58.9	61.7	61.6	59.2	63.3	65.9	59.7	58.8	62.5	57.3	61	64
11 May 23	11:15	58.3	63.7	53	59.8	63.2	54.7	61.4	64.8	54.1	59.1	63.8	55.3	60	64.3	53.7	58.8	63.5	53.9	60	63
17 May 23	13:40	59.3	62.5	55.0	59.7	63.0	55.0	58.9	63.0	56.0	60.3	64.0	59.0	61.8	65.0	58.5	62.2	63.5	57.5	61	64
23 May 23	14:26	60.8	63.5	58	62.5	63	60	63.7	65	61	60.7	62.5	55	62.5	63	55	61.9	63	54.5	62	65
29 May 23	14:26	52.5	56.5	47.5	55.2	57.5	48.3	54.8	56.7	51	53.3	55.5	50.9	58.9	62.5	48.9	59.7	63.1	48.8	58	61

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

Noise Measurement Results (dB(A)) of CN-4																				
Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3rd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq_{30min}
5 May 23	14:41	63.8	66.7	58.4	62.6	65.3	59.9	63.8	66.2	60.7	63.6	65.8	56.2	65.4	67.6	58.7	63.2	65.2	56.6	64
11 May 23	10:30	62.5	67.3	53.5	63.9	68.7	54	62.8	66.4	51.3	63.2	67.9	53	62.7	66.8	54.2	61.5	65.3	53.7	63
17 May 23	13:03	62.6	64.5	56.5	62.2	64.0	56.0	63.5	66.0	58.0	61.8	65.0	57.0	60.2	63.5	56.0	59.3	63.5	56.0	62
23 May 23	15:09	61.3	65.0	56.0	59.8	65.0	55.5	58.5	63.5	55.0	62.2	65.0	58.0	61.7	64.0	55.5	60.8	64.0	55.5	61
29 May 23	15:02	63.3	68.5	55.5	61.8	65.6	55.2	60.8	61.9	55.4	65	67.6	54.9	58.8	61.4	54.7	57.3	59.5	54.4	62

Water Quality

Water Quality Impact Monitoring Result for M1

Date	2 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.13	24.6	24.6	<0.1	<0.1	7.48	7.48	91.6	91.6	3.45	3.5	7.29	7.3	0.06	0.06	4	4.5
			24.6		<0.1		7.47		91.5		3.49		7.29		0.06		5	

Date	4 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.13	24.4	24.4	<0.1	<0.1	7.22	7.20	89.8	89.5	3.07	3.0	7.24	7.2	0.06	0.06	6	6.5
			24.4		<0.1		7.18		89.2		2.98		7.24		0.06		7	

Date	6 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.13	24.5	24.5	<0.1	<0.1	7.12	7.11	88.8	88.7	3.23	3.2	7.29	7.3	0.06	0.06	8	7.5
			24.5		<0.1		7.1		88.6		3.24		7.29		0.06		7	

Date	8 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.16	22.7	22.7	<0.1	<0.1	7.5	7.48	88.3	88.0	152	**151.0**	7.54	7.5	0.10	0.10	114	**115.0**
			22.7		<0.1		7.45		87.7		150		7.54		0.10		116	

Date	10 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	11:00	0.15	23	23.0	<0.1	<0.1	7.19	7.16	87.5	86.9	6.72	6.7	7.52	7.5	0.10	0.10	6	7.0
			23		<0.1		7.12		86.3		6.75		7.52		0.10		8	

Date	12 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.13	23.2	23.2	<0.1	<0.1	7.59	7.56	93.2	93.1	3.25	3.3	7.53	7.5	0.07	0.07	3	3.0
			23.2		<0.1		7.53		93.0		3.27		7.53		0.07		3	

Date	15 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.14	23	23.0	<0.1	<0.1	8.29	8.29	100.2	100.1	6.55	6.6	7.88	7.9	0.10	0.10	8	8.0
			23		<0.1		8.28		100.0		6.72		7.88		0.10		8	

Date	17 May 23

Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.14	25.5	25.5	<0.1	<0.1	7.51	7.51	91.6	91.6	6.85	6.7	7.53	7.5	0.05	0.05	7	7.0
			25.5		<0.1		7.5		91.6		6.55		7.53		0.05		7	

Date	19 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:40	0.14	26.8	26.8	<0.1	<0.1	7.57	7.57	94.8	94.8	3.1	3.1	7.82	7.8	0.03	0.03	7	7.0
			26.8		<0.1		7.56		94.7		3.08		7.82		0.03		7	

Date	22 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.14	28.8	28.8	<0.1	<0.1	7.46	7.46	96.2	96.2	4.62	4.5	7.95	8.0	0.04	0.04	7	7.5
			28.8		<0.1		7.45		96.1		4.39		7.95		0.04		8	

Date	24 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	10:00	0.14	24.7	24.7	<0.1	<0.1	6.99	6.99	93.9	93.9	3.06	3.1	7.46	7.5	0.07	0.07	4	4.5
			24.7		<0.1		6.98		93.8		3.07		7.46		0.07		5	

Date	27 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.13	27.7	27.7	<0.1	<0.1	7.06	7.05	90.3	90.2	2.57	2.6	7.72	7.7	0.07	0.07	5	4.5
			27.7		<0.1		7.04		90.0		2.54		7.72		0.07		4	

Date	29 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
	9:30	0.13	28.1	28.1	<0.1	<0.1	7.44	7.38	95.0	94.3	3.36	3.4	7.17	7.2	0.03	0.03	4	4.0
			28.1		<0.1		7.32		93.5		3.37		7.17		0.03		4	

Date	31 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.13	28.9	28.9	<0.1	<0.1	7.23	7.22	95.3	95.1	2.57	2.6	7.82	7.8	0.07	0.07	4	3.5
			28.9		<0.1		7.2		94.9		2.6		7.82		0.07		3	

Water Quality Impact Monitoring Result for M2

Date	2 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:00	0.08	24.4	24.4	<0.1	<0.1	7.49	7.50	92.1	92.2	2.95	2.9	7.46	7.5	0.08	0.08	4	4.0
			24.4		<0.1		7.5		92.2		2.88		7.46		0.08		4	

Date	4 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:00	0.08	24.7	24.7	<0.1	<0.1	7.43	7.41	92.4	92.1	7.26	7.2	7.53	7.5	0.06	0.06	6	6.5
			24.7		<0.1		7.39		91.8		7.23		7.53		0.06		7	

Date	6 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:00	0.08	24.8	24.8	<0.1	<0.1	7.42	7.40	92.2	92.0	6.48	6.5	7.40	7.4	0.1	0.10	7	7.5
			24.8		<0.1		7.38		91.7		6.43		7.40		0.1		8	

Date	8 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:15	0.10	22.8	22.8	<0.1	<0.1	7.58	7.59	88.1	88.2	54.6	**52.5**	7.32	7.3	0.03	0.03	50	**51.0**
			22.8		<0.1		7.59		88.2		50.3		7.32		0.03		52	

Date	10 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	11:50	0.09	23.2	23.2	<0.1	<0.1	7.5	7.48	92.3	92.0	1.87	1.9	7.51	7.5	0.08	0.08	3	3.5
			23.2		<0.1		7.46		91.7		1.91		7.51		0.08		4	

Date	12 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:00	0.08	24.1	24.1	<0.1	<0.1	7.75	7.72	96.7	96.4	4.19	4.2	7.40	7.4	0.05	0.05	7	6.5
			24.1		<0.1		7.69		96.0		4.11		7.40		0.05		6	

Date	15 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:30	0.08	23.3	23.3	<0.1	<0.1	7.94	7.94	95.9	95.8	2.79	2.8	7.62	7.6	0.09	0.09	7	6.5
			23.3		<0.1		7.93		95.7		2.71		7.62		0.09		6	

Date	17 May 23

Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:00	0.08	25.8	25.8	<0.1	<0.1	7.87	7.86	96.4	96.4	3.36	3.3	7.30	7.3	0.08	0.08	7	7.5
			25.8		<0.1		7.85		96.3		3.29		7.30		0.08		8	

Date	19 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:35	0.08	27	27.0	<0.1	<0.1	7.58	7.58	95.0	95.0	2.91	2.9	7.55	7.6	0.09	0.09	5	5.5
			27		<0.1		7.57		94.9		2.94		7.55		0.09		6	

Date	22 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:10	0.08	29	29.0	<0.1	<0.1	7.45	7.45	95.9	95.9	2.93	2.8	7.79	7.8	0.06	0.06	4	4.5
			29		<0.1		7.44		95.9		2.69		7.79		0.06		5	

Date	24 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:45	0.08	24.9	24.9	<0.1	<0.1	7.38	7.38	96.5	96.5	2.93	2.9	7.46	7.5	0.05	0.05	2	2.5
			24.9		<0.1		7.37		96.4		2.91		7.46		0.05		3	

Date	27 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:20	0.08	27.9	27.9	<0.1	<0.1	7.45	7.45	95.1	95.0	2.23	2.2	7.56	7.6	0.06	0.06	2	2.0
			27.9		<0.1		7.44		94.9		2.21		7.56		0.06		2	

Date	29 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:05	0.07	28.4	28.4	<0.1	<0.1	7.42	7.42	94.6	94.6	2.42	2.5	7.28	7.3	0.04	0.04	2	2.5
			28.4		<0.1		7.42		94.5		2.49		7.28		0.04		3	

Date	31 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:20	0.07	29.5	29.5	<0.1	<0.1	7.17	7.17	94.4	94.4	4.75	4.7	7.64	7.6	0.08	0.08	2	2.0
			29.5		<0.1		7.16		94.4		4.65		7.64		0.08		2	

Water Quality Impact Monitoring Result for M3

Date	2 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:10	2.31	24.8	24.8	<0.1	<0.1	7.23	7.23	88.4	88.4	2.19	2.2	7.34	7.3	0.02	0.02	3	2.5
			24.8		<0.1		7.22		88.4		2.17		7.34		0.02		2	

Date	4 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:10	2.36	24.8	24.8	<0.1	<0.1	7.04	7.02	87.5	87.3	5.13	5.1	7.79	7.8	0.05	0.05	7	6.5
			24.8		<0.1		6.99		87.0		5.09		7.79		0.05		6	

Date	6 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:10	2.34	24.7	24.7	<0.1	<0.1	6.91	6.90	86.1	85.9	3.89	3.9	7.65	7.7	0.03	0.03	6	5.5
			24.7		<0.1		6.88		85.7		3.84		7.65		0.03		5	

Date	8 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:25	2.45	22.6	22.6	<0.1	<0.1	7.14	7.14	83.8	83.8	22.1	**22.3**	7.33	7.3	0.04	0.04	27	**27.0**
			22.6		<0.1		7.13		83.7		22.4		7.33		0.04		27	

Date	10 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	12:00	2.42	23.1	23.1	<0.1	<0.1	7.15	7.12	87.8	87.5	3.09	2.9	7.04	7.0	0.03	0.03	3	3.5
			23.1		<0.1		7.09		87.2		2.76		7.04		0.03		4	

Date	12 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:10	2.41	23.8	23.8	<0.1	<0.1	7.26	7.23	90.0	89.5	4.88	4.9	7.20	7.2	0.03	0.03	4	4.0
			23.8		<0.1		7.19		89.0		4.9		7.20		0.03		4	

Date	15 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:40	2.40	23.1	23.1	<0.1	<0.1	7.29	7.28	88.2	88.1	2.5	2.5	7.70	7.7	0.03	0.03	6	6.0
			23.1		<0.1		7.27		88.0		2.46		7.70		0.03		6	

Date	17 May 23

Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:10	2.42	25.6	25.6	<0.1	<0.1	7.33	7.28	90.4	49.8	1.92	1.9	7.31	7.3	0.03	0.03	6	6.0
			25.6		<0.1		7.23		9.1		1.95		7.31		0.03		6	

Date	19 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:45	2.43	26.9	26.9	<0.1	<0.1	7.08	7.08	89.1	89.1	2.12	2.1	7.42	7.4	0.03	0.03	4	4.5
			26.9		<0.1		7.07		89.0		2.17		7.42		0.03		5	

Date	22 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:20	2.41	28.9	28.9	<0.1	<0.1	7.03	7.03	90.6	90.6	1.49	1.5	7.46	7.5	0.01	0.01	4	4.0
			28.9		<0.1		7.03		90.5		1.45		7.46		0.01		4	

Date	24 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:55	2.42	24.8	24.8	<0.1	<0.1	7.03	7.03	92.6	92.6	1.79	1.8	7.56	7.6	0.01	0.01	5	4.5
			24.8		<0.1		7.02		92.5		1.81		7.56		0.01		4	

Date	27 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:30	2.40	27.7	27.7	<0.1	<0.1	6.97	6.96	89.1	88.9	5.45	5.4	7.29	7.3	0.03	0.03	3	2.5
			27.7		<0.1		6.94		88.7		5.42		7.29		0.03		2	

Date	29 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:15	2.38	28.3	28.3	<0.1	<0.1	6.65	6.65	85.2	85.2	5.35	5.3	7.27	7.3	0.02	0.02	5	5.0
			28.3		<0.1		6.64		85.1		5.16		7.27		0.02		5	

Date	31 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:30	2.37	29.2	29.2	<0.1	<0.1	7.29	7.30	96.2	96.3	2.99	3.0	7.52	7.5	0.01	0.01	2	2.0
			29.2		<0.1		7.3		96.3		3.06		7.52		0.01		2	

Water Quality Impact Monitoring Result for M4

Date	2 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.42	24.7	24.7	<0.1	<0.1	5.82	5.80	71.5	71.2	3.1	3.0	7.16	7.2	0.06	0.06	5	4.5
			24.7		<0.1		5.77		70.9		2.9		7.16		0.06		4	

Date	4 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.41	24.7	24.7	<0.1	<0.1	6.63	6.60	82.4	82.0	4.7	4.8	7.29	7.3	0.08	0.08	5	4.5
			24.7		<0.1		6.56		81.5		4.8		7.29		0.08		4	

Date	6 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.42	24.8	24.8	<0.1	<0.1	6.42	6.41	79.8	79.6	4.1	4.1	7.29	7.3	0.08	0.08	4	4.0
			24.8		<0.1		6.39		79.4		4.0		7.29		0.08		4	

Date	8 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:45	0.45	22.9	22.9	<0.1	<0.1	7.1	7.10	82.7	82.7	36.4	**41.3**	7.25	7.3	0.08	0.08	35	**35.0**
			22.9		<0.1		7.09		82.6		46.1		7.25		0.08		35	

Date	10 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	12:40	0.43	23.4	23.4	<0.1	<0.1	7.24	7.22	88.5	88.3	4.6	4.5	7.06	7.1	0.08	0.08	3	3.5
			23.4		<0.1		7.2		88.0		4.5		7.06		0.08		4	

Date	12 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.43	23.9	23.9	<0.1	<0.1	7.41	7.38	92.0	91.7	3.1	3.1	7.08	7.1	0.08	0.08	4	3.5
			23.9		<0.1		7.35		91.4		3.1		7.08		0.08		3	

Date	15 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:00	0.42	23.5	23.5	<0.1	<0.1	7.32	7.32	88.9	88.8	2.4	2.4	7.45	7.5	0.08	0.08	4	4.0
			23.5		<0.1		7.31		88.7		2.3		7.45		0.08		4	

Date	17 May 23

Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.43	25.9	25.9	<0.1	<0.1	7.06	7.02	86.8	86.6	5.1	5.0	7.04	7.0	0.09	0.09	4	4.5
			25.9		<0.1		6.97		86.4		4.9		7.04		0.09		5	

Date	19 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:00	0.44	27.2	27.2	<0.1	<0.1	6.78	6.76	84.8	84.6	3.1	3.1	7.16	7.2	0.07	0.07	3	3.0
			27.2		<0.1		6.74		84.4		3.1		7.16		0.07		3	

Date	22 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:40	0.42	29.2	29.2	<0.1	<0.1	6.41	6.41	82.8	82.7	3.9	3.9	7.43	7.4	0.06	0.06	4	3.5
			29.2		<0.1		6.4		82.6		3.8		7.43		0.06		3	

Date	24 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:15	0.43	25.1	25.1	<0.1	<0.1	6.54	6.56	86.0	85.9	4.6	4.7	7.19	7.2	0.09	0.09	4	4.5
			25.1		<0.1		6.58		85.8		4.7		7.19		0.09		5	

Date	27 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:45	0.40	28	28.0	<0.1	<0.1	6.95	6.90	89.2	88.5	2.7	2.7	7.08	7.1	0.04	0.04	4	4.5
			28		<0.1		6.84		87.7		2.7		7.08		0.04		5	

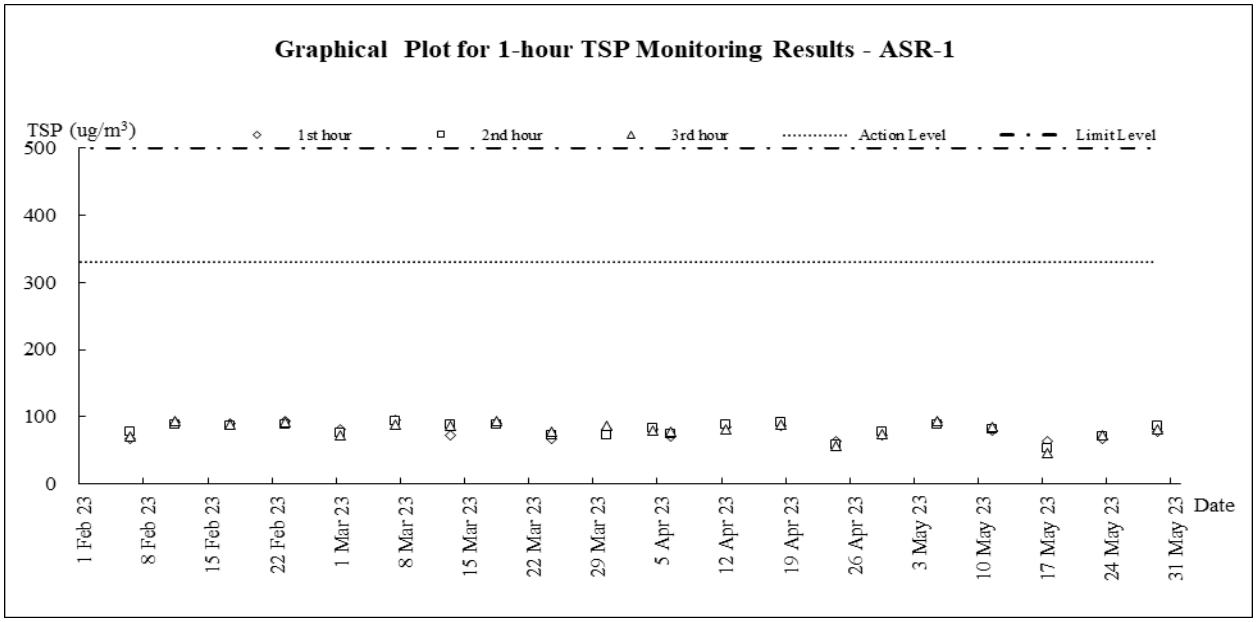
Date	29 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:35	0.41	28.5	28.5	<0.1	<0.1	6.87	6.83	87.2	87.2	3.7	3.6	7.08	7.1	0.04	0.04	3	3.0
			28.5		<0.1		6.79		87.1		3.6		7.08		0.04		3	

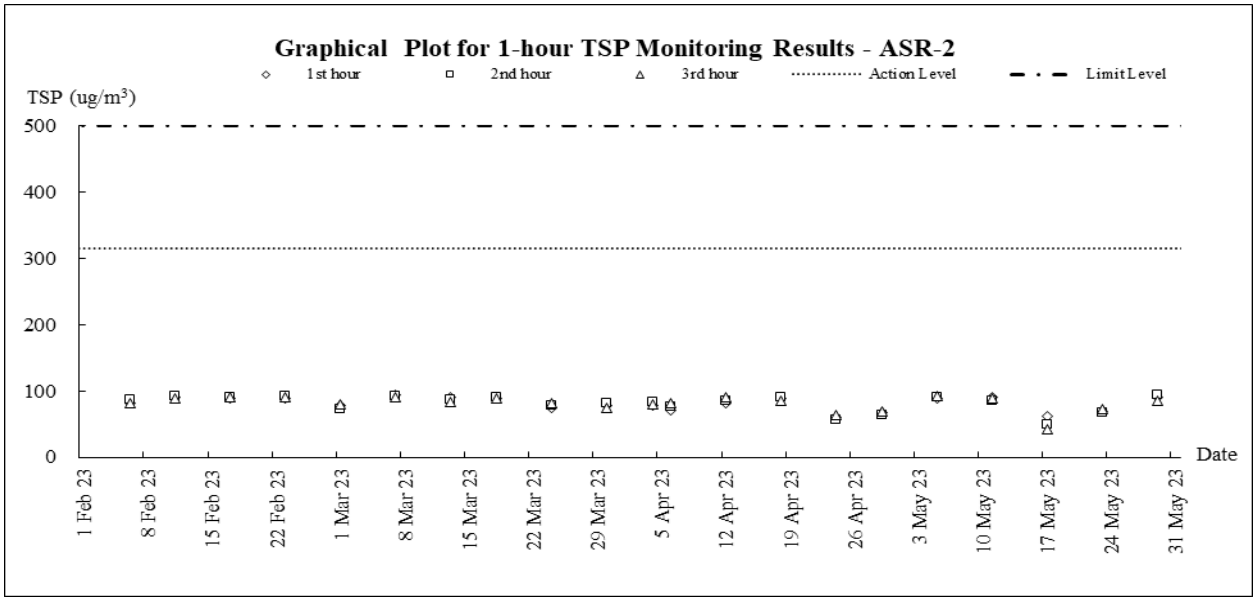
Date	31 May 23																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:45	0.40	29.7	29.7	<0.1	<0.1	6.44	6.44	86.2	86.2	4.3	4.2	7.11	7.1	0.05	0.05	4	4.0
			29.7		<0.1		6.43		86.1		4.2		7.11		0.05		4	

