



**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.49) – AUGUST 2022**

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

Date	Reference No.	Prepared By	Certified By
14 September 2022	TCS00881/18/600/R0674v2		
		Nicola Hon (Environmental Consultant)	Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	9 September 2022	First Submission
2	14 September 2022	Amended according to the IEC's comments



Our Ref: TCS00881/18/300/L0676

**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 September 2022**

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.49) – August 2022**

---

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](mailto: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 Contract 1)	Mr. Steven Tang	by e-mail
	ARUP (RE of Contract 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-202209030

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 September 2022

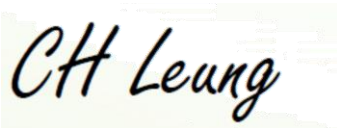
Dear Sir,

**Site Formation and Associated Infrastructural Works for Development of Columbarium at  
Sandy Ridge Cemetery  
Monthly Environmental Monitoring and Audit Report (No. 49) August 2022**

I refer to the email of the ET on 14/08/2022 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 August 2022 (Version 2) with Ref. No. TCS00881/18/600/R0674v2.

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 49<sup>th</sup> Monthly Environmental Monitoring and Audit (EM&A) Report summarizing the monitoring results and inspection findings under the Project for the period from 1<sup>st</sup> to 31<sup>st</sup> August 2022 (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	45
	24-hour TSP		ASR-3	15
Construction Noise	L <sub>eq</sub> (30min) Daytime	CN-1 CN-2	CN-3 CN-4	16
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	23 <sup>rd</sup> August 2022
Landscape & Visual	Site Inspection	Site area of CV/2016/10	Site area of CV/2017/02	30 <sup>th</sup> August 2022
Inspection & Audit	Environmental Team (ET) Regular Environmental Site Inspection	Site area of CV/2016/10	Site area of CV/2017/02	5
	Independent Environmental Checker (IEC) Monthly Environmental Site Audit			2

Remarks: (#) The channel of M2 was dried up / too shallow on 1 to 3 Aug as well as 22 to 31 August 2022 and representative water sampling were unable to be carried out.

## BREACH OF ACTION AND LIMIT (A/L) LEVELS

- ES.01. In the Reporting Month, no exceedance of air quality and noise monitoring was recorded. For water quality monitoring, there were 22 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	L <sub>eq</sub> 30min Daytime	0	0	-	-
Water Quality	DO	0	0	-	-
	Turbidity	0	9	Not project-related	The Contractor was reminded to fully implement the water quality mitigation measures
	Suspended Solids (SS)	0	13		

- ES.02. In the Reporting Month, a total of 22 Limit level water quality exceedances, namely 9 exceedances of turbidity and 13 exceedances of SS were recorded. According to the weather information from the HKO, there was heavy rainstorm intermittently during the days of exceedance recorded. Under the impact of rainstorm, the water quality of the watercourse was deteriorated by the stirred up sediment and runoff from the surrounding environment. 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 rainstorm and not caused by the work under the project.

- ES.03. Monthly ecological monitoring for sensitive habitat for area of Contract 1 and Contract 2 were undertaken on **23<sup>rd</sup> August 2022**. After analysing survey results in August from 2019 to 2022, there was no significant drop in species richness and abundance for wetland and non-wetland habitat for area of Contract 1, but there was a decrease in species richness and abundance for wetland and non-wetland habitats for area of Contract 2. Yet, 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. Unnecessary site clearance should be avoided as well. 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.
- ES.04. There was no precautionary check for the presence of nesting birds conducted outside the concerned breeding season (February to July).
- ES.05. Landscape and visual inspection at both Contracts were undertaken on **30<sup>th</sup> August 2022**. 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.06. In the Reporting Month, an environmental complaint was referred by EPD on 12 August concerning that the soil/ muddy water from construction site at Lin Ma Hang Road near Contract 2. Investigation was conducted by Environmental Team according to the complaint handling procedure in accordance with the EM&A Manual. Investigation result revealed that the current site areas on Lin Ma Hang Road under Contract 2 were generally in order and no noticeable dust and muddy discharge problem was observed. Having noticed adverse environmental impact arising from other private owner depots on Lin Ma Hang Road, it is considered that the complaint is unlikely attributed to the works under the Project.
- ES.07. 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
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 1	0	2	(1) Air Quality (1) Noise
	Contract 2	1	4	(1) Water (1) Air Quality (1) Noise (1) soil/ muddy water

#### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- ES.08. 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
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	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



1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 1	0	0	NA
	Contract 2	0	0	NA

- ES.09. In addition, no complaint and emergency event relating to violation of environmental legislation for illegal dumping and landfilling was received.

#### **REPORTING CHANGE**

- ES.010. No reporting change was made in the Reporting Month.

#### **SITE INSPECTION**

- ES.011. 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 **4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 26<sup>th</sup> and 30<sup>th</sup> August 2022**. Moreover, joint site inspections for Contract 2 by the RE, ET and the Contractor of Contract 2 were carried out on **4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 26<sup>th</sup> and 30<sup>th</sup> August 2022**. IEC attended joint site inspection for both Contracts on **18<sup>th</sup> and 30<sup>th</sup> August 2022**. No non-compliance was noted during the site inspections.

#### **FUTURE KEY ISSUES**

- ES.012. During wet season, 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.
- ES.013. 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.014. 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

<b>1. INTRODUCTION</b>	<b>1</b>
1.1 PROJECT BACKGROUND	1
1.2 REPORT STRUCTURE	2
<b>2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS</b>	<b>4</b>
2.1 CONSTRUCTION CONTRACT PACKAGING	4
2.2 CONSTRUCTION PROGRESS	4
2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS	4
2.4 SUMMARY OF SUBMISSION UNDER THE ENVIRONMENTAL PERMIT REQUIREMENTS	5
<b>3. SUMMARY OF IMPACT MONITORING REQUIREMENT</b>	<b>7</b>
3.1 GENERAL	7
3.2 MONITORING PARAMETERS	7
3.3 MONITORING LOCATIONS	7
3.4 MONITORING FREQUENCY AND PERIOD	9
3.5 MONITORING EQUIPMENT	9
3.6 EQUIPMENT CALIBRATION	12
3.7 DATA MANAGEMENT AND DATA QA/QC CONTROL	12
3.8 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS	12
<b>4. AIR QUALITY</b>	<b>14</b>
4.1 MONITORING RESULTS	14
4.2 AIR MONITORING EXCEEDANCE	14
<b>5. CONSTRUCTION NOISE</b>	<b>15</b>
5.1 MONITORING RESULTS	15
5.2 NOISE MONITORING EXCEEDANCE	15
<b>6. WATER QUALITY</b>	<b>16</b>
6.1 MONITORING RESULTS	16
6.2 WATER QUALITY MONITORING EXCEEDANCE	17
<b>7. ECOLOGY MONITORING</b>	<b>19</b>
7.1 REQUIREMENT	19
7.2 METHODOLOGY	19
7.3 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 1)	20
7.4 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 2)	22
7.5 MONITORING OF FLORA SPECIES OF CONSERVATION INTEREST	24
7.6 MEASURE FOR PROTECTION OF NESTING BIRD	24
<b>8. LANDSCAPE AND VISUAL</b>	<b>25</b>
8.1 REQUIREMENT	25
8.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH	25
<b>9. WASTE MANAGEMENT</b>	<b>26</b>
9.1 GENERAL WASTE MANAGEMENT	26
9.2 RECORDS OF WASTE QUANTITIES	26
<b>10. SITE INSPECTION</b>	<b>27</b>
10.1 REQUIREMENT	27
10.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH	27
<b>11. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE</b>	<b>28</b>
11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION	28
<b>12. IMPLEMENTATION STATUS OF MITIGATION MEASURES</b>	<b>29</b>
12.1 GENERAL REQUIREMENTS	29
12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH	30
12.3 KEY ISSUES FOR THE COMING MONTH	30
<b>13. CONCLUSIONS AND RECOMMENDATIONS</b>	<b>33</b>
13.1 CONCLUSIONS	33
13.2 RECOMMENDATIONS	34



## **LIST OF TABLES**

TABLE 2-1	STATUS OF ENVIRONMENTAL LICENSES AND PERMITS FOR CONTRACT 1
TABLE 2-2	STATUS OF ENVIRONMENTAL LICENSES AND PERMITS FOR CONTRACT 2
TABLE 2-3	STATUS OF SUBMISSION AS UNDER FEP FOR CONTRACT 1
TABLE 2-4	STATUS OF SUBMISSION AS UNDER FEP FOR CONTRACT 2
TABLE 3-1	SUMMARY OF EM&A REQUIREMENTS
TABLE 3-2	DESIGNATED AIR QUALITY MONITORING LOCATION UNDER THE PROJECT
TABLE 3-3	DESIGNATED CONSTRUCTION NOISE MONITORING LOCATION UNDER THE PROJECT
TABLE 3-4	DESIGNATED WATER QUALITY MONITORING STATIONS UNDER THE PROJECT
TABLE 3-5	AIR QUALITY MONITORING EQUIPMENT
TABLE 3-6	NOISE MONITORING EQUIPMENT
TABLE 3-7	WATER QUALITY MONITORING EQUIPMENT
TABLE 3-8	ACTION AND LIMIT LEVELS FOR AIR QUALITY MONITORING
TABLE 3-9	ACTION AND LIMIT LEVELS FOR CONSTRUCTION NOISE
TABLE 3-10	ACTION AND LIMIT LEVELS FOR WATER QUALITY
TABLE 4-1	SUMMARY OF AIR QUALITY MONITORING RESULTS AT ASR-1 UNDER CONTRACT 1
TABLE 4-2	SUMMARY OF AIR QUALITY MONITORING RESULTS AT ASR-2 UNDER CONTRACT 2
TABLE 4-3	SUMMARY OF AIR QUALITY MONITORING RESULTS AT ASR-3A UNDER CONTRACT 2
TABLE 5-1	SUMMARY OF CONSTRUCTION NOISE MONITORING RESULTS UNDER CONTRACT 1
TABLE 5-2	SUMMARY OF CONSTRUCTION NOISE MONITORING RESULTS UNDER CONTRACT 2
TABLE 6-1	SUMMARY OF WATER QUALITY MONITORING RESULTS – M3 UNDER CONTRACT 1
TABLE 6-2	SUMMARY OF WATER QUALITY MONITORING RESULTS (M1, M2 AND M4) UNDER CONTRACT 2
TABLE 6-3	SUMMARY OF FIELD MEASUREMENTS FOR WATER QUALITY
TABLE 6-4	ACTION AND LIMIT (A/L) LEVELS EXCEEDANCE RECORD
TABLE 6-5	SUMMARY OF INVESTIGATION OF WATER QUALITY EXCEEDANCE IN THE REPORTING MONTH
TABLE 7-1	ACTION AND LIMIT LEVELS FOR WET WOODLAND HABITATS MONITORING
TABLE 7-2	ACTION AND LIMIT LEVELS FOR NON-WET WOODLAND HABITATS MONITORING
TABLE 7-3	SCHEDULE OF FAUNAL SURVEYS IN EACH YEAR DURING CONSTRUCTION PHASE
TABLE 7-4	RESULT OF FAUNAL SURVEY UNDER CONTRACT 1
TABLE 7-5	RESULT OF FRESHWATER COMMUNITIES SURVEY UNDER CONTRACT 1
TABLE 7-6	RESULT OF FAUNAL SURVEY UNDER CONTRACT 2
TABLE 7-7	RESULT OF FRESHWATER COMMUNITIES SURVEY UNDER CONTRACT 2
TABLE 8-1	LANDSCAPE & VISUAL INSPECTION FINDING FOR CONTRACT 1
TABLE 8-2	LANDSCAPE & VISUAL INSPECTION FINDING FOR CONTRACT 2
TABLE 9-1	SUMMARY OF QUANTITIES OF INERT C&D MATERIALS
TABLE 9-2	SUMMARY OF QUANTITIES OF C&D WASTES
TABLE 10-1	SITE OBSERVATIONS FOR THE WORKS OF CONTRACT 1
TABLE 10-2	SITE OBSERVATIONS FOR THE WORKS OF CONTRACT 2
TABLE 11-1	STATISTICAL SUMMARY OF ENVIRONMENTAL COMPLAINTS
TABLE 11-2	STATISTICAL SUMMARY OF ENVIRONMENTAL SUMMONS
TABLE 11-3	STATISTICAL SUMMARY OF ENVIRONMENTAL PROSECUTION
TABLE 12-1	ENVIRONMENTAL MITIGATION MEASURES
TABLE 12-2	WORK UNDERTAKEN AND MITIGATION MEASURES FOR CONTRACT 1
TABLE 12-3	WORK UNDERTAKEN AND MITIGATION MEASURES FOR CONTRACT 2



**LIST OF APPENDICES**

APPENDIX A	LAYOUT PLAN OF THE PROJECT
APPENDIX B	ORGANIZATION STRUCTURE AND CONTACT DETAILS OF RELEVANT PARTIES
APPENDIX C	THREE MONTHS ROLLING PROGRAMME
APPENDIX D	DESIGNATED MONITORING LOCATIONS
APPENDIX E	CALIBRATION CERTIFICATES OF MONITORING EQUIPMENT AND LABORATORY CERTIFICATE
APPENDIX F	EVENT AND ACTION PLAN OF AIR QUALITY, NOISE AND WATER QUALITY
APPENDIX G	MONITORING SCHEDULES OF THE REPORTING MONTH AND COMING MONTH
APPENDIX H	MONITORING DATA OF 24-HOUR TSP AIR QUALITY, NOISE AND WATER QUALITY
APPENDIX I	GRAPHICAL PLOTS OF AIR QUALITY, NOISE AND WATER QUALITY
APPENDIX J	METEOROLOGICAL DATA OF THE REPORTING MONTH
APPENDIX K	ECOLOGICAL SURVEY REPORT
APPENDIX L	LANDSCAPE & VISUAL INSPECTION CHECKLIST
APPENDIX M	MONTHLY SUMMARY WASTE FLOW TABLE
APPENDIX N	COMPLAINT LOG AND INVESTIGATION REPORT
APPENDIX O	IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES (ISEMM)
APPENDIX P	ILLUSTRATIONS OF SITE ACTIVITIES
APPENDIX Q	INVESTIGATION REPORT FOR EXCEEDANCE



## 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 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 49<sup>th</sup> Monthly EM&A Report summarizing the monitoring results and inspection findings for the period from 1<sup>st</sup> to 31<sup>st</sup> August 2022.

## **1.2 REPORT STRUCTURE**

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

- Section 1** *Introduction*
- Section 2** *Project 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*



<b>Section 11</b>	<i>Environmental Complaints and Non-Compliance</i>
<b>Section 12</b>	<i>Implementation Status of Mitigation Measures</i>
<b>Section 13</b>	<i>Conclusions and Recommendation</i>



## 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 The three-month rolling construction programme for Contract 1 and Contract 2 are enclosed in [Appendix C](#). Construction activities of the Contract 1 and Contract 2 undertaken in the Reporting Month are presented below. The tentative construction activities are summarised in Section 12.2

#### Contract 1 (CV/2016/10)

- U-channel construction works at Fill Slope FS13
- Paving block installation works
- Compaction works at footpath and carriageway
- U-channel and planter wall construction works at Cut Slope CS1
- Drill holes for planting works and fill top soil at CS11,12
- Laying bitumen works

#### Contract 2 (CV/2017/02)

- Construction of Manhole, gullies, drainage pipe at Lin Ma Hang Road between CH0-50 Southbound & CH505-565 Northbound & CH890-960 Northbound
- Pipe Jacking works for DN400 watermain in approx. CH0-300 at Man Kam To Road
- DN400 DI Watermain reinstatement works in approx. CH700-1040 at Man Kam To Road North Slow Lane
- Construction of road works at Sandy Ridge Road E, Road F, Road B
- Fanling Station Road Covered Walkway
- Lung Sum Avenue road surface modification works

### 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 Acknowledged by EPD on 14/12/2018	Lin Ma Hang Road (San Uk Ling – Muk Wu Nga Yiu)	Valid
		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
5	Construction Noise Permit	GW-RN0562-22 (1 Aug – 30 Nov 2022)		Valid
5a	Construction Noise Permit	GW-RN0563-22 (14 Jul – 13 Oct 2022)		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



Item	EP and / or FEP Stipulation	Description	Status
			2019
4	Condition 2.13 of FEP	Grassland Reinstatement Plan	Pending approval
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)	Approved by EPD on 30 Jun 2020
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, Noise and Water)	Approved by EPD on 25 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	Pending approval
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)	Approved by EPD on 30 Jun 2020
8	Condition 2.19 of EP	Monitoring and Survey Plan for Golden-headed Cisticola Contract 2	Pending approval
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	<ul style="list-style-type: none"> <li>• 1-hour TSP;</li> <li>• 24-hour TSP</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Leq<sub>(30min)</sub> during normal working hours.; and</li> <li>• Leq<sub>(15min)</sub> during the construction works undertaken in Restricted Hours</li> </ul>
Water Quality	<b>In-situ Measurements</b> <ul style="list-style-type: none"> <li>• Dissolved Oxygen Concentration (mg/L) &amp; Saturation (%) ;</li> <li>• Temperature (°C);</li> <li>• Turbidity (NTU);</li> <li>• Salinity (ppm)</li> <li>• pH unit;</li> <li>• Water depth (m); and</li> <li>• Stream Flow Velocity (m/sec).</li> </ul>
	<b>Laboratory Analysis</b> <ul style="list-style-type: none"> <li>• Suspended Solids (mg/L)</li> </ul>
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:
- Be at the site boundary or such locations close to the major dust emission source;
  - Close to the sensitive receptors;
  - Take into account the prevailing meteorological conditions;
  - For monitoring location located in the vicinity of the ASRs, care shall be taken to cause minimal disturbance to the occupants during monitoring.
  - When positioning the HVS, the following points shall be noted:
    - a horizontal platform with appropriate support to secure the samples against gusty wind shall be provided;
    - no two samplers shall be placed less than 2m apart;
    - 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;
    - a minimum of 2 m separation from walls, parapets and penthouses is required for HVS at the rooftop;
    - a minimum of 2 m separation from any supporting structure, measures horizontally is required;
    - no furnace or incinerator flue is nearby;
    - airflow around the sampler is unrestricted;
    - the HVS is more than 20 m from the dripline;
    - any wire fence and gate to protect the HVS, shall not cause any obstruction during monitoring;
    - permission must be obtained to set up the HVS and to obtain access to the monitoring stations; and
    - 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
<b>24-hour TSP</b>	
High Volume Air Sampler (HVAS)	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
<b>1-Hour TSP</b>	
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  $\text{ms}^{-1}$  before each noise monitoring event. Noise measurements should not be made in fog, rain, wind with a steady speed exceeding  $5 \text{ m s}^{-1}$  or wind with gusts exceeding  $10 \text{ m s}^{-1}$ .
- 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-74 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



Equipment	Model
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 Plus/ YSI 550A
pH meter	AZ8685 pH meter / YSI Professional Plus / YSI Professional DSS
Turbidimeter	Hach 2100Q/ YSI Professional Plus / YSI Professional DSS
Salinometer	Atago refractometer Atago S Salinity Meter / YSI Professional Plus / 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 ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
ASR-1	331	181	500	260



Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
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 ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> hour measured	2 <sup>nd</sup> hour measured	3 <sup>rd</sup> hour measured
3-Aug-22	26	4-Aug-22	13:30	77	71	82
9-Aug-22	20	10-Aug-22	13:00	73	71	72
15-Aug-22	35	16-Aug-22	13:30	86	92	81
20-Aug-22	18	22-Aug-22	9:04	96	93	98
26-Aug-22	34	27-Aug-22	13:03	110	121	113
Average (Range)	<b>27</b> <b>(18 – 35)</b>	Average (Range)		<b>89</b> <b>(71 – 121)</b>		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> hour measured	2 <sup>nd</sup> hour measured	3 <sup>rd</sup> hour measured
3-Aug-22	28	4-Aug-22	13:35	83	80	88
9-Aug-22	24	10-Aug-22	13:08	89	86	91
15-Aug-22	75	16-Aug-22	13:36	92	102	109
20-Aug-22	81	22-Aug-22	9:12	103	98	101
26-Aug-22	82	27-Aug-22	13:10	116	123	120
Average (Range)	<b>58</b> <b>(24 – 82)</b>	Average (Range)		<b>99</b> <b>(80 – 123)</b>		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> hour measured	2 <sup>nd</sup> hour measured	3 <sup>rd</sup> hour measured
3-Aug-22	40	4-Aug-22	13:45	68	61	72
9-Aug-22	34	10-Aug-22	13:20	66	70	63
15-Aug-22	35	16-Aug-22	13:42	71	75	69
20-Aug-22	10	22-Aug-22	9:18	103	96	100
26-Aug-22	21	27-Aug-22	13:16	106	113	109
Average (Range)	<b>28</b> <b>(10 – 40)</b>	Average (Range)		<b>83</b> <b>(61 – 113)</b>		

### 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, 4 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(*)
4-Aug-22	13:33	59	14:08	64
13-Aug-22	9:11	61	9:57	63
16-Aug-22	13:30	60	14:06	63
22-Aug-22	9:06	61	9:42	62
<b>Limit Level</b>	<b>75 dB(A)</b>			

(\*) 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
4-Aug-22	14:45	60	15:24	62
13-Aug-22	10:37	62	11:15	59
16-Aug-22	14:42	63	15:17	64
22-Aug-22	10:18	63	10:58	61
<b>Limit Level</b>	<b>75 dB(A)</b>			

(\*) 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  $\pm 0.5$ dB. 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  $5 \text{ m s}^{-1}$  or wind with gusts exceeding  $10 \text{ m s}^{-1}$ .

### 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. Besides, the channel of M2 was dried up / too shallow during 1 to 3 August as well as 22 to 31 August 2022 and representative water sampling was unable be carried out. Notification for cancellation of monitoring had been provided to relevant parties in the following days of the events.
- 6.1.3 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)
1-Aug-22	6.87	1.7	3.5
3-Aug-22	6.51	2.5	5.5
5-Aug-22	6.04	4.5	4.5
8-Aug-22	6.62	2.1	4.5
10-Aug-22	7.52	5.4	8.5
12-Aug-22	6.97	5.4	7.5
15-Aug-22	6.89	5.3	8.5
17-Aug-22	6.52	3.7	8.0
19-Aug-22	6.78	4.5	7.5
22-Aug-22	7.01	1.0	3.5
24-Aug-22	6.82	3.0	4.5
26-Aug-22	6.79	3.5	4.5
29-Aug-22	6.74	1.8	5.5
31-Aug-22	6.63	1.3	3.0

**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
1-Aug-22	6.97	#	6.98	4.9	#	1.2	8.0	#	2.0
3-Aug-22	6.90	#	6.47	4.3	#	0.2	7.5	#	2.0
5-Aug-22	6.95	7.37	6.85	<b>20.0</b>	36.6	<b>23.9</b>	<b>47.5</b>	<b>61.5</b>	<b>45.0</b>
8-Aug-22	7.03	7.20	6.60	6.7	16.6	4.7	4.0	11.5	2.0
10-Aug-22	7.01	7.23	6.62	<b>22.8</b>	36.5	<b>26.9</b>	<b>47.5</b>	<b>50.5</b>	<b>46.0</b>
12-Aug-22	6.51	6.99	6.68	<b>58.2</b>	<b>42.4</b>	<b>33.5</b>	<b>235.0</b>	<b>65.0</b>	<b>99.0</b>
15-Aug-22	7.18	7.33	4.51	4.6	20.9	2.5	4.5	27.0	4.5
17-Aug-22	7.10	6.87	3.65	<b>45.7</b>	34.9	1.1	<b>40.5</b>	<b>68.0</b>	3.5
19-Aug-22	6.83	6.91	5.11	<b>50.9</b>	37.1	1.5	<b>48.5</b>	<b>59.5</b>	3.5
22-Aug-22	7.10	#	4.53	1.6	#	0.9	6.5	#	4.5
24-Aug-22	6.85	#	6.42	7.0	#	2.2	7.5	#	2.0
26-Aug-22	7.12	#	4.88	6.0	#	5.2	5.5	#	4.5
29-Aug-22	6.95	#	5.46	4.6	#	2.0	5.0	#	3.5
31-Aug-22	6.83	#	6.30	4.0	#	1.0	5.0	#	2.0

Remarks: (#) The channel of M2 was dried up / too shallow and representative water sampling was unable be carried out



- 6.1.4 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) (°C)		Water Flow (Averaged) (m/s)	
	min	max	min	max	min	max	min	max
M1	7.5	8.2	0.01	0.07	25.1	28.7	<0.1	0.5
M2	7.5	8.0	0	0.06	25.3	28.6	<0.1	<0.1
M3	7.2	8.0	0.01	0.02	25.2	29.2	<0.1	<0.1
M4	7.3	7.9	0.01	0.10	25.3	29.4	<0.1	<0.1

## 6.2 WATER QUALITY MONITORING EXCEEDANCE

- 6.2.1 In this Reporting Month, there were a total of **22** water quality exceedances recorded. The summary of non-compliance of water quality performance is shown in [Table 6-4](#). Investigation concluded that the exceedances were not project-related, therefore, increase of monitoring frequency (from Event and Action Plan) is not required according to EM&A Manual 7.8.1.3.

**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	<b>5</b>	0	<b>5</b>	0	<b>10</b>	0	0
M2	0	0	0	<b>1</b>	0	<b>5</b>	0	<b>6</b>	0	0
M3	0	0	0	0	0	0	0	0	0	0
M4	0	0	0	<b>3</b>	0	<b>3</b>	0	<b>6</b>	0	0

- 6.2.2 Notification of Exceedance and the investigation for exceedance in the Reporting Month is summarized in [Table 6-5](#). The investigation reports for exceedance were shown in [Appendix Q](#).

**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
5 Aug 2022	M1, M2 & M4	Turbidity & Suspended Solids	<p>According to the weather data from Observatory, there was heavy rainstorm on 5 August 2022, in which Amber Rainstorm Warning Signals were issued at 4:08 and 13:08 on 5 August 2022 respectively. Under the influence of rain, the water quality of seasonal watercourse was inevitably be affected by the stirred up sediment and erosion from the surrounding environment even outside the construction site.</p> <p>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. Construction of footpath at TTA3 was conducted near M4 on Lin Ma Hang Road, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day. Construction of road works was conducted on Sandy Ridge, most of area 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.</p> <p>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</p>



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.
10 August	M1 & M4	Turbidity & Suspended Solids	<p>According to the weather data from Observatory, there was successive heavy rainstorm on 10 to 12 August 2022, in which Amber Rainstorm Warning Signals were issued at 12:15 on 12 August 2022. Under the influence of rain, the water quality of seasonal watercourse was inevitably be affected by the stirred up sediment and erosion from the surrounding environment even outside the construction site.</p> <p>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. Construction of footpath at TTA3 was conducted near M4 on Lin Ma Hang Road, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day. Construction of road works was conducted on Sandy Ridge, most of area 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.</p> <p>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 likely related to the impact of rainstorm and not caused by the work under the project.</p>
	M2	Suspended Solids	
12 August	M1, M2 & M4	Turbidity & Suspended Solids	<p>According to the weather data from Observatory, there was successive heavy rainstorm on 10 to 12 August 2022, in which Amber Rainstorm Warning Signals were issued at 12:15 on 12 August 2022. Under the influence of rain, the water quality of seasonal watercourse was inevitably be affected by the stirred up sediment and erosion from the surrounding environment even outside the construction site.</p> <p>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. Construction of footpath at TTA3 was conducted near M4 on Lin Ma Hang Road, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day. Construction of road works was conducted on Sandy Ridge, most of area 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.</p> <p>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 likely related to the impact of rainstorm and not caused by the work under the project.</p>
17 August	M1	Turbidity & Suspended Solids	<p>According to the weather data from Observatory, there was successive heavy rainstorm on 17 to 19 August 2022, in which Amber Rainstorm Warning Signals were issued at 16:10 on 17 August 2022.</p> <p>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. Construction of footpath at TTA3 was conducted near M4 on Lin Ma Hang Road, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day. Construction of road works was conducted on Sandy Ridge, most of area 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.</p> <p>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 likely related to the impact of rainstorm and not caused by the work under the project.</p>
19 August	M2	Suspended Solids	



## 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 **23<sup>rd</sup> August 2022**, a sunny day. The day 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 34 bird individuals from 10 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey. Two species of conservation interests was recorded in this survey: Chinese Hwamei (*Garrulax canorus*) 畫眉 and Great Coucal (*Centropus sinensis*) 褐翅鴉鵂.