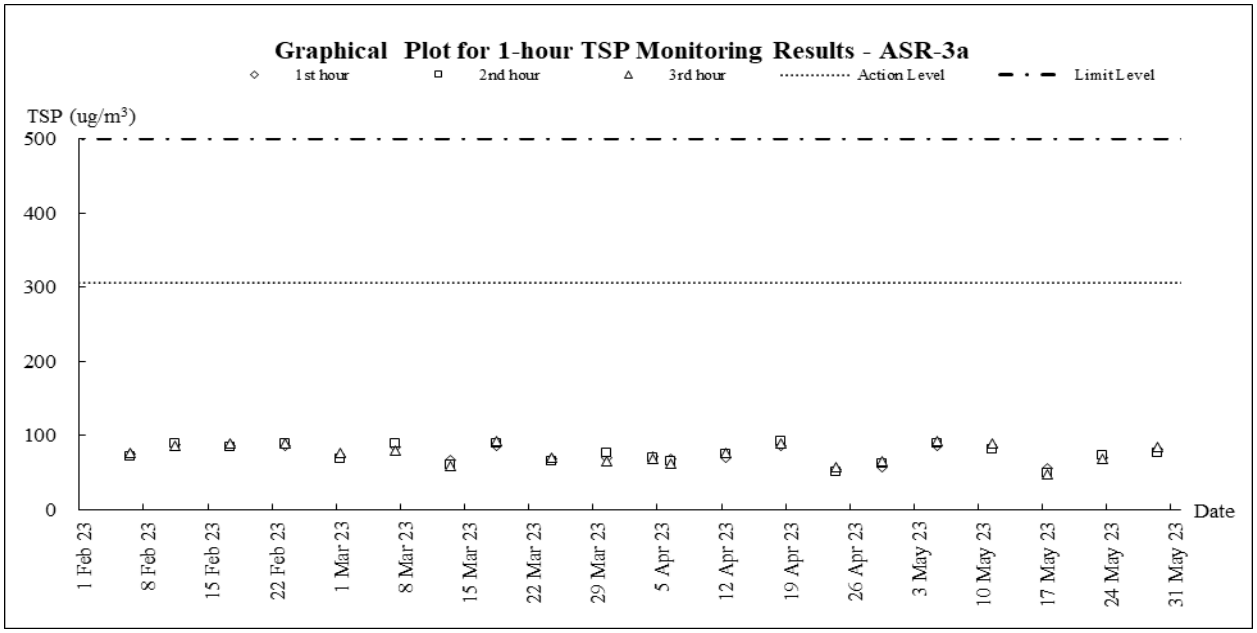
Appendix I

Graphical Plots of Air Quality, Noise and Water Quality

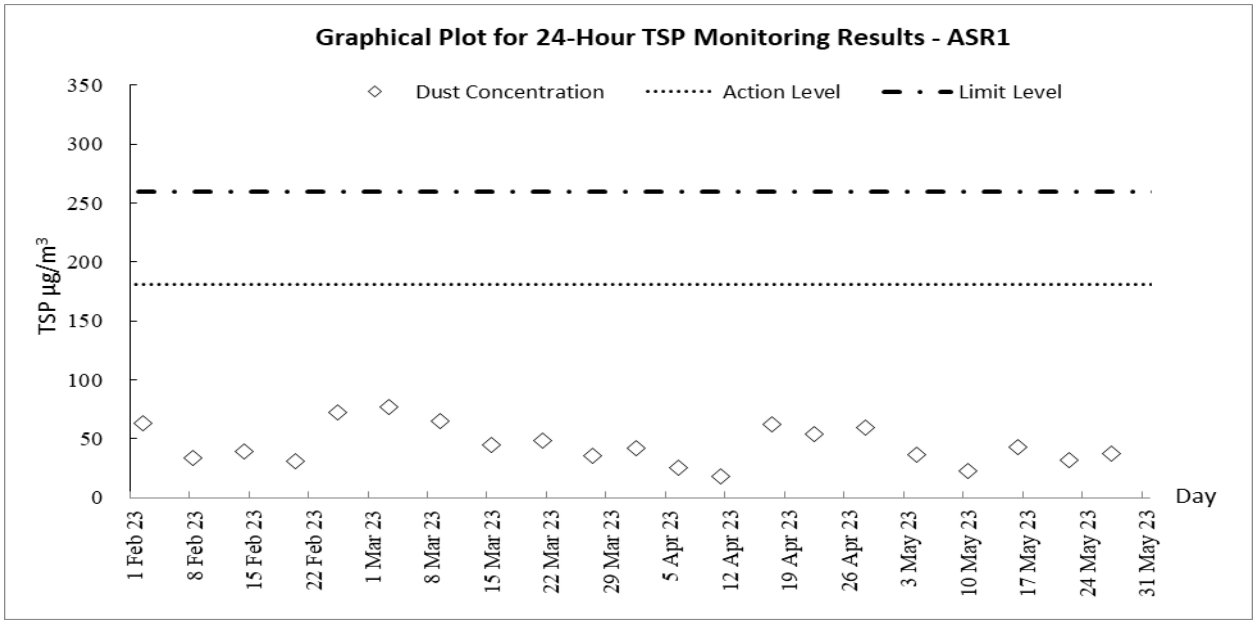
Air Quality Impact Monitoring – 1-hour TSP

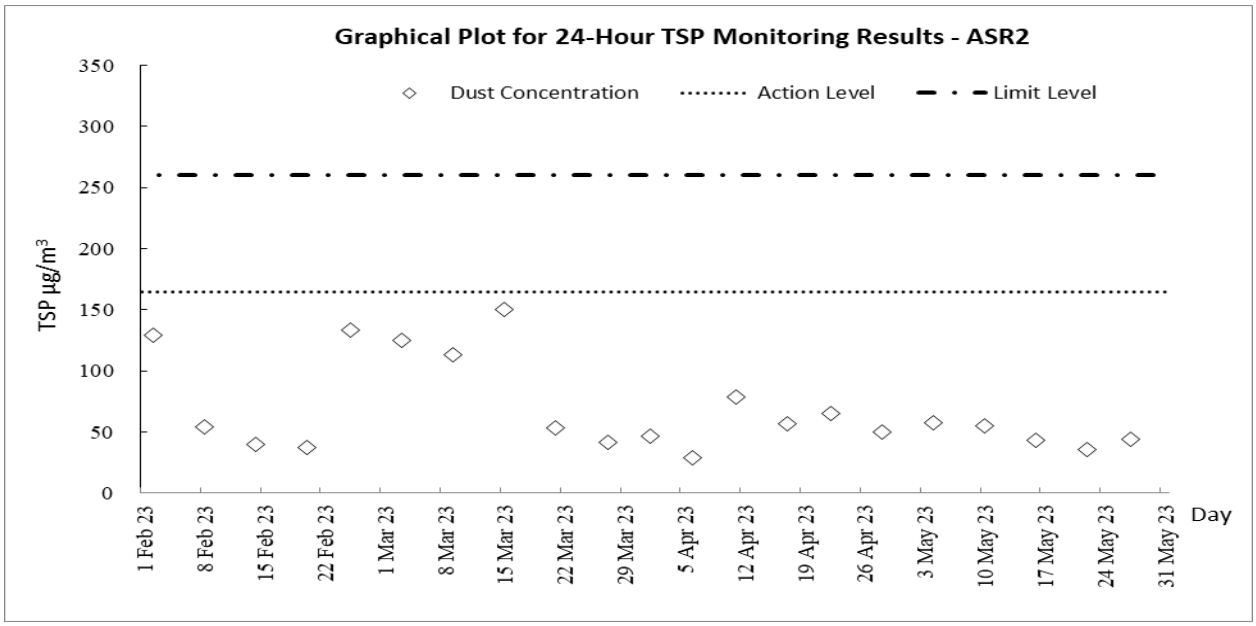


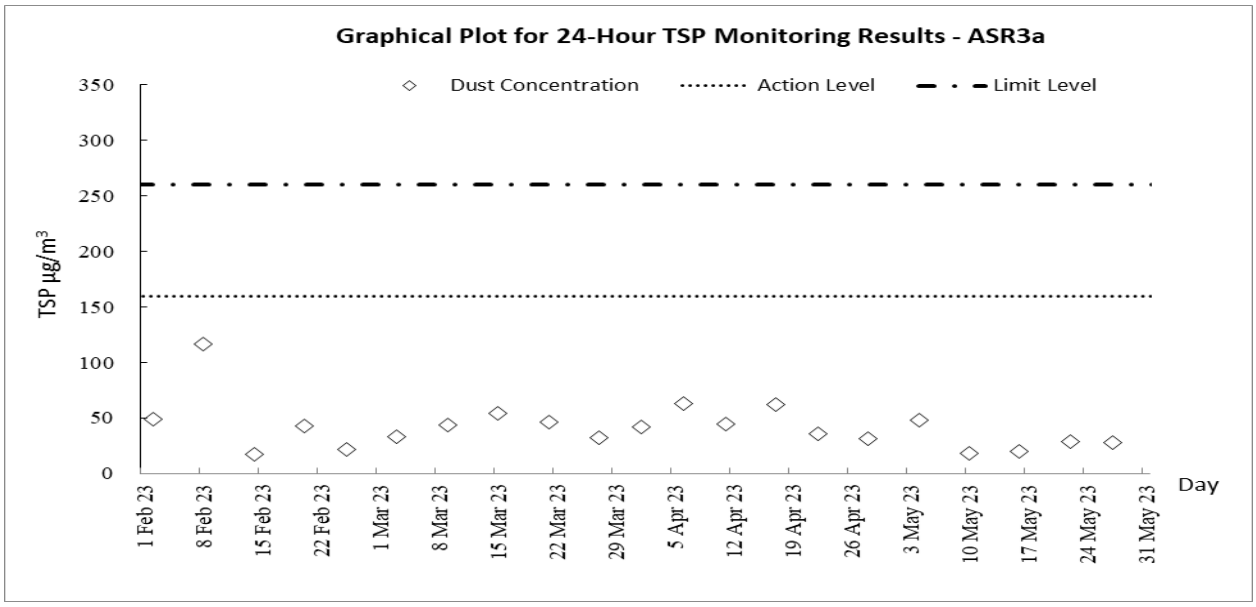




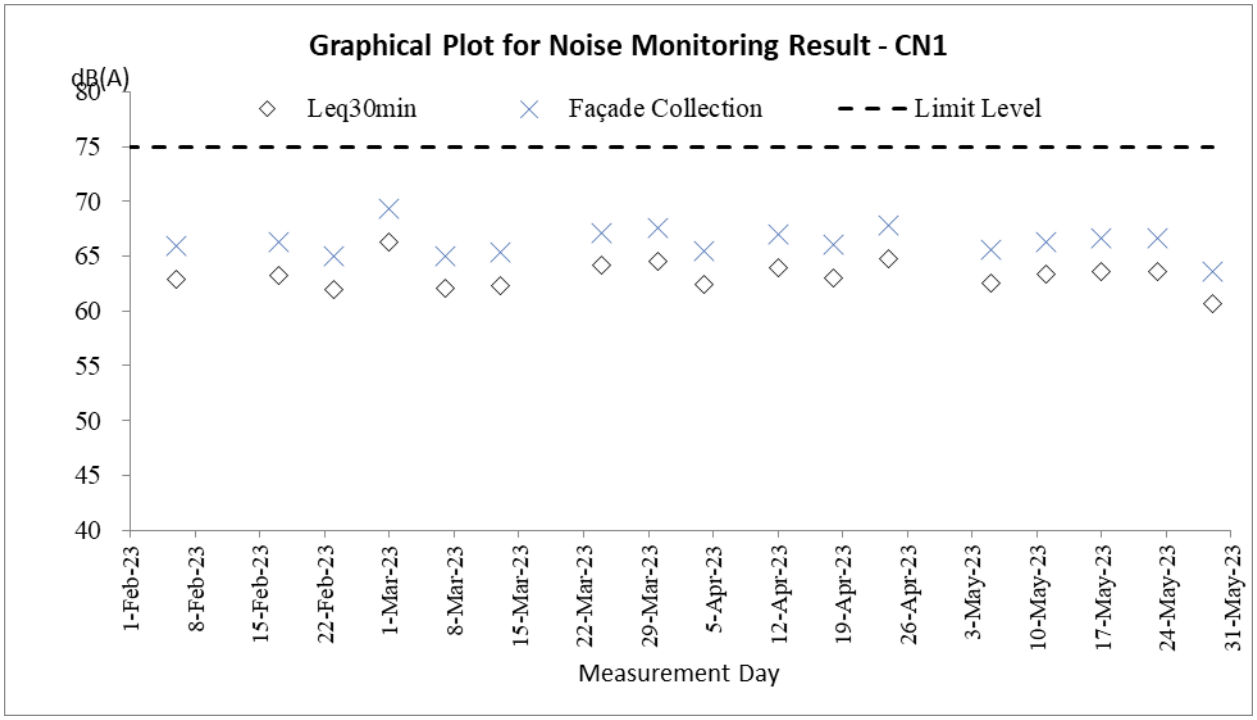
Air Quality Impact Monitoring – 24-hour TSP

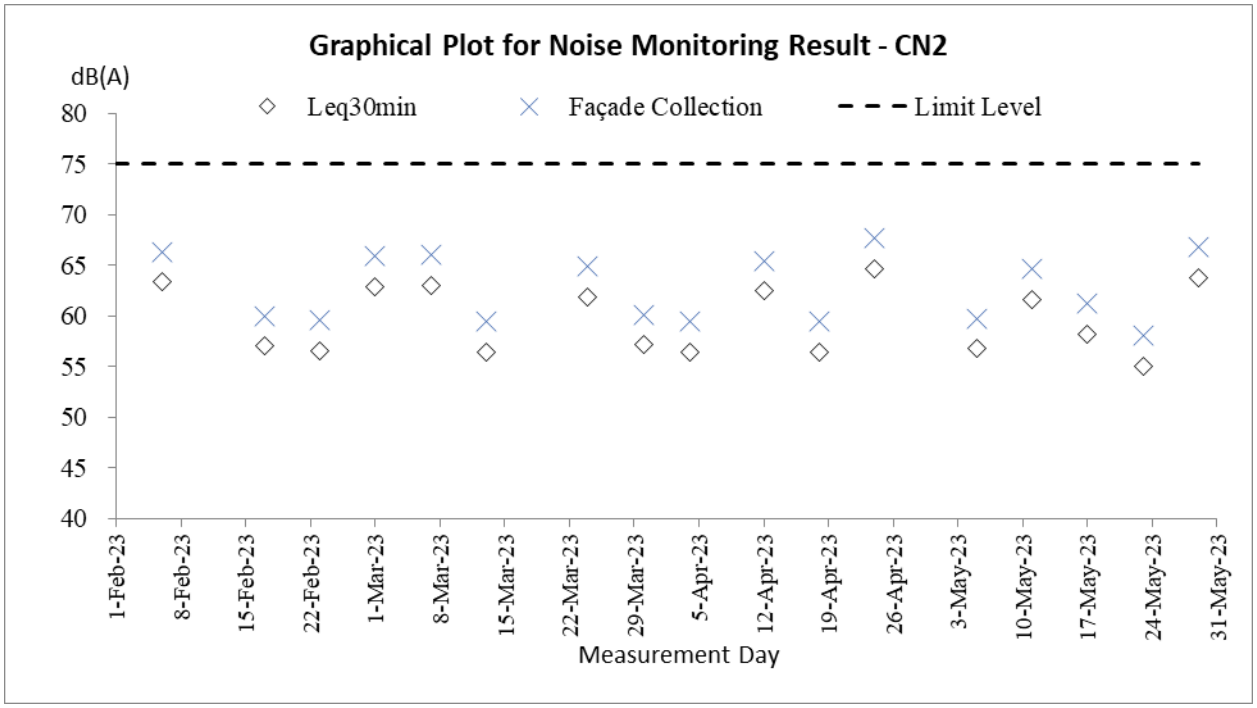


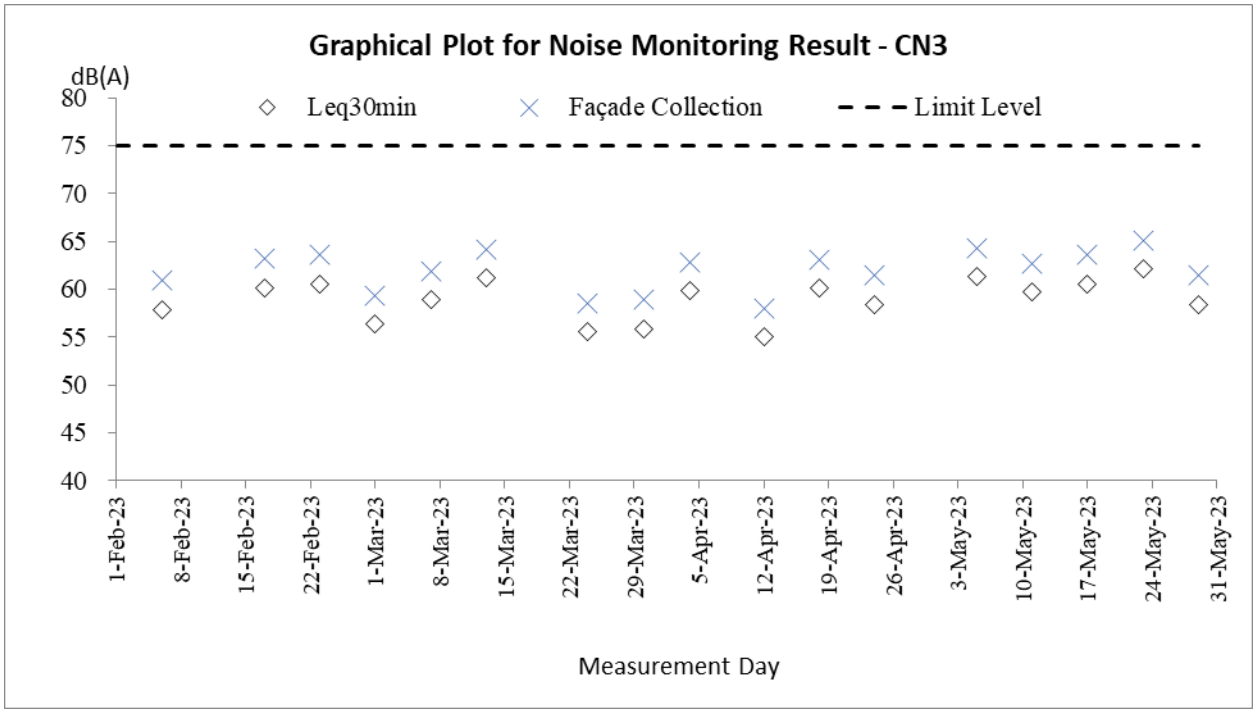


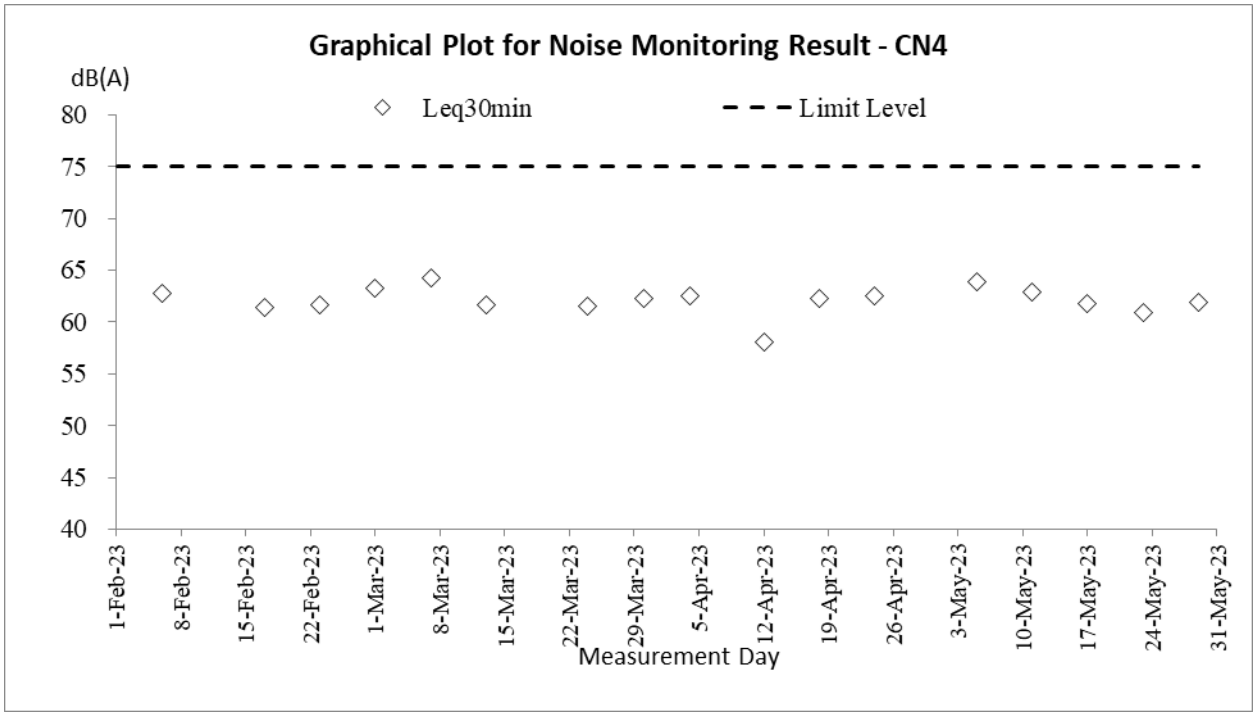


Construction Noise Impact Monitoring

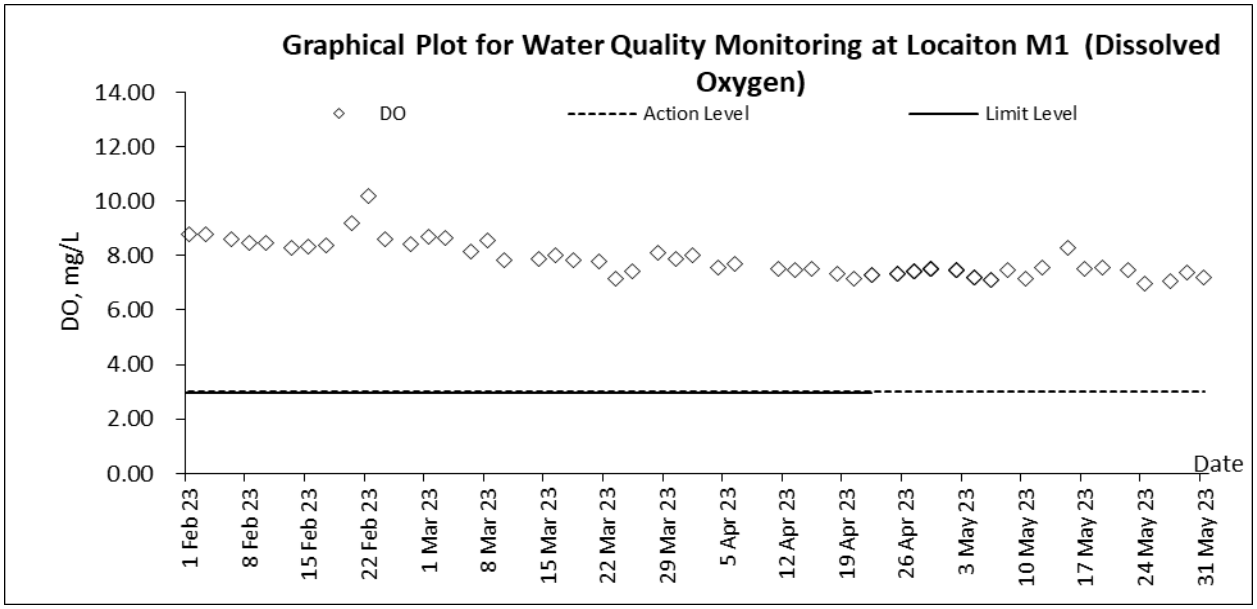


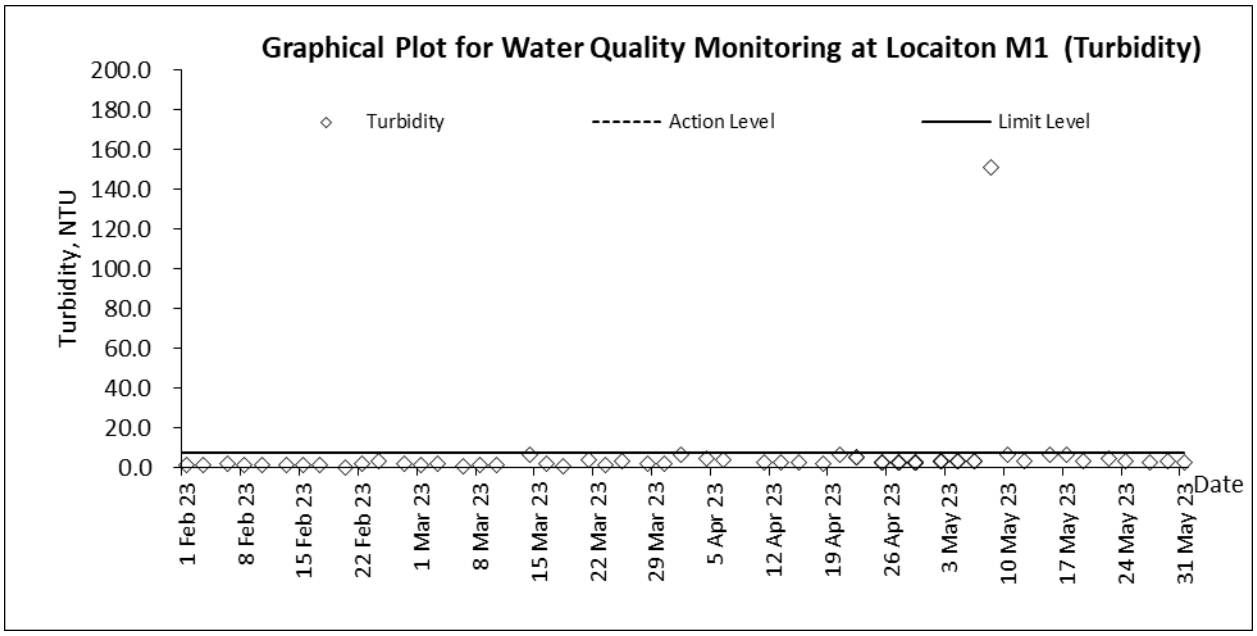


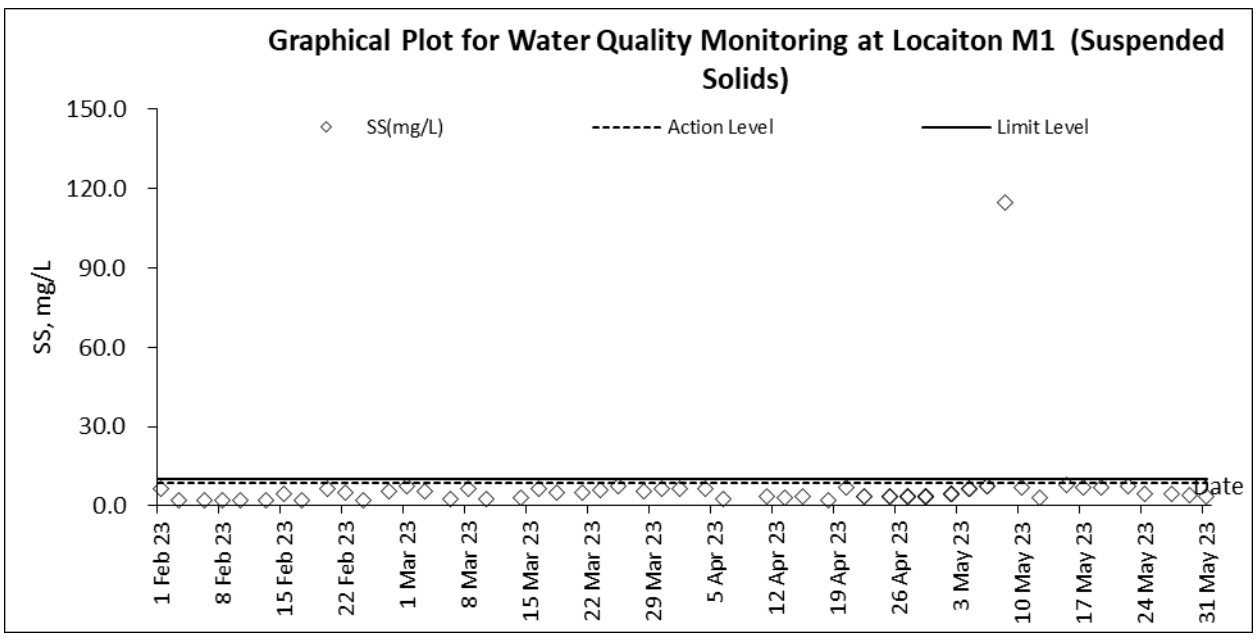

Graphical Plot for Noise Monitoring Result - CN3
dB(A)
Leq30min
Façade Collection
Limit Level
80
75
70
65
60
55
50
45
40
1-Feb-23
8-Feb-23
15-Feb-23
22-Feb-23
1-Mar-23
8-Mar-23
15-Mar-23
22-Mar-23
29-Mar-23
5-Apr-23
12-Apr-23
19-Apr-23
26-Apr-23
3-May-23
10-May-23
17-May-23
24-May-23
31-May-23
Measurement Day