##### 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 5 species recorded in the monitoring area.

Dragonfly

- 7.3.6 There were a total of 7 odonate individuals from 4 species recorded in the monitoring area. One species of conservation interests was recorded in this survey: Scarlet Basker (*Urothemis signata*) 赤斑曲鈎脈蜻.

Aquatic Fauna Survey (Freshwater communities)

- 7.3.7 There were 2 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									
<i>Spilopelia chinensis</i>	Spotted Dove	珠頸斑鳩		1	3				
<i>Centropus sinensis</i>	Greater Coucal	褐翅鴉鵂	Class 2 Protected Animal of China; China Red Data Book Status: (Vulnerable)	1					
<i>Lanius schach</i>	Long-tailed Shrike	棕背伯勞						1	
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	紅耳鸛				2			5
<i>Pycnonotus aurigaster</i>	Sooty-headed Bulbul	白喉紅臀鸛							4
<i>Prinia flaviventris</i>	Yellow-bellied Prinia	黃腹鷦鶯						2	
<i>Orthotomus sutorius</i>	Common Tailorbird	長尾縫葉鶯			1				
<i>Garrulax canorus</i>	<i>Chinese Hwamei</i>	畫眉	Appendix 2 of CITES					2	
<i>Garrulax perspicillatus</i>	Masked Laughingthrush	黑臉噪鵲		4					
<i>Motacilla alba</i>	White Wagtail	白鵲鶯		8					
Reptile Survey									
--	--	--	--	--	--	-	--	--	
Amphibian Survey									
Butterfly Survey									
<i>Borbo cinnara</i>	Formosan Swift	袖弄蝶		2					
<i>Abisara echerius</i>	Plum Judy	蛇目褐蛺蝶		1			1		
<i>Neptis hylas</i>	Common Sailer	中環蛺蝶		1					
<i>Mycalesis mineus</i>	Dark Brand Bush Brown	小眉眼蝶			1				
<i>Catopsilia pomona</i>	Lemon Emigrant	遷粉蝶		3					
Odonate Survey									
<i>Ceriagrion auranticum</i>	Orange-tailed Sprite	翠胸黃蟬						2	
<i>Brachydiplax chalybea</i>	Blue Dasher	藍額疏脈蜻						1	



Scientific Name	Common / Engineer Name	Chinese Name	Conservation Status	Non-wetland		Wetland		
				UG	WL	MA	WW	WC
<i>Pantala flavescens</i>	Wandering Glider	黃蜻						2
<i>Urothemis signata</i>	Scarlet Basker	赤斑曲鈎脈蜻	Fellowes et al. (2002): LC					2

\*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
<i>Puntius semifasciolatus</i>	Chinese Barb	五線無鬚魮	--	--	--	--	--	10
<i>Somanniathelphusa zanklon</i>		鎌刀束腰蟹						10

### Discussion

- 7.3.9 After analysing survey results in August from 2019 to 2022, there was no significant drop in species richness and abundance for wetland habitat. Yet, 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. Unnecessary site clearance should be avoided as well. 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 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 2)**

- 7.4.1 In the Reporting Month, ecological monitoring was undertaken at work area of Contract 2 on **23<sup>rd</sup> August 2022**, 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 5 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 one amphibian recorded in the monitoring area.

#### Butterfly

- 7.4.5 There was a total of 3 butterfly individual from 2 species recorded in the monitoring area.

#### Dragonfly

- 7.4.6 There were a total of 3 odonate from 2 species 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								
<i>Urocissa erythroryncha</i>	Red-billed Blue Magpie	紅嘴藍鵲			1			
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	紅耳鵲			7			
<i>Prinia flaviventris</i>	Yellow-bellied Prinia	黃腹鷦鶯		2				
<i>Garrulax perspicillatus</i>	Masked Laughingthrush	黑臉噪鵲		5				
<i>Motacilla alba</i>	White Wagtail	白鵲				1	2	
Reptile Survey								
--	--	--	--	--	--	--	--	--
Amphibian Survey								
<i>Polypedates megacephalus</i>	Brown Tree Frog	斑腿泛樹蛙				+		
Butterfly Survey								
<i>Graphium agamemnon</i>	Tailed Jay	統帥青鳳蝶				2		
<i>Eurema hecabe</i>	Common Grass Yellow	寬邊黃粉蝶				1		
Odonate Survey								
<i>Orthetrum pruinosum</i>	Common Red Skimmer	赤褐灰蜻				2		
<i>Copera marginipes</i>	Yellow Featherlegs	黃狹扇蟳						1

\*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
<i>Gambusia affinis</i>	Mosquito fish	食蚊魚						+
<i>Puntius semifasciolatus</i>	Chinese Barb	五線無鬚魮						+

\*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 August 2019 to 2022, there was a decrease in species richness and abundance for wetland and non-wetland habitats. Still, a good site practice during construction, with reference to EM&A Manual, is still 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. Unnecessary site clearance should be avoided as well. 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.
- 7.4.10 The detailed Ecological Survey Reports for Contract 1 and Contract 2 are attached in **Appendix K**.
- 7.4.11 The tentative ecology inspection and monitoring in the next Reporting Month (September 2022) is scheduled on **15<sup>th</sup> September 2022**.



#### **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 There was no precautionary check for the presence of nesting birds conducted outside the concerned breeding season (February to July).



## 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 **30<sup>th</sup> August 2022**. 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
30 <sup>th</sup> August 2022	1. Transplanted tree T2468, with sprase foliage, brown foliage and small foliage size was found removed. According to Contractor, it was found collapsed due to typhoon.	• No action required.
	2. 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
	3. The Contractor is reminded to prevent the construction material pile within TPZ and ensure no works is allowed within the TPZ.	• Reminder only
	4. 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
30 <sup>th</sup> August 2022	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 <sup>3</sup> )	0.615	--	606.890 (#)	--
Reused in this Contract (Inert) ('000m <sup>3</sup> )	0.115	--	0	--
Reused in other Projects (Inert) ('000m <sup>3</sup> )	0	--	0	--
Disposal as Public Fill (Inert) ('000m <sup>3</sup> )	0.500	Tuen Mun Area 38	606.890 (#)	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 <sup>3</sup> )	0.002	NENT Landfill	2.06	NENT Landfill

Remark: the unit is '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 **4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 26<sup>th</sup> and 30<sup>th</sup> August 2022** and IEC attended joint site inspection on **18<sup>th</sup> and 30<sup>th</sup> August 2022**. 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
4 <sup>th</sup> August 2022	• The Contractor was advised to put chemical container inside drip tray or remove it.	• The chemical container was removed.
11 <sup>th</sup> August 2022	• The Contractor was reminded to maintain good housekeeping.	• Reminder only.
18 <sup>th</sup> August 2022	• Free-standing chemical containers were observed on the ground. The Contractor was advised provide drip tray or remove it.	• The chemical containers on the ground were removed.
	• The Contractor was advised clean oil stains on site.	• Oil leakage on the ground was cleaned.
26 <sup>th</sup> August 2022	• The Contractor was reminded to remove accumulated water inside drip tray of generator regularly.	• Reminder only.
30 <sup>th</sup> August 2022	• Oil & water mixture was found inside drip tray. The Contractor should clean up the mixture. (at fill slope 13 opposite)	• The oil & water mixture was cleaned.
	• The Contractor was reminded to maintain the tree protection zone properly.	• Reminder only.

#### 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 **4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 26<sup>th</sup> and 30<sup>th</sup> August 2022** and IEC attended joint site inspection on **18<sup>th</sup> and 30<sup>th</sup> August 2022**. 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
4 <sup>th</sup> August 2022	• No adverse environmental issue was observed.	• N/A
11 <sup>th</sup> August 2022	• No adverse environmental issue was observed.	• N/A
18 <sup>th</sup> August 2022	• The Contractor was advised to clean sedimentation tank regularly at jacking pit 2.	• The sedimentation tank was cleaned up.
26 <sup>th</sup> August 2022	• No adverse environmental issue was observed.	• N/A
30 <sup>th</sup> August 2022	• The Contractor was reminded to provide water quality mitigation measures properly.	• Reminder only.



## 11. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

### 11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

11.1.1 In the Reporting Month, no summons and prosecution was lodged for the Contract. However, a public complaint was received from EPD on 14 July concerning that the soil/ muddy water from construction site at Lin Ma Hang Road near Contract 2. Investigation was conducted by ET according to the complaint handling procedure in accordance with the EM&A Manual.

11.1.2 According to the information and photo provided, the suspected site near lamppost N4221 is the Aggregate Stockpile Area (ASA) belongs to Sang Hing. The ASA is for stockpiling of aggregate only and there is no construction activities carried out within the ASA. The current site activities conducted on Lin Ma Hang Road under Contract 2 are located at TTA1 to TTA3 for road widening and footpath construction, and the current site areas on Lin Ma Hang Road under Contract 2 are generally in order and no noticeable dust and muddy discharge problem was observed during site inspection. For the concerned ASA under management of Sang Hing, the unused aggregate have been covered by impervious sheeting to prevent generation of muddy water, and Sang Hing was reminded to provide proper environmental mitigation measures within the ASA.

11.1.3 Having noticed the adverse environmental impact arising from other private owner depots on Lin Ma Hang Road, it is considered that the complaint is unlikely attributed to the works under the Project. Nevertheless, Sang Hing was reminded to fully implement the dust mitigation measures as far as practicable. The ET will closely inspect the implementation of mitigation measures during regularly site inspection and give advice on enhancement measures, where necessary. The complaint log for the Project and investigation report for the complaint is shown in [Appendix N](#).

11.1.4 The statistical summary table of the environmental complaint, summons and prosecution are presented in [Tables 11-1, 11-2 and 11-3](#).

**Table 11-1 Statistical Summary of Environmental Complaints**

Reporting Month		Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 1	0	2	(1) Air Quality (1) Noise
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 2	1	4	(1) Water (1) 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
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 1	0	0	NA
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 2	0	0	NA

**Table 11-3 Statistical Summary of Environmental Prosecution**

Reporting Month		Environmental Prosecution Statistics		
		Frequency	Cumulative	Complaint Nature
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 1	0	0	NA
1 <sup>st</sup> – 31 <sup>st</sup> August 2022	Contract 2	0	0	NA

11.1.5 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	<ul style="list-style-type: none"> <li>• Provided efficient silt removal facilities to reduce SS level before effluent discharge.</li> <li>• Provided ditches, earth bunds or sand bag barriers to minimize polluted runoff.</li> <li>• Temporary drainage was provided to prevent runoff going through site surface and minimize polluted runoff.</li> <li>• Provided perimeter cut-off drains at site boundaries to intercept storm runoff from crossing the site.</li> <li>• Exposed slopes surface were compacted and covered with tarpaulin or similar means.</li> <li>• Provided portable chemical toilets on site.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>• Maintain damp / wet surface on access road.</li> <li>• Maintain low vehicular speed within the works areas.</li> <li>• Provided vehicle wheel washing facilities at each construction site exit;</li> <li>• Provided water spraying every hour for all active works area.</li> <li>• Stockpiles of dusty material were covered with impervious sheeting.</li> <li>• Provided workers to clear dusty materials at the vehicle entrance or exit regularly.</li> <li>• 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.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday.</li> <li>• Keep good maintenance of plants.</li> <li>• Placed noisy plants away from residence and school.</li> <li>• Provided noise barriers or hoarding to enclose the noisy plants or works.</li> <li>• Shut down the plants when not in used.</li> </ul>
Waste and Chemical Management	<ul style="list-style-type: none"> <li>• Provided on-site sorting prior to disposal.</li> <li>• Followed requirements and procedures of the “Trip-ticket System”</li> <li>• Predicted required quantity of concrete accurately.</li> <li>• Collected the unused fresh concrete at designated locations in the sites for subsequent disposal.</li> </ul>
Ecology	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic.</li> <li>• The construction work and site formation have been phased in order to reduce overall noise disturbance impacts in particular areas.</li> <li>• Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas.</li> </ul>
General	<ul style="list-style-type: none"> <li>• The site was generally kept tidy and clean.</li> <li>• Environmental Permit was displayed at site entrance.</li> </ul>



## 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:

- Concrete pavement at RCP
- Paving block installation works
- Drill holes for planting works and fill top soil at CS13
- Compaction works at footpath
- U-channel and planter wall construction works at Fill Slope FS17
- Laying bitumen works

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

- Construction of Manhole, gullies, drainage pipe at Lin Ma Hang Road between CH0-50 Southbound & CH505-565 Northbound & CH890-960 Northbound.
- Pipe Jacking works for DN400 watermain in approx. CH0-300 at Man Kam To Road
- DN400 DI Watermain reinstatement works in approx. CH700-1040 at Man Kam To Road North Slow Lane
- Construction of road works at Sandy Ridge Road E, Road F, Road B
- Fanling Station Road Covered Walkway
- Lung Sum Avenue road surface modification works

## 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
Compact works at footpath on Sandy Ridge	<ul style="list-style-type: none"> <li>• Excavator</li> <li>• Compaction roller</li> </ul>	<ul style="list-style-type: none"> <li>• Provided efficient silt removal facilities to reduce SS level before effluent discharge.</li> <li>• Provided ditches, earth bunds or sand bag barriers to minimize polluted runoff.</li> </ul>
Drill holes for planting works and fill top soil at CS13	<ul style="list-style-type: none"> <li>• Driller</li> <li>• Crane lorry</li> </ul>	<ul style="list-style-type: none"> <li>• Exposed slopes surface were compacted and covered with tarpaulin or similar means.</li> <li>• Maintain damp / wet surface on access road.</li> </ul>
Paving block installation works	<ul style="list-style-type: none"> <li>• Crane lorry</li> <li>• Compaction roller</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain low vehicular speed within the works areas.</li> <li>• Provided vehicle wheel washing facilities at each construction site exit;</li> <li>• Provided water spraying for all active works area, in particular for the soil nail works.</li> </ul>
Utilities laying works	<ul style="list-style-type: none"> <li>• Excavator</li> <li>• Compaction roller</li> </ul>	<ul style="list-style-type: none"> <li>• Stockpiles of dusty material were covered with impervious sheeting.</li> </ul>
Slope drain works at Cut Slope CS13	<ul style="list-style-type: none"> <li>• Excavator</li> </ul>	<ul style="list-style-type: none"> <li>• Provided workers to clear dusty materials at the vehicle entrance or exit regularly.</li> </ul>
Compact works at footpath at Sha Ling Road near Man Kam To Road	<ul style="list-style-type: none"> <li>• Excavator</li> <li>• Compaction roller</li> </ul>	<ul style="list-style-type: none"> <li>• Stockpile more than 20 bags of cement or dry PFA has been covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.</li> <li>• Restricted operation time of plants from 07:00 to 19:00 on any</li> </ul>



Description of Construction Activities	Used on PME	Environmental Mitigation Measures
Drainage and sewerage works at RCP at Sha Ling Road near Man Kam To Road	<ul style="list-style-type: none"> <li>• Dump truck</li> <li>• Excavator</li> <li>• Crane Lorry</li> </ul>	<ul style="list-style-type: none"> <li>• working day except for Public Holiday and Sunday.</li> <li>• Keep good maintenance of plants.</li> <li>• Placed noisy plants away from residence and school.</li> <li>• Provided noise barriers or hoarding to enclose the noisy plants or works.</li> <li>• Shut down the plants when not in used.</li> <li>• Provided on-site sorting prior to disposal.</li> <li>• Followed requirements and procedures of the “Trip-ticket System”</li> <li>• Predicted required quantity of concrete accurately.</li> <li>• Collected the unused fresh concrete at designated locations in the sites for subsequent disposal.</li> <li>• 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.</li> <li>• Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic.</li> <li>• The construction work and site formation have been phased in order to reduce overall noise disturbance impacts in particular areas.</li> <li>• Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas.</li> <li>• The site was generally kept tidy and clean.</li> </ul>

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

Construction Activities	Used on PME	Environmental Mitigation Measures
Construction of Manhole, gullies, drainage pipe at Lin Ma Hang Road	<ul style="list-style-type: none"> <li>• Dump truck</li> <li>• Excavator</li> </ul>	<ul style="list-style-type: none"> <li>• Provided efficient silt removal facilities to reduce SS level before effluent discharge.</li> <li>• Provided ditches, earth bunds or sand bag barriers to minimize polluted runoff.</li> <li>• Exposed slopes surface were compacted and covered with tarpaulin or similar means.</li> </ul>
Pipe Jacking works for DN400 watermain at Man Kam To Road	<ul style="list-style-type: none"> <li>• Pipe jacking drilling machine</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain damp / wet surface on access road.</li> <li>• Maintain low vehicular speed within the works areas.</li> <li>• Provided vehicle wheel washing facilities at each construction site exit.</li> <li>• Provided water spraying for all active works area, in particular for the soil nail works.</li> </ul>
Construction of road works at Sandy Ridge Road	<ul style="list-style-type: none"> <li>• Excavator</li> <li>• Roller</li> <li>• Dump truck</li> </ul>	<ul style="list-style-type: none"> <li>• Stockpiles of dusty material were covered with impervious sheeting.</li> <li>• Provided workers to clear dusty materials at the vehicle entrance or exit regularly.</li> <li>• Stockpile more than 20 bags of cement or dry PFA has been covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.</li> <li>• Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday.</li> <li>• Keep good maintenance of plants.</li> <li>• Placed noisy plants away from residence and school.</li> <li>• Provided noise barriers or hoarding to enclose the noisy plants or works.</li> </ul>



Construction Activities	Used on PME	Environmental Mitigation Measures
		<ul style="list-style-type: none"> <li>● Shut down the plants when not in used.</li> <li>● Provided on-site sorting prior to disposal.</li> <li>● Followed requirements and procedures of the “Trip-ticket System”</li> <li>● Predicted required quantity of concrete accurately.</li> <li>● Collected the unused fresh concrete at designated locations in the sites for subsequent disposal.</li> <li>● 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.</li> <li>● Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic.</li> <li>● The construction work and site formation have been phased in order to reduce overall noise disturbance impacts in particular areas.</li> <li>● Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas.</li> <li>● The site was generally kept tidy and clean.</li> </ul>

12.3.1 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 **49<sup>th</sup>** Monthly EM&A Report presenting the monitoring results and inspection findings for the period of **1<sup>st</sup> to 31<sup>st</sup> August 2022**.
- 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 **22** Limit level water quality exceedances, namely **9** exceedances of turbidity and **13** exceedances of SS were recorded. According to the weather information from the HKO, there was heavy rainstorm intermittently during the days of exceedance recorded. Under the impact of rainstorm, the water quality of the watercourse was deteriorated by the stirred up sediment and runoff from the surrounding environment. 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 rainstorm 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 **23<sup>rd</sup> August 2022**. After analysing survey results in August from 2019 to 2022, there was no significant drop in species richness and abundance for wetland and non-wetland habitat for area of Contract 1, but there was a decrease in species richness and abundance for wetland and non-wetland habitats for area of Contract 2. Yet, 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. Unnecessary site clearance should be avoided as well. 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.
- 13.1.6 There was no precautionary check for the presence of nesting birds conducted outside the concerned breeding season (February to July).
- 13.1.7 Landscape and visual inspection at both Contracts were undertaken on **30<sup>th</sup> August 2022**. The Contractor was reminded to prevent the construction material pile within Tree Protection Zone and ensure no works is allowed within the TPZ.
- 13.1.8 In the Reporting Month, no environmental 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.
- 13.1.9 In the Reporting Month, an environmental complaint was referred by EPD on 12 August concerning that the soil/ muddy water from construction site at Lin Ma Hang Road near Contract 2. Investigation was conducted by Environmental Team according to the complaint handling procedure in accordance with the EM&A Manual. Investigation result revealed that the current site areas on Lin Ma Hang Road under Contract 2 were generally in order and no noticeable dust and muddy discharge problem was observed. Having noticed adverse environmental impact arising from other private owner depots on Lin Ma Hang Road, it is considered that the complaint is unlikely attributed to the works under the Project.
- 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 **4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 26<sup>th</sup> and 30<sup>th</sup> August 2022**. Moreover, joint site inspections for Contract 2 by the RE, ET and the Contractor of Contract 2 were carried out on **4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 26<sup>th</sup> and 30<sup>th</sup> August 2022**. IEC attended the both Contract joint site inspection on **18<sup>th</sup> and 30<sup>th</sup> August 2022**. No non-compliance was noted during the site inspections.



### **13.2 RECOMMENDATIONS**

- 13.2.1 During wet season, 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.
- 13.2.2 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.



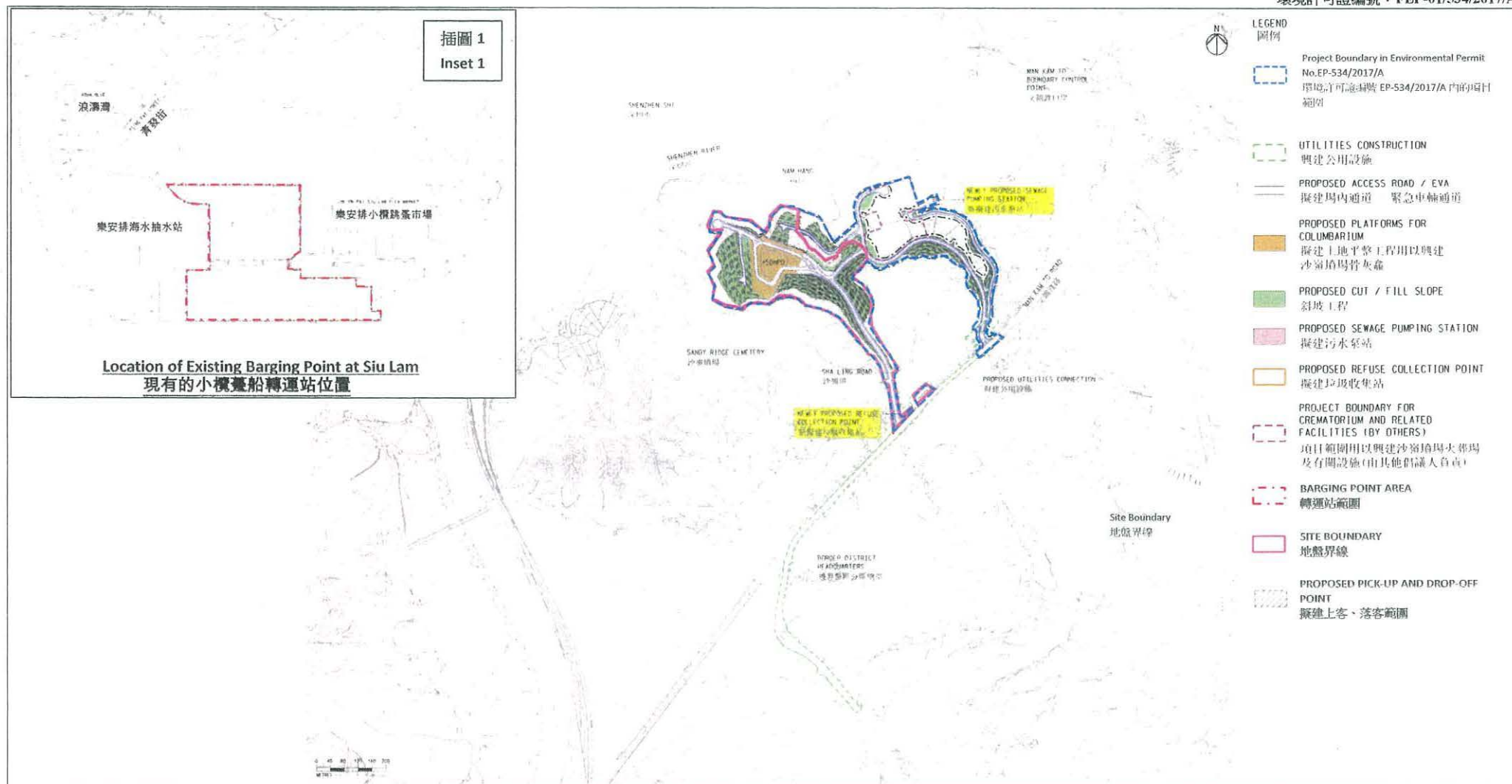
## **Appendix A**

### **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)

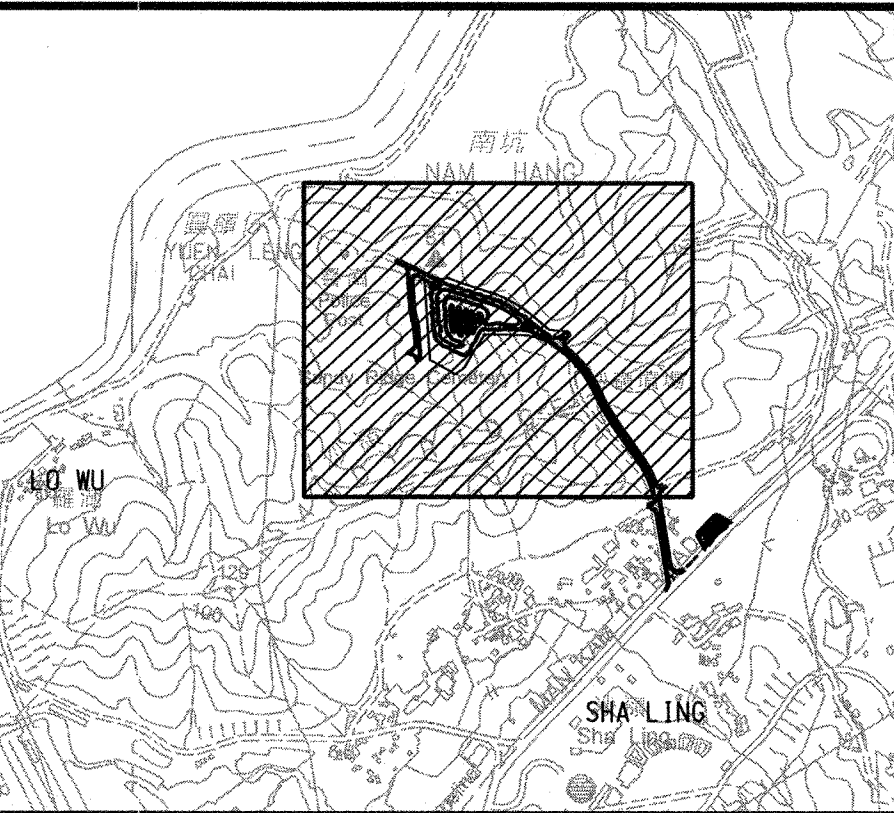
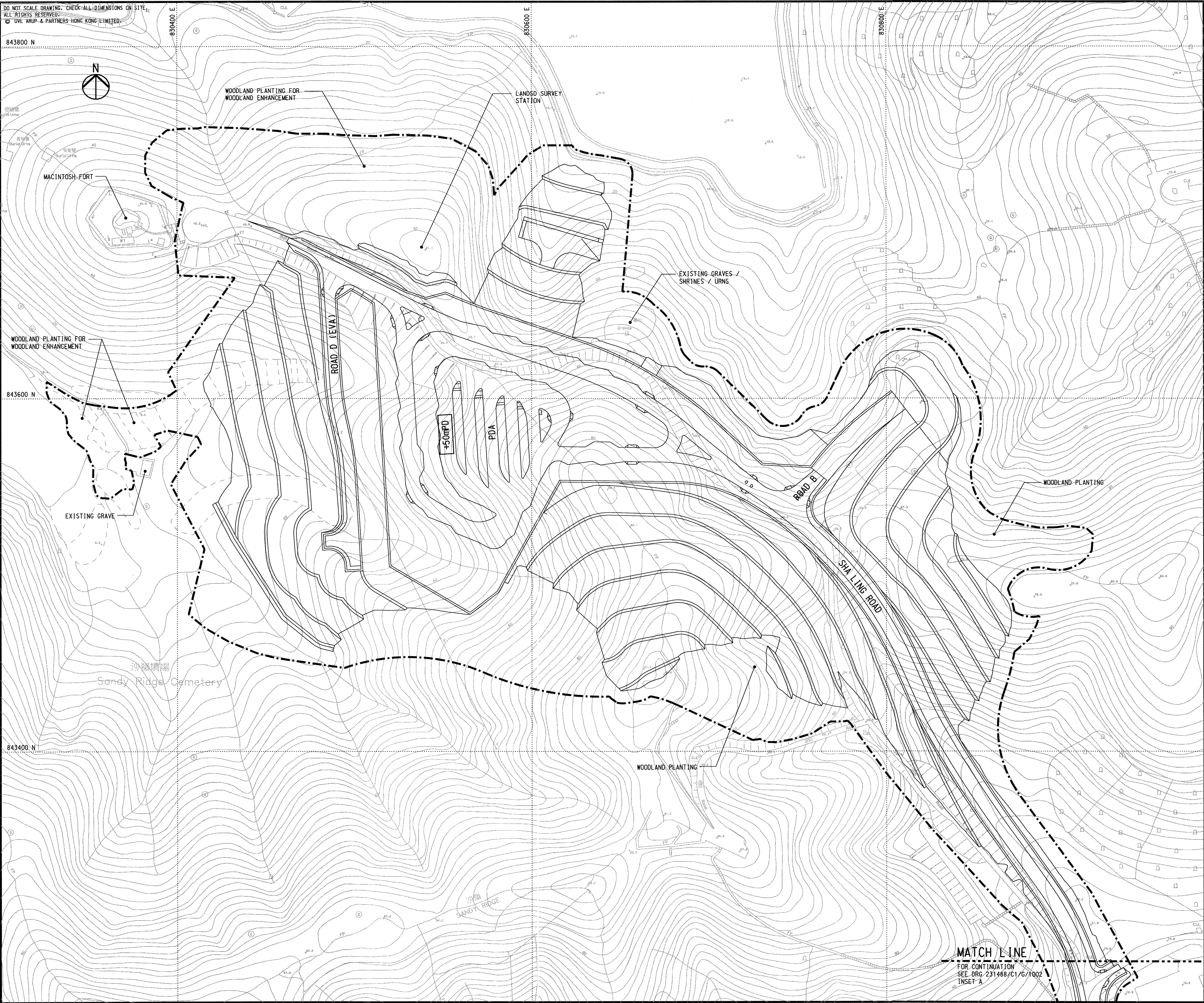
(本圖是根據更改環境許可證申請文件編號: VEP-555/2018 所隨附的圖 1 和環境影響評估報告編號 AEIAR-198/2016 圖 1.3 編制)

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





Printed by : 11/27/2017  
Filename : j:\231448\record\contract\contract 1\civil\231448\_C1\_G\_1001.dgn



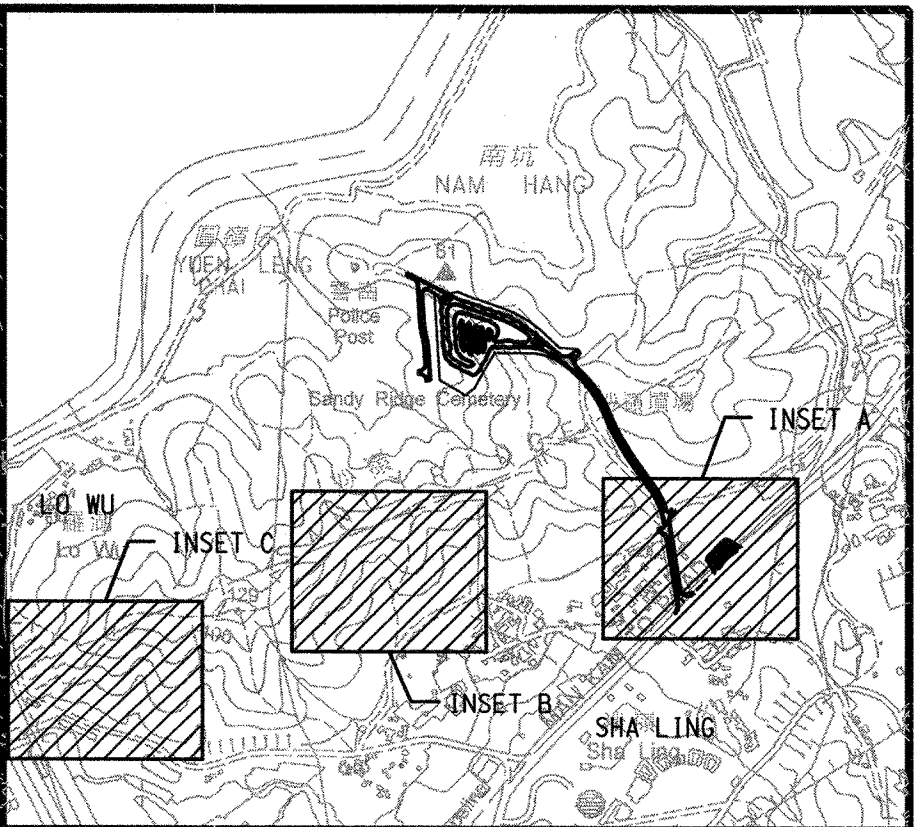
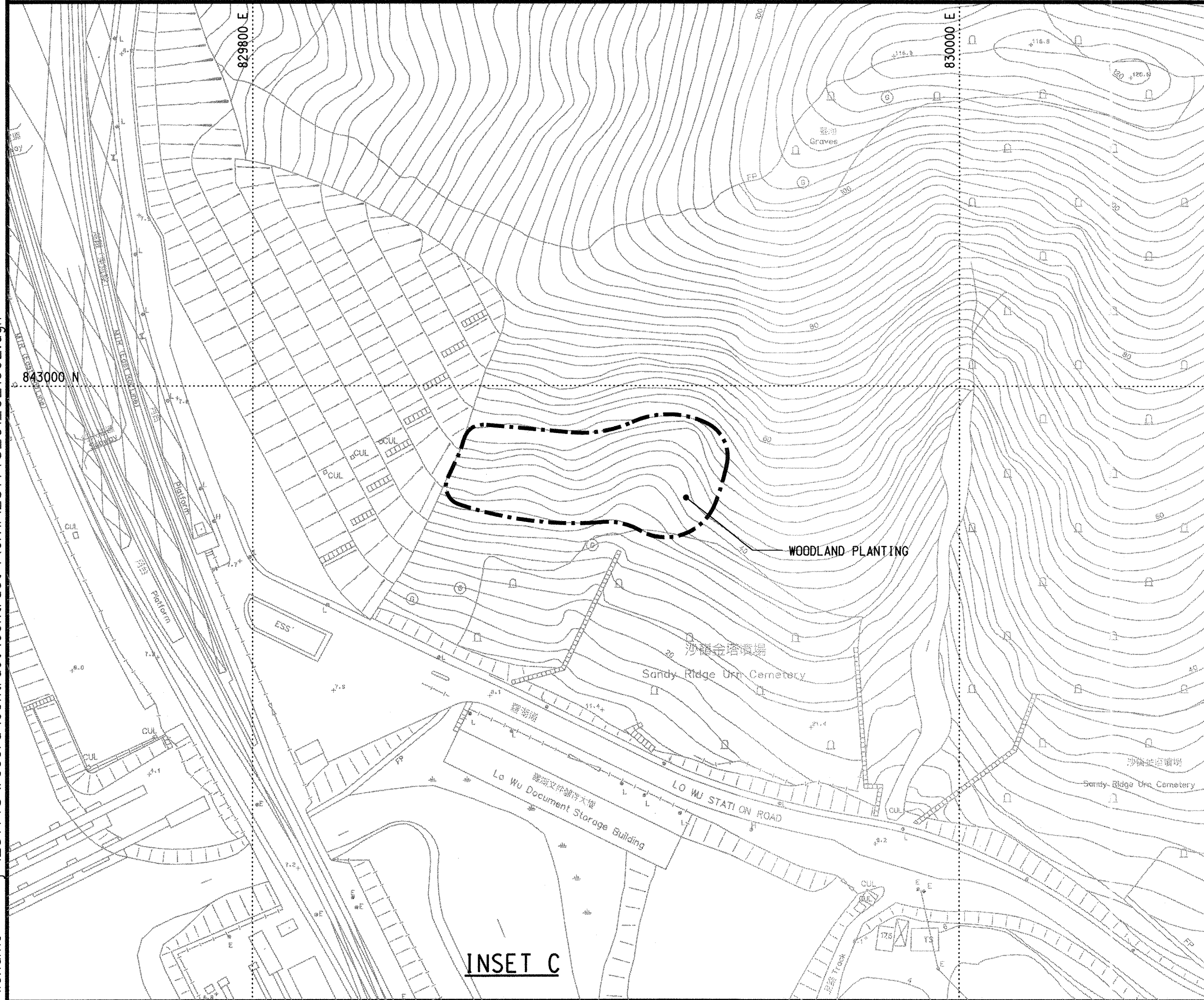
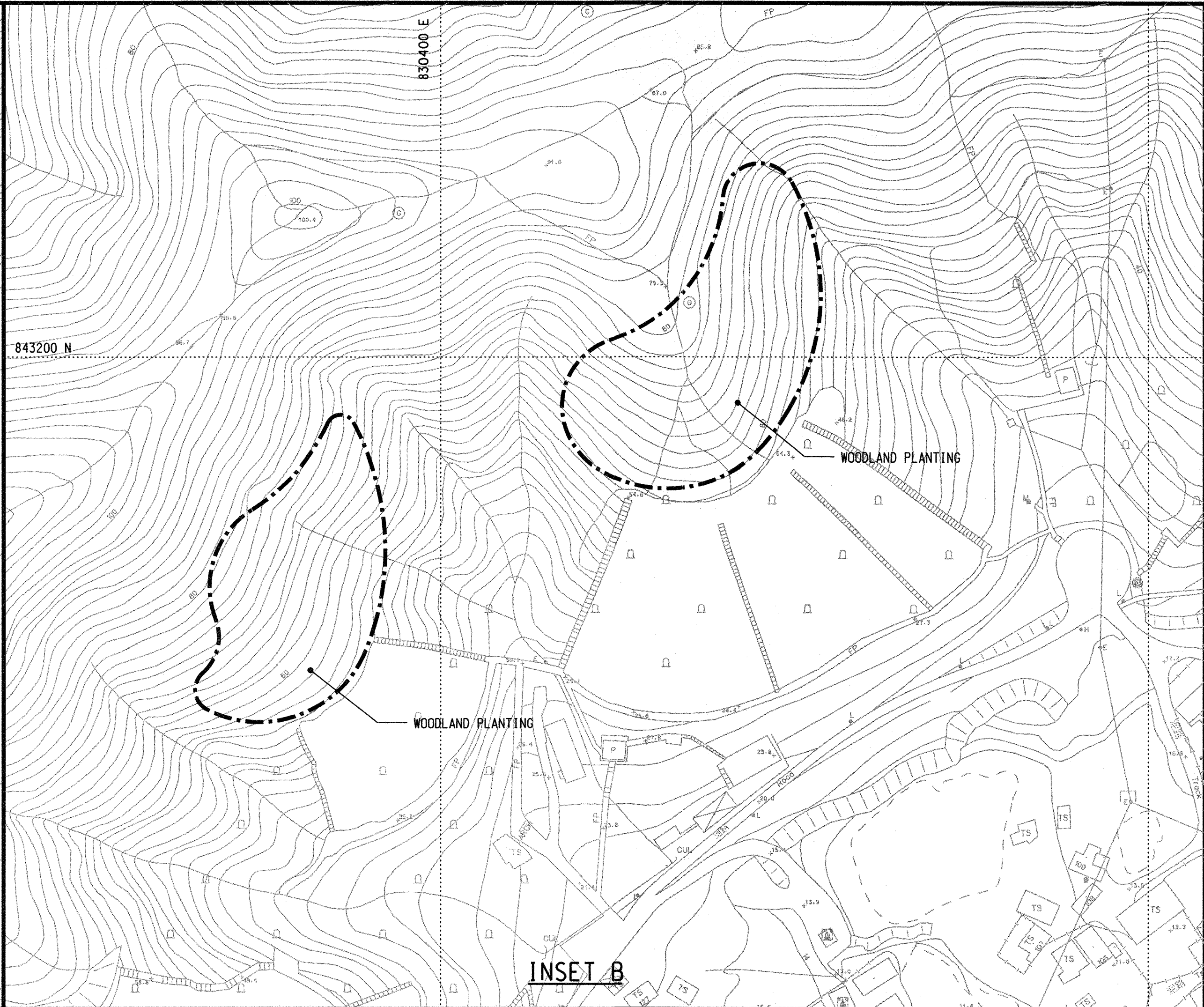
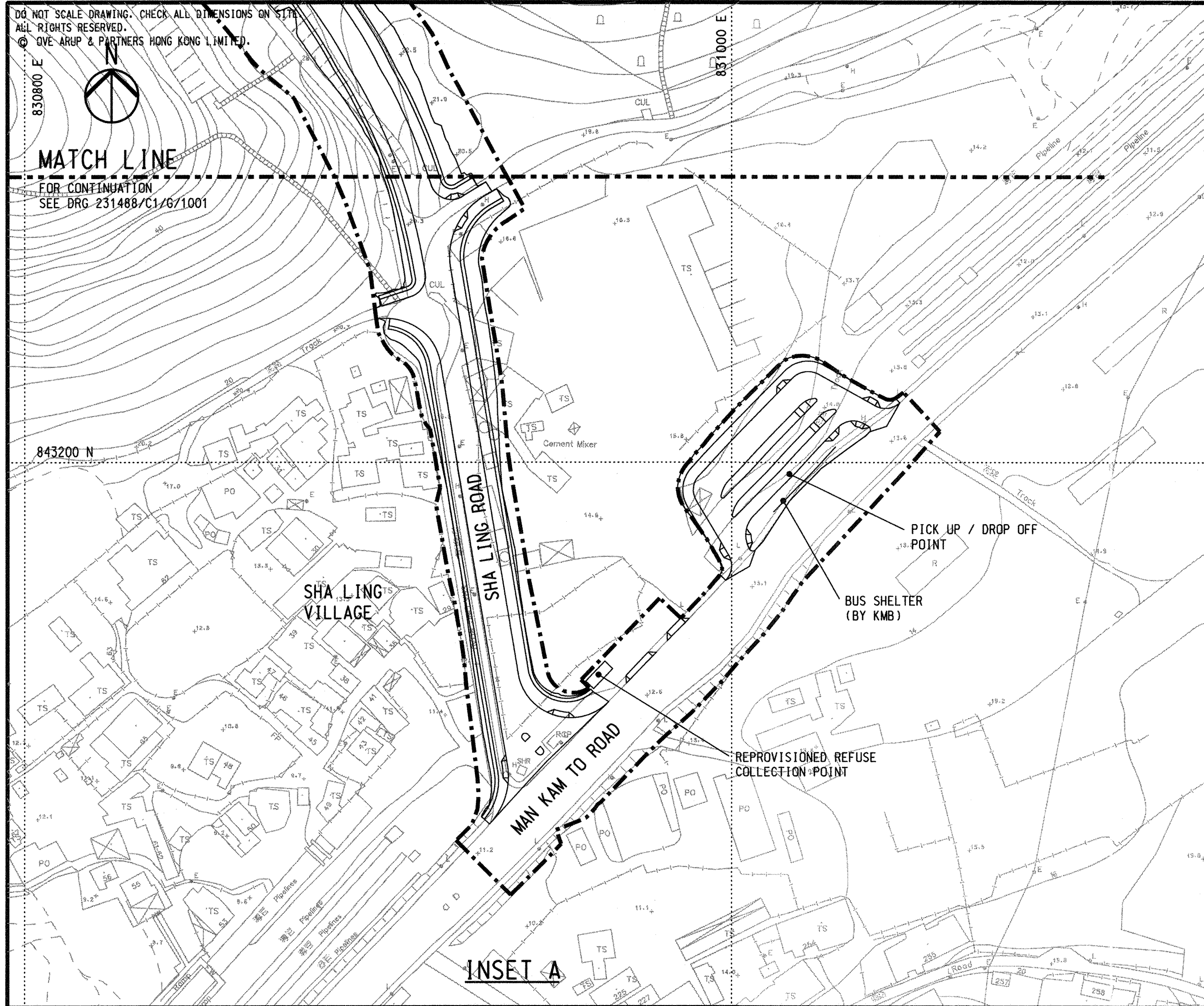
KEY PLAN	
LEGEND:	
-----	PROPOSED WORKS SITE
+50mPD	SITE FORMATION LEVEL

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	Status		
1:1000 @A1	CONTRACT		

COPYRIGHT RESERVED

 土木工程拓展署  
Civil Engineering and Development Department





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. <b>231448/C1/G/1002</b>		Rev. --	
Drawn WM	Date 12/16	Checked AW	Approved DL
Scale 1:1000 @A1		Status CONTRACT	

COPYRIGHT RESERVED

**CEDD**

土木工程拓展署  
Civil Engineering and  
Development Department



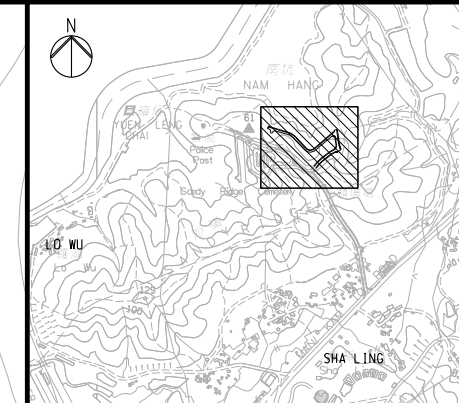
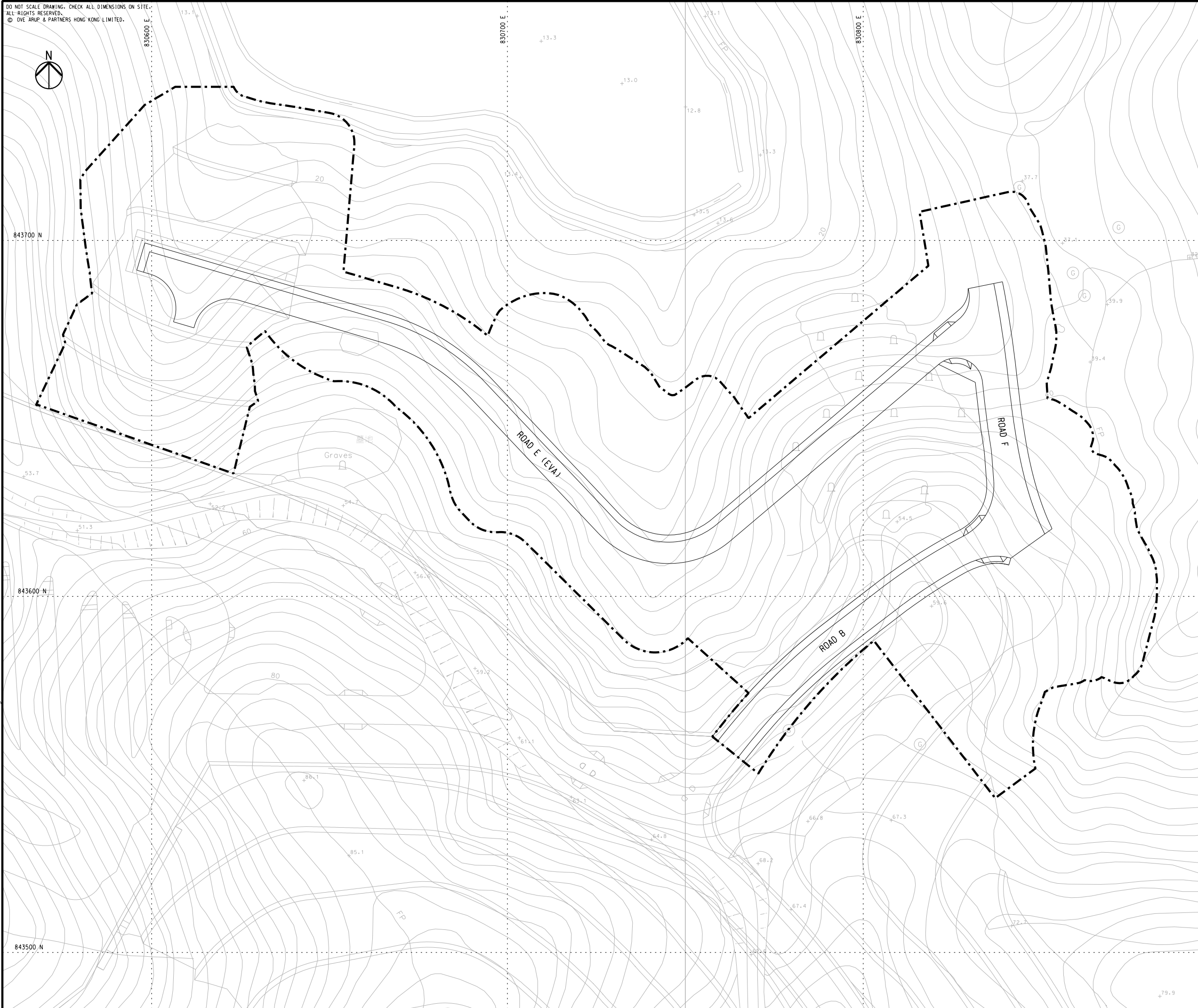




## **Layout Plan of Contract CV/2017/02**



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.



## KEY PLAN

LEGEND:

\_\_\_\_\_

SITE BOUNDARY

-	TENDER DRAWING	AW	11/17
Rev	Description	By	Date
Consultant			
<h1>ARUP</h1>			
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 WM	Date 07/17	Checked AW	Approved DL
Scale 1:500 @A1		Status TENDER	

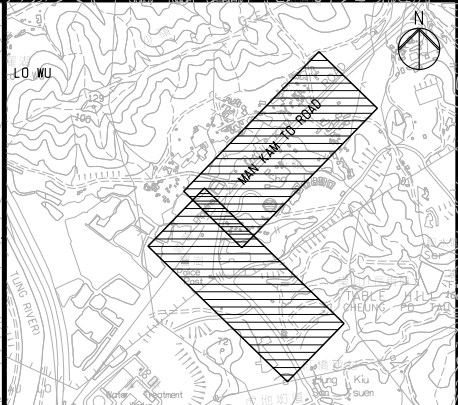
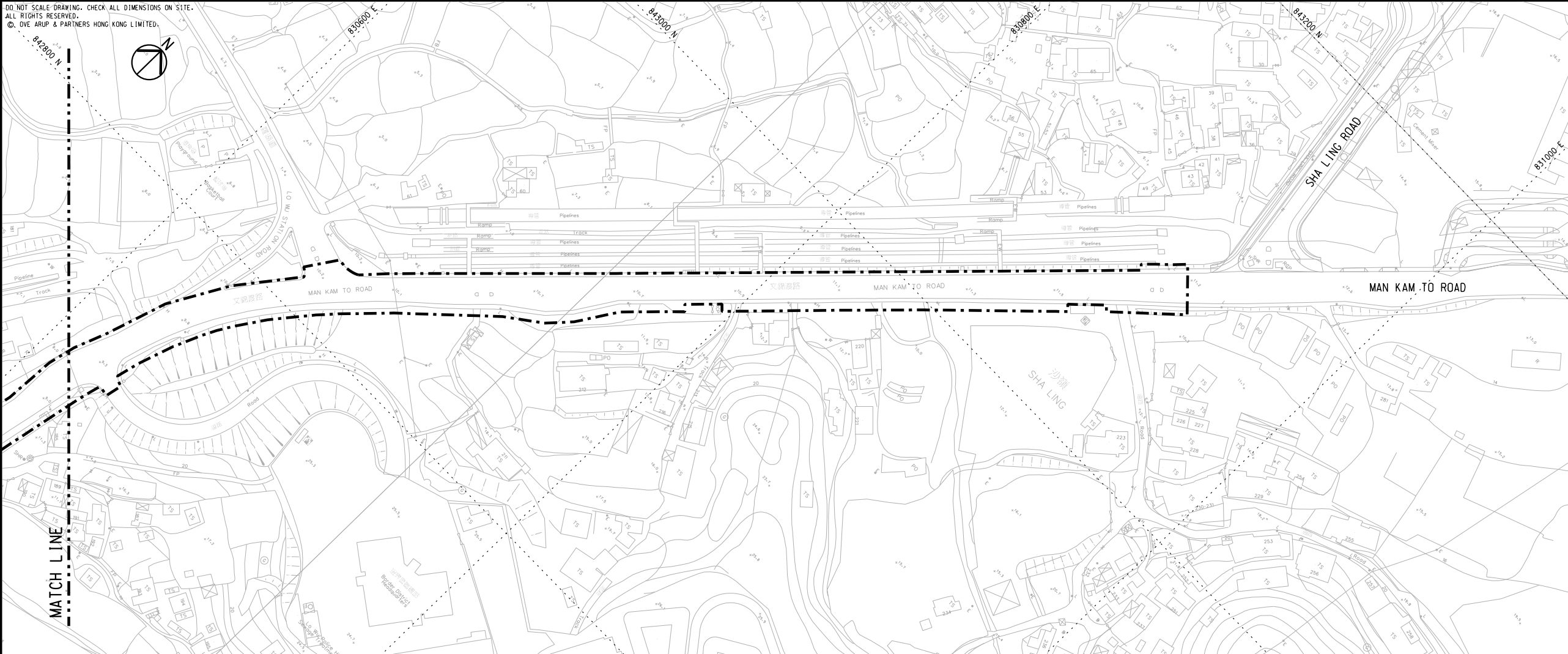
COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department



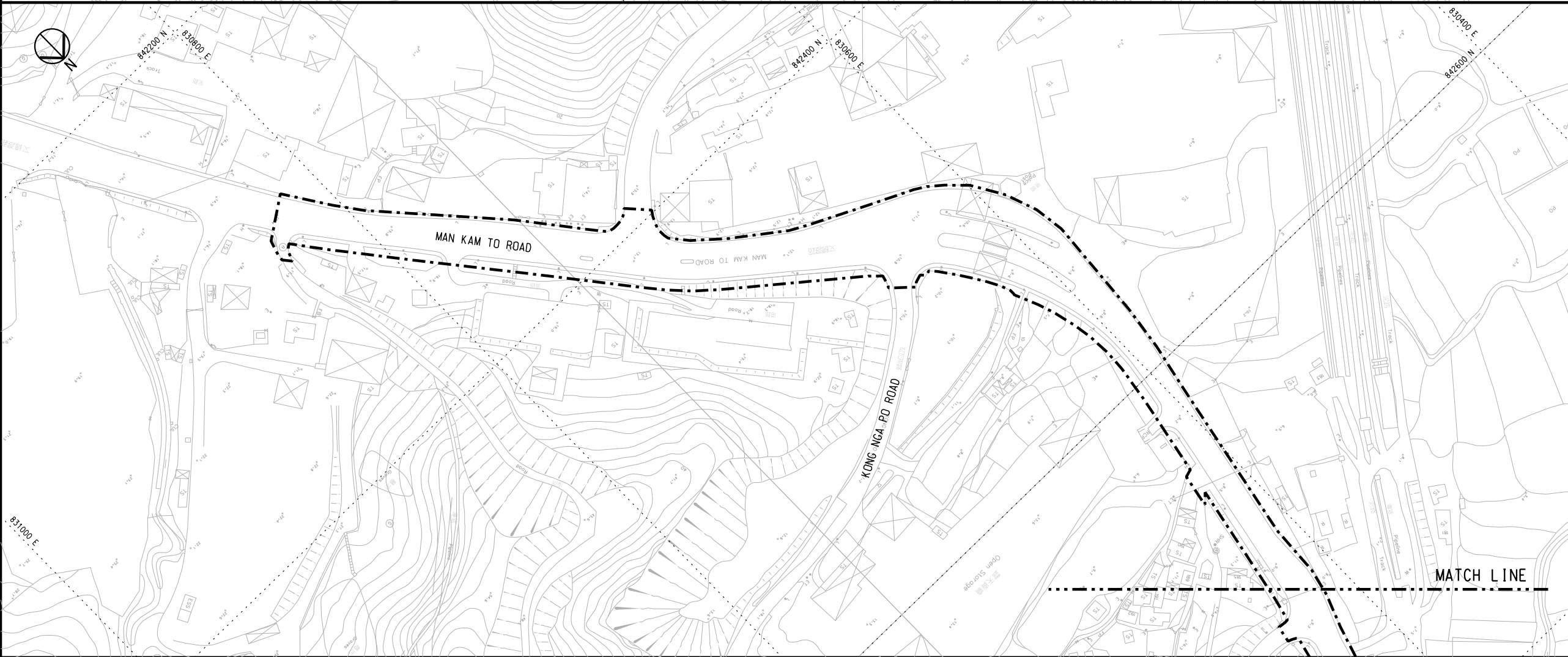
DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
©. OVE ARUP & PARTNERS HONG KONG LIMITED.