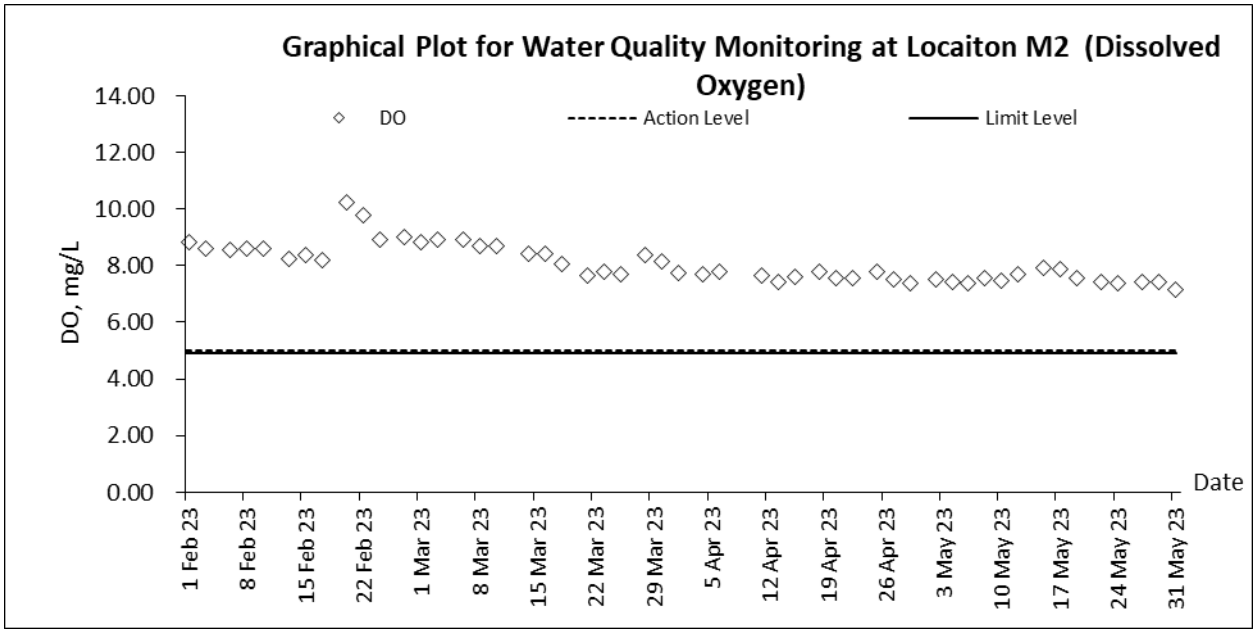

Graphical Plot for Noise Monitoring Result - CN4
dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
40
1-Feb-23
8-Feb-23
15-Feb-23
22-Feb-23
1-Mar-23
8-Mar-23
15-Mar-23
22-Mar-23
29-Mar-23
5-Apr-23
12-Apr-23
19-Apr-23
26-Apr-23
3-May-23
10-May-23
17-May-23
24-May-23
31-May-23
Measurement Day

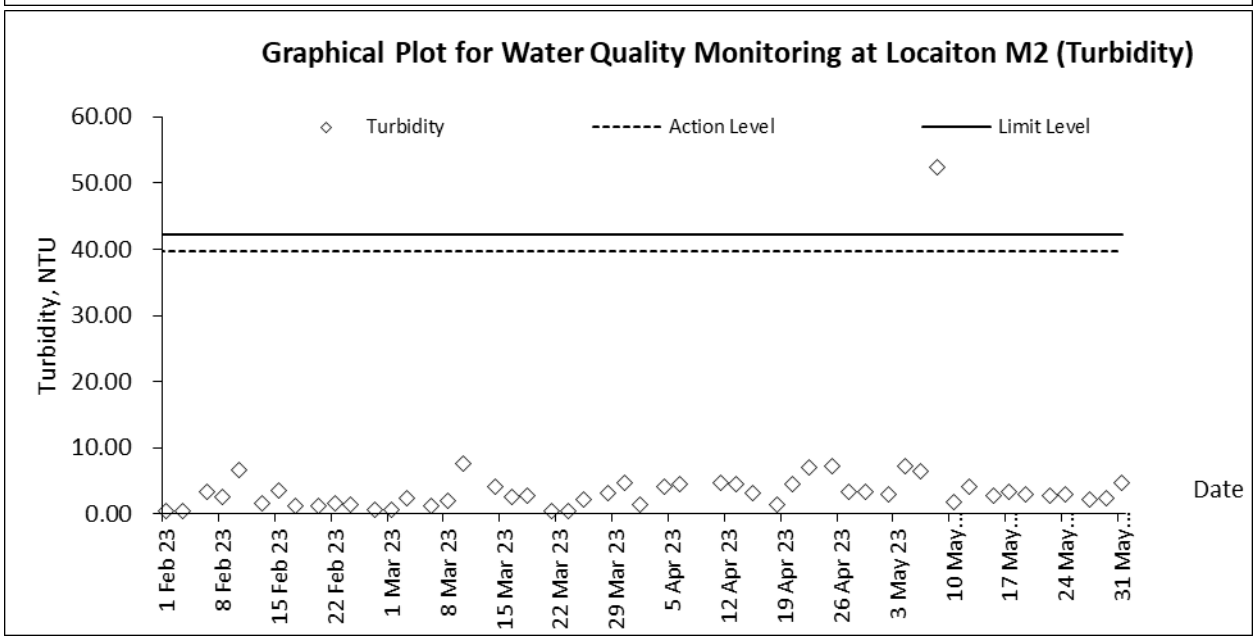
Water Quality Impact Monitoring

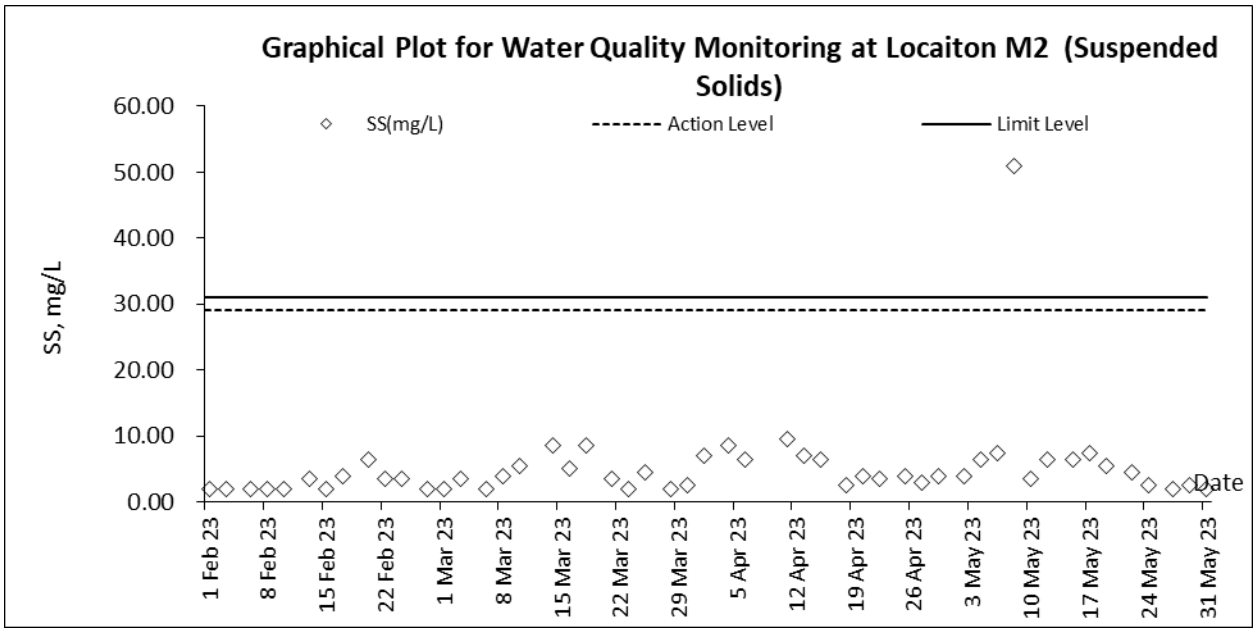


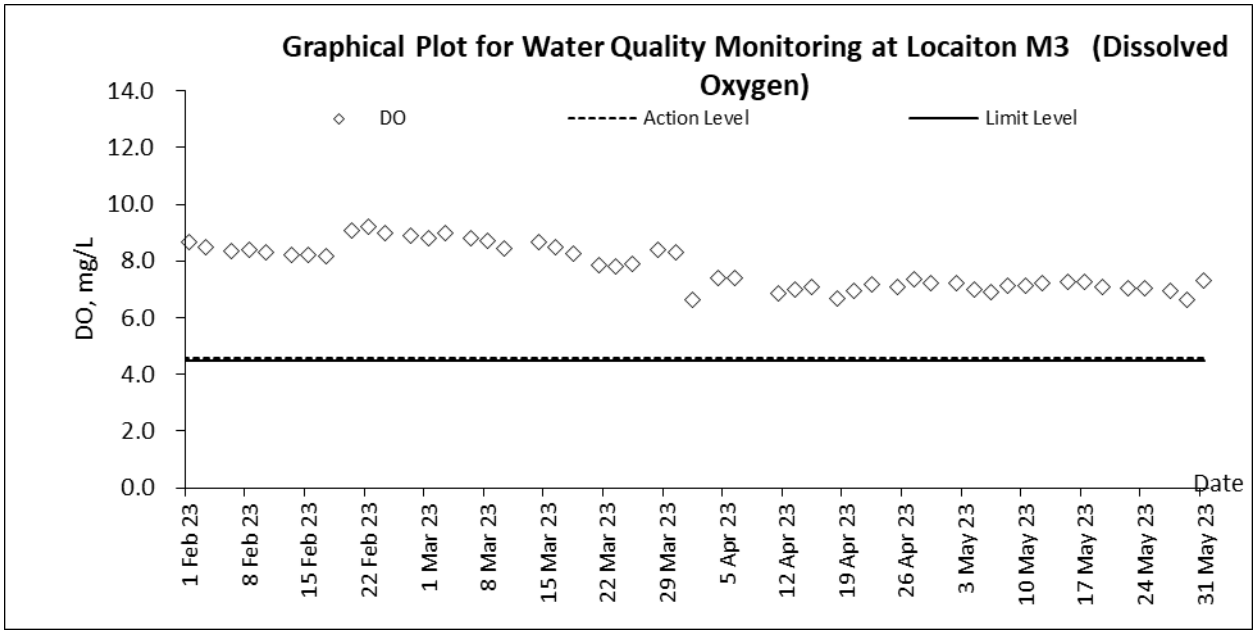


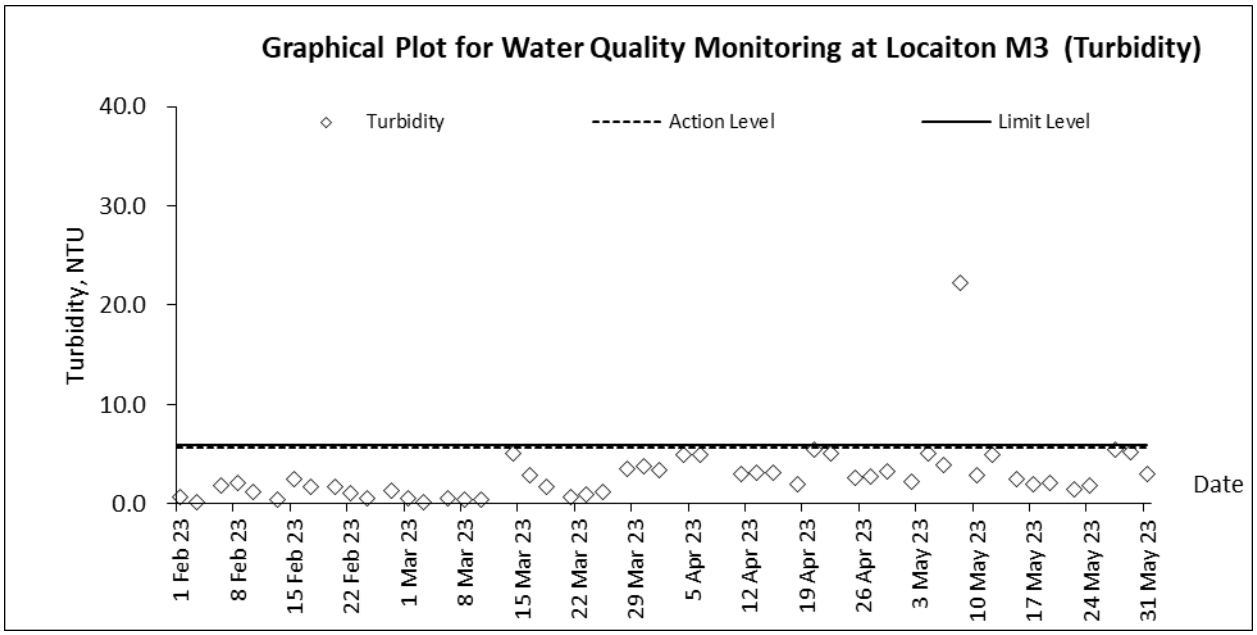


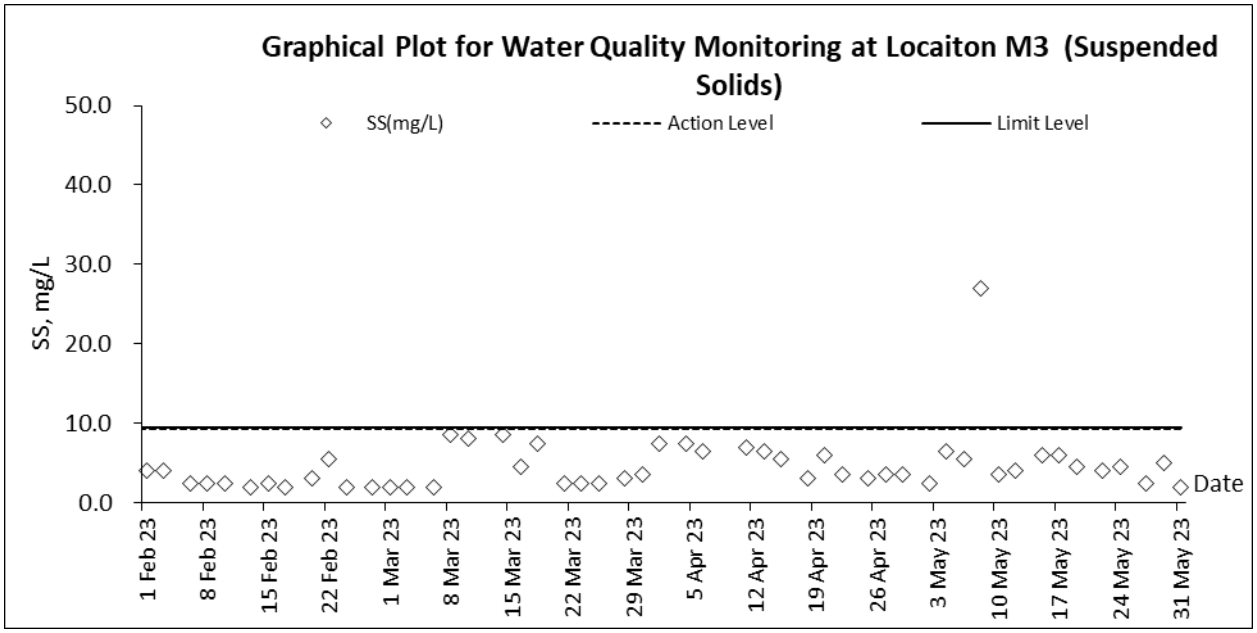

Graphical Plot for Water Quality Monitoring at Locaiton M2 (Dissolved Oxygen)
DO
Action Level
Limit Level
DO, mg/L
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23

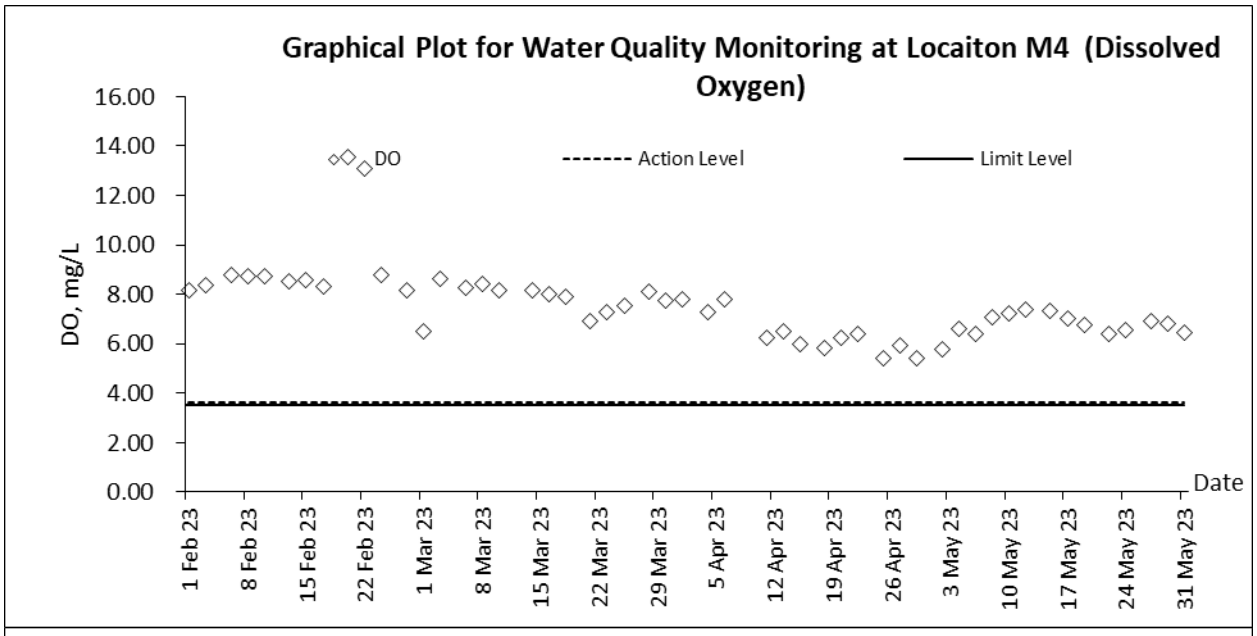

Graphical Plot for Water Quality Monitoring at Locaiton M2 (Turbidity)
Turbidity
Action Level
Limit Level
Turbidity, NTU
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May...
17 May...
24 May...
31 May...