KEY PLAN

LEGEND:

--- SITE BOUNDARY



-	TENDER DRAWING	AW	11/17
Rev	Description	By	Date
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
WM	07/17	AW	DL
Scale	1:1000 @A1		Status
			TENDER

COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.

844000 N



844200 N

844000 N

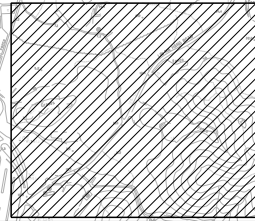
832800 E

832000 E

832200 E

MATCH LINE  
FOR CONTINUATION SEE  
DRG 231448/C2/G/1004

LIN MA HANG ROAD



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 -  
Infrastructural Works at  
Man Kam To Road and  
Lin Ma Hang Road

Drawing title  
**GENERAL LAYOUT  
(SHEET 3 OF 5)**

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

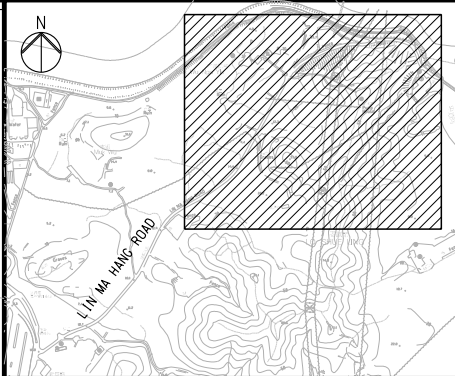
COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.



KEY PLAN

LEGEND:  
- - - SITE BOUNDARY

-	TENDER DRAWING	AW	11/17
Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title:			
Contract No. CV/2017/02			
Development of Columbarium - 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
WM	07/17	AW	DL
Scale	1:1000 @A1		Status
			TENDER

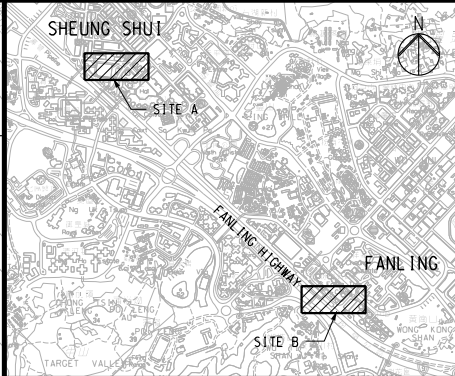
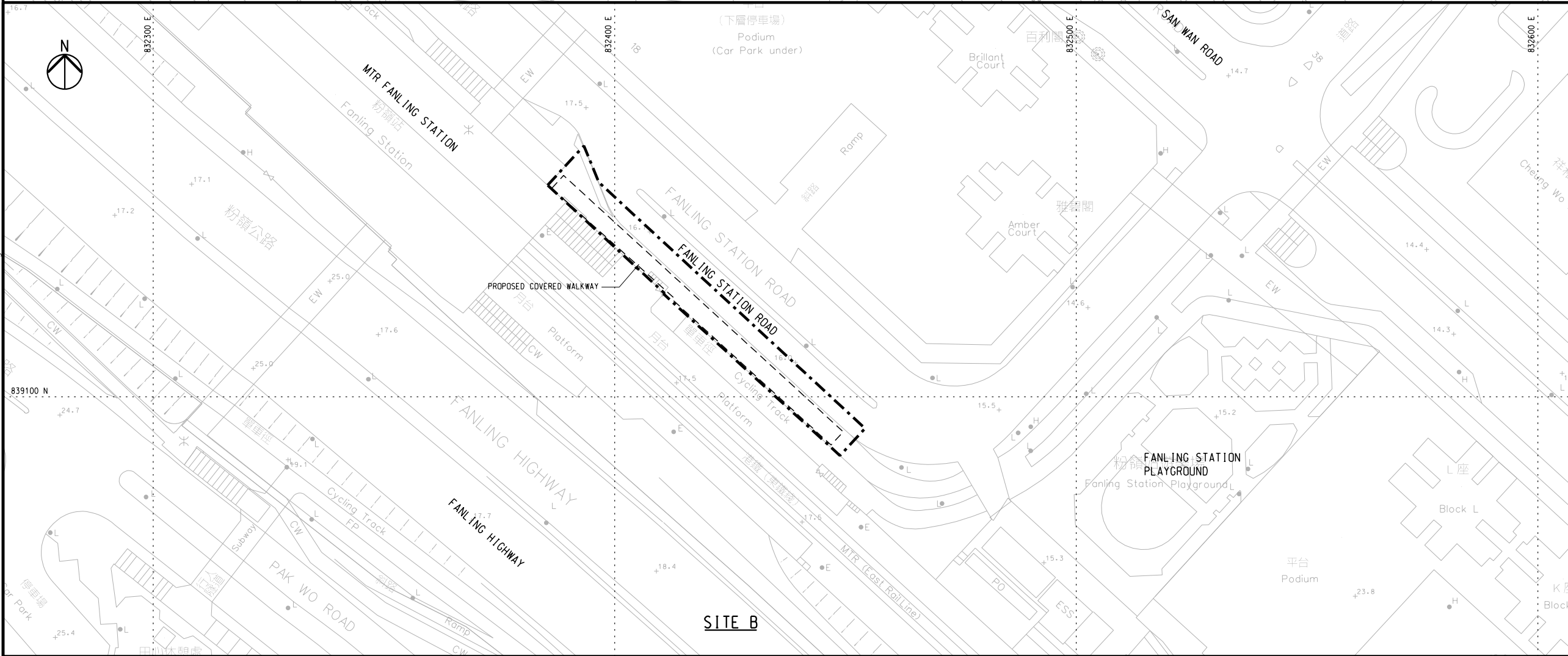
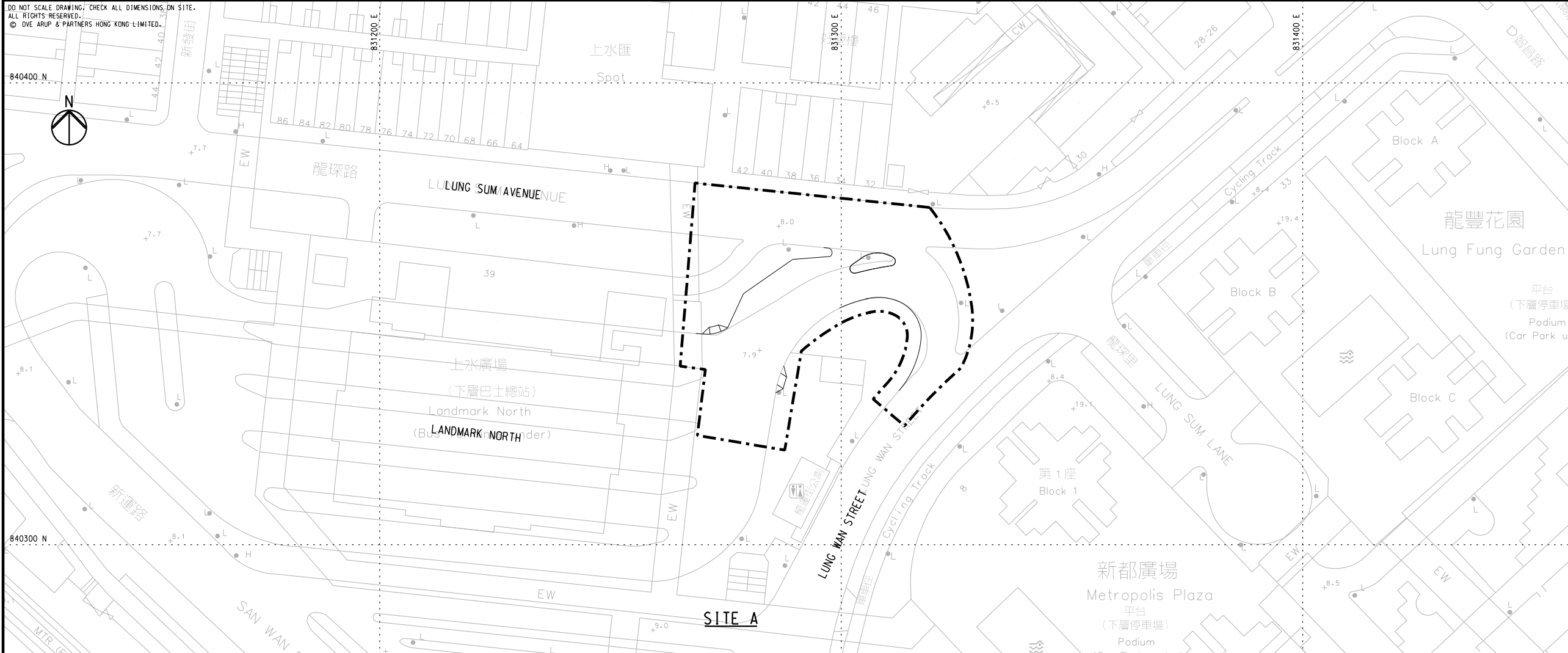
COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.



## 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. <b>231448/C2/G/1005</b>		Rev. -	
Drawn WM	Date 07/17	Checked AW	Approved DL
Scale 1:500 @A1		Status <b>TENDER</b>	

COPYRIGHT RESERVED

 土木工程拓展署  
Civil Engineering and  
Development Department

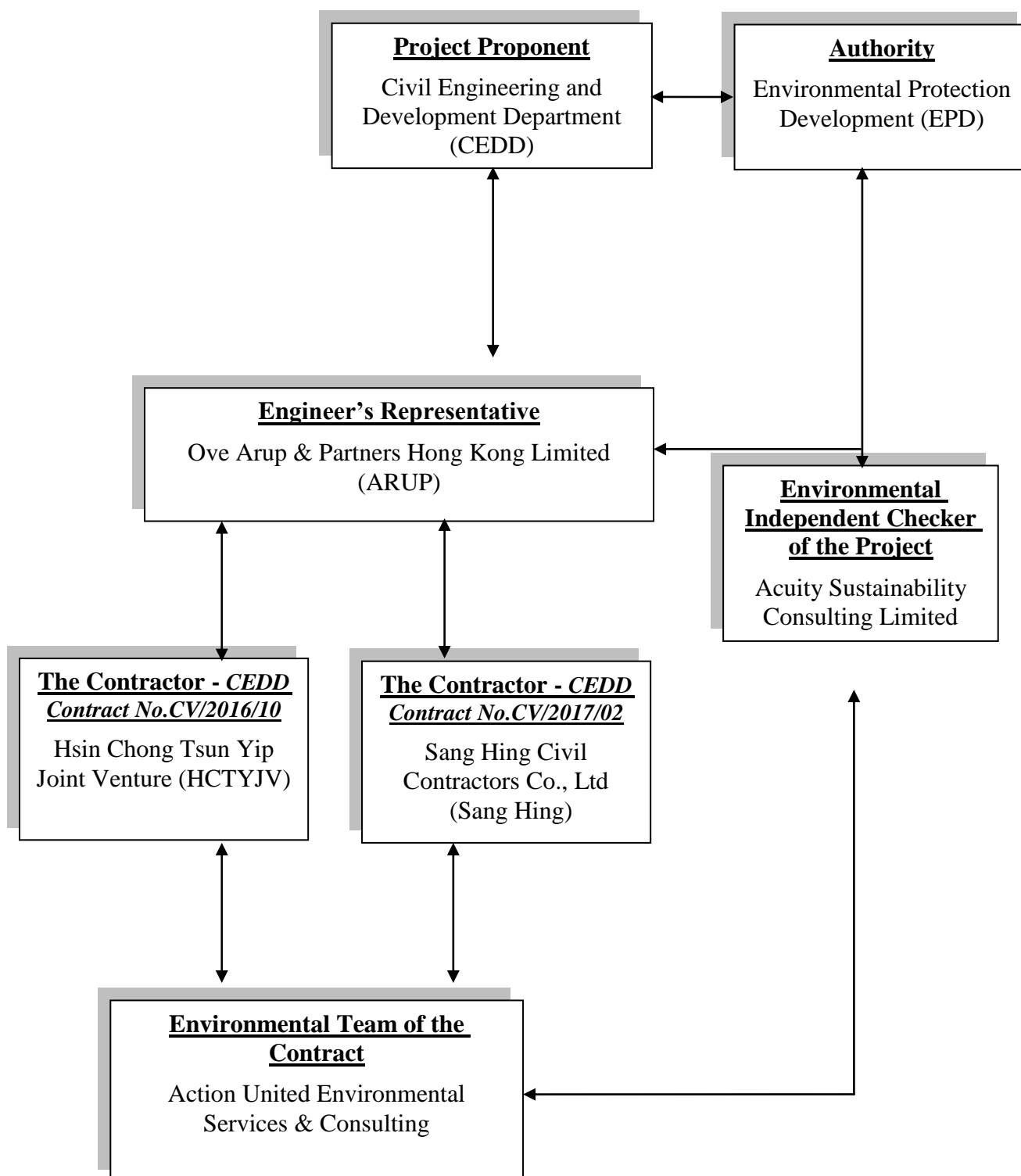


## **Appendix B**

### **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)**

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No.</b>	<b>Fax No.</b>
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**



Contract No. CV/2016/10 Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery				3 Month Rolling Programme (Aug 2022 to Oct 2022)				Hsin Chong Tsun Yip Joint Venture Updated Date : Sep 2022									
ID	Task Name	Duration	Start	8		9		10		11		12		1		2	
1	Key Dates	1071 days	Fri 15/12/17														
2	Contract Starting Date	0 days	Fri 15/12/17														
3	Contract Completion Date for Section 1	1 day	Sat 29/8/20														
4	Contract Completion Date for Section 2	1 day	Fri 30/7/21														
5	Contract Completion Date for Section 3	1 day	Thu 21/11/19														
6	Scheduled Completion Date	644 days	Tue 10/12/19														
7	Section 1	0 days	Sat 2/10/21														
8	Section 2	0 days	Mon 14/2/22														
9	Section 3	0 days	Tue 10/12/19														
10	Preliminary Works	144 days	Tue 20/2/18														
11	Submission and Approval Required at Environmental Permit for Commencement of Construction	128 days	Tue 20/3/18														
12	Other Submission (Initial Survey /Tree Survey/ Condition Survey)	106 days	Tue 20/2/18														
13	Section 1 of the Works (Parts A1, A2 & A3)	1041 days	Thu 29/3/18														
14	Ground Investigation and Geotechnical instrumentation for Commencement of Slopework	112 days	Thu 29/3/18														
15	Verification Drillholes (8 Nos., VDH1, 2, 7-9,8-16) / Inspection Pits and Preliminary Results Submission	114 days	Thu 29/3/18														
16	Design Review	36 days	Thu 5/7/18														
17	Retaining Wall RW1	280 days	Thu 16/8/18														
18	General Excavation to Formation Level	37 days	Thu 16/8/18														
19	Plate Load Test and Blinding Layer for Retaining Wall Bays 1-4	3 days	Fri 28/9/18														
20	Plate Load Test and Blinding Layer for Retaining Wall Bays 5-8	3 days	Tue 2/10/18														
21	Plate Load Test and Blinding Layer for Retaining Wall Bays 9-13	15 days	Wed 10/10/18														
22	Plate Load Test and Blinding Layer for Retaining Wall Bays 14-17	7 days	Sat 6/10/18														
23	Base slab of Retaining Wall RW1 Bay 1-4	8 days	Tue 2/10/18														
24	Base slab of Retaining Wall RW1 Bay 5-8	13 days	Mon 8/10/18														
25	Base slab of Retaining Wall RW1 Bay 9-13	17 days	Mon 22/10/18														
26	Base slab of Retaining Wall RW1 Bay 14-17	17 days	Mon 22/10/18														
27	Wall Stem of Retaining Wall RW1 Bay1-4	36 days	Thu 25/10/18														
28	Wall Stem of Retaining Wall RW1 Bay 5-8	26 days	Tue 11/12/18														
29	Wall Stem of Retaining Wall RW1 Bay 10-13	30 days	Wed 14/11/18														
30	Wall Stem of Retaining Wall RW1 Bay 14-17	23 days	Mon 26/11/18														
31	Protective Coating / Subsoil Drain / Filter Layer	5 days	Thu 14/2/19														
32	Drainage and Maintenance Access in front of RW1	75 days	Tue 26/3/19														
33	Construction CP1X & CP7X	102 days	Mon 1/4/19														
34	Filling Works behind Retaining Wall and Fill Slope FS1 South (Section 12 at Drawing C1/GE/1030)	705 days	Mon 1/4/19														
35	Behind Retaining Wall RW1, Filling Stage 1 (up to +25mPD)	95 days	Mon 1/4/19														
36	FS1 South , Filling (Rolling by Pass) (+25 to +27.8mPD)	10 days	Sat 20/7/19														
37	FS1 South Filling Stage 2 (~2.5m, +25.0 to +27.5 mPD)	56 days	Wed 1/4/20														
38	Filling (Rolling by Pass)	1 day	Wed 1/4/20														
39	Filling in 3m Zone	28 days	Thu 2/4/20														
40	Benching Works for Rolling by Pass Surface	3 days	Thu 2/4/20														
41	Lay Rockfill Layer (4.5/1m per 5 days)	25 days	Tue 7/4/20														
42	Drainage and Maintenance Access (+25 to +27.5 mpD)	21 days	Tue 12/5/20														
43	FS1 South Filling Stage 3 (~7.5m height, +27.5 to +35mPD)	320 days	Sat 1/2/20														
44	Filling (Rolling by Pass)(~7.5m, 0.5m per day)	175 days	Sat 1/2/20														
45	Filling in 3m Zone	103 days	Wed 2/9/20														
46	Benching Works for Rolling by Pass Surface	3 days	Wed 2/9/20														
47	Lay Rockfill Layer (7.5/1m per 5 days)	100 days	Sat 5/9/20														
48	Drainage and Maintenance Access (+27.5 to +35 mpD)	28 days	Thu 7/1/21														
49	FS1 South Filling Stage 4 (~7.5m height, +35 to +42.5mPD)	188 days	Wed 2/9/20														
50	Filling (Rolling by Pass)(~7.5m, 0.5m per day)	15 days	Wed 2/9/20														
51	Filling in 3m Zone	41 days	Thu 7/1/21														
52	Benching Works for Rolling by Pass Surface	3 days	Thu 7/1/21														
53	Lay Rockfill Layer (7.5/1m per 5 days)	38 days	Mon 11/1/21														
54	Drainage and Maintenance Access (+35 to +42.5mpD)	35 days	Sat 27/2/21														
55	FS1 South Filling Stage 5 (~7.5m height, +42.5 to +50mPD)	536 days	Mon 2/12/19														
56	Construction of RW11	30 days	Mon 2/12/19														
57	Filling in 3m Zone	109 days	Sat 27/2/21														
58	Benching Works for Rolling by Pass Surface	3 days	Sat 27/2/21														
59	Lay Rockfill Layer (7.5/1m per 5 days)	102 days	Wed 3/3/21														
60	Additional Plate Load Test at FS1	4 days	Thu 8/7/21														
61	Drainage and Maintenance Access (+42.4 to +50 mpD)	35 days	Thu 8/7/21														
62	Fill Slope FS1 Middle (Section 13 at Drawing C1/GE/1030)	386 days	Mon 10/2/20														
63	Drainage and Maintenance Access at toe (+13 mpD)	10 days	Mon 10/2/20														
64	FS1 middle Filling Stage 1 (~7.0m max, +13.0 mPD to +20 mPD)	22 days	Fri 21/2/20														
65	Filling (Rolling by Pass)(~2m, 0.5m per day)	4 days	Fri 21/2/20														
66	Filling in 3m Zone	8 days	Wed 26/2/20														
67	Benching Works for Rolling by Pass Surface	3 days	Wed 26/2/20														
68	Lay Filter Layer	5 days	Sat 29/2/20														
69	Drainage and Maintenance Access ( at and below+20 mpD)	10 days	Fri 6/3/20														
70	FS1 middle Filling Stage 2 (~7.5m, +20.0 to +27.5 mPD)	53 days	Wed 26/2/20														
71	Filling (Rolling by Pass)(~7.5m, 0.5m per day)	15 days	Wed 26/2/20														
72	Filling in 3m Zone	23 days	Sat 14/3/20														
73	Benching Works for Rolling by Pass Surface	3 days	Sat 14/3/20														
74	Lay Rockfill Layer (7.5m/1m per 5 day)	20 days	Wed 18/3/20														
75	Drainage and Maintenance Access (at and below+27.5 mpD)	15 days	Wed 15/4/20														
76	FS1 middle Filling Stage 3 (~7.5m height, +27.5 to ~+35mPD)	283 days	Sat 14/3/20														

Task

Milestone

Summary

Critical

Progress

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Manual Progress

1

Page 1







Contract No. CV/2016/10  
Site Formation and Associated Infrastructural Works for  
Development of Columbarium at Sandy Ridge Cemetery