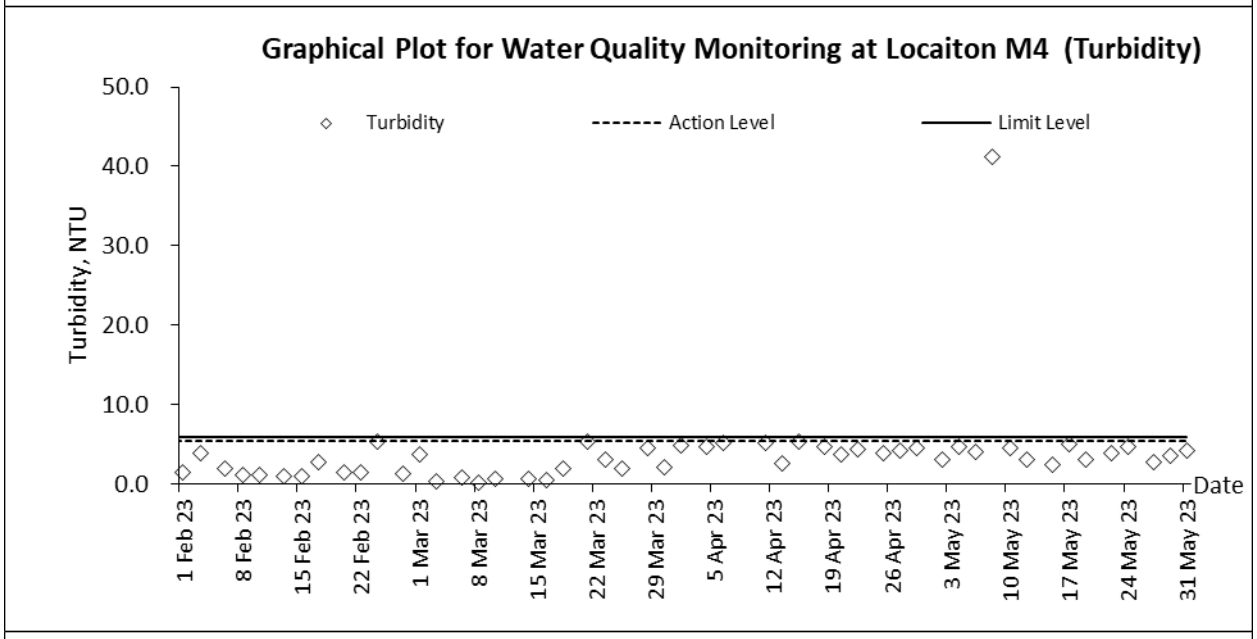

Graphical Plot for Water Quality Monitoring at Locaiton M2 (Suspended Solids)
SS(mg/L)
Action Level
Limit Level
SS, mg/L
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23

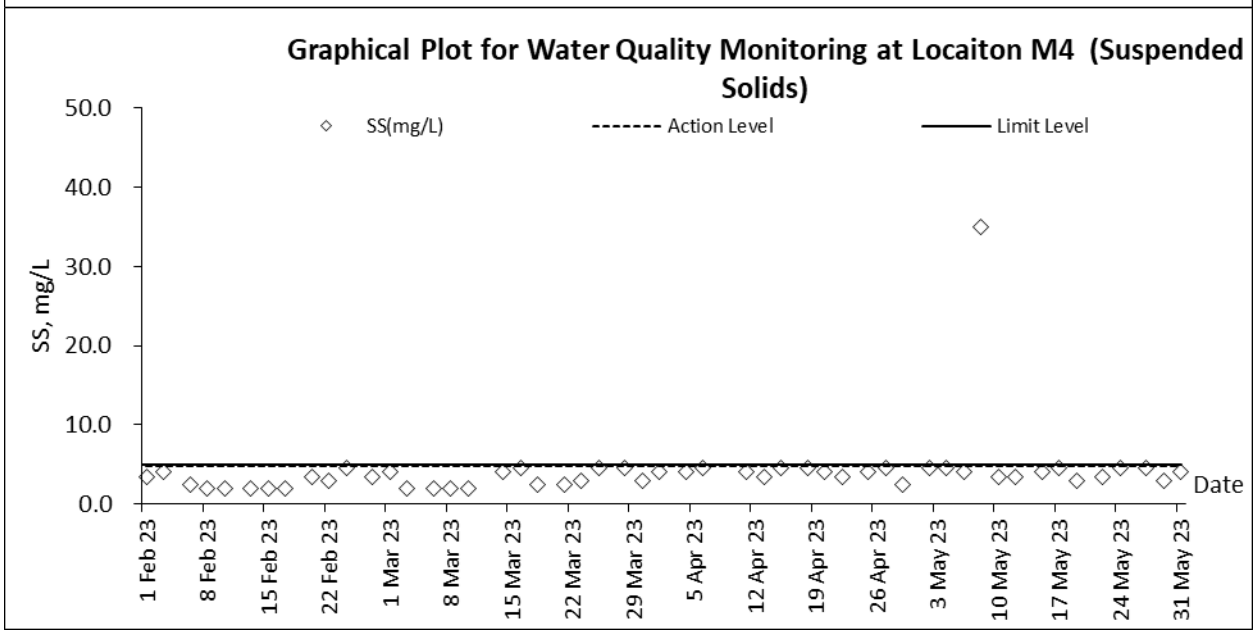

Graphical Plot for Water Quality Monitoring at Locaiton M3 (Dissolved Oxygen)
DO
Action Level
Limit Level
DO, mg/L
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23


Graphical Plot for Water Quality Monitoring at Locaiton M3 (Turbidity)
Turbidity
Action Level
Limit Level
Turbidity, NTU
40.0
30.0
20.0
10.0
0.0
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23


Graphical Plot for Water Quality Monitoring at Locaiton M3 (Suspended Solids)
SS(mg/L)
Action Level
Limit Level
SS, mg/L
50.0
40.0
30.0
20.0
10.0
0.0
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23


Graphical Plot for Water Quality Monitoring at Locaiton M4 (Dissolved Oxygen)
DO
Action Level
Limit Level
DO, mg/L
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23


Graphical Plot for Water Quality Monitoring at Locaiton M4 (Turbidity)
Turbidity
Action Level
Limit Level
Turbidity, NTU
50.0
40.0
30.0
20.0
10.0
0.0
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23


Graphical Plot for Water Quality Monitoring at Locaiton M4 (Suspended Solids)
SS(mg/L)
Action Level
Limit Level
SS, mg/L
50.0
40.0
30.0
20.0
10.0
0.0
Date
1 Feb 23
8 Feb 23
15 Feb 23
22 Feb 23
1 Mar 23
8 Mar 23
15 Mar 23
22 Mar 23
29 Mar 23
5 Apr 23
12 Apr 23
19 Apr 23
26 Apr 23
3 May 23
10 May 23
17 May 23
24 May 23
31 May 23

Appendix J

Meteorological Data of the Reporting Month

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-May-23	Mon	Mainly cloudy. Sunny intervals in the afternoon.	0.3	24.6	12	71.0	E/SE
2-May-23	Tue	Moderate easterly winds, fresh offshore at first.	0	24.6	12.5	68.7	E/SE
3-May-23	Wed	Sunny periods in the afternoon.	0.1	26.5	7.5	82.1	E/SE
4-May-23	Thu	Cloudy periods in the morning and at night.	0	27.7	9.2	77.2	E
5-May-23	Fri	Mainly fine. Hot during the day.	0	27.9	9.2	75.5	SW
6-May-23	Sat	Mainly fine and hot during the day.	0	28.7	9.1	79.0	E/SE
7-May-23	Sun	Mainly cloudy with occasional showers.	35.5	26.5	8.7	85.7	E/SE
8-May-23	Mon	Showers will ease off gradually later.	39.2	21.9	6.2	89.7	N
9-May-23	Tue	Isolated thunderstorms at first.	0.1	23.9	8	79.0	E
10-May-23	Wed	Mainly cloudy tonight.	0	23.7	11.7	71.5	E/SE
11-May-23	Thu	Sunny periods in the afternoon.	0.5	23.8	10	71.0	E/SE
12-May-23	Fri	Mainly cloudy tonight.	Trace	23.5	6	76.7	N
13-May-23	Sat	Light to moderate east to northeasterly winds.	9.5	23.0	4	92.7	E/SE
14-May-23	Sun	Mainly cloudy.	39.9	24.1	5	89.2	E/SE
15-May-23	Mon	Light to moderate south to southeasterly winds.	0.1	25.5	5	80.5	E/SE
16-May-23	Tue	Hot with sunny periods in the afternoon.	0.4	25.2	7.5	83.7	E/SE
17-May-23	Wed	Mainly cloudy with a few showers.	32.7	27.8	8.7	85.0	SE
18-May-23	Thu	Hot with sunny periods during the day.	0	29.7	6.2	79.2	W/SW
19-May-23	Fri	Hot with sunny periods in the afternoon.	0	29.6	7.2	78.0	SE
20-May-23	Sat	Moderate south to southwesterly winds.	Trace	30.0	7.9	77.2	W/SW
21-May-23	Sun	A few showers later.	1.5	29.7	8.7	75.0	W/SW
22-May-23	Mon	Hot with sunny periods.	0	30.3	7	74.7	SW
23-May-23	Tue	Mainly cloudy with a few showers.	8.3	26.3	8.5	86.7	E/SE
24-May-23	Wed	Hot with sunny periods in the afternoon.	14.5	26.2	13.7	82.5	E/SE
25-May-23	Thu	Light winds.	Trace	26.6	11.2	85.7	E/SE
26-May-23	Fri	Some haze at first.	0.2	28.8	10.8	81.0	E/SE
27-May-23	Sat	Light to moderate west to northwesterly winds.	0	29.1	12.2	75.7	E/SE
28-May-23	Sun	Sunny periods during the day.	Trace	29.2	9.2	68.0	E/SE
29-May-23	Mon	Mainly fine. Very hot during the day. Light winds.	0	28.9	7	72.2	W/SW
30-May-23	Tue	Very hot with a few showers and isolated thunderstorms.	0	31	5	74.5	W/SW
31-May-23	Wed	Very hot with sunny periods.	Trace	30.4	11.2	77.5	E/SE

Appendix K

Ecological Survey Report

Ecological Survey Report for Contract CV/2016/10

Contract No. CV/2016/10
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery

Monthly Report of Ecologically Sensitive Habitats Monitoring – May 2023

Revision Date of issue	0 5 June 2023	
Prepared by	Alan Lam	
Reviewed by	Rachel Siu	
Verified by	Mike Leung	

Table of Contents

1 INTRODUCTION

1.1 BACKGROUND

1.1.1 The main objective of the proposed site formation and associated infrastructural works for development of columbarium, crematorium (C&C) and related facilities at Sandy Ridge Cemetery is to increase the public cremation services and supply of public niches to meet the future demand.

1.1.2 The project includes site formation and associated works for development of C&C facilities at the Sandy Ridge Cemetery, road works within Sandy Ridge Cemetery, widening a section of Lin Ma Hang Road (from 6.5m to 7.3m), provision of off-site pick-up/drop-off points for shuttle buses as well as barging point at Siu Lam, Lok On Pai.

1.1.3 The Environmental Impact Assessment (EIA) report, including Environmental Monitoring and Audit Manual (EM&A Manual), was approved with conditions on 8 August 2016 (Register No.: AEIAR-198/2016). EPD issued an Environmental Permit (EP) for the Project (EP-534/2017) on 7 April 2017. A Further Environment Permit (FEP) for the Project (FEP-01/534/2017) was issued on 23 February 2018, variation of EP (EP-534/2017/A) and variation of FEP (FEP-01/534/2017/A) were issued on 24 December 2018.

1.1.4 According to Clause 3.1 of the FEP (FEP-01/534/2017/A), "The Permit Holder shall implement the EM&A programme in accordance with the procedures and requirements as set out in the EM&A Manual. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval".

1.1.5 This Ecologically Sensitive Habitats Monitoring Methodology articulates the protocol of monitoring the ecology of concerned habitats as specified in EM&A Manual.

1.2 OBJECTIVE

1.2.1 According to approved EIA report (AEIAR-198/2016), habitat types within project boundary comprise of watercourse, grassland, upland grassland, plantation, woodland and developed area. Natural habitats were of moderate ecological value in terms of species diversity, species rarity, species abundance, ecological linkage as well as nursery. Moreover, 0.3ha of wet woodland on the northern side of Sandy Ridge was deemed habitat with high ecological value. Four types of habitats were regarded as ecologically sensitive habitats, namely wet woodland, watercourses, upland grassland and woodland. Considering human disturbance in upcoming construction and operation phases, ecologically sensitive habitats shall be monitored in accordance with EM&A Manual.

1.2.2 The objective of ecologically sensitive habitats monitoring is to evaluate the effectiveness of measures to minimize impacts on concerned habitats from disturbance and pollution.

2 ECOLOGICALLY SENSITIVE HABITATS

2.1 DESCRIPTION OF HABITATS

2.1.1 In order to monitor the effectiveness of the measures to the minimise impact on ecologically sensitive habitats from disturbance and pollution, monthly monitoring during construction and operation phases is required as specified in EM&A Manual. Standard faunal transect and sampling surveys cover both wetland and non-wetland habitats:

Wetland habitats	Non-wetland habitats
Wet Woodland	Upland Grassland
Watercourses	Woodland

2.1.2 Wet woodland is small patch present on northwest of the project boundary, and is confined by the marsh area to the north and the secondary woodland to the east, south and south-west parts. A number of mature trees *Cleistocalyx nervosum* and *Acronychia pedunculata* form the tree canopy, with other self-sown shrubs (including *Psychotria asiatica*, *Ligustrum sinense* and *Glochidion lanceolarium*) and trees (*Aporosa dioica* and *Litsea monopetala*). Whilst botanically it comprises of naturally regenerated secondary woodland and ground level are a series of small braided streams and weep points which even during the dry season remain wet. This creates a rather uncommon habitat in Hong Kong offering suitable conditions for a good assemblage of common wetland species. The wet woodland provides a good assemblage of micro-habitats, which is relatively undisturbed and has good linkages to other natural habitats. Several species of conversation importance were recorded in EIA report from this habitat: East Asian Porcupine, Leopard Cat, Red Muntjac, Two-striped Grass Frog, Small Snakehead, *Somanniathelphusa zanklon*, Dancing Shadow-emerald.

2.1.3 Seasonal watercourse running west to east in the eastern part of the area inside the Project boundary is shallower in gradient than those running off the hillside. This seasonal watercourse is heavily vegetated with wetland-associated herbs including *Commelina diffusa*, *Polygonum chinense*, *Colocasia esculenta* and *Dracaena sanderiana*. A mature tree of *Aquilaria sinensis* was recorded at the bank of the seasonal watercourse to the west of the Sandy Ridge Cemetery Office. Seasonal watercourses are restricted to the steeper slopes within the project boundary and are characterised by being entirely dry for much of the dry season. However, endemic crab *S. zanklon* population is supported by ephemeral watercourses close to the project boundary.

2.1.4 Upland grassland is the major habitat within the project boundary. The semi-natural habitat is dominated by typical upland grassland species: fern *Dicranopteris pedata*, grass *Neyraudia reynaudiana*, *Miscanthus floridulus*, climbing vines *Smilax china*, *Smilax glabra*, and shrubs such as *Rhodomyrtus tomentosa*, *Breynia fruticosa* and *Helicteres angustifolia*. Approximately 30 flowering spikes of two orchid species Bamboo Orchid and Toothed Habenaria were recorded near the hill top in the northern part of this upland grassland. Golden-headed Cisticola, which is considered as Local Concern by Fellowes *et al.* (2002), was also recorded in upland grassland on Sandy Ridge, including a proved breeding record of fledged young in September 2013. In addition, numerous species of conservation interest were recorded in EIA report, such as East Asian Porcupine, Leopard Cat, Red Muntjac, Great Swift, Tamil Grass Dart, Small Three-ring and Small Grass Yellow.

2.1.5 Scattered patches of woodland are present throughout the assessment area, with the largest contiguous block located immediately to the east of the project boundary. These woodlands are relatively young with single-layered of canopy dominants (~10 – 15m tall) including *A. dioica*, *Bridelia tomentosa*, *Cinnamomum burmannii*, *Daphniphyllum calycinum*, *Litsea glutinosa*, *Rhus succedanea*, and *Zanthoxylum avicennae*. Such areas comprise secondary woodland which is largely derived from natural regeneration and colonisation of trees as a result of seed dispersal by birds and/or bats. A mature tree of *A. sinensis* is located at the woodland edge at the central part of the Project according to EIA report.

2.2 MONITORING MEASURES OF WETLAND HABITATS

2.2.1 Wetland habitats include wet woodland and watercourses. Monitoring surveys using standardised quantitative methodology will be conducted at fixed points. For seasonal watercourse, survey shall be conducted whenever the habitat appears.

2.2.2 Measures to respond to decreases in numbers of aquatic fauna using the wetland habitats and action and limit levels to trigger these measures are detailed in Table 1.

Action Level	Response	Limit Level	Response
Reduction in taxa diversity by 30%	Investigate cause and if cause identified as related to the project instigate remedial action to remove or reduce source of disturbance.	Reduction in taxa diversity by 50%	Investigate cause and if cause identified as related to the project instigate remedial action.

Table 1 Action and Limit Levels and Responses to Evidence of Declines in Aquatic Fauna

2.3 MONITORING MEASURES OF NON-WETLAND HABITATS

2.3.1 Non-wetland habitats consist of upland grassland and woodland. Monthly quantitative surveys of non-aquatic fauna will be conducted using standard route transect counts.

2.3.2 Measures to respond to decreases in numbers of non-aquatic fauna using the non-wetland habitats and action and limit levels to trigger these measures are detailed in Table 2.

Action Level	Response	Limit Level	Response
Reduction in species diversity by 30%	Investigate cause and if cause identified as related to the project instigate remedial action to remove or reduce source of disturbance.	Reduction in species diversity by 50%	Investigate cause and if cause identified as related to the project instigate remedial action.

Table 2 Action and Limit Levels and Responses to Evidence of Declines in Non-Aquatic Fauna

3 METHODOLOGY

The ecological survey includes all taxa being investigated in EIA report. Table 3 summarizes schedule of faunal surveys.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mammals	√	√	√	√	√	√	√	√	√	√	√	√
Birds (day)	√	√	√	√	√	√	√	√	√	√	√	√
Birds (night)				√	√	√	√	√	√	√		
Herpetofauna				√	√	√	√	√	√	√		
Dragonflies			√	√	√	√	√	√	√	√		
Butterflies			√	√	√	√	√	√	√	√		
Aquatic fauna	√	√	√	√	√	√	√	√	√	√	√	√

Table 3 Survey Schedule

3.1 MAMMAL SURVEY

3.1.1 Mammal surveys will be conducted along the transects shown in Appendix 1 during both daytime and night time periods. Along with direct observations, other field signs, such as scats and tracks, will be searched and recorded if present.

3.2 BIRD SURVEY

3.2.1 Bird surveys will be conducted along the transects shown in Appendix 1 during the surveys, species and their vocalizing individuals recorded will be enumerated and recorded according to the habitat(s) they are utilising.

3.3 HERPETOFAUNA SURVEY

3.3.1 Reptile and amphibian surveys will be conducted along transects shown in Appendix 1 during surveys careful searches of appropriate microhabitats and refugia for reptiles and their vocalizing individuals will be undertaken and all reptiles observed will be identified and counted.

3.4 DRAGONFLY SURVEY

3.4.1 Dragonfly surveys will be conducted along transects shown in Appendix 1 during surveys all dragonflies seen will be identified and counted as accurately as possible.

3.5 BUTTERFLY SURVEY

3.5.1 Butterfly surveys will be conducted along transects shown in Appendix 1 during surveys all butterflies seen will be identified and counted as accurately as possible.

3.6 AQUATIC FAUNA SURVEY

3.6.1 Freshwater fishes and macro-invertebrates will be recorded by direct observation. All species trapped/recorded will be enumerated and identified (to the lowest taxonomic level possible), and the species of conservation importance photographed.

4 RESULT

This monitoring survey started on 18th May 2023, a sunny day. The day and night survey covered wetland and non-wetland areas. The survey was conducted by transect and at fixed points. All species seen would be identified and counted as accurately as possible.

- Mammal

There was no mammal species recorded in the monitoring area.

- Bird

There were a total of 56 birds individuals from 15 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey. Three species of conservation interests were recorded in this survey: Lesser Coucal (*Centropus bengalensis*) 小鴉鵑, Greater Coucal (*Centropus sinensis*) 褐翅鴉鵑, Asian Barred Owlet (*Glaucidium cuculoides*) 斑頭鴴鷸, White-throated Kingfisher (*Halcyon smyrnensis*) 白胸翡翠

- Herpetofauna

There was no reptile species recorded in the monitoring area.
There was no amphibian species recorded in the monitoring area.

- Butterfly

There were a total of 9 butterfly individuals from 3 species recorded in the monitoring area.

- Dragonfly

There were a total of 9 dragonfly individuals from 2 species recorded in the monitoring area.

- Freshwater communities

There was no freshwater community recorded in the monitoring area.

Picture 1

Caprimulgus affinis 林夜鷹 Savanna Nightjar

Picture 2

Centropus bengalensis 小鴉鵑 Lesser Coucal

Table 4 Result of Mammal in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 5 Result of Avifauna in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
Centropus bengalensis	Lesser Coucal	小鴉鵑	Class 2 Protected Animal of China;China Red Data Book Status: (Vulnerable)	4				
Centropus sinensis	Greater Coucal	褐翅鴉鵑	Class 2 Protected Animal of China;China Red Data Book Status: (Vulnerable)	1				
Caprimulgus affinis	Savanna Nightjar	林夜鷹		3				
Glaucidium cuculoides	Asian Barred Owlet	斑頭鴗鶹	Class 2 Protected Animal of China; Appendix 2 of CITES	1				
Spilopelia chinensis	Spotted Dove	珠頸斑鳩		4				
Eudynamys scolopaceus	Asian Koel	噪鵑		1				
Hierococcyx sparverioides	Large Hawk Cuckoo	大鷹鵑		1				
Apus nipalensis	House Swift	小白腰雨燕		10				
Halcyon smyrnensis	White-throated Kingfisher	白胸翡翠	Fellowes et al. (2002): LC	2				
Corvus macrorhynchos	Large-billed Crow	大嘴烏鴉		1				
Pycnonotus jocosus	Red-whiskered Bulbul	紅耳鵯						12
Pycnonotus sinensis	Chinese Bulbul	白頭鵯		2				4
Pycnonotus aurigaster	Sooty-headed Bulbul	白喉紅臀鵯		2				
Prinia flaviventris	Yellow-bellied Prinia	黃腹鷦鶯		2				1
Orthotomus sutorius	Common Tailorbird	長尾縫葉鶯		2				3

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 6 Result of Reptile in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 7 Result of Amphibian in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse
+ Species appeared but uncountable

Table 8 Result of Butterfly in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
Acytolepis puspa	Common Hedge Blue	鈕灰蝶		2				
Mycalesis mineus	Dark Brand Bush Brown	小眉眼蝶		2			1	
Abisara echerius	Plum Judy	蛇目褐蜆蝶		4				

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 9 Result of Odonate in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
Orthetrum pruinosum	Common Red Skimmer	赤褐灰蜻						3
Pseudothemis zonata	Pied Skimmer	玉帶蜻						6

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 10 Result of Freshwater Communities in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

5 DISCUSSION

Data analysis was carried out to compare with the biodiversity within the site boundary in the same month over years. General description of the ecological conditions is first revealed in terms of abundance as well as species richness, following by statistical analysis of the existing database. The result is considered as significant whenever the drop of diversity indexes exceeds the percentages mentioned in previous sections 2.2 and 2.3.

5.1 Total abundance and species richness in May over years were compared to show the trends. Figures 1 and 2 indicate the total species richness and total abundance within the site boundary respectively.

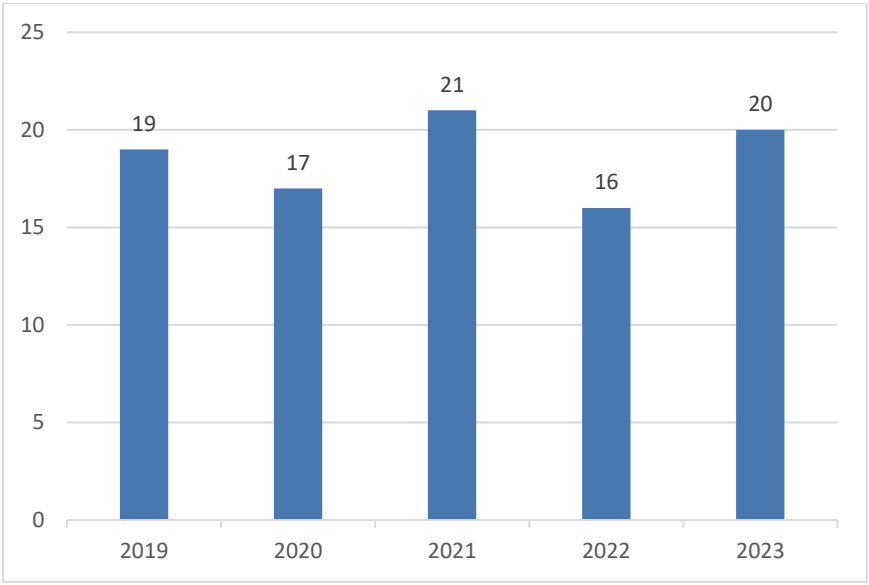


Figure 1: Bar chart showing the total species richness within site boundary from 2019 to 2023
(Actual quantity annotated at the top of each bar)

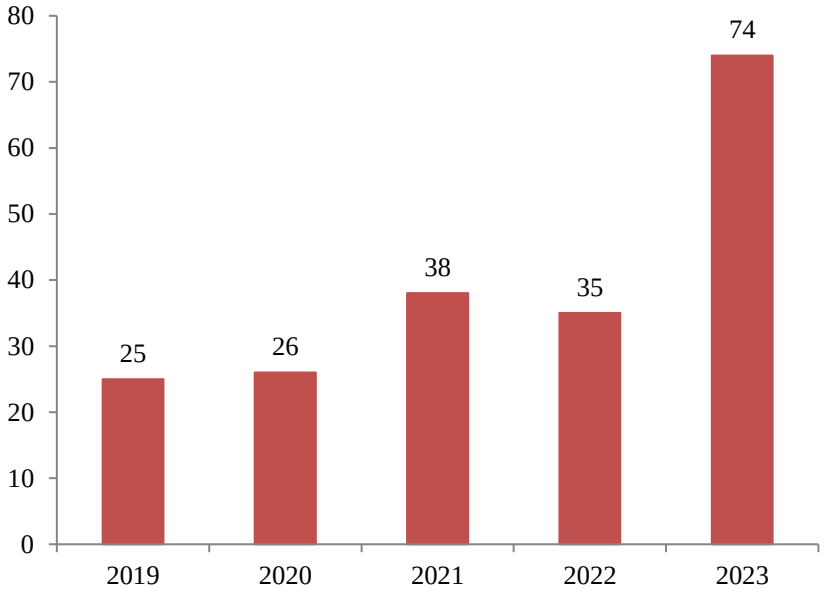


Figure 2: Bar chart showing the total abundance within site boundary from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.2 As results in section 4 were categorized by taxa, a detailed breakdown of each taxon is shown in figure 3 to further investigate the trend of specific taxa over contract period.