3 Month Rolling Programme (Aug 2022 to Oct 2022)

Hsin Chong Tsun Yip Joint Venture  
Updated Date : Sep 2022

ID	Task Name	Duration	Start	8	9	10	11	12	1	2	
154	Drainage and Maintenance Access (at +94.5mPD berm)	7 days	Fri 26/10/18								
155	Drainage and Maintenance Access (+94.5 to +87mPD slope surface)+ GI Works	24 days	Fri 26/10/18								
156	Slope Cutting and Soil Nail (+87 to+79.5mPD, 84Nos. of Soil Nail)	40 days	Thu 8/11/18								
157	Drainage and Maintenance Access (at +87mPD berm)	33 days	Fri 26/10/18								
158	RFI50 (Waiting Instruction / Abortive Works / Additional Earthwork+25m Uchannel at CS13crest)	61 days	Thu 22/11/18								
159	RFI( Slope Cutting and Soil Nail - additional 24 Nos. of Soil Nail)	39 days	Fri 11/1/19								
160	RFI50(Additional Drainage and Maintenance Access (at 87mPD berm)	13 days	Fri 1/2/19								
161	Drainage and Maintenance Access (+79.5 to +87mPD slope surface)+ GI Works	10 days	Fri 8/2/19								
162	Slope Cutting and Soil Nail (+72 to +79.5,115+21Nos. of Soil Nail)	90 days	Mon 21/1/19								
163	Drainage and Maintenance Access (at +79.5mPD berm)	42 days	Fri 1/2/19								
164	Drainage and Maintenance Access (+72 to +79.5mPD slope surface, CS13 crest)+ GI Works	13 days	Thu 2/5/19								
165	Slope Cutting and Soil Nail (+64.5 to +72 mPD, ,192 Nos. of Soil Nail)	67 days	Mon 8/4/19								
166	Drainage and Maintenance Access (at +72mPD berm)	29 days	Sat 13/4/19								
167	Drainage and Maintenance Access (+64.5 to +72mPD slope surface)+ GI Works	17 days	Wed 3/7/19								
168	Slope Cutting and Soil Nail (+57 to +64.5mPD, 521 nos. of Soil Nail, 96 nos. of Raking Drain)	180 days	Tue 2/7/19								
169	Drainage and Maintenance Access (at +64.5mPD berm)	40 days	Tue 6/8/19								
170	Drainage and Maintenance Access (+57 to +64.5mPD slope surface)+ GI Works	17 days	Fri 7/2/20								
171	Slope Cutting and Soil Nail for CS11 (+57 to +49.5 mPD, 88 nos. of Soil Nail, 19 nos. of Raking Drain)	38 days	Thu 12/3/20								
172	Drainage and Maintenance Access for CS11 (at +57mPD berm)	20 days	Thu 26/3/20								
173	Drainage and Maintenance Access for CS11 (below57 mPD slope surface/ on RW11)+ GI Works	17 days	Sat 2/5/20								
174	Slope Cutting and Soil Nail for CS12/CS13 (+57 to +49.5 mPD, 497 nos. of Soil Nail, 80 nos. of Raking Drain)	85 days	Fri 7/2/20								
175	Drainage and Maintenance Access for CS12/13 (at +57mPD berm)	35 days	Wed 11/3/20								
176	Drainage and Maintenance Access for CS12/CS13 (+49.5 to + 57mPD slope surface)+ GI Works	20 days	Sat 23/5/20								
177	Slope Cutting and Soil Nail for CS12/CS13 (+42 to +49.5 mPD, 383 nos. of Soil Nail, 87 nos. of Raking Drain)	170 days	Tue 2/6/20								
178	Drainage and Maintenance Access for CS12/13 (at +49.5mPD berm)	42 days	Fri 3/7/20								
179	Drainage and Maintenance Access for CS12/CS13 (+42 to +49.5mPD slope surface)+ GI Works	17 days	Sat 29/8/20								
180	Slope Cutting and Soil Nail for CS13 (+42 to +34.5 mPD, 126 nos. of Soil Nail, 55 nos. of Raking Drain)	59 days	Wed 23/12/20								
181	Drainage and Maintenance Access for CS13 (at +42mPD berm)	28 days	Tue 19/1/21								
182	Drainage and Maintenance Access for CS13 (+34.5 to +42mPD slope surface)+ GI Works	25 days	Tue 9/3/21								
183	Slope Cutting and Soil Nail for CS13 (+34.5 mPDto toe, 73 nos. of Soil Nail, 27 nos. of Raking Drain)	100 days	Tue 16/3/21								
184	Drainage and Maintenance Access for CS13 (at +34.5mPD berm)	27 days	Mon 12/4/21								
185	Drainage and Maintenance Access for CS13 (below+34.5 mPD slope surface)+ GI Works	21 days	Mon 19/7/21								
186	Retaining Wall RW11	98 days	Tue 12/11/19								
187	General Excavation with ELS to Formation Level RW11 Bay 1-4	30 days	Tue 12/11/19								
188	Plate Load Test and Blinding Layer for RW11 Bays 1-4	5 days	Tue 17/12/19								
189	Base slab of Retaining Wall RW11 Bay 1-4	10 days	Sun 22/12/19								
190	Wall Stem of Retaining Wall RW11 Bay 1-4	20 days	Mon 13/1/20								
191	Plate Load Test and Blinding Layer for RW11 Bays 5-6	5 days	Tue 17/12/19								
192	Base slab of Retaining Wall RW11 Bay 5-6	10 days	Sun 22/12/19								
193	Wall Stem of Retaining Wall RW11 Bay 5-6	20 days	Tue 7/1/20								
194	Protective Coating / Subsoil Drain / Filter Layer	5 days	Sat 8/2/20								
195	Filling Works behind Retaining Wall RW11, (~-5.8m, up to +54.8mPD)	23 days	Fri 14/2/20								
196	Existing Slope Upgrading Works	210 days	Tue 1/12/20								
197	Existing Feature 3NW-C/C256 Rock Joint Mapping, drainage and maintenance access	150 days	Tue 1/12/20								
198	Existing Feature 3NW-C/C258 Slope Upgrading Works	200 days	Mon 28/12/20								
199	Slope Cutting and Soil Nail (Crest to To, 29 Nos. of Soil Nail)	100 days	Mon 28/12/20								
200	Drainage and Maintenance Access (Crest)	100 days	Fri 23/4/21								
201	Cut Slope CS15, CS16 and CS17	753 days	Thu 16/8/18								
202	Slope Cutting and Soil Nail (crest to+69.5mPD,25 nos. of Soil Nail)	36 days	Thu 16/8/18								
203	Drainage and Maintenance Access (at crest)	15 days	Mon 20/8/18								
204	Slope Cutting and Soil Nail (+62 to +69.5mPD, 99 nos. of Soil Nail, 37 nos. of Raking Drain)	62 days	Mon 3/9/18								
205	Drainage and Maintenance Access (at +69.5mPD berm)	49 days	Mon 3/9/18								
206	Drainage and Maintenance Access (+62 to +69.5mPD slope surface)+ GI Works	36 days	Fri 26/10/18								
207	Slope Cutting and Soil Nail (+54.5 to +62mPD, 237 nos. of Soil Nail, 58 nos. of Raking Drain)	66 days	Wed 7/11/18								
208	Drainage and Maintenance Access (at +62mPD berm)	26 days	Wed 7/11/18								
209	Drainage and Maintenance Access (+54.5 to +62mPD slope surface)+ GI Works	38 days	Sat 29/12/18								
210	Slope Cutting and Soil Nail (+47 to +54.5mPD, 548 nos. of Soil Nail, 86 nos. of Raking Drain)	155 days	Mon 7/1/19								
211	Drainage and Maintenance Access (at +54.5mPD berm)	61 days	Sat 19/1/19								
212	Drainage and Maintenance Access (+54.5 to +47mPD slope surface)+ GI Works	90 days	Wed 3/4/19								
213	Slope Cutting and Soil Nail (+39.5 to +47mPD, 490 nos. of Soil Nail, 107 nos. of Raking Drain)	94 days	Mon 6/5/19								
214	Drainage and Maintenance Access (at +47mPD berm)	38 days	Tue 2/7/19								
215	Drainage and Maintenance Access (+39.5 to +47mPD slope surface)+ GI Works	23 days	Tue 27/8/19								
216	Slope Cutting and Soil Nail (+39.5 to toe, 83 nos. of Soil Nail, 18nos. of Raking Drain)	59 days	Mon 4/5/20								
217	Drainage and Maintenance Access (at +39.5mPD berm and Slope Surface) + GI Works	45 days	Tue 5/1/21								
218	Fill Slope FS17	52 days	Fri 2/7/21								
219	Drainage and Maintenance Access at toe	28 days	Fri 2/7/21								
220	FS17 Filling Stage 1 (~2.5m max)	24 days	Wed 4/8/21								
221	Civil Works for Sha Ling Road (M001 CH710 to CH825, MO11 CH00 to CH20, M014)	224 days	Mon 28/12/20								
222	Waterworks / Drainage / Sewerage/ Utilities Works	27 days	Mon 28/12/20								
223	Sewerage Works / Drainage Works	18 days	Mon 28/12/20								
224	Watermain FW1 (CH532-637), FW1a (CH000-029) and FW2 (CH530-618)	15 days	Tue 12/1/21								
225	Road Lighting Civil Works Provision	8 days	Tue 12/1/21								

Task

Milestone

Summary

Critical

Progress

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Manual Progress

3

Page 3



Contract No. CV/2016/10  
Site Formation and Associated Infrastructural Works for  
Development of Columbarium at Sandy Ridge Cemetery

3 Month Rolling Programme (Aug 2022 to Oct 2022)

Hsin Chong Tsun Yip Joint Venture  
Updated Date : Sep 2022

ID	Task Name	Duration	Start	8				9				10				11				12				1				2			
226	Utilities (by others)	3 days	Tue 12/1/21																												
227	Carriageway and Footway	57 days	Fri 23/7/21																												
228	Backfilling to Formation Level	11 days	Fri 23/7/21																												
229	Carriageway	28 days	Thu 5/8/21																												
230	Footpath, Road Marking and Street Furniture	18 days	Tue 7/9/21																												
231	Civil Works for PDA (PT04, PT05, PT06, PT07 and PT08)	381.1 days	Fri 5/6/20																												
232	Waterworks / Drainage / Sewerage/ Utilities Works	238 days	Fri 5/6/20																												
233	Drainage Works (with Petrol Interceptor)	200 days	Fri 5/6/20																												
234	Road Lighting Civil Works Provision	10 days	Thu 11/3/21																												
235	Carriageway and Footway	143.1 days	Tue 23/3/21																												
236	Backfilling to Formation Level	80 days	Tue 23/3/21																												
237	Carriageway	60 days	Sat 10/4/21																												
238	Footpath, Road Marking and Street Furniture	22 days	Thu 19/8/21																												
239	Civil Works for PDA (M011 CH140-215,M08 CH70-102)	161 days	Tue 9/3/21																												
240	Waterworks / Drainage / Sewerage/ Utilities Works	90 days	Tue 9/3/21																												
241	Sewerage Works / Drainage Works	60 days	Tue 9/3/21																												
242	Road Lighting Civil Works Provision	10 days	Mon 29/3/21																												
243	Utilities (by others)	10 days	Thu 17/6/21																												
244	Carriageway and Footway	71 days	Tue 29/6/21																												
245	Backfilling to Formation Level	30 days	Tue 29/6/21																												
246	Carriageway	30 days	Wed 4/8/21																												
247	Footpath, Road Marking and Street Furniture	11 days	Wed 8/9/21																												
248	Civil Works for Sha Ling Road (M001 CH610-710)	114 days	Tue 9/3/21																												
249	Waterworks / Drainage / Sewerage/ Utilities Works	44 days	Tue 9/3/21																												
250	Sewerage Works / Drainage Works	30 days	Tue 9/3/21																												
251	Watermain FW1 (CH433-532) and FW2 (CH433-530)	30 days	Thu 25/3/21																												
252	Road Lighting Civil Works Provision	10 days	Thu 25/3/21																												
253	Utilities (by others)	10 days	Thu 25/3/21																												
254	Carriageway and Footway	70 days	Tue 4/5/21																												
255	Backfilling to Formation Level	30 days	Tue 4/5/21																												
256	Carriageway	30 days	Wed 9/6/21																												
257	Footpath, Road Marking and Street Furniture	10 days	Fri 16/7/21																												
258	Civil Works for Sha Ling Road (M001 CH480-510, M08 CH00-70)	555 days	Tue 3/3/20																												
259	Sewage Detention Tank Civil and Structural Works	549 days	Tue 3/3/20																												
260	Civil and Structural Works	74 days	Tue 3/3/20																												
261	Excavation by open cut	25 days	Tue 3/3/20																												
262	Blinding layer concreting	1 day	Wed 1/4/20																												
263	Construction of base slab	7 days	Thu 2/4/20																												
264	Construction of wall and top slab	20 days	Wed 15/4/20																												
265	Construction of manhole	7 days	Mon 11/5/20																												
266	Backgilling	14 days	Tue 19/5/20																												
267	VDS and AMS for Sewage Detention Tank (Permanent Design and Submission Approval)	350 days	Mon 18/5/20																												
268	VDS and AMS for Sewage Detention Tank	140 days	Wed 21/7/21																												
269	Waterworks / Drainage / Sewerage/ Utilities Works	146 days	Tue 4/5/21																												
270	Sewerage Works / Drainage Works	40 days	Wed 8/9/21																												
271	Watermain FW1 and FW2 (CH310-433)	17 days	Tue 4/5/21																												
272	Road Lighting Civil Works Provision	18 days	Tue 25/5/21																												
273	Utilities (by others)	17 days	Wed 16/6/21																												
274	Carriageway and Footway	64 days	Thu 28/10/21																												
275	Backfilling to Formation Level	12 days	Thu 28/10/21																												
276	Carriageway	32 days	Thu 11/11/21																												
277	Footpath, Road Marking and Street Furniture	20 days	Sat 18/12/21																												
278	Civil Works for Sha Ling Road (M001 CH360-480)	104 days	Wed 28/7/21																												
279	Waterworks / Drainage / Sewerage/ Utilities Works	67 days	Wed 28/7/21																												
280	Sewerage Works / Drainage Works	28 days	Wed 28/7/21																												
281	Watermain FW1 and FW2 (CH175-310)	18 days	Thu 19/8/21																												
282	Additional rising main (CE No. 181)	30 days	Thu 9/9/21																												
283	Road Lighting Civil Works Provision	15 days	Thu 19/8/21																												
284	Utilities (by others)	11 days	Thu 19/8/21																												
285	Carriageway and Footway	37 days	Mon 18/10/21																												
286	Backfilling to Formation Level	7 days	Mon 18/10/21																												
287	Carriageway	18 days	Tue 26/10/21																												
288	Footpath, Road Marking and Street Furniture	12 days	Tue 16/11/21																												
289	Civil Works for Sha Ling Road (M001 CH180-360)	109 days	Fri 6/8/21																												
290	Waterworks / Drainage / Sewerage/ Utilities Works	59 days	Fri 6/8/21																												
291	Drainage and Sewerage Works	40 days	Fri 6/8/21																												
292	Watermain FW1 and FW2 (CH000-175)	23 days	Tue 7/9/21																												
293	Road Lighting Civil Works Provision	22 days	Tue 7/9/21																												
294	Utilities (by others)	32 days	Tue 7/9/21																												
295	Carriageway and Footway	50 days	Mon 18/10/21																												
296	Backfilling to Formation Level	10 days	Mon 18/10/21																												
297	Carriageway	24 days	Fri 29/10/21																												
298	Footpath, Road Marking and Street Furniture	16 days	Fri 26/11/21																												
299	Part B2, G1 and G2	1232 days	Fri 15/12/17																												
300	Access Date for Part G1 and G2	0 days	Tue 5/2/19																												

Task

Milestone

Summary

Critical

Progress

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Manual Progress

4

Page 4



Contract No. CV/2016/10 Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery				3 Month Rolling Programme (Aug 2022 to Oct 2022)				Hsin Chong Tsun Yip Joint Venture Updated Date : Sep 2022									
ID	Task Name	Duration	Start	8		9		10		11		12		1		2	
301	Land Decontamination Works	293 days	Tue 2/10/18														
302	Re-appraisal and Contamination Assessment Plan (CAP) Submission to EPD	10 days	Tue 2/10/18														
303	EPD Review and Acceptance for CAP	195 days	Fri 12/10/18														
304	Environmental SI for Determination of Decontamination and SI Testing	70 days	Tue 28/5/19														
305	Contamination Assessment Report (CAR) Submission to EPD	18 days	Tue 20/8/19														
306	EPD Review and Acceptance for CAR	14 days	Tue 10/9/19														
307	Civil Works for Sha Ling Road (M001 CH40-110)	717 days	Tue 21/5/19														
308	Objection from Local Village (EW16 & 18)	355 days	Tue 21/5/19														
309	Application for Road Closure / Road Diversion	17 days	Thu 30/7/20														
310	Noise Barrier Bay 5 to Bay 8	322 days	Wed 19/8/20														
311	General Excavation with ELS to Formation Level Bay 5 to Bay 8	15 days	Wed 19/8/20														
312	Base slab of Noise Barrier Bay 5 to Bay 8	30 days	Thu 20/8/20														
313	Wall Stem of Noise Barrier Bay 5 to Bay 8	30 days	Thu 24/9/20														
314	Protective Coating /Temp Fill	5 days	Mon 2/11/20														
315	Installation of panel	10 days	Mon 6/9/21														
316	Waterworks / Drainage / Sewerage/ Utilities Works	70 days	Thu 13/5/21														
317	Sewerage Works / Drainage Works	35 days	Thu 13/5/21														
318	Watermain FW3 (CH045-105)	20 days	Wed 14/7/21														
319	Road Lighting Civil Works Provision	10 days	Fri 25/6/21														
320	Utilities (by others)	15 days	Fri 25/6/21														
321	Carriageway and Footway	59 days	Fri 6/8/21														
322	Backfilling to Formation Level	10 days	Fri 6/8/21														
323	Carriageway	42 days	Wed 18/8/21														
324	Footpath, Road Marking and Street Furniture	7 days	Fri 8/10/21														
325	Ground Investigation and Geotechnical instrumentation for Commencement of Slopework	45 days	Fri 8/2/19														
326	Trial Pit Excavation / Installation of Instruments and Preliminary Results Submission	45 days	Fri 8/2/19														
327	Fill Slope FS13 and FS14	56 days	Fri 6/8/21														
328	Drainage and Maintenance Access at toe	32 days	Fri 6/8/21														
329	FS13 and FS14 Filling Stage 1 (~2.5m max)	24 days	Mon 13/9/21														
330	Cut Slope CS14	20 days	Wed 13/10/21														
331	Slope Cutting (crest to toe)	3 days	Wed 13/10/21														
332	Drainage and Maintenance Access (at crest)	17 days	Mon 18/10/21														
333	Civil Works for Sha Ling Road (M001 CH110-180)	104 days	Fri 8/10/21														
334	Waterworks / Drainage / Sewerage/ Utilities Works	45 days	Fri 8/10/21														
335	Sewerage Works / Drainage Works	30 days	Fri 8/10/21														
336	Watermain FW3 (CH105-175)	12 days	Sat 13/11/21														
337	Road Lighting Civil Works Provision	10 days	Sat 13/11/21														
338	Utilities (by others)	15 days	Sat 13/11/21														
339	Carriageway and Footway	59 days	Wed 1/12/21														
340	Backfilling to Formation Level	10 days	Wed 1/12/21														
341	Carriageway	42 days	Mon 13/12/21														
342	Footpath, Road Marking and Street Furniture	7 days	Mon 7/2/22														
343	Man Kam To Road Bus Shelter (PT01, PT02 and PT03)	1175 days	Fri 15/12/17														
344	Used as Temporary Site Office / Storage Area	340 days	Fri 15/12/17														
345	Investigation for DongJiang Watermain(CE23)	82 days	Thu 10/1/19														
346	Works Area Handing Over to WSD as Request	198 days	Mon 15/4/19														
347	Interface Issue with C2 (As request by Arup to delay XP application) (Including Temp. Road Diversion)	290 days	Tue 28/5/19														
348	TTA and XP Application at Man Kam To Road	14 days	Wed 20/5/20														
349	Works Area Handling to WSD for DongJiang Watermain Works	37 days	Wed 25/11/20														
350	Waterworks / Drainage / Sewerage/ Utilities Works	180 days	Mon 11/1/21														
351	Sewerage Work (Petrol Interceptor)	15 days	Fri 16/7/21														
352	Sewerage Works / Drainage Works	150 days	Mon 11/1/21														
353	Road Lighting Civil Works Provision	11 days	Fri 16/7/21														
354	Utilities (by others)	30 days	Fri 16/7/21														
355	Carriageway and Footway	117 days	Fri 16/7/21														
356	Backfilling to Formation Level	12 days	Fri 20/8/21														
357	Carriageway	56 days	Fri 3/9/21														
358	Footpath, Road Marking and Street Furniture	19 days	Thu 11/11/21														
359	Reinstatement to existing Man Kam To Road	5 days	Fri 16/7/21														
360	Civil Works for Sha Ling Road (M001 CH00-40)	985 days	Thu 30/8/18														
361	TTA and XP Application at Man Kam To Road	14 days	Fri 15/1/21														
362	Works Area Handing Over to WSD as Request	120 days	Mon 6/5/19														
363	Work Area Handling to Sang Hing for Turn Around	190 days	Mon 6/4/20														
364	Works Area Handling to WSD for DongJiang Watermain Works	41 days	Wed 25/11/20														
365	Consent from WSD for Works Near Dong Jing Watermain	325 days	Thu 30/8/18														
366	Investigation works / Trial Pits for Watermains	150 days	Thu 30/8/18														
367	Submission for Tempworks	104 days	Thu 21/2/19														
368	Approval from WSD	80 days	Tue 2/7/19														
369	Noise Barrier Bay 1-4	196 days	Mon 1/2/21														
370	General Excavation with ELS to Formation Level Bay 1-4	30 days	Mon 1/2/21														
371	Base slab of Noise Barrier Bay 1-4	30 days	Thu 11/3/21														
372	Wall Stem of Noise Barrier Bay 1-4	15 days	Mon 19/4/21														
373	Protective Coating /Temp Fill	5 days	Fri 7/5/21														
374	Installation of panel	10 days	Fri 17/9/21														
375	Waterworks / Drainage / Sewerage/ Utilities Works (RHS + Man Kam To EB Slow Lane)	62 days	Thu 13/5/21														
376	Sewerage Works / Drainage Works	54 days	Thu 13/5/21														

Task

Milestone

Summary

Critical

Progress

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Manual Progress

5

Page 5



Contract No. CV/2016/10

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

3 Month Rolling Programme (Aug 2022 to Oct 2022)

Hsin Chong Tsun Yip Joint Venture

Updated Date : Sep 2022

ID	Task Name	Duration	Start	8				9	10	11	12	1	2		
377	Watermain FW3 (CH000-045)	6 days	Mon 19/7/21												
378	Road Lighting Civil Works Provision	8 days	Mon 19/7/21												
379	Utilities (by others)	25 days	Thu 13/5/21												
380	Carriageway and Footway (RHS+ Man Kan To EB Slow Lane)	38 days	Wed 28/7/21												
381	Backfilling to Formation Level	10 days	Wed 28/7/21												
382	Carriageway	24 days	Mon 9/8/21												
383	Footpath, Road Marking and Street Furniture	4 days	Mon 6/9/21												
384	Waterworks / Drainage / Sewerage/ Utilities Works (LHS)	52 days	Mon 6/9/21												
385	Sewerage Works / Drainage Works	42 days	Mon 6/9/21												
386	Road Lighting Civil Works Provision	5 days	Thu 28/10/21												
387	Utilities (by others)	10 days	Thu 28/10/21												
388	Carriageway and Footway (LHS)	38 days	Tue 9/11/21												
389	Backfilling to Formation Level	10 days	Tue 9/11/21												
390	Carriageway	24 days	Sat 20/11/21												
391	Footpath, Road Marking and Street Furniture	4 days	Sat 18/12/21												
392	Part C	902 days	Sat 15/12/18												
393	Consent from WSD for Works Near Dong Jing Watermain	702 days	Sat 15/12/18												
394	Investigation works / Trial Pits for Watermain	60 days	Sat 15/12/18												
395	Submission for Tempworks	102 days	Sat 23/2/19												
396	Approval from WSD (RFI No.66) & Re-design the arrangement	546 days	Tue 2/7/19												
397	Refuse Collection Point	200 days	Tue 4/5/21												
398	General Excavation with ELS to Formation	15 days	Tue 4/5/21												
399	Substructure Construction	20 days	Sat 22/5/21												
400	Superstructure Construction	45 days	Wed 16/6/21												
401	Pavement / Footpath reinstatment	90 days	Mon 9/8/21												
402	ABWF Works	120 days	Mon 9/8/21												
403	E&M and Waterworks	120 days	Mon 9/8/21												
404	Landscape Works	274 days	Tue 2/3/21												
405	at Cut Slope CS1, CS2, CS3	90 days	Wed 8/9/21												
406	at Cut Slope CS11, CS12, CS13	90 days	Thu 12/8/21												
407	at Cut Slope CS15, CS16, CS17	90 days	Tue 2/3/21												
408	at Fill Slope FS13, FS14, FS17	60 days	Wed 13/10/21												
409	Sha Ling Road and Man Kam To Road	30 days	Thu 23/12/21												
410	Woodland Planting at Site 1,2,4, 7, 8, 9	170 days	Tue 2/3/21												
411	Irrigation System and Water Points (Except Water Connection)	30 days	Fri 3/12/21												
412	Section 3 of the Works (Part E)	457 days	Thu 31/5/18												
413	Ground Investigation and Geotechnical Instrumentation for Commencement of Slopework	64 days	Thu 31/5/18												
414	Verification Drillholes (2 Nos., VDH4-5) and Preliminary Results Submission	43 days	Thu 31/5/18												
415	Design Review	36 days	Thu 5/7/18												
416	Fill Slope FS3 (Section 17 at Drawing C1/GE/1053 )	424 days	Wed 11/7/18												
417	Time Lag of CE16	100 days	Wed 11/7/18												
418	RFI046 Outfall Location	47 days	Mon 8/10/18												
419	Drainage, Maintenance Access at slope toe	63 days	Sat 16/2/19												
420	Construction of Outfall CP14X	11 days	Mon 7/1/19												
421	FS3 Filling Stage 1(~+16 to+17.6 mPD)	121 days	Thu 6/12/18												
422	CE50-No Fine at Slope Toe	12 days	Fri 26/4/19												
423	FS Filling (+16.9 to +27.6 mPD) (Rolling by Pass)	60 days	Thu 23/5/19												
424	FS Filling (+27.6to 30 mPD) (Rolling by Pass)	12 days	Sat 3/8/19												
425	FS3 Filling Stage 1 (+16.9 to +21 mPD)	41 days	Sat 17/8/19												
426	Drainage and Maintenance Access (+21 to +28.5 mpD)	19 days	Tue 8/10/19												
427	FS3 Filling Stage 2 (~7.5m, 21 to +28.5 mPD)	10 days	Wed 30/10/19												
428	Drainage and Maintenance Access (+28.5 to +35.5mpD)	15 days	Fri 22/11/19												
429	FS3 Filling Stage 3 (~7.5m, +28.5 to 35.5 mPD)	17 days	Thu 21/11/19												
430	Retaining Wall RW4	96 days	Sat 17/8/19												
431	General Excavation to Formation Level(Bay1~2)	23 days	Sat 17/8/19												
432	Plate Load Test and Blinding Layer for Retaining Wall Bays 3-8	5 days	Fri 13/9/19												
433	Plate Load Test and Blinding Layer for Retaining Wall Bays 1-2	5 days	Fri 20/9/19												
434	Base Slab of Retaining Wall RW4 Bay 1-4	16 days	Fri 20/9/19												
435	Base Slab of Retaining Wall RW4 Bay 5-8	16 days	Thu 26/9/19												
436	Wall Stem of Retaining Wall RW4 Bay 1-4	30 days	Fri 11/10/19												
437	Wall Stem of Retaining Wall RW4 Bay 5-8	20 days	Thu 17/10/19												
438	Protective Coating / Subsoil Drain / Filter Layer	5 days	Sat 9/11/19												
439	Backfilling behind RW4 and Fill Slop FS4 (~8m up to +35.5 mPD)	22 days	Fri 15/11/19												
440	Fill Slope FS2	47 days	Thu 17/10/19												
441	Drainage and Maintenance Access (+35.5 to +43.0 mpD)	19 days	Thu 17/10/19												
442	FS2 Filling Stage 1 (~7.5m, +35.5 to +43 mPD)	20 days	Fri 8/11/19												
443	Drainage and Maintenance Access (+43.0 to +50 mpD)	30 days	Thu 17/10/19												
444	FS2 Filling Stage 2 (~7.5m, +43 to +50 mPD)	18 days	Wed 20/11/19												
445	Cut Slope CS18 and CS19	235 days	Mon 25/2/19												
446	Slope Cutting (+54.5 to crest)	30 days	Wed 27/2/19												
447	Confirmation of Interface Details at CS18/19 (NCE29)	30 days	Wed 27/2/19												
448	Drainage and Maintenance Access (crest)+ GI Works	8 days	Wed 3/4/19												
449	Slope Cutting and Raking Drain (+47 to +54.5mPD, 13 nos. of Raking Drain)	113 days	Mon 25/2/19												
450	Drainage and Maintenance Access (+54.5 to +62mPD slope surface/berm)+ GI Works	30 days	Thu 4/4/19												
451	Slope Cutting and Raking Drain (+47mPD to toe, 18 nos. of Raking Drain)	110 days	Mon 6/5/19												
452	Drainage and Maintenance Access (below +47mPD slope surface/berm)+ GI Works	70 days	Sat 14/9/19												

Task

Milestone

Summary

Critical

Progress

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Manual Progress

6

Page 6



ID	Task Name	Duration	Start	8	9	10	11	12	1	2
453	Landscape Works	67 days	Mon 16/9/19							
454	at Fill Slope FS2, FS3	50 days	Tue 8/10/19							
455	at Cut Slope CS18, CS19	60 days	Mon 16/9/19							