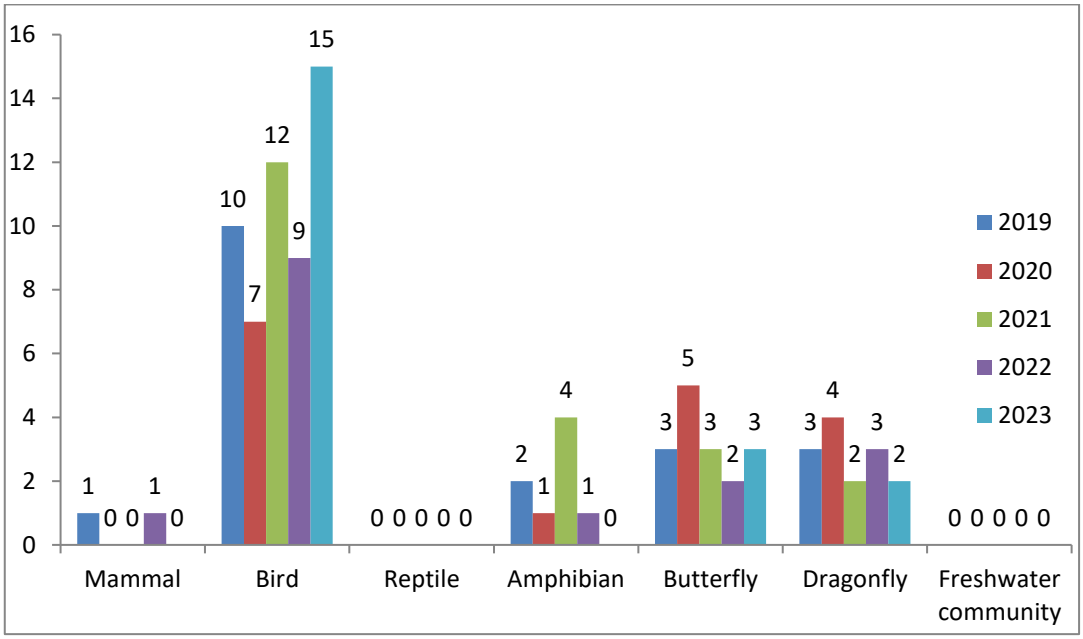


Figure 3: Bar chart showing the species richness within site boundary by taxa from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.3 According to EM&A Manual, monitoring measures was determined by the species diversity of types of sensitive habitats, i.e. non-wetland and wetland habitats. Abundance and species richness by habitat type in May over years were compared in Figures 4 and 5.

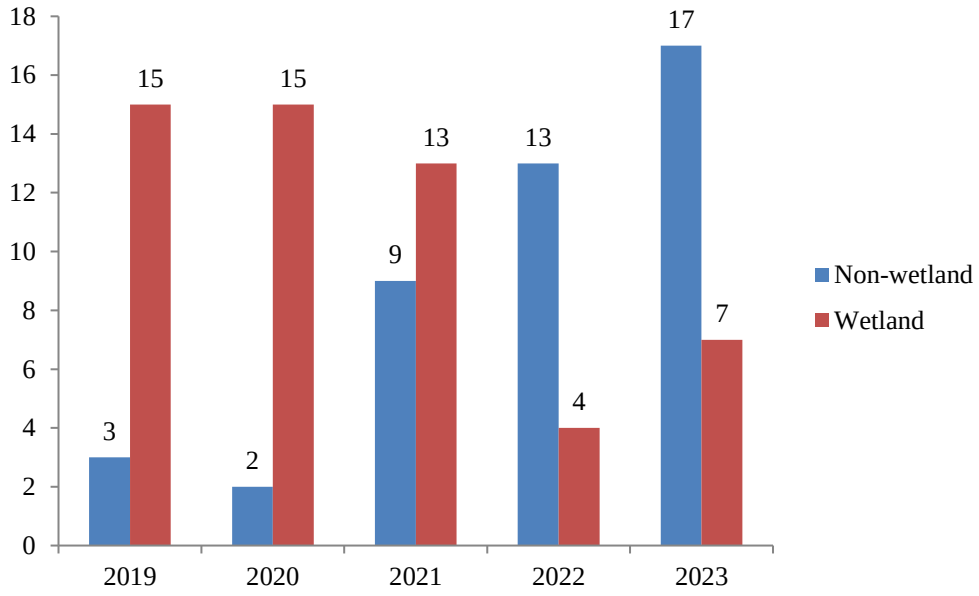


Figure 4: Bar chart showing the species richness based on habitat type from 2019 to 2023
(Actual quantity annotated at the top of each bar)

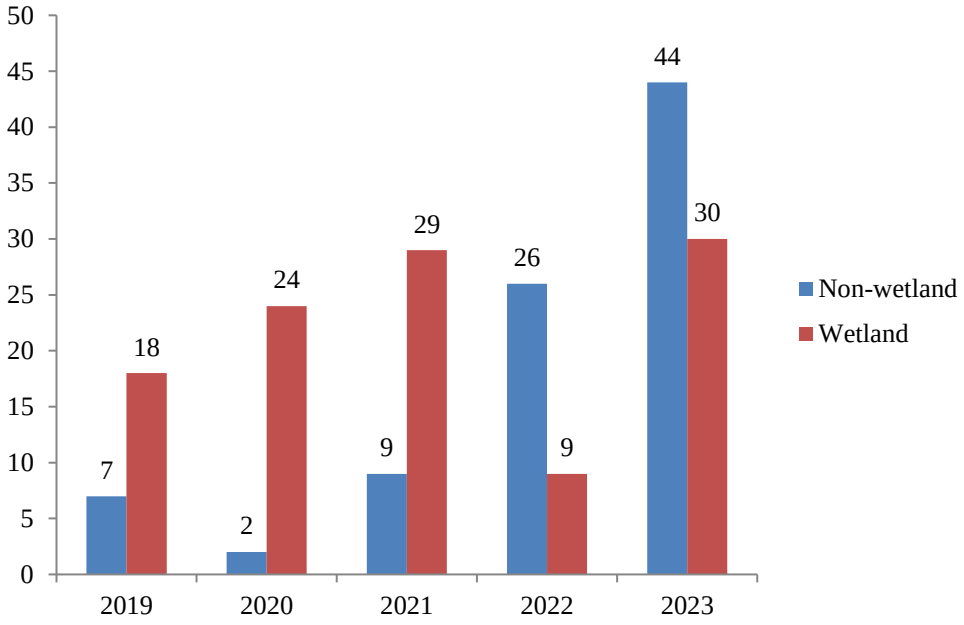
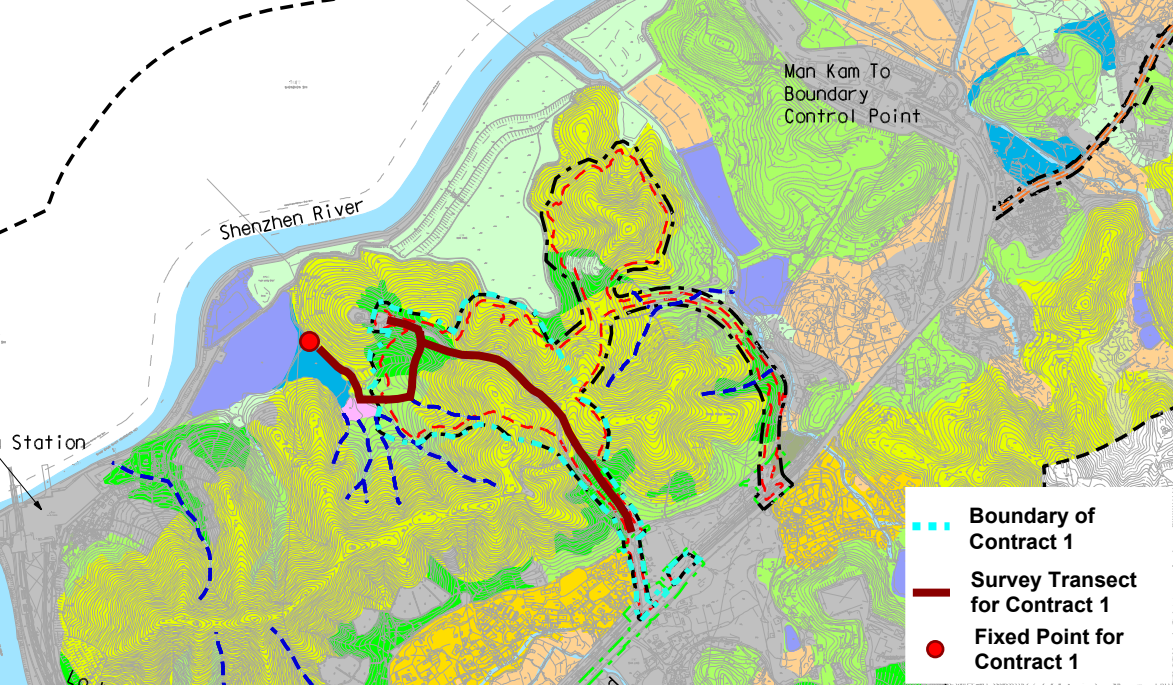


Figure 5: Bar chart showing the abundance based on habitat type from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.4 After analysing survey results in May from 2019 to 2023, the species richness and abundance for wetland habitat were unstable. A rapid rebound from 2022 was recorded recently. This could be benefited by some positive factors such as the major construction works were completed and most of the PME has been removed from site. Besides, compensation planting works have been conducted in early Jan 2023. Therefore, disturbance to fauna species from construction works have been largely minimised. In addition, woodland compensation and grassland reinstatement would be implemented in the second and third quarter of 2023. Hence, the habitat of fauna species would be gradually recovered and expectation of increase in the species richness and abundance for wetland habitat is high.

Yet, good site practice during construction, with reference to EM&A Manual, is still required to prevent or alleviate environmental impacts. Continuous monitoring is also recommended to inspect any changes in species diversity.

Appendix I – Transect Routes for Contract CV/2016/10


Man Kam To
Boundary
Control Point
Shenzhen River
Station
Boundary of
Contract 1
Survey Transect
for Contract 1
Fixed Point for
Contract 1

Ecological Survey Report for Contract CV/2017/02

Muni Arborist

Contract No. CV/2017/02
Development of Columbarium at Sandy Ridge Cemetery – Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

Monthly Report of Ecologically Sensitive Habitats Monitoring – May 2023

Revision	0	
Date of issue	5 June 2023	
Prepared by	Alan Lam	
Reviewed by	Rachel Siu	
Verified by	Mike Leung	

Table of Contents

1 INTRODUCTION

1.1 BACKGROUND

1.1.1 The main objective of the proposed site formation and associated infrastructural works for development of columbarium, crematorium (C&C) and related facilities at Sandy Ridge Cemetery is to increase the public cremation services and supply of public niches to meet the future demand.

1.1.2 The project includes site formation and associated works for development of C&C facilities at the Sandy Ridge Cemetery, road works within Sandy Ridge Cemetery, widening a section of Lin Ma Hang Road (from 6.5m to 7.3m), provision of off-site pick-up/drop-off points for shuttle buses as well as barging point at Siu Lam, Lok On Pai.

1.1.3 The Environmental Impact Assessment (EIA) report, including Environmental Monitoring and Audit Manual (EM&A Manual), was approved with conditions on 8 August 2016 (Register No.: AEIAR-198/2016). EPD issued an Environmental Permit (EP) for the Project (EP-534/2017) on 7 April 2017, variation of EP (EP-534/2017/A) were issued on 24 December 2018.

1.1.4 According to Clause 3.1 of the EP (EP-534/2017/A), "The Permit Holder shall implement the EM&A programme in accordance with the procedures and requirements as set out in the EM&A Manual. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval".

1.1.5 This Ecologically Sensitive Habitats Monitoring Methodology articulates the protocol of monitoring the ecology of concerned habitats as specified in EM&A Manual.

1.2 OBJECTIVE

1.2.1 According to approved EIA report (AEIAR-198/2016), habitat types within project boundary comprise of watercourse, grassland, upland grassland, plantation, woodland and developed area. Natural habitats were of moderate ecological value in terms of species diversity, species rarity, species abundance, ecological linkage as well as nursery. Moreover, 0.3ha of wet woodland on the northern side of Sandy Ridge was deemed habitat with high ecological value. Four types of habitats were regarded as ecologically sensitive habitats, namely wet woodland, watercourses, upland grassland and woodland. Considering human disturbance in upcoming construction and operation phases, ecologically sensitive habitats shall be monitored in accordance with EM&A Manual.

1.2.2 The objective of ecologically sensitive habitats monitoring is to evaluate the effectiveness of measures to minimize impacts on concerned habitats from disturbance and pollution.

2 ECOLOGICALLY SENSITIVE HABITATS

2.1 DESCRIPTION OF HABITATS

2.1.1 In order to monitor the effectiveness of the measures to the minimise impact on ecologically sensitive habitats from disturbance and pollution, monthly monitoring during construction and operation phases is required as specified in EM&A Manual. Standard faunal transect and sampling surveys cover both wetland and non-wetland habitats:

Wetland habitats	Non-wetland habitats
Wet Woodland	Upland Grassland
Watercourses	Woodland

2.1.2 Wet woodland is small patch present on northwest of the project boundary, and is confined by the marsh area to the north and the secondary woodland to the east, south and south-west parts. A number of mature trees *Cleistocalyx nervosum* and *Acronychia pedunculata* form the tree canopy, with other self-sown shrubs (including *Psychotria asiatica*, *Ligustrum sinense* and *Glochidion lanceolarium*) and trees (*Aporosa dioica* and *Litsea monopetala*). Whilst botanically it comprises of naturally regenerated secondary woodland and ground level are a series of small braided streams and weep points which even during the dry season remain wet. This creates a rather uncommon habitat in Hong Kong offering suitable conditions for a good assemblage of common wetland species. The wet woodland provides a good assemblage of micro-habitats, which is relatively undisturbed and has good linkages to other natural habitats. Several species of conversation importance were recorded in EIA report from this habitat: East Asian Porcupine, Leopard Cat, Red Muntjac, Two-striped Grass Frog, Small Snakehead, *Somanniathelphusa zanklon*, Dancing Shadow-emerald.

2.1.3 Seasonal watercourse running west to east in the eastern part of the area inside the Project boundary is shallower in gradient than those running off the hillside. This seasonal watercourse is heavily vegetated with wetland-associated herbs including *Commelina diffusa*, *Polygonum chinense*, *Colocasia esculenta* and *Dracaena sanderiana*. A mature tree of *Aquilaria sinensis* was recorded at the bank of the seasonal watercourse to the west of the Sandy Ridge Cemetery Office. Seasonal watercourses are restricted to the steeper slopes within the project boundary and are characterised by being entirely dry for much of the dry season. However, endemic crab *S. zanklon* population is supported by ephemeral watercourses close to the project boundary.

2.1.4 Upland grassland is the major habitat within the project boundary. The semi-natural habitat is dominated by typical upland grassland species: fern *Dicranopteris pedata*, grass *Neyraudia reynaudiana*, *Miscanthus floridulus*, climbing vines *Smilax china*, *Smilax glabra*, and shrubs such as *Rhodomyrtus tomentosa*, *Breynia fruticosa* and *Helicteres angustifolia*. Approximately 30 flowering spikes of two orchid species Bamboo Orchid and Toothed Habenaria were recorded near the hill top in the northern part of this upland grassland. Golden-headed Cisticola, which is considered as Local Concern by Fellowes *et al.* (2002), was also recorded in upland grassland on Sandy Ridge, including a proved breeding record of fledged young in September 2013. In addition, numerous species of conservation interest were recorded in EIA report, such as East Asian Porcupine, Leopard Cat, Red Muntjac, Great Swift, Tamil Grass Dart, Small Three-ring and Small Grass Yellow.

2.1.5 Scattered patches of woodland are present throughout the assessment area, with the largest contiguous block located immediately to the east of the project boundary. These woodlands are relatively young with single-layered of canopy dominants (~10 – 15m tall) including *A. dioica*, *Bridelia tomentosa*, *Cinnamomum burmannii*, *Daphniphyllum calycinum*, *Litsea glutinosa*, *Rhus succedanea*, and *Zanthoxylum avicennae*. Such areas comprise secondary woodland which is largely derived from natural regeneration and colonisation of trees as a result of seed dispersal by birds and/or bats. A mature tree of *A. sinensis* is located at the woodland edge at the central part of the Project according to EIA report.

2.2 MONITORING MEASURES OF WETLAND HABITATS

2.2.1 Wetland habitats include wet woodland and watercourses. Monitoring surveys using standardised quantitative methodology will be conducted at fixed points. For seasonal watercourse, survey shall be conducted whenever the habitat appears.

2.2.2 Measures to respond to decreases in numbers of aquatic fauna using the wetland habitats and action and limit levels to trigger these measures are detailed in Table 1.

Action Level	Response	Limit Level	Response
Reduction in taxa diversity by 30%	Investigate cause and if cause identified as related to the project instigate remedial action to remove or reduce source of disturbance.	Reduction in taxa diversity by 50%	Investigate cause and if cause identified as related to the project instigate remedial action.

Table 1 Action and Limit Levels and Responses to Evidence of Declines in Aquatic Fauna

2.3 MONITORING MEASURES OF NON-WETLAND HABITATS

2.3.1 Non-wetland habitats consist of upland grassland and woodland. Monthly quantitative surveys of non-aquatic fauna will be conducted using standard route transect counts.

2.3.2 Measures to respond to decreases in numbers of non-aquatic fauna using the non-wetland habitats and action and limit levels to trigger these measures are detailed in Table 2.

Action Level	Response	Limit Level	Response
Reduction in species diversity by 30%	Investigate cause and if cause identified as related to the project instigate remedial action to remove or reduce source of disturbance.	Reduction in species diversity by 50%	Investigate cause and if cause identified as related to the project instigate remedial action.

Table 2 Action and Limit Levels and Responses to Evidence of Declines in Non-Aquatic Fauna

3 METHODOLOGY

The ecological survey includes all taxa being investigated in EIA report. Table 3 summarizes schedule of faunal surveys.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mammals	√	√	√	√	√	√	√	√	√	√	√	√
Birds (day)	√	√	√	√	√	√	√	√	√	√	√	√
Birds (night)				√	√	√	√	√	√	√		
Herpetofauna				√	√	√	√	√	√	√		
Dragonflies			√	√	√	√	√	√	√	√		
Butterflies			√	√	√	√	√	√	√	√		
Aquatic fauna	√	√	√	√	√	√	√	√	√	√	√	√

Table 3 Survey Schedule

3.1 MAMMAL SURVEY

3.1.1 Mammal surveys will be conducted along the transects shown in Appendix 1 during both daytime and night time periods. Along with direct observations, other field signs, such as scats and tracks, will be searched and recorded if present.

3.2 BIRD SURVEY

3.2.1 Bird surveys will be conducted along the transects shown in Appendix 1 during the surveys, species and their vocalizing individuals recorded will be enumerated and recorded according to the habitat(s) they are utilising.

3.3 HERPETOFAUNA SURVEY

3.3.1 Reptile and amphibian surveys will be conducted along transects shown in Appendix 1 during surveys careful searches of appropriate microhabitats and refugia for reptiles and their vocalizing individuals will be undertaken and all reptiles observed will be identified and counted.

3.4 DRAGONFLY SURVEY

3.4.1 Dragonfly surveys will be conducted along transects shown in Appendix 1 during surveys all dragonflies seen will be identified and counted as accurately as possible.

3.5 BUTTERFLY SURVEY

3.5.1 Butterfly surveys will be conducted along transects shown in Appendix 1 during surveys all butterflies seen will be identified and counted as accurately as possible.

3.6 AQUATIC FAUNA SURVEY

3.6.1 Freshwater fishes and macro-invertebrates will be recorded by direct observation. All species trapped/recorded will be enumerated and identified (to the lowest taxonomic level possible), and the species of conservation importance photographed.

4 RESULT

This monitoring survey started on 18th May 2023, a sunny day. The day and night survey covered wetland and non-wetland areas. The survey was conducted by transect and at fixed point. All species seen would be identified and counted as accurately as possible.

- Mammal

  There was no mammal recorded in the monitoring area.

- Bird

  There were total of 18 bird individuals from 6 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey.

- Herpetofauna

  There was no reptile recorded in the monitoring area.
  There was no amphibian recorded in the monitoring area.

- Butterfly

  There were total of 8 butterfly individuals from 4 species recorded in the monitoring area.

- Dragonfly

  There were a total of 12 dragonfly individuals from 3 species recorded in the monitoring area.

- Freshwater communities

  There were 2 species of freshwater fish recorded in the monitoring area.

Picture 1

Watercourse in monitoring area.

Picture 2

construction by others

Table 4 Result of mammal in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 5 Result of Avifauna in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
Spilopelia chinensis	Spotted Dove	珠頸斑鳩		2				
Amaurornis phoenicurus	White-breasted Waterhen	白胸苦惡鳥				1		
Pycnonotus jocosus	Red-whiskered Bulbul	紅耳鵯		2			6	
Prinia flaviventris	Yellow-bellied Prinia	黃腹鷦鶯				2		
Orthotomus sutorius	Common Tailorbird	長尾縫葉鶯			4			
Acridotheres cristatellus	Crested Myna	八哥		1				

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 6 Result of reptile in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 7 Result of amphibian in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
N/A								

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse
+ Species appeared but uncountable

Table 8 Result of butterfly in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
Papilio polytes	Common Mormon	玉帶鳳蝶		1				
Graphium sarpedon	Common Bluebottle	青鳳蝶			2			
Eurema hecabe	Common Grass Yellow	寬邊黃粉蝶		2		2		
Pieris canidia	Indian Cabbage White	東方菜粉蝶			1			

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 9 Result of Odonate in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
Copera marginipes	Yellow Featherlegs	黃狹扇蟌				2		
Pseudothemis zonata	Pied Skimmer	玉帶蜻				4		
Pantala flavescens	Wandering Glider	黃蜻				6		

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse

Table 10 Result of freshwater communities in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	18/5/2023				
				UG	WL	MA	WW	WC
Gambusia affinis	Mosquito fish	食蚊魚						+
Puntius semifasciolatus	Chinese Barb	五線無鬚鯝						+

*UG: Upland Grassland | WL: Woodland | MA: Marsh | WW: Wet Woodland | WC: Watercourse
+ Species appeared but uncountable

5 DISCUSSION

Data analysis was carried out to compare with the biodiversity within the site boundary in the same month over years. General description of the ecological conditions is first revealed in terms of abundance as well as species richness, following by statistical analysis of the existing database. The result is considered as significant whenever the drop of diversity indexes exceeds the percentages mentioned in previous sections 2.2 and 2.3.