**Three Months Rolling Programme of  
Contract CV/2017/02**



	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019												Qtr		
						November						June			January					
						24/9		1/7		7/4		12/1		18/10		25/7			1/5	
1	1	Letter of Acceptance	0 days	Wed 30/5/18	Wed 30/5/18															
2	2	Starting Date	0 days	Thu 31/5/18	Thu 31/5/18															
3	3	ET Submissions	9 days	Wed 26/9/18	Fri 5/10/18															
12	4	Applications to Government Department	27 days	Mon 4/6/18	Sat 30/6/18															
20	5	Submissions & acceptances	835 days	Mon 4/6/18	Tue 15/9/20															
44	6	Liaison with Utility Undertakers	979 days	Fri 1/6/18	Wed 3/2/21															
47	7	Liaison with Contract CV/2016/01 regarding Parts A1 to A4 (refer PS Appendix A1)	979 days	Fri 1/6/18	Wed 3/2/21															
48	8	Liaison Meeting with Interface and associated contractors	389 days	Fri 1/6/18	Mon 24/6/19															
53	9	Tree Survey Reporting	164 days	Fri 1/6/18	Sun 11/11/18															
58	10	Street Lighting Designs by the Contractor	671 days	Fri 1/6/18	Wed 1/4/20															
66	11	Provision of Project Manager's Site Accommodation (PS1.08A(b) & 1.49)	28 days	Fri 1/6/18	Thu 28/6/18															
67	12	Design of irrigation system within the Sandy Ridge Cemetery (LS/2021, 2041, 2042, W/1041,1011)	21 days	Fri 20/12/19	Fri 10/1/20															
70	13	Condition Survey	81 days	Thu 23/8/18	Sun 11/11/18															
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	Thu 31/5/18	Wed 3/2/21															
78	14.1	Parts A1	859 days	Fri 28/9/18	Wed 3/2/21															
79	14.1.1	access date for section 1 (Parts A1) - not more than 120 days after the starting date	0 days	Fri 28/9/18	Fri 28/9/18															
80	14.1.2	form temporary haul road from the south side to Parts A1	14 days	Tue 2/10/18	Mon 22/10/18															
81	14.1.3	general site clearance	30 days	Tue 23/10/18	Wed 28/11/18															
82	14.1.4	initial survey	27 days	Thu 29/11/18	Wed 2/1/19															
83	14.1.5	construction of temporary drainage	21 days	Thu 3/1/19	Sat 26/1/19															
84	14.1.6	Site Formation works for Cut Slope CS22 (in Parts A1)	258 days	Mon 28/1/19	Mon 23/12/19															
101	14.1.7	A1) Construction of Retaining Wall RW13 (bays 1 to 4)	192 days	Mon 15/4/19	Thu 12/12/19															
125	14.1.8	Site Formation works for Fill Slope FS18	231 days	Mon 15/4/19	Mon 3/2/20															
136	14.1.9	CS21 - slope cutting	7 days	Fri 20/12/19	Mon 30/12/19															
137	14.1.10	install instrument for CS21	5 days	Tue 31/12/19	Mon 6/1/20															
138	14.1.11	placement of erosion control mat/ hydroseeding	2 days	Tue 7/1/20	Wed 8/1/20															
139	14.1.12	minor cutting CS26 (Parts A1) (for Road E)	7 days	Thu 9/1/20	Thu 16/1/20															
140	14.1.13	Drainage works at Road E	43 days	Fri 17/1/20	Tue 10/3/20															
143	14.1.14	Waterworks at Road E	24 days	Wed 11/3/20	Tue 14/4/20															
144	14.1.15	CS23 - slope cutting & 300U channel	17 days	Wed 11/3/20	Wed 1/4/20															
145	14.1.16	install instrument for CS23	5 days	Thu 2/4/20	Wed 8/4/20															
146	14.1.17	placement of erosion control mat/ hydroseeding	2 days	Thu 9/4/20	Tue 14/4/20															
147	14.1.18	backfilling of pipe trench to formation (including SRT test)	9 days	Wed 15/4/20	Sat 25/4/20															
148	14.1.19	300U channel behind RW13	4 days	Mon 27/4/20	Sat 2/5/20															
149	14.1.20	300U channel and planter wall at south side of Road E	30 days	Mon 4/5/20	Sat 6/6/20															
150	14.1.21	Roadworks of Road E (A1-ch66-243)	164 days	Mon 8/6/20	Wed 30/12/20															
151	14.1.21.1	ducting for road lighting (RD/2091) & construction of irrigation system	20 days	Mon 8/6/20	Thu 2/7/20															
152	14.1.21.2	kerbing, sub-base (include subbase SRT test) & cross road duct (RD/2061, 2081)	24 days	Fri 3/7/20	Thu 30/7/20															
153	14.1.21.3	concrete pavement	45 days	Fri 31/7/20	Mon 21/9/20															
154	14.1.21.4	traffic signs, directional signs, type 2 railing, emergency crash gate, beam barriers	48 days	Tue 22/9/20	Thu 26/11/20															
155	14.1.21.5	concrete footpath	27 days	Fri 27/11/20	Wed 30/12/20															
156	14.1.22	street lighting (Drg/ RD/2091)	14 days	Thu 31/12/20	Sat 16/1/21															
157	14.1.23	landscaping (hydroseeding)	5 days	Mon 18/1/21	Fri 22/1/21															
158	14.1.24	landscaping (shrub planting)	10 days	Sat 23/1/21	Wed 3/2/21															
159	14.2	Parts A2	400 days	Tue 31/12/19	Wed 3/2/21															
160	14.2.1	access date for section 1 (Parts A2) - not more than 580 days after the starting date	0 days	Tue 31/12/19	Tue 31/12/19															
161	14.2.2	form temporary haul road to Parts A2	6 days	Thu 2/1/20	Wed 8/1/20															
162	14.2.3	general site clearance	18 days	Thu 9/1/20	Sat 1/2/20															



ID	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019										Qtr 1, 2020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
						November					June			January																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
						24/9		1/7		7/4		12/1		18/10			25/7		1/5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
163	14.2.4	initial survey	12 days	Mon 3/2/20	Sat 15/2/20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								



Sang Hing Civil Contractors Company Limited Page 3/9 3 month rolling programme 20220726(26 July 22-25 Oct 22)



	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019												Q
						November						June			January			
						24/9		1/7		7/4		12/1		18/10		25/7		
955	17.3.29	Phase Ia stage 107)-south lane (chainage 790-840)	21 days	Sat 6/4/19	Sat 4/5/19													
966	17.3.30	Phase Ia (stage 108)-north lane (chainage 790-840)	29 days	Mon 6/5/19	Mon 10/6/19													
976	17.3.31	Phase Ia (stage 109)-south lane (chainage 840-890)	31 days	Tue 11/6/19	Wed 17/7/19													
988	17.3.32	Phase Ia (stage 110)-north lane (chainage 840-890)	18 days	Thu 18/7/19	Wed 7/8/19													
998	17.3.33	Phase III (stage 1)-south lane (chainage 435-490)	20 days	Thu 8/8/19	Fri 30/8/19													
1009	17.3.34	Phase III (stage 2)-north lane (chainage 435-490)	16 days	Sat 31/8/19	Thu 19/9/19													
1019	17.3.35	Phase III (stage 3)-south lane (chainage 490-540)	34 days	Fri 20/9/19	Thu 31/10/19													
1030	17.3.36	Phase III (stage 4)-north lane (chainage 490-540)	17 days	Fri 8/11/19	Wed 27/11/19													
1039	17.3.37	Phase III (stage 5)-south lane (chainage 540-590)	29 days	Thu 28/11/19	Fri 3/1/20													
1049	17.3.38	Phase III (stage 6)-north lane (chainage 540-590)	22 days	Sat 4/1/20	Sat 1/2/20													
1059	17.3.39	Phase III (stage 7)-south lane (chainage 590-633)	29 days	Tue 4/2/20	Sat 7/3/20													
1069	17.3.40	Phase III (stage 8)-north lane (chainage 590-633)	25 days	Mon 9/3/20	Tue 7/4/20													
1079	17.3.41	Street lighting (drawpits, abandon existing public lighting & cable, 100uPVC ducts) (ch435-890)	7 days	Wed 8/4/20	Sat 18/4/20													
1080	17.3.42	tree planting	5 days	Tue 14/4/20	Sat 18/4/20													
1081	17.3.43	Street furniture & construction of footpath (ch435-890)	23 days	Mon 20/4/20	Mon 18/5/20													
1082	17.3.44	Phase IV (stage 1)-south lane (chainage 890-940)	22 days	Fri 20/9/19	Thu 17/10/19													
1093	17.3.45	Phase IV (stage 2)-north lane (chainage 890-940)	17 days	Fri 18/10/19	Wed 6/11/19													
1103	17.3.46	Phase IV (stage 3)-south lane (chainage 940-983)	31 days	Thu 7/11/19	Thu 12/12/19													
1113	17.3.47	Phase IV (stage 4)-north lane (chainage 940-983)	16 days	Fri 13/12/19	Fri 3/1/20													
1122	17.3.48	Phase V (stage 1)-south lane (chainage 983-1035)	17 days	Sat 4/1/20	Thu 23/1/20													
1132	17.3.49	Phase V (stage 2)-north lane (chainage 983-1035)	16 days	Fri 24/1/20	Fri 14/2/20													
1141	17.3.50	Phase V (stage 3)-south lane (chainage 1035-1087)	19 days	Sat 15/2/20	Sat 7/3/20													
1151	17.3.51	Phase V (stage 4)-north lane (chainage 1035-1087)	12 days	Mon 9/3/20	Sat 21/3/20													
1160	17.3.52	Phase V (stage 5)-south lane (chainage 1087-1139)	20 days	Mon 23/3/20	Sat 18/4/20													
1170	17.3.53	Phase V (stage 6)-north lane (chainage 1087-1139)	15 days	Mon 20/4/20	Fri 8/5/20													
1179	17.3.54	Phase V (stage 7)-south lane (chainage 1139-1190)	20 days	Sat 9/5/20	Mon 1/6/20													
1189	17.3.55	Phase V (stage 8)-north lane (chainage 1139-1190)	15 days	Tue 2/6/20	Thu 18/6/20													
1198	17.3.56	Phase VI (stage 1)-south lane (chainage 1190-1240)	21 days	Fri 19/6/20	Wed 15/7/20													
1208	17.3.57	Phase VI (stage 2)-north lane (chainage 1190-1240)	15 days	Thu 16/7/20	Sat 1/8/20													
1217	17.3.58	Phase VI (stage 3)-south lane (chainage 1240-1286)	34 days	Mon 3/8/20	Thu 10/9/20													
1228	17.3.59	Phase VI (stage 4)-north lane (chainage 1240-1286)	15 days	Fri 11/9/20	Mon 28/9/20													
1237	17.3.60	Phase VI (stage 5)-south lane (chainage 1286-1332)	20 days	Tue 29/9/20	Fri 23/10/20													
1247	17.3.61	Phase VI (stage 6) - north lane (chainage 1286 -1332)	12 days	Sat 24/10/20	Sat 7/11/20													
1254	17.3.62	Phase VI (stage 7)-south lane (chainage 1332-1377)	27 days	Mon 9/11/20	Wed 9/12/20													
1266	17.3.63	Phase VI (stage 8)-north lane (chainage 1332-1377)	15 days	Thu 10/12/20	Tue 29/12/20													
1275	17.3.64	Street lighting (drawpits, abandon existing public lighting & cable, 100uPVC ducts) (ch890-1377)	7 days	Tue 29/12/20	Wed 6/1/21													
1276	17.3.65	tree planting	1 day	Wed 6/1/21	Wed 6/1/21													
1277	17.3.66	Street furniture & construction of footpath (ch890-1377)	25 days	Wed 6/1/21	Wed 3/2/21													
1278	17.4	Noise Barrier works above the concrete substructure of the noise barrier (section 2 Part C1)	674 days	Mon 29/10/18	Wed 3/2/21													
1279	17.4.1	seek specialist subcontractor to design and build	210 days	Mon 29/10/18	Sun 26/5/19													
1280	17.4.2	propose specialist subcontractor to PM for acceptance	0 days	Sun 26/5/19	Sun 26/5/19													
1281	17.4.3	acceptance of propose specialist subcontractor by Project Manager	0 days	Sun 16/6/19	Sun 16/6/19													
1282	17.4.4	prepare design & liaise with designer & PM	120 days	Mon 17/6/19	Mon 14/10/19													
1283	17.4.5	submit a proposal detailing the changes to PM's design, if any	14 days	Tue 15/10/19	Mon 28/10/19													
1284	17.4.6	submit 1st design for PM's comment	0 days	Mon 28/10/19	Mon 28/10/19													
1285	17.4.7	PM's comments	21 days	Tue 29/10/19	Mon 18/11/19													
1286	17.4.8	revise design	28 days	Tue 19/11/19	Mon 16/12/19													
1287	17.4.9	re-submit design for PM's acceptance	0 days	Mon 16/12/19	Mon 16/12/19													
1288	17.4.10	submit 3 sample panels for each type & colour for acceptance	7 days	Tue 17/12/19	Mon 23/12/19													
1289	17.4.11	PM's & relevant authorities' acceptance	0 days	Mon 13/1/20	Mon 13/1/20													
1290	17.4.12	ordering of noise barrier panel	0 days	Wed 15/1/20	Wed 15/1/20													
1291	17.4.13	fabricating of panel and steelworks	180 days	Thu 16/1/20	Mon 13/7/20													
1292	17.4.14	delivery of panel and steelworks on site	76 days	Tue 14/7/20	Sun 27/9/20													



ID	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019												Qtr					
						November						June											
						24/9		1/7		7/4		12/1		18/10		25/7			1/5				
1293	17.4.15	completion of concrete curing of substructure of Nosie Barriers	463 days	Mon 14/10/19	Tue 19/1/21																		
1301	17.4.16	construction works above the concrete substructure of the noise barrier MM6, MM7 & MM9 (app. 77m)	48 days	Mon 28/9/20	Wed 25/11/20																		
1308	17.4.17	construction works above the concrete substructure of the noise barrier MM10 (app. 94m)	54 days	Thu 26/11/20	Sat 30/1/21																		
1315	17.4.18	construction works above the concrete substructure of the noise barrier MM5 & MM8 (app. 42.322m)	10 days	Wed 20/1/21	Sat 30/1/21																		
1322	17.4.19	submit as-built drawings & design calculation & 2 sets of velographs for noise barrier works	0 days	Wed 3/2/21	Wed 3/2/21																		
1323	17.5	access date for section 2 (Part C2)	0 days	Sun 24/2/19	Sun 24/2/19																		
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	Sun 24/2/19	Sun 24/2/19																		
1325	17.7	Slope Upgrading works (section 2 Part C2)	578 days	Mon 25/2/19	Wed 3/2/21																		
1326	17.7.1	general site clearance	45 days	Mon 25/2/19	Thu 18/4/19																		
1327	17.7.2	Initial topographic survey	45 days	Thu 11/4/19	Sat 8/6/19																		
1328	17.7.3	utility detection and submit reports	21 days	Wed 22/5/19	Sat 15/6/19																		
1329	17.7.4	drilling of verification boreholes DHA1,A2 & A3	21 days	Mon 17/6/19	Thu 11/7/19																		
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	Fri 12/7/19	Thu 15/8/19																		
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	Thu 15/8/19	Thu 15/8/19																		
1332	17.7.7	Slopeworks: 3NW-C/C470 (ch490-540S/B)	59 days	Fri 16/8/19	Sat 26/10/19																		
1333	17.7.7.1	removal of existing trees	10 days	Fri 16/8/19	Tue 27/8/19																		
1334	17.7.7.2	hoarding & fencing	6 days	Wed 28/8/19	Tue 3/9/19																		
1335	17.7.7.3	slope excavation works	1 day	Wed 4/9/19	Wed 4/9/19																		
1336	17.7.7.4	temporary scaffolding	5 days	Thu 5/9/19	Tue 10/9/19																		
1337	17.7.7.5	proposed slope stripping for mapping or rock and relict discontinuities (AS5-A,B, AS6-A,B)	8 days	Wed 11/9/19	Fri 20/9/19																		
1338	17.7.7.6	Phase I	8 days	Sat 21/9/19	Mon 30/9/19																		
1339	17.7.7.6.1	install test nail PN02 & pull out test	6 days	Sat 21/9/19	Fri 27/9/19																		
1340	17.7.7.6.2	drill, install steel bars and grout soil nails (B01-12)	2 days	Sat 28/9/19	Mon 30/9/19																		
1341	17.7.7.7	Phase II	8 days	Wed 2/10/19	Fri 11/10/19																		
1342	17.7.7.7.1	install test nail PN01 & pull out test	6 days	Wed 2/10/19	Wed 9/10/19																		
1343	17.7.7.7.2	drill, install steel bars and grout soil nails (A01-17)	2 days	Thu 10/10/19	Fri 11/10/19																		
1344	17.7.7.8	raking drains	1 day	Sat 12/10/19	Sat 12/10/19																		
1345	17.7.7.9	TDR Test (including test & wait issue result)	2 days	Mon 14/10/19	Tue 15/10/19																		
1346	17.7.7.10	soil nail head works	3 days	Wed 16/10/19	Fri 18/10/19																		
1347	17.7.7.11	UC & catchpit (38m & 1 nr)	5 days	Sat 19/10/19	Thu 24/10/19																		
1348	17.7.7.12	biodegradable erosion control mat with hydroseeding	2 days	Fri 25/10/19	Sat 26/10/19																		
1349	17.7.8	Slopeworks: - 3NW-C/C230 (ch1240-1330S/B)	130 days	Mon 28/10/19	Thu 2/4/20																		
1350	17.7.8.1	removal of existing trees	10 days	Mon 28/10/19	Thu 7/11/19																		
1351	17.7.8.2	hoarding & fencing	9 days	Fri 8/11/19	Mon 18/11/19																		
1352	17.7.8.3	temporary scaffolding	7 days	Tue 19/11/19	Tue 26/11/19																		
1353	17.7.8.4	proposed slope stripping for mapping or rock and relict discontinuities (AS3-A,B, AS4-A,B)	8 days	Wed 27/11/19	Thu 5/12/19																		



	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019										Q																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
						November					June		January																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
						24/9		1/7		7/4		12/1		18/10			25/7		1/5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1354	17.7.8.5	slope excavation works	1 day	Fri 6/12/19	Fri 6/12/19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											



Sang Hing Civil Contractors Company Limited Page 7/9 3 month rolling programme 20220726(26 July 22-25 Oct 22)



	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019										Q	
						November					June			January			
						24/9	1/7		7/4		12/1		18/10		25/7		1/5
1575	29.1.5	initial survey	12 days	Tue 2/7/19	Mon 15/7/19												



D	WBS	Task Name	Duration	Start Date	Completion Date	Qtr 4, 2019												Q																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
						November						June			January																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
						24/9		1/7		7/4		12/1		18/10		25/7			1/5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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	Wed 29/1/20	Wed 5/2/20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					



## **Appendix D**

### **Monitoring Locations**



## **Air Quality Monitoring Location**



Printed by : 2/26/2016  
Filename : G:\env\project\231448\13\_Drawing Deliverables\Reports\018\_EIM&A Manual\20160226 Revised Final\Figure 5.12 - Locations of Construction Dust Monitoring (Sheet 2 of 4).dgn



**Legend**

- Project Boundary
- Utilities Construction
- Proposed Air Monitoring Stations

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

COPYRIGHT RESERVED

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



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© THE ARUP & PARTNERS HONG KONG LIMITED.

Man Kam To Boundary  
Control Point



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



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

Lin Ma Hang Road

ASR-2

San Uk Ling

#### Legend

- Project Boundary
- Existing Air Monitoring Stations

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

COPYRIGHT RESERVED

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



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© DVE ARUP & PARTNERS HONG KONG LIMITED.



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



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

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

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

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)

COPYRIGHT RESERVED



## **Noise Monitoring Location**



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

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© THE AMP & PARTNERS HONG KONG LIMITED.



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

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

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

COPYRIGHT RESERVED

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



Printed by : 2/29/2016  
Filename : G:\env\project\231448\13\_Drawing\_Deliverables\Reports\018\_EWA Manual\20160226 Revised Final.vla  
Figure 6.2.3 - Locations of Proposed Construction Noise Monitoring (Sheet 3 of 4).dgn

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
THIS MAP IS THE PROPERTY OF HONG KONG LIMITED.



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

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

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

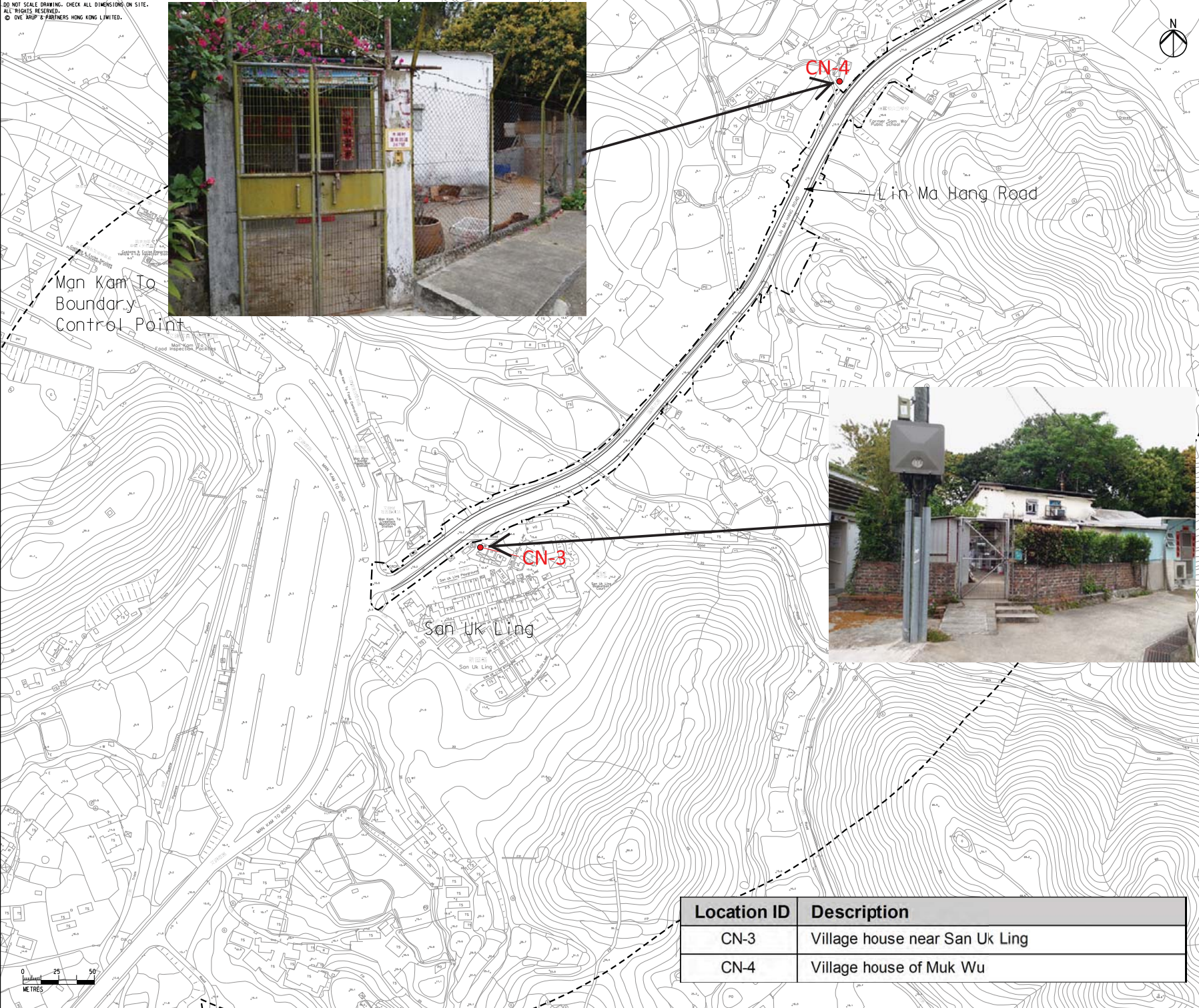
COPYRIGHT RESERVED

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



Printed by : 2/29/2016  
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\018 EWA Manual\20160226 Revised Final.v1\Figure 6.2.4 - Locations of Proposed Construction Noise Monitoring (Sheet 4 of 4).dgn

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© DYE NIP & PARTNERS HONG KONG LIMITED.