5.1 Total abundance and species richness in May over years were compared to show the trends. Figures 1 and 2 indicate total species richness and total abundance within the site boundary respectively.

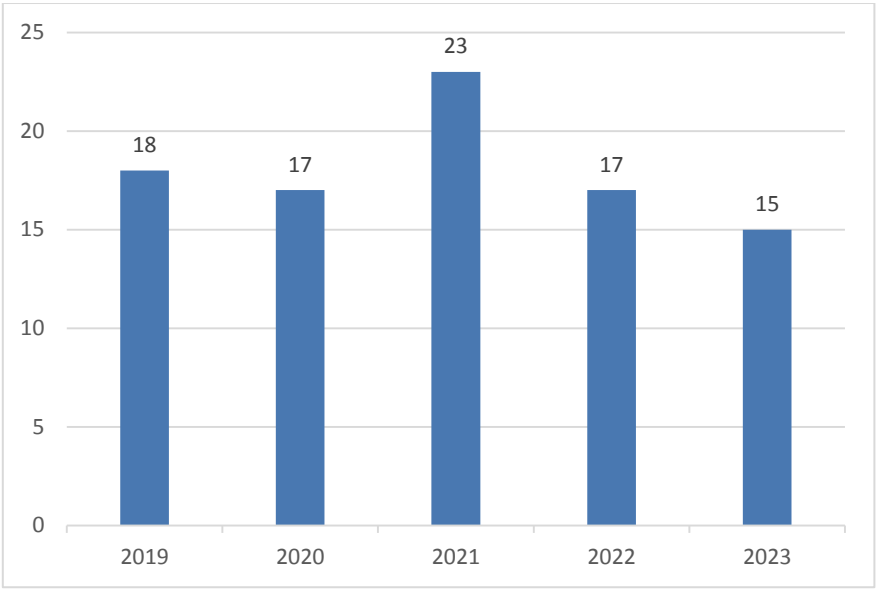


Figure 1: Bar chart showing the total species richness within site boundary from 2019 to 2023 (Actual quantity annotated at the top of each bar)

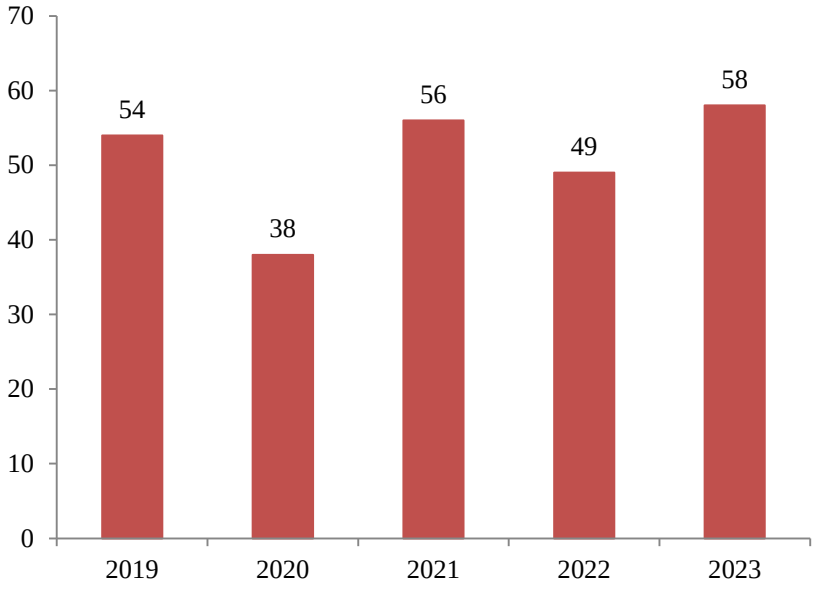


Figure 2: Bar chart showing the total abundance within site boundary from 2019 to 2023 (Actual quantity annotated at the top of each bar)

5.2 As results in section 4 were categorized by taxa, a detailed breakdown of each taxon is shown in figure 3 to further investigate the trend of specific taxa over contract period.

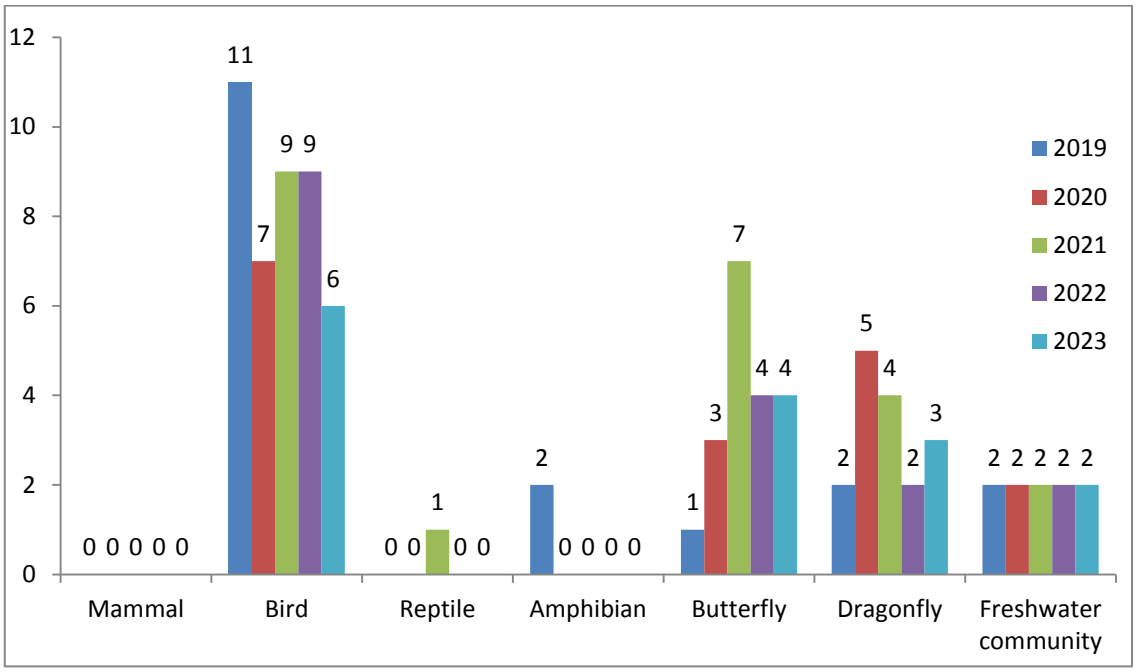


Figure 3: Bar chart showing the species richness within site boundary by taxa from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.3 According to EM&A Manual, monitoring measures was determined by the species diversity of types of sensitive habitats, i.e. non-wetland and wetland habitats. Abundance and species richness by habitat type in May over years were compared in figures 4 and 5.

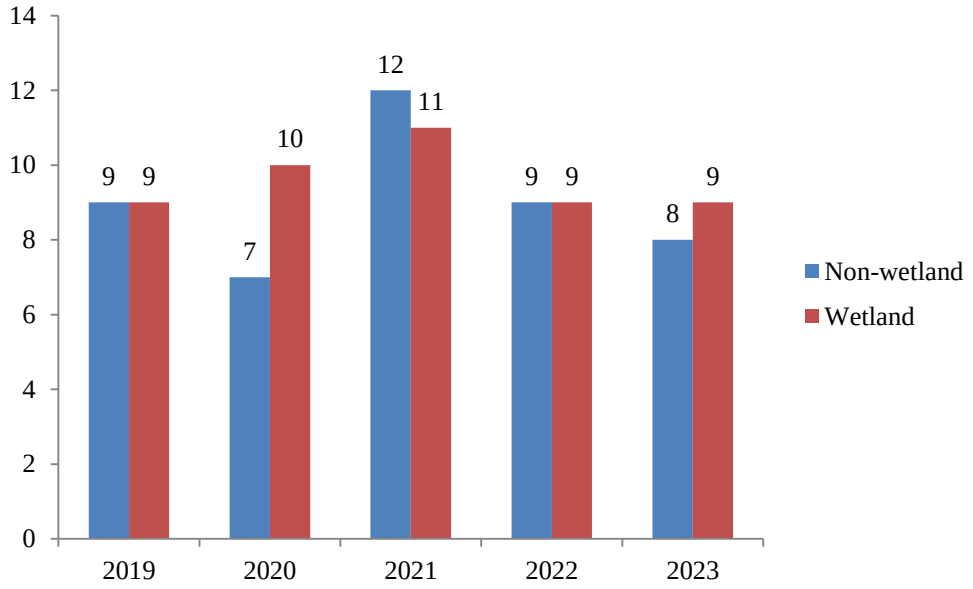


Figure 4: bar chart showing the species richness based on habitat type from 2019 to 2023
(Actual quantity annotated at the top of each bar)

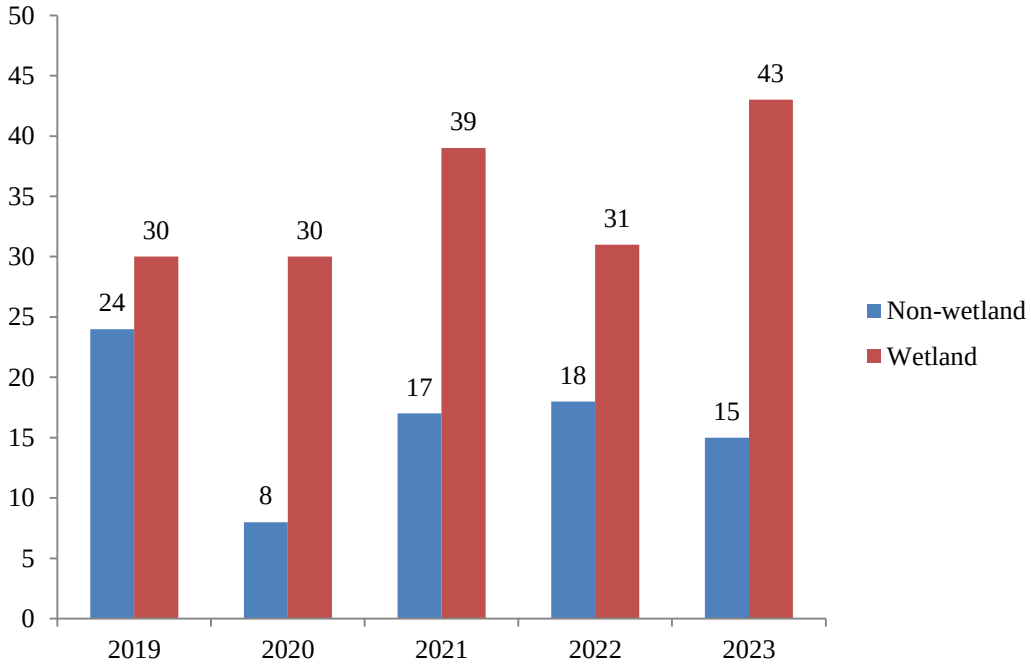


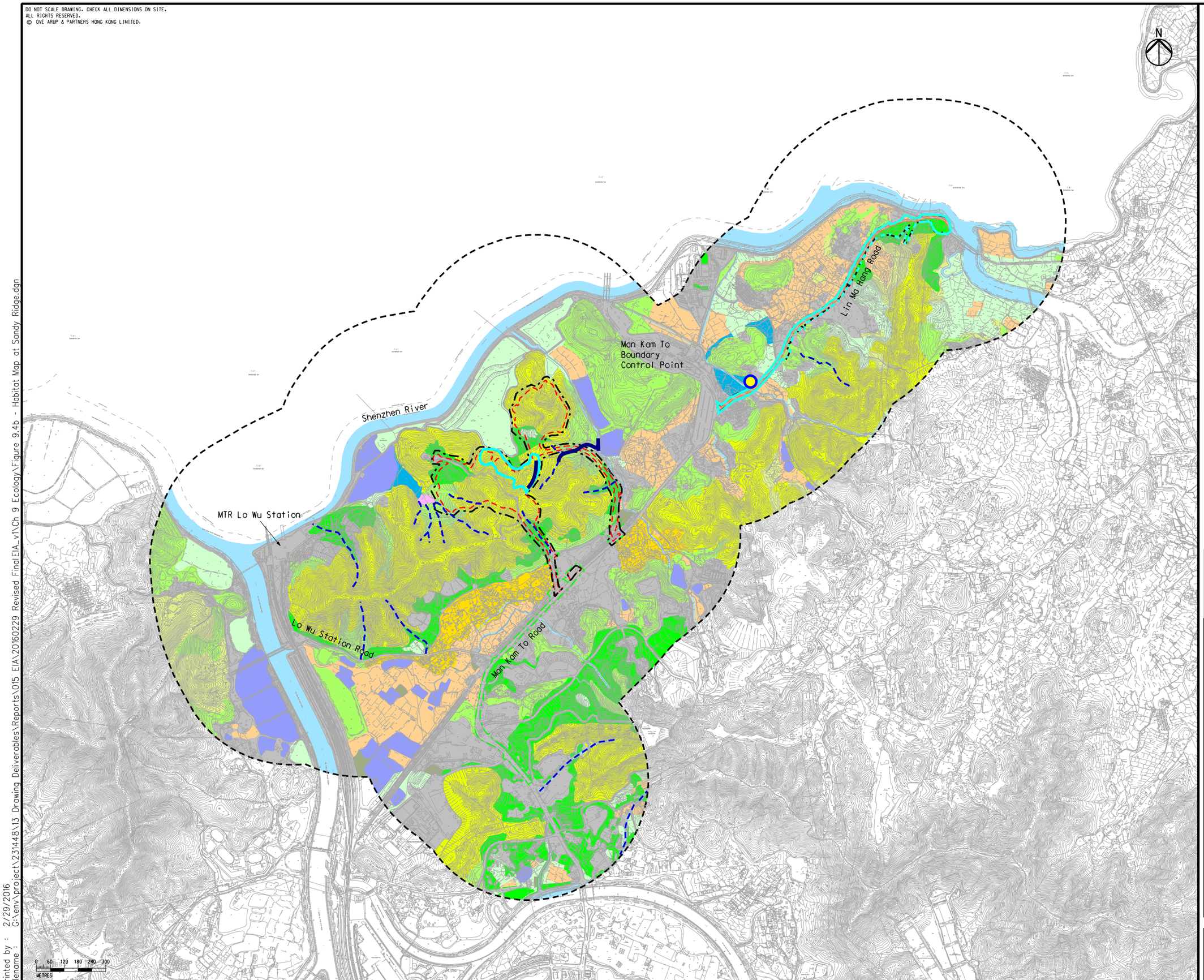
Figure 5: bar chart showing the abundance based on habitat type from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.4 After analysing survey results in May from 2019 to 2023, records in species richness and abundance for wetland and non-wetland habitats are unstable, this may due to natural fluctuation. According to the recent on-site observation, there are new built workshops by others situated on both sides of Lin Ma Hang Road so the disturbance to fauna species from construction works could be increased. Due to the cause was not related to this project, remedial action to remove or reduce source of disturbance is limited.

Nevertheless, the situation could be benefited by some positive factors such as the major construction works in this contract were completed and most of the PME has been removed from site. Besides, compensation planting works have been conducted in early Jan 2023. Therefore, disturbance to fauna species from construction works have been largely minimized internally. In addition, woodland compensation and grassland reinstatement would be implemented in the second and third quarter of 2023. Hence, the habitat of fauna species would be gradually recovered and expectation of increase in the species richness and abundance for wetland habitat is high.

Still, a good site practice during construction, with reference to EM&A Manual, is required to prevent or alleviate environmental impacts. For instance, the size of work areas should be minimized and disturbed areas should be reinstated immediately after completion of construction works. In addition, implementing proper waste disposal is necessary to reduce contamination to water and soil. Continuous monitoring is also recommended to inspect any significant decrease in species diversity.

Appendix I – Transect Routes for Contract CV/2017/02



Legend

- Project Boundary
- Utilities Construction
- Sandy Ridge Works Area
- Lin Ma Hang Road Works Area
- 500m Assessment Area
- Watercourse
- Seasonal Watercourse
- Pond
- Developed Area
- Agricultural Land
- Marsh
- Wasteland
- Grassland
- Upland Grassland
- Shrubland
- Plantation
- Woodland
- Wet Woodland
- Village Area
- **Site boundary of Contract 2**
- **Survey Transect for Contract 2**
- **Fixed Point for Contract 2**

Rev	Description	By	Date
G	SEVENTH ISSUE	GL	02/16
F	SIXTH ISSUE	GL	01/16
E	FIFTH ISSUE	GL	12/15
D	FOURTH ISSUE	GL	10/15

Consultant

ARUP

Contract No. and Title:

Agreement No. CE 1/2013(CE)

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Habitat Map at Sandy Ridge

Drawing no.	Rev.
Figure 9.4b	G

Drawn	Date	Checked	Approved
GL	02/16	EL	ST

Scale: AS SHOWN

Status: PRELIMINARY

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 2/29/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\015 EIA\20160229 Revised Final\EIA_v1\Ch 9 Ecology\Figure 9.4b - Habitat Map at Sandy Ridge.dgn

Appendix L

Landscape & Visual Inspection Checklist

Contract No. CV/2016/10
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
Landscape and Visual Impact Assessment Checklist for Site Audit

Date/ Time: 31/05/2023 10:30 Weather: Fine/ ~~Overcast~~/ ~~Rain~~/ ~~Windy~~

Item	Mitigation Measures	Implementation			Actions/ Remarks
		Yes	No	N/A	
1	**Landscape and Visual**				
1.1	Is the construction period become shortened?			✓	Under review.
1.2	Is the work site confined within site boundaries and without encroaching into the landscape resources offsite?	✓			
1.3	Is the site kept clean and tidy (E.g. storage of materials, location and appearance of site accommodation being well positioned)	✓			
1.4	Is the construction site screened properly by hoardings or noise barriers in visually unobstructed colours?	✓			
1.5	Is the erosion and dust control for exposed soil well performed during excavation work? (E.g. Exposed soil shall be covered or "camouflaged" and watered frequently. Areas that are expected to be left with bare soil for a long period of time should be hydro seeded and / or covered with suitable protective fabrics.)	✓			
1.6	Are the woodland, plantation and other vegetation being protected and preserved in accordance with DEVB TC(W) No. 07/2015(E.g. Set up Tree Protection Zone)?	✓			
1.7	Are the trees which are in direct conflict with the development proposal being transplanted as far as practical in accordance with and DEVB TC(W) No. 07/2015?	✓			
1.8	Are compensatory planting for trees being provided to compensate the trees felled in accordance with DEVB TC(W) No. 07/2015?			✓	Tree planting works have not yet been commenced.
1.9	Are precautionary control measures to protect natural streams and rivers from adverse impact being implemented in accordance with ETWWB TCW No. 5/2005? (E.g. Construction debris and spoil should be covered up and properly disposed)	✓			
1.10	Is light and glare control such as hooding being implemented during construction and operation to minimize light pollution and night time glare? (E.g. All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers)	✓			

Summary / Remarks:

Follow up actions taken by Contractor for previous comments:

N/A

New observation:

N/A

Reminders:

1. Contractor is reminded to set up TPZ of proper size and with appropriate material around retain trees according to approved method statement.
2. Contractor is reminded to prevent the construction material pile within TPZ and ensure no works is allowed within the TPZ.
3. Transplanted trees T2465 and T2928 were in fair health condition with normal foliage color and density. Contractor is reminded to provide proper maintenance according to approved method statement.

Photo Record:

Fig A.

General view (1)

Fig B.

General view (2)

Fig C.

General view (3)

Fig D.

General view (4)

Fig E.

Transplanted tree (T-2465)

Fig F.

Transplanted tree (T-2928)

Contract No. CV/2017/02
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
Development of Columbarium at Sandy Ridge Cemetery –
Infrastructural Works at Man Kam To Road and Lin Ma Hang Road
Landscape and Visual Impact Assessment Checklist for Site Audit

Date/ Time: 31/05/2023 11:30 Weather: Fine/ ~~Overcast~~/ ~~Rain~~/ ~~Windy~~

Item	Mitigation Measures	Implementation			Actions/ Remarks
		Yes	No	N/A	
1	**Landscape and Visual**				
1.1	Is the construction period become shortened?			✓	Under review
1.2	Is the work site confined within site boundaries and without encroaching into the landscape resources offsite?	✓			
1.3	Is the site kept clean and tidy (E.g. storage of materials, location and appearance of site accommodation being well positioned)	✓			
1.4	Is the construction site screened properly by hoardings or noise barriers in visually unobstructed colours?	✓			
1.5	Is the erosion and dust control for exposed soil well performed during excavation work? (E.g. Exposed soil shall be covered or "camouflaged" and watered frequently. Areas that are expected to be left with bare soil for a long period of time should be hydro seeded and / or covered with suitable protective fabrics.)	✓			
1.6	Are the woodland, plantation and other vegetation being protected and preserved in accordance with DEVB TC(W) No. 07/2015(E.g. Set up Tree Protection Zone)?	✓			
1.7	Are the trees which are in direct conflict with the development proposal being transplanted as far as practical in accordance with and DEVB TC(W) No. 07/2015?			✓	
1.8	Are compensatory planting for trees being provided to compensate the trees felled in accordance with DEVB TC(W) No. 07/2015?			✓	
1.9	Are precautionary control measures to protect natural streams and rivers from adverse impact being implemented in accordance with ETWWB TCW No. 5/2005? (E.g. Construction debris and spoil should be covered up and properly disposed)			✓	
1.10	Is light and glare control such as hooding being implemented during construction and operation to minimize light pollution and night time glare? (E.g. All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers)			✓	

Summary / Remarks:

Follow up actions taken by Contractor for previous comments:

N/A

New Observation:

N/A

Reminders:

1. Contractor is reminded to set up TPZ of proper size and with appropriate material around retain trees according to approved method statement. Contractor should prevent any construction material pile within TPZ and ensure no works is allowed within the TPZ.

Photo Record:

Fig A.

General view (1)

Fig B.

General view (2)

Fig C.

General view (3)

Fig D.

General view (4)

Signature:

		Signature	Date
Recorded by	Registered Landscape Architect		31 May 2023
Checked by	Environmental Team Leader		14 Jun 2023
	Independent Environmental Checker		14 June 2023

Appendix M

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for 2023

Department: Civil Engineering and Development Department Contract No.: CV/2016/10

Contract Title: Site Formation and Assoicated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Commencement Date: 15-Dec-2017 Estimated completion Date 22-Dec-2023 Estimated Contract Sum: 780M

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	0.340	0.000	0.000	0.000	0.340	0.000	0.000	0.000	0.000	0.000	0.020
Feb	0.300	0.000	0.000	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.015
Mar	0.157	0.000	0.000	0.000	0.157	0.000	0.000	0.000	0.000	0.000	0.015
Apr	0.120	0.000	0.000	0.000	0.120	0.000	0.000	0.000	0.000	0.000	0.010
May	0.160	0.000	0.000	0.000	0.160	0.000	0.000	0.000	0.000	0.000	0.015
June											
Sub-total	**1.077**	**0.000**	**0.000**	**0.000**	**1.077**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.075**
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	**1.077**	**0.000**	**0.000**	**0.000**	**1.077**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.075**

Notes:
(1) The waste flow table should cover the whole construction period of the Contract.
(2) The original estimates of the C&D materials should be the estimates at contract commencement and should not be altered during construction.
(3) Inert C&D materials that are specified in the Contract to be imported for use at the Site shall be separately indicated.
(4) The yearly estimates of the C&D materials should be updated as appropriate taking into account the latest works programme etc.
(5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(6) Broken concrete for recycling into aggregates.

Name of Department: CEDD

Monthly Summary Waste Flow Table for 2023

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in Litre)	(in '000kg)
JAN	191.800	0.000	0.000	0.000	191.800	0.000	0.000	0.000	0.000	0.000	5.800
FEB	356.600	0.000	0.000	0.000	356.600	0.000	0.000	0.000	0.000	0.000	9.600
MAR	352.230	0.000	0.000	0.000	352.230	0.000	0.000	0.000	0.000	0.000	4.640
APRIL	87.490	0.000	0.000	0.000	87.490	0.000	0.000	0.000	0.000	0.000	2.090
MAY	44.900	0.000	0.000	0.000	44.900	0.000	0.000	0.000	0.000	0.000	3.300
JUN											
Sub Total	1033.020	0.000	0.000	0.000	1033.020	0.000	0.000	0.000	0.000	0.000	25.430
JUL											
AUG											
SEP											
OCT											
NOV											
DEC											
Total	1033.020	0.000	0.000	0.000	1033.020	0.000	0.000	0.000	0.000	0.000	25.430

Notes: * estimated quantity (pending from EPD NENT (soil) to update the actual quantity)

Name of Department: CEDD

Forecast of Total Quantities of C&D Materials to be Generated from the Contract (see Note 4)										
Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metal	Paper / cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
0	0	0	0	0	0	0	0	0	1	0

Notes:

(1) The performance targets are given in PS clause 6(14) above.

(2) The waste flow table shall also include C&D materials that are specified in the Contractor to be imported for use at the Site.

(3) Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature

- Hard Rocks and Large Broken Concrete = Cannot be defined at this stage
- Imported Fill = Estimated by the Contractor
- Metal = Estimated by the Contractor
- Paper/cardboard packaging = Estimated by the Contractor
- Plastics = Estimated by the Contractor
- Chemical Waste = Estimated by the Contractor (Spent lubricating oil, assume density 0.9kg/L)
- Other, e.g. general refuse = Estimated by the Contractor

Appendix N

Complaint Log

Complaint Log for Contract 1

Log ref.	Date of complaint	Complaint route	Reference no.	Complaint nature	Investigation fining	Status
1	15-Apr-21	EPD	EPD Ref.: EP3/N07/RN/8770-21	Air Quality	Non-project related	Interim IR was submitted to EPD on 22 April 2021 and included in EM&A Report – Apr 2021
2	11-Feb-22	EPD	EPD Ref.: EP3/N07/RN/03921-22	Noise	Non-project related	Interim IR was submitted to EPD on 25 Feb 2022 and included in EM&A Report – Feb 2021

Complaint Log for Contract 2

Log ref.	Date of complaint	Complaint route	Reference no.	Complaint nature	Investigation fining	Status
1	4-Sep-20	EPD	EPD Ref.: EP/RN/419300	Water quality	Non-project related	Interim IR was submitted to EPD on 14 Sep 2020 and included in EM&A Report – Sep 2020
2	15-Apr-21	EPD	EPD Ref.: EP3/N07/RN/8770-21	Air Quality	Non-project related	Interim IR was submitted to EPD on 22 April 2021 and Included in EM&A Report – Apr 2020
3	11-Feb-22	EPD	EPD Ref.: EP3/N07/RN/03921-22	Noise	Non-project related	Interim IR was submitted to EPD on 25 Feb 2022 and included in EM&A Report – Feb 2021
4	14-July-22	EPD	EPD Ref.: N07/RN/00014141-22	Soil/muddy water	Non-project related	Interim IR was submitted to EPD on 19 Aug 2022 and included in EM&A Report – Aug 2022
5	23-9-22	EPD	EPD Ref.: N07/RN/00020415-22	Air Quality	Non-project related	Interim IR was submitted to EPD on 30 Sep 2022 and included in EM&A Report – Sep 2022

Appendix O

Implementation Schedule for Environmental Mitigation Measures

Environmental Mitigation Implementation Schedule – Sandy Ridge

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPS)							
Construction Dust Impact							
S4.4.5.2	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria	Implemented.
S4.4.5.3	Water spraying every hour for all active works area.	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria	Implemented. *2 nos. of water truck were running on haul road for sufficient water spraying
S4.4.5.2	• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria	Implemented. Implemented Implemented Implemented Implemented Implemented Implemented Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						Implemented Implemented Implemented Implemented Implemented
S4.4.5.1	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction phase	• TM-EIAO	Implemented. 3 dust monitoring stations were Implemented.
S4.4.5.3	• All road surface within the barging facilities will be paved. • Dust enclosures will be provided for the loading ramp, installation of 3- sided screen with top cover and the provision of water sprays at the discharge point would be provided. • Vehicles will be required to pass through designated wheel wash facilities. • Continuous water spray at the loading point.	Minimise dust impact at the nearby sensitive receivers	Contractor	Barging point at Siu Lam	Construction phase	• TM-EIAO	No Applicable. * Barging point at Siu Lam is not in used.
Construction Noise							
S5.5.5.3	Implement the following good site management practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from onsite construction	Control construction noise	Contractor	All construction sites	Construction phase	• Annex 5, TM-EIAO	Implemented Implemented Implemented Implemented Implemented Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	activities.						
S5.5.5.5	Adopt quiet plants during the construction of viaduct, widening of Sha Ling Road, construction of platform for crematorium and widening of Lin Ma Hang Road. The quiet plants should be made reference to the PME listed in the TM or the QPME/ other commonly used PME listed in EPD web pages or taken from BS5228: Part 1: 2009 Noise Control on Construction and Open Sites as far as possible.	Reduce the noise levels of plant items	Contractor	Works area for construction of viaduct, widening of Sha Ling Road, construction of platform for crematorium and widening of Lin Ma Hang Road	Construction phase	• Annex 5, TM-EIAO	Implemented * Quiet plants were in used.
S5.5.5.6	Install temporary noise barriers (in the form of site hoardings, approx. 2.4m high) located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites where practicable	Construction phase	Annex 5, TM-EIAO	Implemented where necessary. * Temporary noise barriers are not practicable due to site constraint.
S5.5.5.7 – S5.5.5.12	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered upper portion of superficial density no less than 7kg/m2 on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressors, generators etc.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction phase	Annex 5, TM-EIAO	Implemented where necessary. * Movable noise barriers are not practicable due to site constraint.
S5.5.5.13	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction noise	Contractor	All construction sites where practicable	Construction phase	Annex 5, TM-EIAO	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
S13.2.1.1 – S13.4.1.2	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction phase	TM-EIAO	Implemented. * 4 noise monitoring stations were Implemented.
Operational Noise (Road Traffic Noise)							
S5.6.6.4	Provide a series of noise mitigation measures including absorptive noise barriers and low noise road surfacing materials along Lin Ma Hang Road and Sha Ling Road before operation of the proposed project for existing and planned representative NSRs. Locations of noise mitigation measures are stated as following: *For existing representative NSRs* • Approx. 12m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM1); • Approx. 92m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM2); • Approx. 28m of absorptive noise barrier 3m above road level along Project Road near Sha Ling Road (MM3); • Approx. 51m of absorptive noise barrier 3m above road level along Project Road near Sha Ling Road (MM4); • Approx. 25m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM5); • Approx. 21m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM6); • Approx. 14m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM7); • Approx. 18m of absorptive noise barrier 3m above road level along Lin Ma Hang Road near San Uk Ling (MM8); • Approx. 42m of absorptive noise barrier 3m above road level along temporary pullover space opposite San Uk Ling (MM9); • Approx. 93m of absorptive noise barrier 3m above road level along Lin Ma Hang Road opposite San Uk Ling (MM10); • Approx. 185m of low noise surfacing materials along Lin Ma Hang Road near San Uk Ling (MM11); • For planned representative NSRs • Approx. 36m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM12); • Approx. 47m of absorptive noise barrier 5m above road level along Lin Ma Hang	Reduce operation noise from road traffic	Contractor	Refer to Figures 5.6.9 – 5.6.13 of the EIA Report	Prior to operation of the Project for existing representative NSRs. While for barriers to protect planned representative NSRs, it should constructed before intake of planned representative NSRs.	• TM-EIAO	Shall be implemented Prior to operation of the Project.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	Road near Muk Wu Nga Yiu (MM13); • Approx. 31m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM14); • Approx. 31m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM15); • Approx. 41m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM16); • Approx. 340m of low noise surfacing materials along Lin Ma Hang Road near Muk Wu Nga Yiu (MM17).						
Water Quality (Construction Phase)							
S6.4.4.1 – S6.4.4.3	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>*General Site Operation*</u> • At the start of site establishment, perimeter cut-off drains to direct offsite water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction; • Diversion of natural stormwater should be avoided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipment in order to avoid or minimise polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacities are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped; • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates; • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction; • Construction works should be programmed to minimise surface excavation works during the rainy seasons (April to September). All exposed earth areas should be	To minimise water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where applicable	Construction phase	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-DSS	Implemented Implemented Implemented Implemented Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means;						
	• If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;						Implemented
	• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas;						Implemented
	• All open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system;						Implemented
	• Manholes (including newly constructed ones) should always be covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers;						Implemented
	• Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes;						Implemented
	• All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable.						Implemented
	• Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains;						Implemented
	• Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain;						Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts; • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby; • Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the water bodies, marsh and ponds; • Adopt best management practices.						Implemented Implemented Implemented Implemented
S6.4.4.4 – S6.4.4.5	*Sewage from workforce* • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance; • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project; • Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.	To minimise water quality from sewage effluent	Contractor	All construction sites where practicable	Construction phase	• Water Pollution Control Ordinance • TM-DSS	Implemented Implemented Implemented
S6.4.4.6	*Operation of Barging Point at Siu Lam* • All barges should be fitted with tight bottom seals to prevent leakage of materials during transport; • Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation; • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and • Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. • Mitigation measures for land-based activities as outlined in Section 6.4.4 should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate.	To minimise water quality from operation of barging point at Siu Lam	Contractor	All construction sites where practicable	Construction phase	• Water Pollution Control Ordinance • TM-DSS	No Applicable. * Barging point at Siu Lam is not in used.
Water Quality (Operational Phase)							

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
S6.5.4.1 – S6.5.4.6	The following mitigation measures during operational phase are recommended: • Sewage and wastewater discharge should be connected to foul sewerage system; • Proper drainage systems with silt traps and oil interceptors should be installed; • The design of road gullies with silt traps should be incorporated especially for the catchment leading to the existing wet woodland area located at the north of the site; • The silt traps and oil interceptors should be cleaned and maintained regularly, especially before peak seasons of the visitors in Ching Ming • Festival and Chung Yeung Festival; • Energy dissipaters should be installed at the seasonally wet watercourses to reduce the magnitude of the first flush in order to minimise the erosion impact to the wet woodland.	To minimise the road runoff, wastewater discharge and erosion of seasonal watercourse during the operational phase	Highways Department /Contractors	Whole alignment	Construction / Operational Phase	• Water Pollution Control Ordinance • TM-DSS	For Operational phase
Waste Management (Construction Waste)							
S7.3.3.8	Construction & Demolition Material Management Plan (C&DMMP) • A C&DMMP shall be submitted to the Public Fill Committee for approval in the case of C&D materials disposal exceeding 50,000m3.	To enhance the management of construction and demolition (C&D) material including rock in public works projects	Contractor	All construction sites	Construction phase	• Project Administrative Handbook for Civil Engineering Works, 2012 Edition	
S7.3.4.2	Good Site Practice The following good site practices are recommended throughout the construction activities: • nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • provision of sufficient waste disposal points and regular collection for disposal; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • a Waste Management Plan (WMP) should be prepared by the contractor and submitted to the Engineer for approval.	Minimise waste generation during construction	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance	Implemented Implemented Implemented Implemented Implemented Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
S7.3.4.3	Waste Reduction Measures Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction: • segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; • proper storage and site practices to minimise the potential for damage and contamination of construction materials; • plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; • sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete metal etc.); • provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	Reduce waste generation	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance	Implemented Implemented Implemented Implemented Implemented
S7.3.4.5	Storage of Waste The following recommendation should be implemented to minimise the impacts: • non-inert C&D materials such as soil should be handled and stored well to ensure secure containment; • stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; • different locations should be designated to stockpile each material to enhance reuse;	Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction phase	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	Implemented Implemented Implemented
S7.3.4.6	Collection and Transportation of Waste The following recommendation should be implemented to minimise the impacts: • remove waste in timely manner; • employ the trucks with cover or enclosed containers for waste transportation; • obtain relevant waste disposal permits from the appropriate authorities; and • disposal of waste should be done at licensed waste disposal facilities.	Minimise waste impacts from storage	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance	Implemented Implemented Implemented Implemented
S7.3.4.8 – S7.3.4.15	Excavated and C&D Materials Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials: • maintain temporary stockpiles and reuse excavated fill material for backfilling; • carry out on-site sorting; • make provisions in the Contract documents to allow and promote the	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction phase	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	Implemented Implemented Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	• use of recycled aggregates where appropriate; and • implement a recording system for the amount of waste generated, recycled and disposed of for checking. • The recommended C&D materials handling should include: • On-site sorting of C&D materials; • Reuse of C&D materials; and • Use of Standard Formwork and Planning of Construction Material purchasing.						Implemented Implemented Implemented Implemented Implemented Implemented Implemented
S7.3.4.17 – S7.3.4.18	Chemical Waste If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste Contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction phase	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	Implemented
S7.3.4.19	General Refuse • General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis.	Minimise production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance	Implemented Implemented Implemented
S7.3.4.20	Sewage • The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities. • Regularly collection by licensed collectors should be arranged to minimise potential environmental impacts.	Minimise production of sewage impacts	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance	Implemented Implemented
Waste Management (Operational Waste)							
S7.4.4.1	General Refuse A reputable waste collector should be employed to remove general refuse on a daily basis.	Remove general refuse during routine road cleaning activities on the roads network and avoid odour, pest and litter impacts	Highways Department /Contractor	Roads network for the C&C facilities and Lin Ma Hang Road	Operational phase	• Waste Disposal Ordinance	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
Land Contamination							
S8.9.1.1	Re-appraisal of the potentially contaminated site (SRC-1)	Identify any hot spots for SI within the southeast and western portions of SRC-1	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	Once the works area for the Project is confirmed and site access is available (e.g. after land resumption)	• Annex 19 of the TM-EIAO, Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3 :Potential Contaminated Land Issues); • Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; • Guidance Notes for Contaminated Land Assessment and Remediation; and • Practice Guide for Investigation and Remediation of Contaminated Land • Recommendations in Health Risk Assessment	Implemented
S8.11.1.1	Preparation and submission of Contamination Assessment Plan (CAP) to EPD for review and approval, if required	Present the findings of the reappraisal and strategy of the recommended SI, if required	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	After land resumption and prior to the construction phase	Ditto	Implemented
S8.11.1.2	Preparation and submission of Contamination Assessment Report (CAR) to EPD for review and approval, if required	Present the findings of SI, if any, and evaluate the level and extent of potential contamination	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	Prior to the construction phase	Ditto	Implemented
S8.11.1.2	Preparation and submission of Remediation Action Plan (RAP) to EPD for review and approval if contamination is identified	Recommend appropriate mitigation	Project Proponent /	Potentially contaminated	Prior to the construction	Ditto	Not required as no contamination is

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
		measures for the contaminated soil and groundwater identified in the assessment if remediation is required	Detailed Design Consultant	site (SRC-1)	phase		identified.
S8.11.1.2	Preparation and submission of Remediation Report (RR) to EPD for review and approval following the completion of any necessary remediation works	Demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	Prior to the construction phase	Ditto	Not required as no contamination is identified.
Ecology (Construction Phase)							
S9.7.2.3	Preparation and submission of Upland Grassland Reinstatement Plan to EPD for agreement.	An Upland Grassland Reinstatement Plan will be prepared by a qualified ecologist/botanist with full details of the findings of a baseline grassland survey, the practical details and methodology of the physical excavation, transport and storage or turves/topsoil and their subsequent reinstatement once the receptor sites have been established, along with an implementation programme of reinstatement, post-reinstatement monitoring and maintenance programme. A contingency plan	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Upland Grassland Reinstatement Plan	Engineered slopes Of Crematorium Indicative locations for Grassland Reinstatement should be referred to **Figure 9.11** of the EIA Report	Prior to construction phase	• Reinstatement and establishment requirements to be detailed in Upland Grassland Reinstatement Plan • TM-EIAO	Implemented *Upland Grassland Reinstatement Plan was submitted to EPD.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
		should be proposed in the Grassland Reinstatement Plan so as to describe the action and limit levels and the action plan if certain performance criteria (such as area of preferred habitat) are not met during the monitoring and maintenance period.					
S9.7.2.5 – S9.7.2.6	Preparation and submission of a Vegetation Survey Report and Transplantation Proposal (if needed as concluded in the Vegetation Survey Report) to EPD for agreement.	The Vegetation Survey will report the presence, as well as update the conditions, number, locations and habitat types of any identified floral species of conservation importance to be impacted by the development, and evaluate suitability and/or practicality of transplantation. The Transplantation Proposal will recommend locations of the receptor site(s), transplantation methodology, implementation programme of transplantation and post-transplantation monitoring	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Vegetation Survey Report and Transplantation Proposal.	Within the Project Area where applicable	Prior to construction phase	• Survey findings and transplantation methodology to be detailed in Vegetation Survey Report and Transplantation Plan respectively. • TM-EIAO.	Implemented * Vegetation Survey Report and Transplantation Proposals for Contract 1 and Contract 2 were submitted to EPD.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
		and maintenance programme.					
S9.7.5.3 – S9.7.5.5, S9.8.1.6	Preparation and submission of Enhancement Woodland Proposal to EPD for agreement.	Recommend appropriate enhancement planting programme, planting and post-transplantation monitoring methodology, action plan for monitoring the enhancement planting and maintenance programme.	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Wooded Area Proposal.	Filled slope west of the platform, and north west of the platform in the valley below MacIntosh Fort Indicative locations for Enhancement Woodland should be referred to **Figure 9.11** of the EIA Report	Prior to construction phase	• Enhancement planting and establishment requirements to be detailed in Wooded Enhancement Proposal. • TM-EIAO	Implemented *Woodland compensation plan was submitted to EPD.
S9.7.3.1 – S9.7.3.3	Indirect impacts due to potential changes in water quality, hydrology and sedimentation could occur to a series of downstream watercourses and wetland systems (including the wet woodland, marsh and mitigation ponds) during both the construction (for the Platform and LMHR widening works) and operational stages. Generally, indirect water impact to any aquatic fauna during the construction phase should easily be avoided by implementing water control measures (ETWB TCW No. 5/2005) to avoid direct or indirect impacts any watercourses and good site practices (further details are discussed in Section 6 of the EIA Report). In addition, construction phase impacts on the watercourses, riparian corridor and fauna using these areas will be minimised by erection of a 2m high, solid, dull green site boundary fence on the edge of any active works area, 30m from the watercourse. Where this is not practicable due to site constraints, demarcation fencing will need to be erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic. Detailed mitigation measures will be designed at the detailed design stage.	Minimise the indirect impacts to Water Quality and Hydrology	Contractor /detailed design consultant.	On the edge of any active works area, 30m from The watercourse	Prior to commencement and during construction phase	• ETWB TCW No. 5/2005 • TM-EIAO	Implemented.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
S9.7.3.4 – S9.7.3.6	Mitigation for noise disturbance (details refer to S5.5.5 to S5.6.6 of this table). Site formation and construction are tentatively proposed to cover a 65-month period from mid 2017 to late 2022. As a precautionary approach, consideration should be given at the detailed design stage to avoid the use of highly reflective materials in the design and implementing the use of opaque materials, fritting, breaking up external reflections with stickers or plastic wrap and/or any other birdfriendly design for noise barriers. Works will be restricted to daytime and any construction lighting should be designed and positioned as to not impact on adjacent ecologically sensitive areas.	The construction work and site formation will be phased in order to reduce overall noise disturbance impacts in particular areas. Collisions usually occurs as a result of birds perceiving a clear path through an object that is transparent or appears to be transparent at some distance, or if the noise barrier is highly reflective which would appear to be composed of the adjacent natural vegetation. Furthermore, mitigation measures to control noise disturbance during this phase will involve the selection of quieter plant, use of movable noise barriers and erection of hoarding and fencing to demarcate the site boundary	Contractor Project Proponent	All construction sites	Prior to commencement and during construction phase	• TM-EIAO.	
.9.7.3.7	In order to demonstrate ecological awareness and to minimise the risk of indirect impacts from water pollution and hill fires, a series of good site practices should be adopted by site staff throughout the construction phase at each works site. These are as follows: • Put up signs to alert site staff about any locations which are ecologically sensitive and measures to prevent accidental impacts; • Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering	Minimise impacts on hydrological condition and water quality of hillside watercourses and reduce chances of hillfires.	Contractor	All construction sites	Prior to commencement and during construction phase	• TM-EIAO.	Implemented Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
	watercourses; • Prohibition of soil storage against trees or close to waterbodies; • Delineation of works site to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value; • No smoking, hot works or sources of fire close to upland grassland; • No on-site burning of waste; and • Waste and refuse in appropriate receptacles.						Implemented Implemented Implemented Implemented Implemented
S.9.7.3.9	Precautionary checks by a suitably experienced ecologist of the vegetation for the presence of nesting birds should be carried out in the breeding season (February to July) before vegetation clearance. These impacts can be avoided by conducting vegetation clearance during the non-breeding season (tentatively August-January) and phased through the project period to minimise impacts.	Minimise the impacts to breeding birds within the works areas.	Contractor	All construction sites	Prior to site clearance	• TM-EIAO • WAPO	Implemented during breeding season.
Ecology (Operational Phase)							
S9.7.2	Establishment, maintenance and monitoring of a Upland Grassland Reinstatement Area	Reinstatement of upland grassland and to maintain connectivity in Sandy Ridge.	Project Proponent/ Contractor / Maintenance Authority	Engineered slopes of Crematorium Indicative locations for Grassland Reinstatement should be referred to **Figure 9.11** of the EIA Report	Operational phase	• Monitoring methodology and successfulness of survival of upland grassland should follow Upland Grassland Reinstatement Plan. • TM-EIAO.	Upland Grassland Reinstatement Area will be implemented by other contract.
S9.7.5.3 – S9.7.5.6	Establishment, maintenance and monitoring of an enhancement woodland	Recommend appropriate enhancement planting programme, planting and post-transplantation monitoring methodology, action plan for monitoring the enhancement planting and	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Wooded Area Proposal.	Filled slope west of the platform, and north west of the platform in the valley below MacIntosh Fort	Operational phase	• Enhancement planting and establishment requirements to be detailed in Wooded Area Proposal. • TM-EIAO.	