**Legend**

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

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

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

COPYRIGHT RESERVED

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



## **Water Quality Monitoring Station**

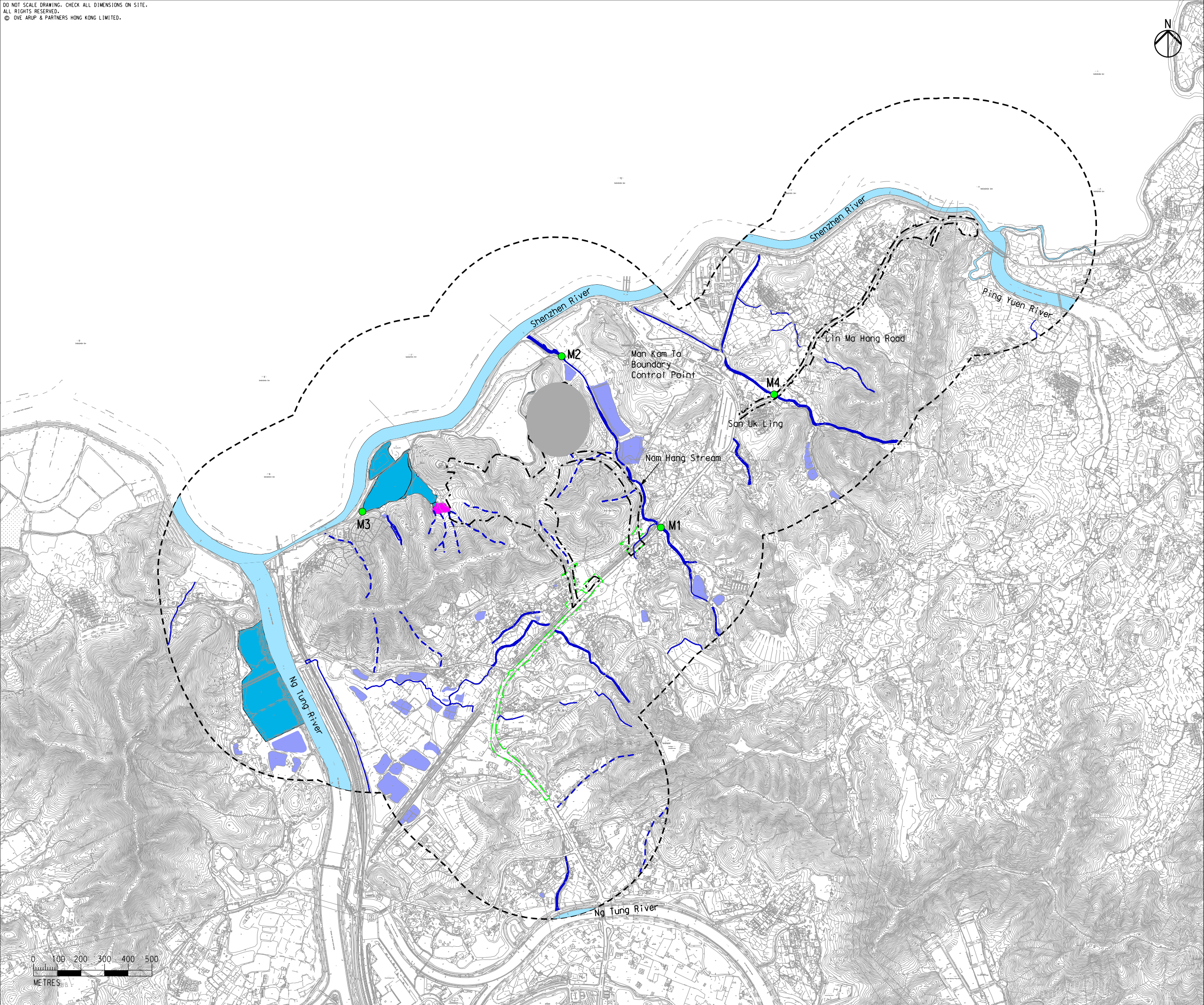




Legend

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

Printed by : 2/29/2016  
Filename : G:\env\project\23144\8\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final\1\Figure 7.1.1 - Water Quality Monitoring Locations.dgn



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

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	Status		
AS SHOWN	PRELIMINARY		

COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and Development Department



**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	21 Jul 22	4 Aug 22
1b		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-1	8 Aug 22	22 Aug 22
1c		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-1	25 Aug 22	8 Sep 22
2		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2	21 Jul 22	4 Aug 22
2a		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2	8 Aug 22	22 Aug 22
2c		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2	25 Aug 22	8 Sep 22
3		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a	21 Jul 22	4 Aug 22
3a		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a	8 Aug 22	22 Aug 22
3c		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a	25 Aug 22	8 Sep 22
4		Calibration Kit TISCH Model TE-5025A Orifice ID 1612 and Rootmeter S/N 438320	27 Dec 21	27 Dec 22
5		Laser Dust Monitor, Model AM510 (Serial No. 11008060) – EQ101	4 Feb 22	4 Feb 23
6		Laser Dust Monitor, Model AM510 (Serial No. 11008017) – EQ102	4 Feb 22	4 Feb 23
7		Laser Dust Monitor, Model LD-3B (Serial No. 2X6145) – EQ105	15 Jan 22	15 Jan 23
8	Noise	Rion NL- 52 Sound Level Meter (Serial No. 00921191) – EQ013	10 Sep 21	10 Sep 22
9		Rion NL- 52 Sound Level Meter (Serial No. 00142581) – EQ015	9 Nov 21	9 Nov 22
10		Rion NC - 74 Acoustical Calibrator (Serial No. 34657230) – EQ086	10 Sep 21	10 Sep 22
11	Water	YSI Professional DSS (Serial No.17B102764)	23 Jun 22	23 Sep 22
12		Global Water FP211 Flow Meter (Serial No. 1449006330)	1 Sep 21	1 Sep 22



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Sha Ling Village House No.6

Date of Calibration: 21-Jul-22

Location ID : ASR-1

Next Calibration Date: 4-Aug-22

Name and Model: TISCH HVS Model TE-5170

Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa)

1002.2

Corrected Pressure (mm Hg)

751.65

Temperature (°C)

28.8

Temperature (K)

302

### CALIBRATION ORIFICE

Make-> TISCH

Qstd Slope ->

1.999838

Model-> 5025A

Qstd Intercept ->

-0.00903

Serial # -> 1612

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.90	5.90	11.8	1.702	54	53.03	Slope = 30.5886
13	4.90	4.90	9.8	1.551	48	47.13	Intercept = 0.6544
10	3.50	3.50	7.0	1.312	42	41.24	Corr. coeff. = 0.9976
7	2.50	2.50	5.0	1.109	36	35.35	
5	1.40	1.40	2.8	0.831	26	25.53	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

m = sampler slope

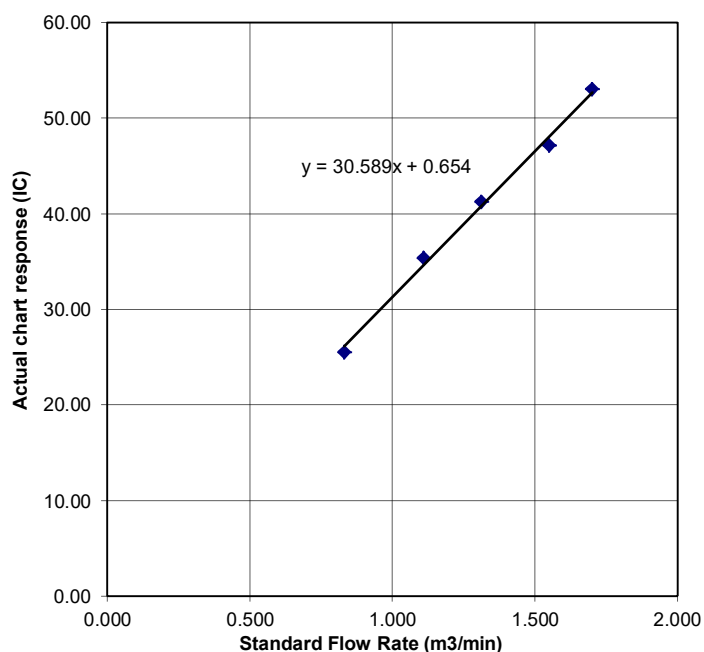
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

### FLOW RATE CHART





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : San Uk Ling Village House No.1  
 Location ID : ASR-2  
 Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 21-Jul-22  
 Next Calibration Date: 4-Aug-22  
 Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa) 1002.2  
 Temperature (°C) 28.8

Corrected Pressure (mm Hg) 751.65  
 Temperature (K) 302

### CALIBRATION ORIFICE

Make-> TISCH  
 Model-> 5025A  
 Serial # -> 1612

Qstd Slope -> 1.999838  
 Qstd Intercept -> -0.00903

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.10	6.10	12.2	1.730	56	54.99	Slope = 31.2578
13	4.90	4.90	9.8	1.551	49	48.12	Intercept = 0.4316
10	3.75	3.75	7.5	1.358	44	43.21	Corr. coeff. = 0.9991
7	2.40	2.40	4.8	1.087	35	34.37	
5	1.30	1.30	2.6	0.801	26	25.53	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

m = sampler slope

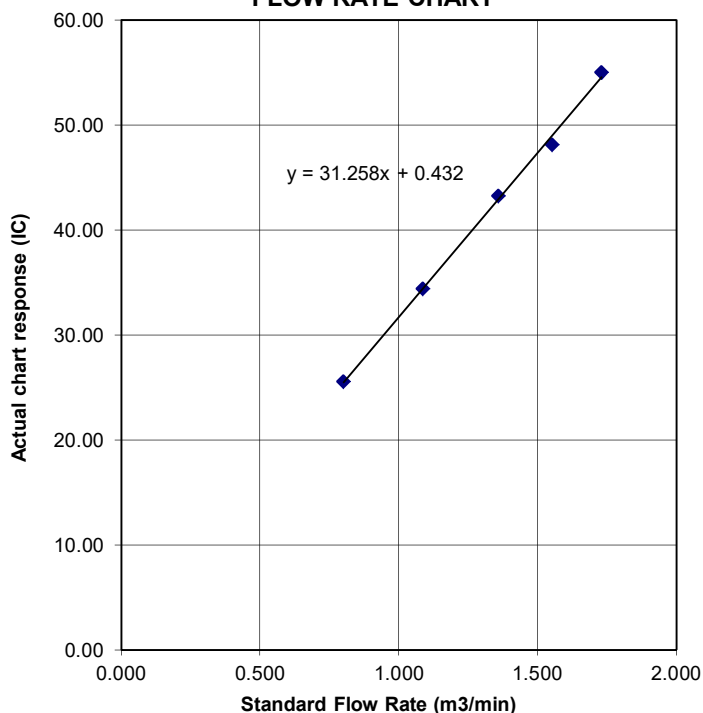
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

### FLOW RATE CHART





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Muk Wu Nga Yiu House No.2A	Date of Calibration: 21-Jul-22
Location ID : ASR-3a	Next Calibration Date: 4-Aug-22
Name and Model: TISCH HVS Model TE-5170	Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa)	1002.2	Corrected Pressure (mm Hg)	751.65
Temperature (°C)	28.8	Temperature (K)	302

### CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope ->
Model-> 5025A	1.999838
Serial # -> 1612	Qstd Intercept ->
	-0.00903

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.00	6.00	12.0	1.716	55	54.01	Slope = 31.6101
13	4.60	4.60	9.2	1.503	48	47.13	Intercept = -0.0969
10	3.60	3.60	7.2	1.330	43	42.22	Corr. coeff. = 0.9987
7	2.30	2.30	4.6	1.064	35	34.37	
5	1.40	1.40	2.8	0.831	26	25.53	

#### Calculations :

$$Q_{std} = 1/m[\sqrt{H_{2O}(P_a/P_{std})(T_{std}/T_a)} - b]$$

$$IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

$$1/m((I) [\sqrt{298/T_{av}}(P_{av}/760)] - b)$$

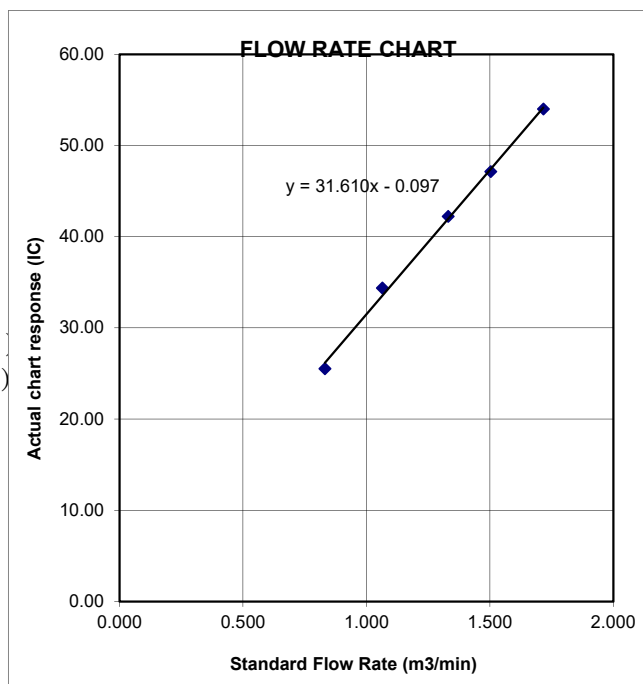
m = sampler slope

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: 8-Aug-22

Location ID : ASR-1

Next Calibration Date: 22-Aug-22

Name and Model: TISCH HVS Model TE-5170

Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa)

1006.3

Temperature (°C)

28.3

Corrected Pressure (mm Hg)

754.725

Temperature (K)

301

### CALIBRATION ORIFICE

Make->TISCH

Model->5025A

Serial # ->1612

Qstd Slope ->

1.999838

Qstd Intercept ->

-0.00903

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.00	6.00	12.0	1.721	56	55.19	Slope = 31.0668
13	4.90	4.90	9.8	1.556	49	48.29	Intercept = 0.6654
10	3.70	3.70	7.4	1.353	42	41.40	Corr. coeff. = 0.9960
7	2.40	2.40	4.8	1.090	36	35.48	
5	1.30	1.30	2.6	0.804	26	25.63	

#### Calculations :

$Q_{std} = 1/m[\text{Sqrt}(H2O(Pa/P_{std})(T_{std}/T_a)) - b]$

$IC = I[\text{Sqrt}(Pa/P_{std})(T_{std}/T_a)]$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

$1/m((I) [\text{Sqrt}(298/T_{av})(P_{av}/760)] - b)$

m = sampler slope

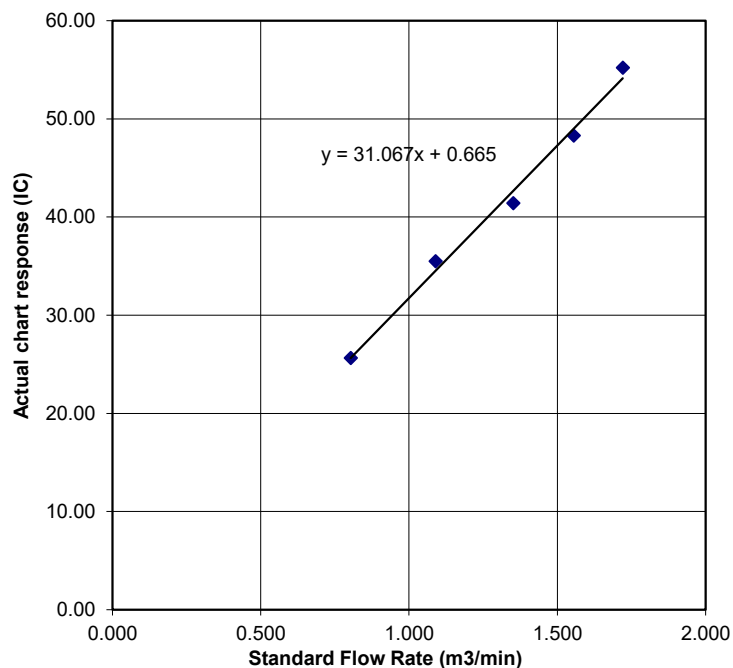
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

### FLOW RATE CHART





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : San Uk Ling Village House No.1  
 Location ID : ASR-2  
 Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 8-Aug-22  
 Next Calibration Date: 22-Aug-22  
 Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa) 1006.3  
 Temperature (°C) 28.3

Corrected Pressure (mm Hg) 754.725  
 Temperature (K) 301

### CALIBRATION ORIFICE

Make-> TISCH  
 Model-> 5025A  
 Serial # -> 1612

Qstd Slope -> 1.999838  
 Qstd Intercept -> -0.00903

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.00	6.00	12.0	1.721	56	55.19	Slope = 32.4975
13	4.90	4.90	9.8	1.556	49	48.29	Intercept = -1.3178
10	3.80	3.80	7.6	1.371	44	43.37	Corr. coeff. = 0.9987
7	2.40	2.40	4.8	1.090	35	34.50	
5	1.40	1.40	2.8	0.834	26	25.63	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

m = sampler slope

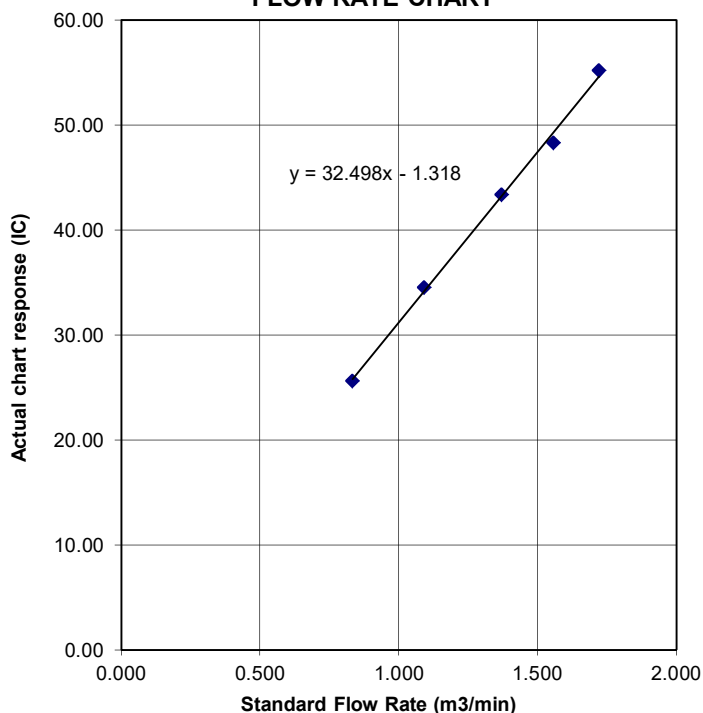
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Muk Wu Nga Yiu House No.2A	Date of Calibration: 8-Aug-22
Location ID : ASR-3a	Next Calibration Date: 22-Aug-22
Name and Model: TISCH HVS Model TE-5170	Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa)	1006.3	Corrected Pressure (mm Hg)	754.725
Temperature (°C)	28.3	Temperature (K)	301

### CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 1.999838
Model-> 5025A	Qstd Intercept -> -0.00903
Serial # -> 1612	

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.00	6.00	12.0	1.721	55	54.21	Slope = 32.6723 Intercept = -2.0695 Corr. coeff. = 0.9987
13	4.50	4.50	9.0	1.491	47	46.32	
10	3.60	3.60	7.2	1.334	42	41.40	
7	2.40	2.40	4.8	1.090	35	34.50	
5	1.40	1.40	2.8	0.834	25	24.64	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

#### For subsequent calculation of sampler flow:

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

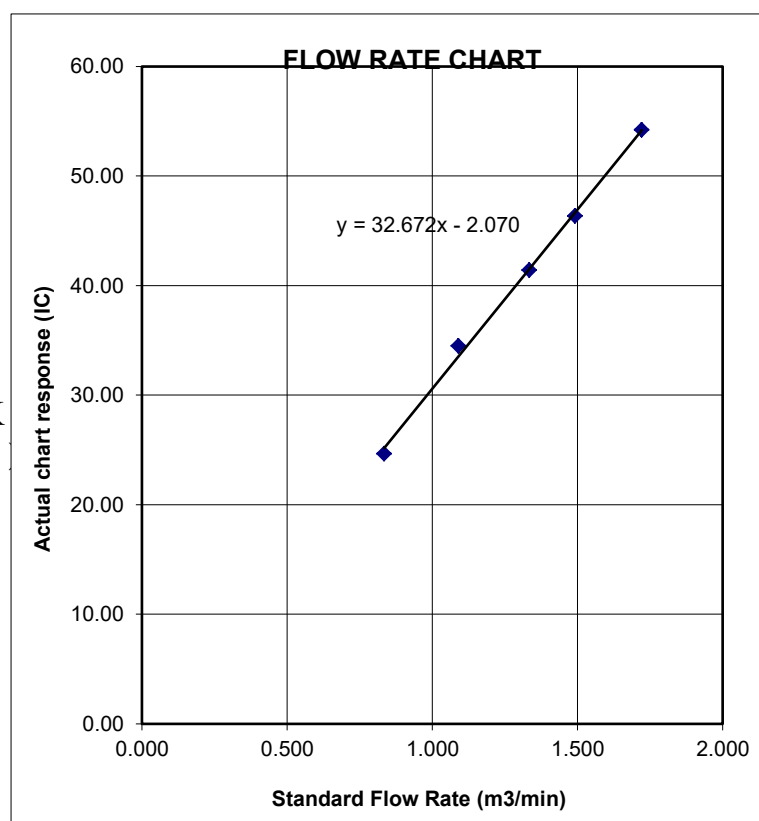
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Sha Ling Village House No.6

Date of Calibration: 25-Aug-22

Location ID : ASR-1

Next Calibration Date: 8-Sep-22

Name and Model: TISCH HVS Model TE-5170

Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa)

1006.3

Corrected Pressure (mm Hg)

754.725

Temperature (°C)

27.2

Temperature (K)

300

### CALIBRATION ORIFICE

Make-> TISCH

Qstd Slope ->

1.999838

Model-> 5025A

Qstd Intercept ->

-0.00903

Serial # -> 1612

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.10	6.10	12.2	1.739	55	54.41	Slope = 30.4904
13	4.90	4.90	9.8	1.559	48	47.48	Intercept = 0.7296
10	3.60	3.60	7.2	1.337	41	40.56	Corr. coeff. = 0.9954
7	2.40	2.40	4.8	1.092	36	35.61	
5	1.30	1.30	2.6	0.805	25	24.73	

#### Calculations :

$$Q_{std} = 1/m[\sqrt{H2O(Pa/P_{std})(T_{std}/Ta)}-b]$$

$$IC = I[\sqrt{Pa/P_{std})(T_{std}/Ta)}]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

m = sampler slope

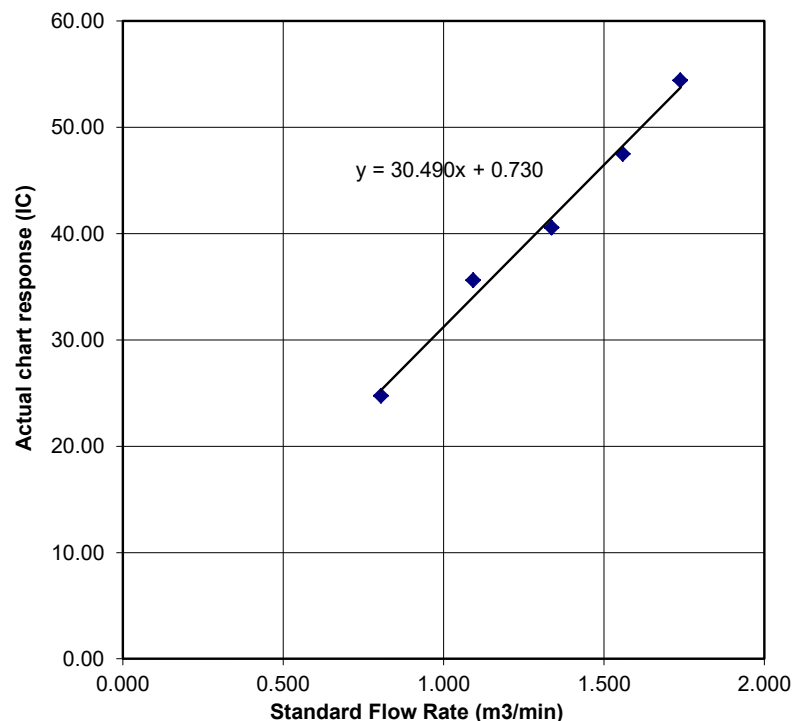
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

### FLOW RATE CHART





TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : San Uk Ling Village House No.1

Location ID : ASR-2

Name and Model: TISCH HVS Model TE-5170

Date of Calibration: 25-Aug-22

Next Calibration Date: 8-Sep-22

Technician: Leung Ka Wai

CONDITIONS

Sea Level Pressure (hPa)

1006.3

Corrected Pressure (mm Hg)

754.725

Temperature (°C)

27.2

Temperature (K)

300

CALIBRATION ORIFICE

Make->TISCH

Model->5025A

Serial # ->1612

Qstd Slope ->1.999838

Qstd Intercept ->-0.00903

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.00	6.00	12.0	1.724	56	55.40	Slope = 31.0381
13	4.90	4.90	9.8	1.559	49	48.47	Intercept = 0.7771
10	3.70	3.70	7.4	1.355	43	42.54	Corr. coeff. = 0.9966
7	2.40	2.40	4.8	1.092	34	33.63	
5	1.20	1.20	2.4	0.774	26	25.72	

Calculations :

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

For subsequent calculation of sampler flow:

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

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

FLOW RATE CHART

The chart displays a linear relationship between the standard flow rate and the actual chart response. The x-axis represents the Standard Flow Rate in m3/min, ranging from 0.000 to 2.000. The y-axis represents the Actual chart response (IC), ranging from 0.00 to 60.00. Five data points are plotted, and a linear regression line is fitted to them with the equation y = 31.038x + 0.777.

Standard Flow Rate (m3/min)	Actual chart response (IC)
0.774	25.72
1.092	33.63
1.355	42.54
1.559	48.47
1.724	55.40



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Muk Wu Nga Yiu House No.2A	Date of Calibration: 25-Aug-22
Location ID : ASR-3a	Next Calibration Date: 8-Sep-22
Name and Model: TISCH HVS Model TE-5170	Technician: Leung Ka Wai

### CONDITIONS

Sea Level Pressure (hPa)	1006.3	Corrected Pressure (mm Hg)	754.725
Temperature (°C)	27.2	Temperature (K)	300

### CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 1.999838
Model-> 5025A	Qstd Intercept -> -0.00903
Serial # -> 1612	

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.90	5.90	11.8	1.710	55	54.41	Slope = 33.1136 Intercept = -2.7202 Corr. coeff. = 0.9979
13	4.50	4.50	9.0	1.494	47	46.49	
10	3.60	3.60	7.2	1.337	41	40.56	
7	2.30	2.30	4.6	1.069	34	33.63	
5	1.40	1.40	2.8	0.835	25	24.73	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

#### For subsequent calculation of sampler flow:

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

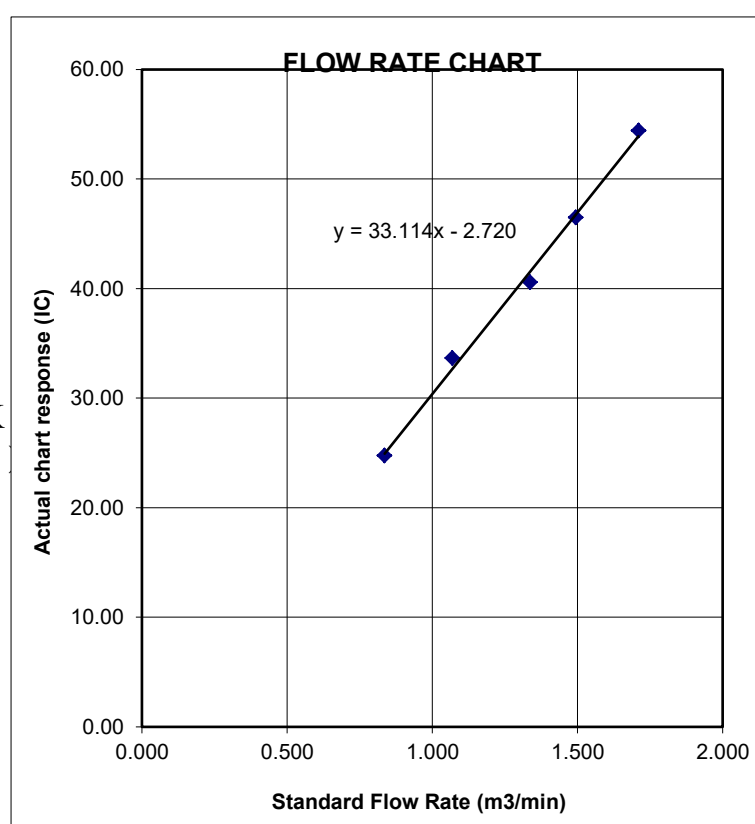
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure







# Certificate of Calibration

## Calibration Certification Information

Cal. Date:	December 27, 2021	Rootsmeter S/N:	438320	Ta:	295	°K
Operator:	Jim Tisch	Pa:	740.4			mm Hg
Calibration Model #:	TE-5025A	Calibrator S/N:	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)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
0.9799	0.7055	1.4029	0.9957	0.7168	0.8927
0.9756	0.9996	1.9841	0.9914	1.0157	1.2624
0.9736	1.1140	2.2183	0.9893	1.1320	1.4114
0.9724	1.1688	2.3265	0.9881	1.1876	1.4803
0.9673	1.4079	2.8059	0.9828	1.4306	1.7853
<b>QSTD</b>	m=	<b>1.99838</b>	<b>QA</b>	m=	<b>1.25135</b>
	b=	<b>-0.00903</b>		b=	<b>-0.00574</b>
	r=	<b>0.99999</b>		r=	<b>0.99999</b>

## Calculations

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

## Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg
<b>Key</b>	
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





# CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA  
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 <http://www.tsi.com>

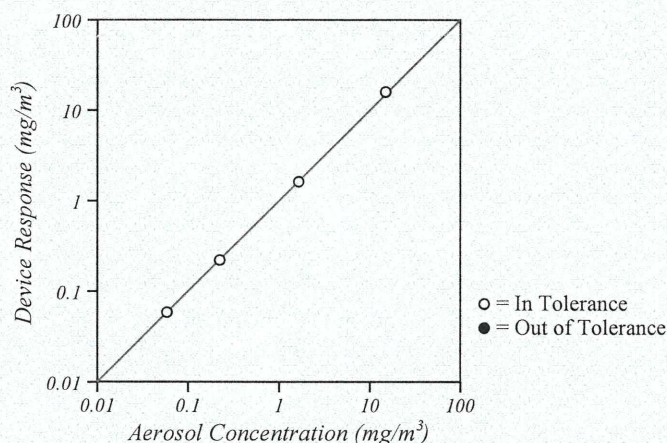
Environment Conditions			Model	AM510
Temperature	76.23 (24.6)	°F (°C)	Serial Number	11008060
Relative Humidity	19.5	%RH		
Barometric Pressure	29.30 (992.2)	inHg (hPa)		