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
		maintenance programme.		Indicative locations for Enhancement Woodland should be referred to **Figure 9.11** of the EIA Report			
S9.7.4.1 – S9.7.4.5	<u>Mitigation for Impacts to Water Quality and Hydrology (Operational Phase)</u> • Stormwater drainage system will be further developed in detailed design stage to collect dusty materials from water collected from the platform and associated road system. Silt traps will be installed to ensure removal of dusty materials. Regular cleaning will be conducted to avoid debris entering downstream rivers during first flush; and • The proposed small diameter bore pile system at the foundation of the proposed platform structure.	Specific mitigation measures will be implemented to prevent indirect impacts wetland habitats and fauna. Mitigation measures are to be further developed in the detailed design stage to address any water quality impacts due to the drainage from the proposed platform, and any erosion issues due to the drainage from the proposed platform. The surface runoff collected on the platform will be captured by a stormwater drainage system, which will be further developed at the detailed design stage. The proposed small diameter bore pile system at the foundation of the	Detailed Design Consultant	Wet woodland (and further down the marsh and mitigation ponds) and the seasonal watercourse to the east of the Project boundary	Detailed Design phase/Operational phase	• TM-EIAO	Implemented before Operational phase

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
		proposed platform structure would allow a notional free area of about 87 – 91% for groundwater to pass through.					
S9.7.4.6 – S9.7.4.7	<u>Minimise the potential indirect light disturbance on the Street Lighting on fireflies surrounding the Project Site during operational phase</u> • It is considered that at the detailed design stage, street lighting of similar lux/light intensity as to what is currently present is utilised. Furthermore, as a precautionary measure, it is suggested that deflectors are fixed to the back of the street lights to prevent additional light reaching the marsh and causing adverse impacts to fireflies.	Reduce light pollution and impact on the nearby habitats and their associated wildlife groups, particularly nocturnal fireflies.	Detailed Design/ Consultant/ Operator	The whole Project area	Detailed Design phase/Operational phase	• TM-EIAO	Implemented before Operational phase
S9.7.4.9 – S9.7.4.9	The increase in visitors to the columbarium allows greater public access to the upland grassland of Sandy Ridge and in turn, the potential for hill fires is also increased. Fires may emanate from discarded cigarettes and from specific practices during festivals or grave-sweeping. In order to reduce the risk of hill fires, sufficient educational signage should be displayed throughout the columbarium warning people of the risks of fire and strictly prohibits practices that could cause hill fires. This will require input in the detailed design phase.	Minimise the risk of hill fires.	Detailed Design/ Consultant/ Operator	The whole Project area	Detailed Design phase/Operational phase	• TM-EIAO	Implemented before Operational phase
Fisheries							
S10.5.1.1	No loss of fish ponds is anticipated and no *in situ* mitigation is required. However, mitigation measures for water quality (S6.4.4 – S6.5.4 in this table) proposed are also pertinent in ensuring that fisheries impacts of the Project do not occur downstream of the Project area either locally or in Inner Deep Bay.	-	-	-	-	-	Not applicable
Landscape & Visual							
S11.8.1.3, Table 11.9	CM1 – The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape, and the reliance on off-site construction.	Minimise landscape impact and visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Construction phase	-	Implemented.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
S11.8.1.3, Table 11.9	CM3 – Screening of construction works by hoardings/noise barriers around works area in visually unobtrusive colours and to screen construction works. It is proposed that screening be compatible with the surrounding environment and non-reflective, recessive colours be used. Hoarding should be taken down at the end of the construction period.	Minimise visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Construction phase	-	Implemented.
S11.8.1.3, Table 11.9	CM4 – Dust and Erosion Control for Exposed Soil - Excavation works anddemolition of existing building blocks shall be well planned with precautions to suppress dust. Exposed soil shall be covered or watered often. Areas that are expected to be left with bare soil for a long period of time after excavation shall be properly covered with suitable protective fabric. Suitable drainage shall be provided around construction sites to avoid discharge of contaminants and sediments into sensitive water-based habitat.	Minimise indirect landscape impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Construction phase	-	Implemented.
S11.8.1.3, Table 11.9	CM5 – Control night-time lighting and glare by hooding all lights.	Minimise visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Construction phase	-	Implemented.
11.8.1.3, Table 11.9	CM6 – Tree Protection and Preservation – Woodland, plantation and other vegetation within the Study Area will be protected and preserved as far as possible in accordance with ETWB TCW No. 29/2004 - Registration of Old and Valuable Trees, and Guidelines for their Preservation and DEVB TCW No.07/2015 – Tree Preservation. Detailed Design Considerations are made to avoid impacts to trees, e.g. proper viaduct/ bridge design routing to avoid majority of the woodland, locating the columbarium buildings in areas with less trees and ensuring design of the buildings has as small a footprint as practical.	Minimise landscape impact and visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Construction phase	• DEVB TC(W) 07/2015 • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB	Implemented.
S11.8.1.3, Table 11.9	CM7 – Tree Transplantation – Tree(s) will be affected according to the Tree Preservation and Removal Proposal to be carried out in a later stage. Established trees of value are to be re-located where practically feasible.	Minimise landscape and visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Design and Construction phase	• 'Guidelines for Tree Risk Management And Assessment Arrangement on an Area Basis and on a Tree Basis', issued January 2011, Greening, Landscape and Tree Management	Implemented.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
						(GLTM) Section, DevB • Latest recommended horticultural practices from GLTM Section, DevB	
S11.8.1.3, Table 11.9	CM8 - Implementing precautionary control measures during construction stage accordingly to ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works to avoid direct or indirect impacts any watercourses and good site practices.	Minimize landscape impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Design and Construction phase	• ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works	Implemented.
S11.8.1.3, Table 11.9	OM1 – Compensatory Woodland Planting - The arrangement of compensatory planting (e.g. areas of woodland to be compensated and space to be allowed within the Project Site) will be subject to detailed engineering design, landscape design and planting plan, and is recommended to be implemented prior to the construction activities as far as practical.	Compensate the loss of landscape greenery and enhance the overall visual value of the site.	Funded by CEDD and implemented by Contractor	Within Project Site	Prior to Construction phase	• DEVB TC(W) 07/2015 – Tree Preservation • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB • DEVB TCW No. 06/2015 – Maintenance of Vegetation and Hard Landscape Features	Implemented
S11.8.1.3, Table 11.9	OM2 – Compensatory Tree Planting for Plantation and Other Vegetated Areas - Compensatory planting should be provided in accordance with DEVB TCW No. 07/2015 to compensate for those trees felled. According to the preliminary design, compensatory trees will be planted on the cut/fill slopes, along new roads and in car parks. The selection of planting species shall be made with reference to the species identified in the future Detailed Tree Survey and be native to Hong Kong or the South China region.	Compensate the loss of landscape greenery and enhance the overall visual value of the site.	Funded by CEDD and implemented by Contractor	Within Project Site	Construction phase	• DEVB TC(W) 07/2015 – Tree Preservation • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB • DEVB TCW No. 06/2015 –	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
						Maintenance of Vegetation and Hard Landscape Features	
S11.8.1.3, Table 11.9	OM3 – Amenity Planting and aesthetic streetscape design of hard landscaping for Pedestrian Walkway, Roadside - Roadside amenity planting should be provided along Sha Ling Road, Lin Ma Hang Road, as well as the internal road within Sandy Ridge columbarium and crematorium site; to enhance the landscape quality of the existing and proposed transport routes. Climbers are proposed to cover vertical, hard surfaces of the piers of the proposed viaducts, and also the newly formed retaining wall within the site. Shade tolerant plants will be planted, where light is sufficient, to improve aesthetic value of areas under viaducts.	Minimise visual impact and also enhance landscape.	Funded by CEDD and implemented by Contractor	Within Project Site	Construction phase	• Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB • DEVB TCW No. 06/2015 – Maintenance of Vegetation and Hard Landscape Features	Implemented
S11.8.1.3, Table 11.9	OM4 – Greening Works and Contour Grading Works on Cut/ Fill Slopes - Greening works such as hydroseeding/ terraces of shrub or tree planting will be provided where slope gradient allows, according to Geotechnical Engineering Office (GEO) Publication No.1/2011 Technical Guidelines on Landscape Treatment for Slopes.	Minimise landscape and visual impact	Funded by CEDD and implemented by Contractor	Within Project Site	Construction phase	Geotechnical Engineering Office (GEO) Publication No.1/2011 Technical Guidelines on Landscape Treatment for Slopes.	Implemented
S11.8.1.3, Table 11.9	OM5 – Landscape design treatment to be provided by relevant government department.	Mitigate the loss of greenery and enhance the overall landscape and visual value	Funded by FEHD and implemented by Contractor	Within Project Site	After handover to the relevant department	-	Implemented after handover to the relevant department
S11.8.1.3, Table 11.9	OM6 – Architectural and chromatic treatment of the hard architectural and engineering structures and facilities.	Mitigate the loss of greenery and enhance the overall landscape and visual value	Funded by FEHD and implemented by Contractor	Within Project Site	After handover to the relevant department	-	Implemented after handover to the relevant department
S11.8.1.3, Table 11.9	OM7 – Aesthetic design of the proposed noise barriers.	Mitigate the visual impact	Funded by CEDD and implemented by Contractor	Along Sha Ling Road and Lin Ma Hang Road	Construction phase	• WBTC No. 36/2004 - ACABAS - submission is required to ACABAS for approval of any bridges and associated structures within the public highway	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
						system.	
S11.8.1.3 , Table 11.9	OM8 - Silt traps should also be incorporated into design of road gullies for the natural water stream(s).	Minimise the landscape impact on natural stream	Funded by CEDD and implemented by Contractor	Within Project Site	Construction Phase		Implemented

Notes:

(a) A detailed Tree Survey Report showing all identified valuable trees and OVT will be undertaken in a separate Tree Preservation and Removal Proposal.

(b) Wood resulting from tree removal should be recycled as mulch or soil conditioner for re-use within the Project or in other projects as far as possible e.g. for the construction of soft landscape work, were practical.

(c) Contractor is responsible for landscaping during the agreed establishment and maintenance period. Other designated management and maintenance agents to take up maintenance and management of landscaping after end of agreed period

(d) Highways Department (HyD) is responsible for maintenance and management of landscaping of public road side slope, Leisure and Cultural Services Department (LCSD) is responsible for the management and maintenance of soft landscapes along non-expressway public roads outside Country Park and Food and Environmental Hygiene Department (FEHD) is responsible for maintenance and management of landscaping of other areas allocated to FEHD..

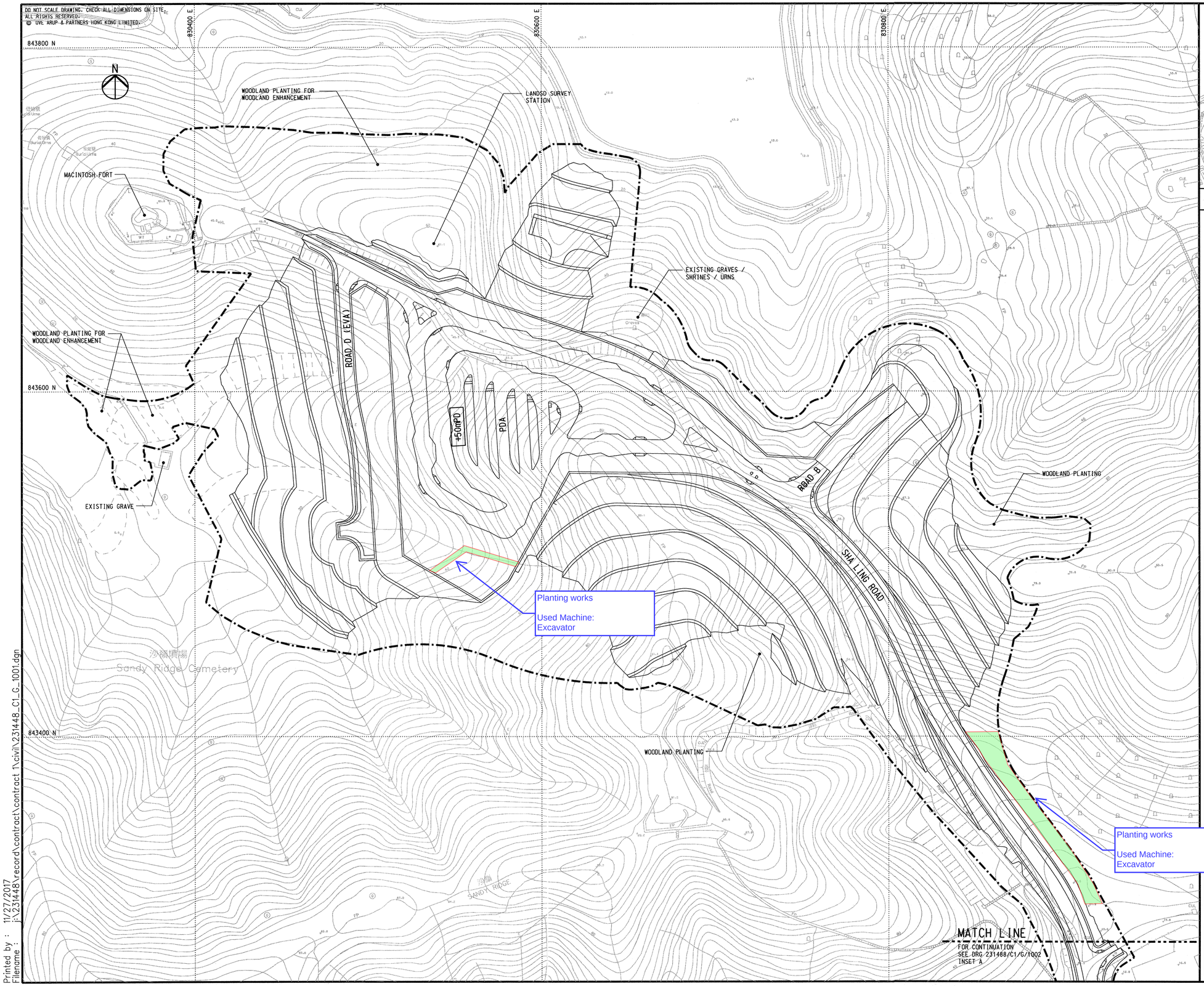
(e) The landscape mitigation treatment of the future development site shall follow the below frameworks:

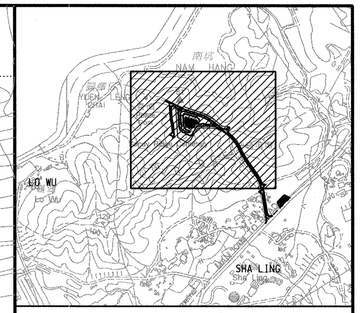
- Buffer planting shall be provided to soften the edge of the site.
- Aesthetic landscape treatment including both soft and hard landscape features shall be provided.
- Vertical greening shall be provided as far as practicable.
- At-grade tree planting shall be provided as far as possible while planting space is allowed, to enhance the overall environment.
- Architectural design shall blend in with the surrounding environment.
- Overall greening ratio shall comply with TC(W) No.3/2012 Site coverage of Greenery for Government Building Projects.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved	Implementation status and remark*
The compensatory woodland planting shall be included woodland mixed whips, seeding, and shrubs. The principle of the location shall be the extension of the existing woodland, as well as the original lost woodland location. The proposal will be agreed with AFCD, the woodland enhancement planting shall refer to Chapter 9.							
EM&A Project							
S13.1.1.1 , S13.2.1.2	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Highways Department	All construction sites	Construction phase	• EIAO Guidance Note No.4/2010 • TM-EIAO	Implemented
S13.2.1.1 – S13.4.1.2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Highways Department / Contractor	All construction sites	Construction phase	• EIAO Guidance Note No.4/2010 • TM-EIAO	Implemented

Appendix P

Illustrations of Site Activities





KEY PLAN

LEGEND:

PROPOSED WORKS SITE

+50mPD — SITE FORMATION LEVEL

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Drawing title

GENERAL LAYOUT
(SHEET 1 OF 3)

Drawing No.	Rev.
231448/C1/G/1001	–

Drawn	Date	Checked	Approved
WM	12/16	AW	DL

Scale: 1:1000 @A1

Status: CONTRACT

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 11/27/2017
Filename : j:\231448\record\contract\contract 1\civil\231448_C1_G_1001.dgn

N

830800 E

831000 E

MATCH LINE
FOR CONTINUATION
SEE DRG 231448/C1/G/1001

843200 N

SHA LING ROAD

MAN KAM TO ROAD

SHA LING VILLAGE

PICK UP / DROP OFF POINT

BUS SHELTER (BY KMB)

REPROVISIONED REFUSE COLLECTION POINT

INSET A

830400 E

843200 N

WOODLAND PLANTING

WOODLAND PLANTING

INSET B

829800 E

830000 E

843000 N

WOODLAND PLANTING

Sandy Ridge Uni. Cemetery

LO WU STATION ROAD

Lo Wu Document Storage Building

INSET C

NAM HANG

Sandy Ridge Cemetery

LO WU

SHA LING

INSET A

INSET B

INSET C

KEY PLAN

LEGEND:

PROPOSED WORKS SITE

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Drawing title

GENERAL LAYOUT
(SHEET 2 OF 3)

Drawing no.			Rev.
231448/C1/G/1002			-
Drawn: WM	Date: 12/16	Checked: AW	Approved: DL
Scale: 1:1000 @A1		Status: CONTRACT	

CEDD 土木工程拓展署 Civil Engineering and Development Department

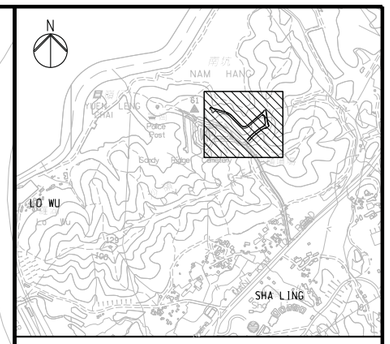
Printed by : 11/27/2017
Filename : i:\231448\record\contract\contract 1\civil\231448_C1_G_1002.dgn

830600 E
830700 E
830800 E
843700 N
843600 N
843500 N

Planting work

Plant: excavator

ROAD E (EVA)
ROAD F
ROAD B



KEY PLAN

LEGEND:

SITE BOUNDARY

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

Drawing title

GENERAL LAYOUT (SHEET 1 OF 5)

Drawing no.	Rev.
231448/C2/G/1001	-

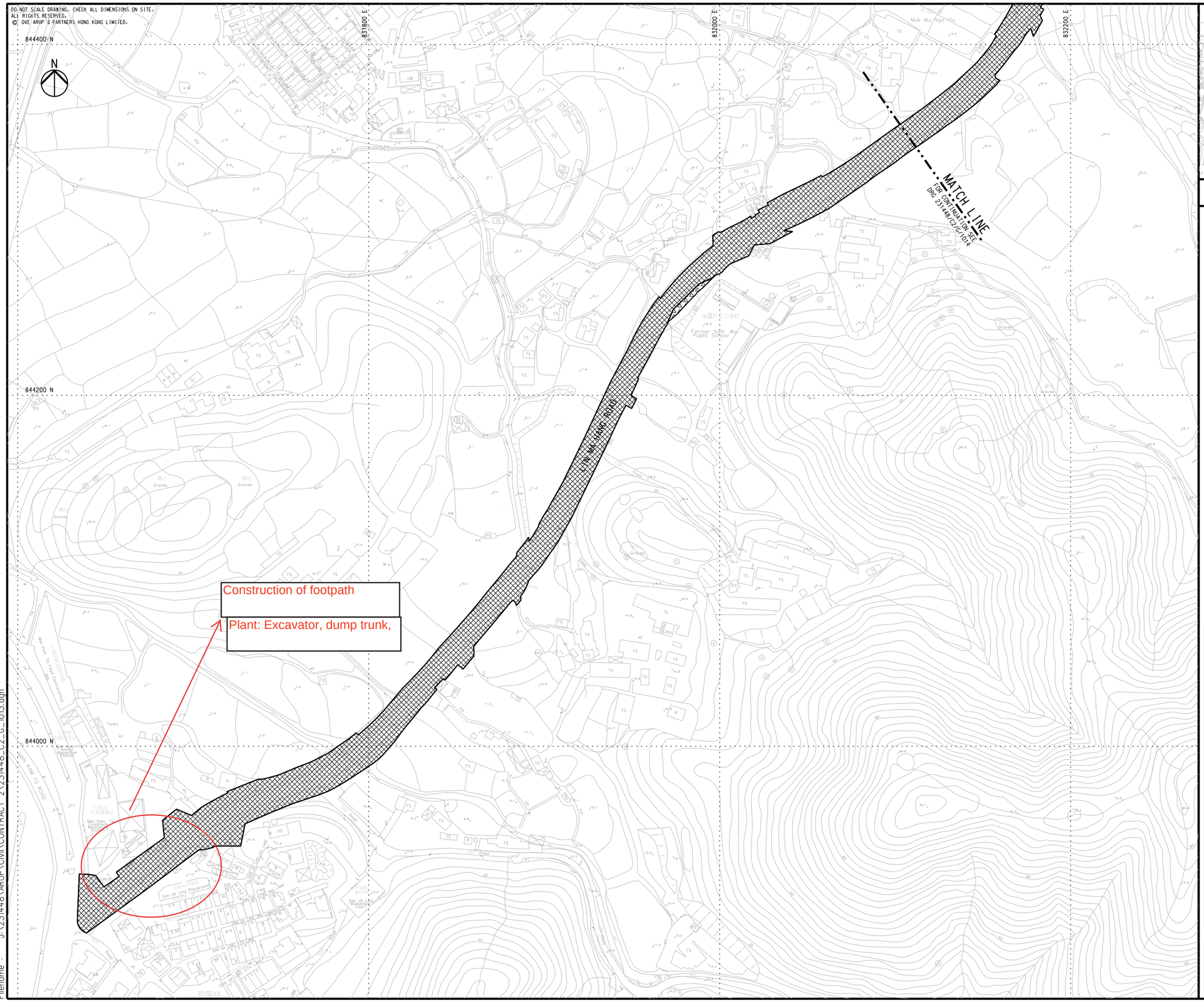
Drawn	Date	Checked	Approved
WM	07/17	AW	DL

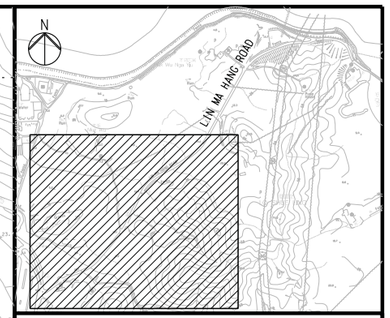
Scale: 1:500 @A1

Status: TENDER

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1001.dgn





KEY PLAN

NOTE:

1. PART(S) OF THE SITE WHICH IS/ARE LOCATED IN THE PUBLIC ROADS AND FOOTPATH SHALL ONLY BE OCCUPIED BY THE CONTRACTOR FOR THE EXECUTION OF THE WORKS WITH PRIOR APPROVAL FROM RELEVANT GOVERNMENT AUTHORITIES INCLUDING ACQUIRING EXCAVATION PERMITS ISSUED BY THE HIGHWAYS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO ACQUIRE APPROVAL OF HIS TEMPORARY TRAFFIC ARRANGEMENT SCHEMES AND ALL NECESSARY EXCAVATION PERMITS FROM RELEVANT AUTHORITIES.
2. THE DEMARCATION AND EXTENT OF THE PART(S) OF THE SITE AS SHOWN ARE APPROXIMATE ONLY AND SHALL BE CONFIRMED ON SITE BY THE PROJECT MANAGER / SUPERVISOR.

LEGEND:

- PART A1
- PART A2
- PART A3
- PART A4
- PART B
- PART C1
- PART C2
- PART D
- PART E

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

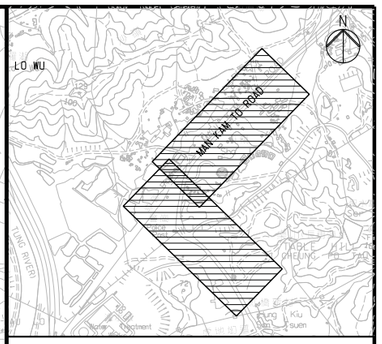
Drawing title

PART OF THE SITE (SHEET 3 OF 5)

Drawing no.			Rev.
231448/C2/G/1013			-
Drawn: WM	Date: 07/17	Checked: AW	Approved: DL
Scale: 1:1000 @A1		Status: TENDER	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1013.dgn



KEY PLAN

NOTE:

1. PART(S) OF THE SITE WHICH IS/ARE LOCATED IN THE PUBLIC ROADS AND FOOTPATH SHALL ONLY BE OCCUPIED BY THE CONTRACTOR FOR THE EXECUTION OF THE WORKS WITH PRIOR APPROVAL FROM RELEVANT GOVERNMENT AUTHORITIES INCLUDING ACQUIRING EXCAVATION PERMITS ISSUED BY THE HIGHWAYS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO ACQUIRE APPROVAL OF HIS TEMPORARY TRAFFIC ARRANGEMENT SCHEMES AND ALL NECESSARY EXCAVATION PERMITS FROM RELEVANT AUTHORITIES.
2. THE DEMARCATION AND EXTENT OF THE PART(S) OF THE SITE AS SHOWN ARE APPROXIMATE ONLY AND SHALL BE CONFIRMED ON SITE BY THE PROJECT MANAGER / SUPERVISOR.

LEGEND:

- PART A1
- PART A2
- PART A3
- PART A4
- PART B
- PART C1
- PART C2
- PART D
- PART E

Rev	Description	By	Date
-	TENDER DRAWING	AW	11/17

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2017/02

Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

Drawing title

PART OF THE SITE (SHEET 2 OF 5)

Drawing no.	Rev.
231448/C2/G/1012	-

Drawn	Date	Checked	Approved
WM	07/17	AW	DL

Scale: 1:1000 @A1

Status: TENDER

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 12/27/2017
Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1012.dgn