☒ As Left  
☐ As Found

☒ In Tolerance  
☐ Out of Tolerance



Concentration Linearity Plot



System ID: DTII01-02

CONCENTRATION				Unit: mg/m <sup>3</sup>			
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	1.631	1.529	1.468~1.794	3	0.058	0.055	0.041~0.075
2	0.221	0.207	0.188~0.254	4	14.840	14.955	13.356~16.324

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 4:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003314	01-11-22	01-31-23	Photometer	E003319	08-30-21	02-28-22
Microbalance	M001324	01-29-21	01-31-23	Pressure	E003511	10-26-21	10-31-22
Flowmeter	E005626	03-09-21	03-31-22	DC Voltage	E003315	01-11-22	01-31-23

Calibrated

February 4, 2022

Date





# CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA  
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 <http://www.tsi.com>

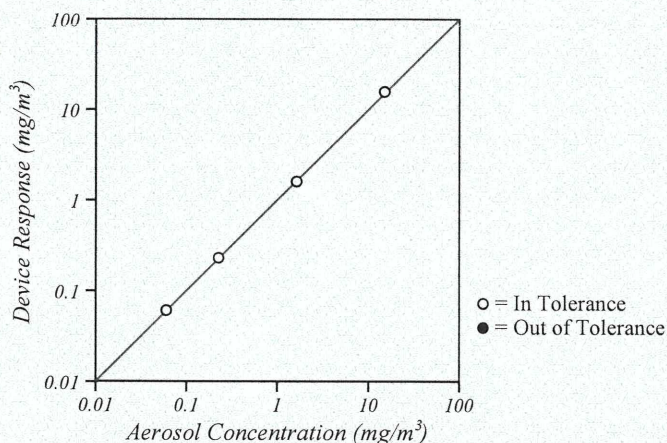
Environment Conditions			Model	AM510
Temperature	76.22 (24.6)	°F (°C)	Serial Number	11008017
Relative Humidity	21.7	%RH		
Barometric Pressure	29.32 (992.9)	inHg (hPa)		

☒ As Left  
☐ As Found

☒ In Tolerance  
☐ Out of Tolerance



Concentration Linearity Plot



System ID: DTII01-02

CONCENTRATION				Unit: mg/m <sup>3</sup>			
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	1.609	1.505	1.448~1.770	3	0.059	0.057	0.041~0.077
2	0.223	0.216	0.190~0.256	4	14.848	14.816	13.363~16.333

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 4:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003314	01-11-22	01-31-23	Photometer	E003319	08-30-21	02-28-22
Microbalance	M001324	01-29-21	01-31-23	Pressure	E003511	10-26-21	10-31-22
Flowmeter	E005626	03-09-21	03-31-22	DC Voltage	E003315	01-11-22	01-31-23

Calibrated

February 4, 2022

Date





### SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK2210522
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	: 18-MAR-2022
		DATE OF ISSUE	: 28-MAR-2022
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.
- 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 is the Final Report and supersedes any preliminary report with this batch 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  
Tel. +852 2610 1044 Fax. +852 2610 2021 [www.alsglobal.com](http://www.alsglobal.com)



WORK ORDER : HK2210522  
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.
HK2210522-001	S/N: 2X6145	AIR	18-Mar-2022	S/N: 2X6145



## Equipment Verification Report (TSP)

### Equipment Calibrated:

Type: Laser Dust monitor  
Manufacturer: Sibata LD-3B  
Serial No. 2X6145  
Equipment Ref: EQ105

### Standard Equipment:

Standard Equipment: Higher Volume Sampler (TSP)  
Location & Location ID: AUES office (calibration room)  
Equipment Ref: HVS 018 & HVS 019  
Last Calibration Date: 5 November 2021 & 13 December 2021

### Equipment Verification Results:

Verification Date: 20 December 2021 & 7 January 2022

Date	Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
7 Jan 22	2hr	11:55 ~ 13:55	18.6	1021.6	55.1	2445	20.4
7 Jan 22	2hr27mins	14:23 ~ 16:50	18.6	1021.6	54.8	2316	15.8
7 Jan 22	2hr09mins	16:50 ~ 18:59	18.6	1021.6	56.5	2504	19.4
20 Dec 21*	45mins	10:15 ~ 11:00	20.5	1008.7	472.0	9410	209.1
20 Dec 21*	31mins	11:05 ~ 11:36	20.5	1008.7	187.2	3955	129.2

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

Sensitivity Adjustment Scale Setting (Before Calibration) 586 (CPM)

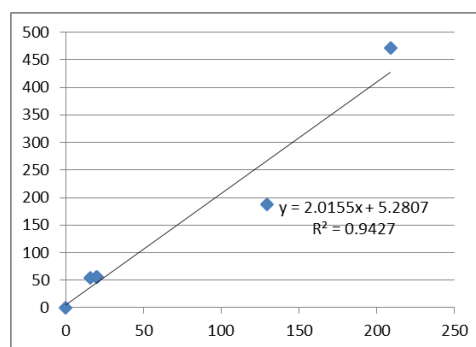
Sensitivity Adjustment Scale Setting (After Calibration) 586 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 2.0155 (ug/m<sup>3</sup>)/CPM

Correlation Coefficient (R) 0.9709

Date of Issue 15 January 2022



### Remarks:

1. Strong Correlation ( $R > 0.8$ )
2. Factor 2.0155 (ug/m<sup>3</sup>)/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 : 15 January 2022

QC Reviewer : Ben Tam Signature :  Date : 15 January 2022



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 5-Nov-21
Location ID :	Calibration Room	Next Calibration Date: 5-Feb-22

### CONDITIONS

Sea Level Pressure (hPa)	1012.5	Corrected Pressure (mm Hg)	759.375
Temperature (°C)	25.6	Temperature (K)	299

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10574
Model->	5025A	Qstd Intercept ->	-0.00985
Calibration Date->	19-Jan-21	Expiry Date->	18-Jan-22

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.675	52	51.93	Slope = 24.2092 Intercept = 10.8881 Corr. coeff. = 0.9959
13	5	5	10.0	1.504	48	47.93	
10	3.9	3.9	7.8	1.329	42	41.94	
8	2.5	2.5	5.0	1.065	36	35.95	
5	1.0	1.0	2.0	0.675	28	27.96	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

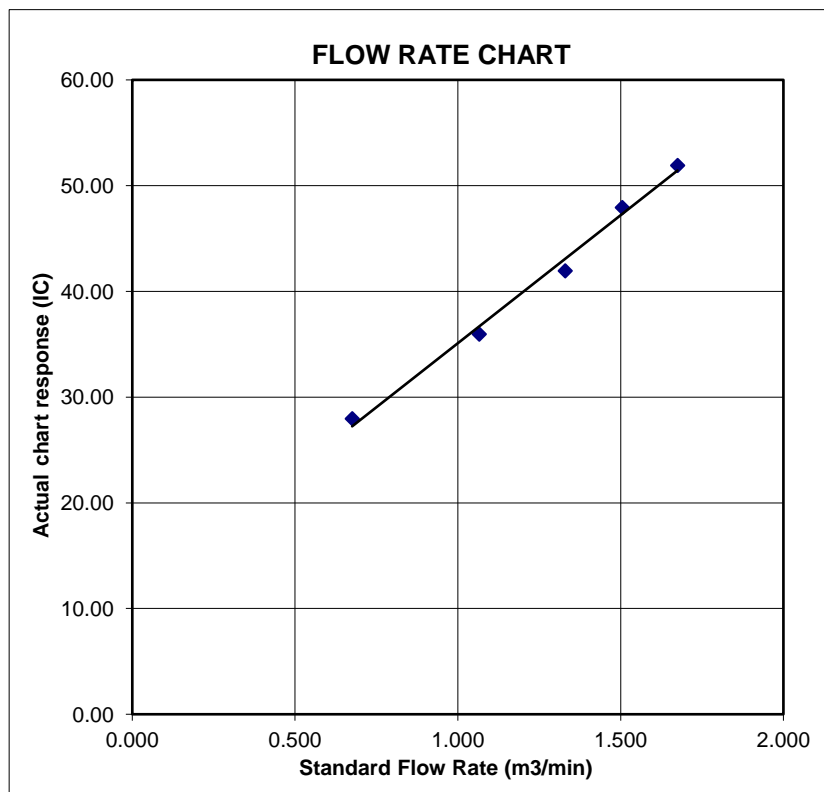
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 13-Dec-21
Location ID :	Calibration Room	Next Calibration Date: 13-Mar-22

### CONDITIONS

Sea Level Pressure (hPa)	1014.3	Corrected Pressure (mm Hg)	760.725
Temperature (°C)	24.0	Temperature (K)	297

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10574
Model->	5025A	Qstd Intercept ->	-0.00985
Calibration Date->	19-Jan-21	Expiry Date->	18-Jan-22

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.681	52	52.11	Slope = 36.4525 Intercept = -9.0200 Corr. coeff. = 0.9943
13	4.9	4.9	9.8	1.495	44	44.10	
10	3.7	3.7	7.4	1.299	40	40.09	
8	2.4	2.4	4.8	1.047	30	30.06	
5	1.5	1.5	3.0	0.829	20	20.04	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

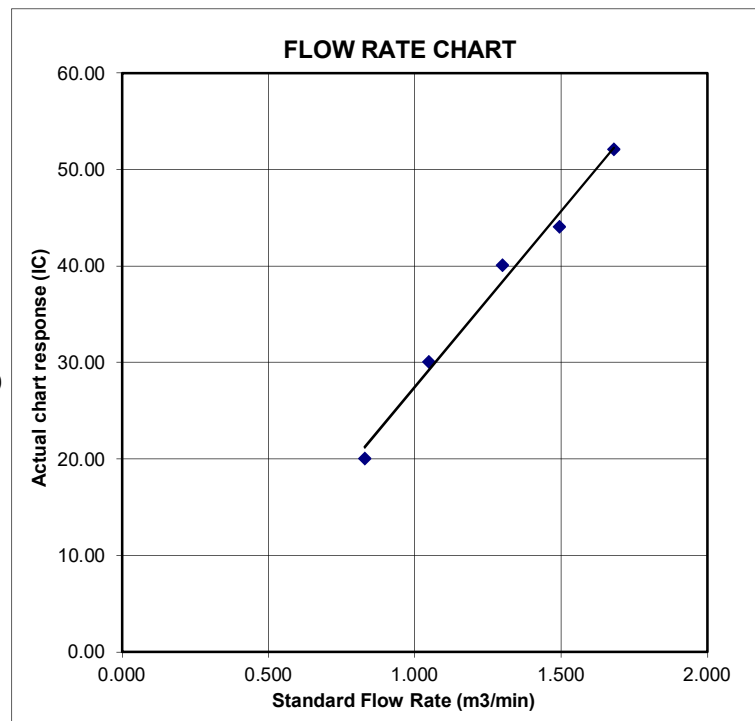
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure







RECALIBRATION

DUE DATE:

January 19, 2022

# Certificate of Calibration

## Calibration Certification Information

Cal. Date: January 19, 2021      Rootsmeter S/N: 438320      Ta: 294 °K  
Operator: Jim Tisch      Pa: 755.1 mm Hg  
Calibration Model #: TE-5025A      Calibrator S/N: 1941

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4830	3.2	2.00
2	3	4	1	1.0420	6.4	4.00
3	5	6	1	0.9290	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7340	12.9	8.00

## Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)
1.0029	0.6762	1.4192	0.9958	0.6715	0.8824
0.9986	0.9583	2.0071	0.9915	0.9516	1.2479
0.9965	1.0726	2.2440	0.9894	1.0650	1.3952
0.9954	1.1260	2.3535	0.9883	1.1180	1.4633
0.9899	1.3487	2.8385	0.9829	1.3391	1.7648
<b>QSTD</b>	m=	<b>2.10574</b>	<b>QA</b>	m=	<b>1.31858</b>
	b=	<b>-0.00985</b>		b=	<b>-0.00612</b>
	r=	<b>0.99992</b>		r=	<b>0.99992</b>

## Calculations

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

## Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg
<b>Key</b>	
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





輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C215420  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC21-1765 )

Date of Receipt / 收件日期 : 26 August 2021

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 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 10 September 2021

### 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

:

  
K P Cheuk  
Project Engineer

Certified By

核證

:

  
K C Lee  
Engineer

Date of Issue

簽發日期

:

13 September 2021

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C215420  
證書編號

- 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.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C210084
CL281	Multifunction Acoustic Calibrator	AV210017

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.2	± 1.1

#### 6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.1

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	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.2	Ref.
			Slow			94.2	± 0.3

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。



# Certificate of Calibration

## 校正證書

Certificate No. : C215420  
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 <sub>A</sub>	A	Fast	94.00	63 Hz	67.9	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.5
					250 Hz	85.5	-8.6 ± 1.4
					500 Hz	91.0	-3.2 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	95.4	+1.2 ± 1.6
					4 kHz	95.2	+1.0 ± 1.6
					8 kHz	93.2	-1.1 (+2.1 ; -3.1)
					16 kHz	86.2	-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 <sub>C</sub>	C	Fast	94.00	63 Hz	93.3	-0.8 ± 1.5
					125 Hz	94.0	-0.2 ± 1.5
					250 Hz	94.2	0.0 ± 1.4
					500 Hz	94.2	0.0 ± 1.4
					1 kHz	94.2	Ref.
					2 kHz	94.0	-0.2 ± 1.6
					4 kHz	93.4	-0.8 ± 1.6
					8 kHz	91.3	-3.0 (+2.1 ; -3.1)
					16 kHz	84.3	-8.5 (+3.5 ; -17.0)

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C215420

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

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C216480

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC21-2189)

Date of Receipt / 收件日期 : 25 October 2021

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 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 9 November 2021

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification. (after adjustment)


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

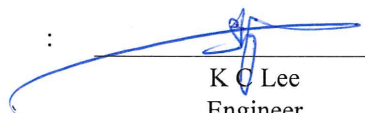
Tested By

測試

  
K P Cheuk  
Project Engineer

Certified By

核證

  
K C Lee  
Engineer

Date of Issue

簽發日期

10 November 2021

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。



# Certificate of Calibration

## 校正證書

Certificate No. : C216480

證書編號

- 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.
- Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C210084
CL281	Multifunction Acoustic Calibrator	AV210017

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

##### 6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	* 96.3	± 1.1

\* Out of IEC 61672 Class 1 Spec.

##### 6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.0	± 1.1

##### 6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C216480

證書編號

### 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 <sub>A</sub>	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

### 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 <sub>A</sub>	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					16 kHz	86.1	-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 <sub>C</sub>	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					16 kHz	84.2	-8.5 (+3.5 ; -17.0)

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C216480

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

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C215419

證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC21-1345 )

Date of Receipt / 收件日期 : 26 August 2021

Description / 儀器名稱 : Sound Calibrator (EQ086)

Manufacturer / 製造商 : Rion

Model No. / 型號 : NC-74

Serial No. / 編號 : 34657230

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 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 10 September 2021

### 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

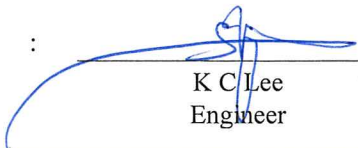
Tested By  
測試

:

  
K P Cheuk  
Project Engineer

Certified By  
核證

:

  
K C Lee  
Engineer

Date of Issue  
簽發日期

:

13 September 2021

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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. : C215419  
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 :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C213954
CL281	Multifunction Acoustic Calibrator	AV210017
TST150A	Measuring Amplifier	C201309

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	94.1	$\pm 0.3$	$\pm 0.2$

### 5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.002	1 kHz $\pm 1$ %	$\pm 1$

Remark : 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.

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

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 - 校正及檢測實驗室

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





## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK2223600
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:	20-Jun-2022
		DATE OF ISSUE:	27-Jun-2022

### 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:	23-June-2022

### GENERAL COMMENTS

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

Ms. Lin Wai Yu, Iris  
Assistant Manager - Inorganics

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*



# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2223600  
 SUB-BATCH: 0  
 DATE OF ISSUE: 27-Jun-2022  
 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: 23-June-2022

Date of Next Calibration: 23-September-2022

## PARAMETERS:

### Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading ( $\mu\text{S}/\text{cm}$ )	Displayed Reading ( $\mu\text{S}/\text{cm}$ )	Tolerance (%)
146.9	160.5	+9.3
6667	7197	+7.9
12890	14036	+8.9
58670	61677	+5.1
	Tolerance Limit (%)	$\pm 10.0$

### Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.82	2.88	+0.06
5.03	5.13	+0.10
8.38	8.37	-0.01
	Tolerance Limit (mg/L)	$\pm 0.20$

### pH Value

Method Ref: APHA (21st edition), 4500H: B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.85	-0.15
7.0	7.10	+0.10
10.0	10.02	+0.02
	Tolerance Limit (pH unit)	$\pm 0.20$

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: HK2223600  
 SUB-BATCH: 0  
 DATE OF ISSUE: 27-Jun-2022  
 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: 23-June-2022 Date of Next Calibration: 23-September-2022

## PARAMETERS:

Turbidity Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	-0.42	--
4	4.31	+7.7
40	38.64	-3.4
80	76.24	-4.7
400	387.03	-3.2
800	737.96	-7.8
	Tolerance Limit (%)	±10.0

Salinity Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.10	+1.0
20	20.54	+2.7
30	30.74	+2.5
	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: HK2223600  
SUB-BATCH: 0  
DATE OF ISSUE: 27-Jun-2022  
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: 23-June-2022

Date of Next Calibration: 23-September-2022

## 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)
12.0	12.8	+0.8
21.5	21.2	-0.3
38.0	37.0	-1.0
	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

## **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

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

**WORK ORDER:** HK2135790  
**SUB-BATCH:** 0  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 02-Sep-2021  
**DATE OF ISSUE:** 10-Sep-2021

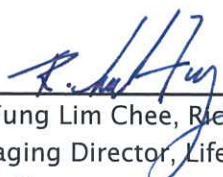
### **SPECIFIC COMMENTS**

The calibration of flow rate performed by AUES staff on 02 September 2020.

Scope of Test: Flow rate  
Equipment Type: Flow Meter  
Brand Name: Global Water  
Model No.: FP211  
Serial No.: 1449006330  
Equipment No.: --  
Calibration Factor: 314  
Date of Calibration: 01 September, 2021

### **GENERAL COMMENTS**

This is the Final Report and supersedes any preliminary report with this batch number.

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

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

Page 1 of 2



# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**Work Order:** HK2135790  
**Sub-batch:** 0  
**Date of Issue:** 10-Sep-2021  
**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.:** 1449006330  
**Equipment No.:** --  
**Calibration Factor:** 314

**Date of Calibration:** 01 September, 2021

**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. 1449006330
1	0.10	0.1
2	0.19	0.2
3	0.41	0.4
4	0.78	0.8
5	1.02	1.0
6	1.11	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



## **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	<ol style="list-style-type: none"> <li>1. Notify IEC, ER and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC, ER and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analyzed results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analyzed noise problem;</li> <li>4. Ensure remedial measures are properly implemented</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC and ER;</li> <li>2. Implement noise mitigation proposals</li> </ol>
Limit Level Exceedance	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC, ER, EPD and Contractor;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analyzed noise problem;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

*Note:*

*ET – Environmental Team*

*IEC – Independent Environmental Checker*

*ER – Engineer's Representative*



### 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 ET, ER 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, 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 – August 2022**

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

✓	Monitoring Day
	Sunday or Public Holiday



**Impact Monitoring Schedule of Air Quality, Noise and Water Quality – September 2022**

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

✓	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 ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
3-Aug-22	28544	25894.71	25918.71	1440.00	39	39	39.0	28.2	1006.7	1.24	1789	2.6702	2.7175	0.0473	26
9-Aug-22	28564	25918.71	25942.71	1440.00	38	38	38.0	26.7	1003.6	1.19	1717	2.7306	2.7645	0.0339	20
15-Aug-22	28576	25942.71	25966.71	1440.00	40	40	40.0	30	1006.2	1.25	1801	2.7432	2.8058	0.0626	35
20-Aug-22	28596	25966.71	25990.71	1440.00	39	39	39.0	28.2	1007.5	1.22	1762	2.7301	2.7612	0.0311	18
26-Aug-22	28613	25990.71	26014.71	1440.00	39	39	39.0	29.4	1010.6	1.24	1792	2.7157	2.7764	0.0607	34

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 ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
3-Aug-22	28543	23309.36	23333.36	1440.00	41	42	41.5	28.2	1006.7	1.30	1876	2.6681	2.7211	0.0530	28
9-Aug-22	28563	23333.36	23357.36	1440.00	42	42	42.0	26.7	1003.6	1.32	1905	2.7322	2.7784	0.0462	24
15-Aug-22	28575	23357.36	23381.36	1440.00	42	42	42.0	30	1006.2	1.32	1898	2.7508	2.8930	0.1422	75
20-Aug-22	28595	23381.36	23405.36	1440.00	42	43	42.5	28.2	1007.5	1.34	1926	2.7339	2.8895	0.1556	81
26-Aug-22	28605	23405.36	23429.36	1440.00	43	43	43.0	29.4	1010.6	1.35	1942	2.7305	2.8888	0.1583	82

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 ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
3-Aug-22	28542	17077.11	17101.11	1440.00	40	40	40	28.2	1006.7	1.26	1811	2.6758	2.7359	0.0728	40
9-Aug-22	28562	17101.11	17125.11	1440.00	40	40	40	26.7	1003.6	1.28	1841	2.7108	2.7390	0.0632	34
15-Aug-22	28574	17125.11	17149.11	1440.00	40	40	40	30	1006.2	1.27	1833	2.7374	2.7757	0.0649	35
20-Aug-22	28594	17149.11	17173.11	1440.00	40	41	40.5	28.2	1007.5	1.29	1862	2.7283	2.7552	0.0178	10
26-Aug-22	28612	17173.11	17197.11	1440.00	40	40	40	29.4	1010.6	1.28	1843	2.7131	2.7671	0.0388	21



## **Noise**



Noise Measurement Results (dB(A)) of CN-1																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq <sub>30min</sub>	Façade Correction (*)
4-Aug-22	13:33	53.7	56.9	49.9	56.6	59.2	51.1	56.8	59.7	53.3	57.7	59.3	53.5	57.6	59.5	55.5	51.7	58.8	54.6	56	59
13-Aug-22	9:11	57.6	63.5	53.5	56.8	62.5	53	58.7	65.5	56.5	56.2	62.5	53.5	58.3	63.5	56.5	57.6	65.5	53	58	61
16-Aug-22	13:30	56.8	57.9	54.4	58.8	61.6	54.5	55.5	56.6	54.6	55.5	57.7	53.6	55.8	56.3	53.8	56.2	56.9	53.9	57	60
22-Aug-22	9:06	58.4	60	53	60.2	60	52	56.3	58	52	55.4	57	53.5	58.2	60	52.5	59.6	62	54.5	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-2																					
Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq <sub>30min</sub>	Façade Correction (*)
4-Aug-22	14:08	59.9	62.7	51.7	59.7	62.8	53.3	61.7	64.4	52.8	63.3	66	55.5	60.5	63.3	53.1	61.6	63.5	56.2	61	64
13-Aug-22	9:57	60.7	64	56	59.6	63.5	55.5	58.2	63	55	62.2	65	57	60.6	65	56.5	58.8	63	53.5	60	63
16-Aug-22	14:06	59.9	63.3	55.8	58.8	61.6	56.2	59.7	63.3	55.7	58.8	60.8	54.9	58.6	61.7	54.4	60.8	62.7	54.6	60	63
22-Aug-22	9:42	60.8	63	50	58.6	62.5	49.5	59.4	63.5	52.5	58.8	61	55	59.3	62	56	58.7	61.5	55.5	59	62

(\*) 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	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq <sub>30min</sub>	Façade Correction (*)
4-Aug-22	14:45	58.2	56.4	51.7	57.6	57.6	51.6	56.3	58.7	51.3	55.5	56.7	52.2	57.3	59.1	52.5	57.5	60.8	51.1	57	60
13-Aug-22	10:37	58.2	63.5	55.5	60.3	65	56	59.1	63.5	55.5	60.8	65	58	59.6	64.5	56	56.2	63	52	59	62
16-Aug-22	14:42	61.7	63.3	54.8	58.8	61.7	54.4	58.6	60.9	54.7	59.9	63.6	55.6	58.8	61.7	56.4	59.8	63.3	55.8	60	63
22-Aug-22	10:18	60.8	63.5	56	58.6	62	53.5	60.2	62.5	55	56.4	59	50.5	57.6	61	51	63.7	67.5	56.5	60	63

(\*) 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	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq <sub>30min</sub>	
4-Aug-22	15:24	66.1	66.4	60.2	62.8	63.7	60.1	61.5	62.2	59.1	58.1	60.1	51.1	61.1	62.3	60	58.2	60.3	51.4	62	
13-Aug-22	11:15	60.2	66.5	58.5	60.1	65.5	59	59.4	63.5	57.5	58.2	65.5	53.5	58.3	64	54.5	56.6	63.3	53.5	59	
16-Aug-22	15:17	61.4	63.3	59.1	68.7	66.6	59.2	62.8	64.4	59.5	61.8	63.3	59.4	60.8	62.1	58.8	60.7	61.6	56.7	64	
22-Aug-22	10:58	57.7	59.5	54	58.8	61.5	55.5	63.4	66.5	58	60.2	63.5	58	61.9	63.5	58.5	58.4	61	53.5	61	



## **Water Quality**



**Water Quality Impact Monitoring Result for M1**

Date	1-Aug-22																	
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	28.7	28.7	<0.1	<0.1	6.95	6.97	93.3	93.7	4.92	4.9	7.70	7.7	0.01	0.01	8	8.0
			28.7		<0.1		6.99		94.0		4.87		7.70		0.01		8	

Date	3-Aug-22																	
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	27.1	27.1	<0.1	<0.1	6.92	6.90	94.6	94.4	4.31	4.3	7.80	7.8	0.01	0.01	8	7.5
			27.1		<0.1		6.87		94.1		4.28		7.80		0.01		7	

Date	5-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	10:00	0.16	25.5	25.5	<0.1	<0.1	6.97	6.95	91.0	90.7	20.2	20.0	7.67	7.7	0.06	0.06	47	47.5
			25.5		<0.1		6.93		90.4		19.8		7.67		0.06		48	

Date	8-Aug-22																	
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	26.8	26.8	<0.1	<0.1	7.04	7.03	92.3	92.2	6.91	6.7	7.53	7.5	0.01	0.01	4	4.0
			26.8		<0.1		7.01		92.0		6.52		7.53		0.01		4	

Date	10-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.18	25.8	25.8	<0.1	<0.1	7.01	7.01	88.7	88.7	22.7	22.8	7.75	7.8	0.07	0.07	47	47.5
			25.8		<0.1		7		88.7		22.8		7.75		0.07		48	

Date	12-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	10:10	0.18	25.1	25.1	0.5	0.5	6.51	6.51	83.3	83.3	59.1	58.2	7.70	7.7	0.04	0.04	237	235.0
			25.1		0.5		6.5		83.3		57.3		7.70		0.04		233	

Date	15-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:25	0.14	26.2	26.2	<0.1	<0.1	7.19	7.18	93.1	93.0	4.54	4.6	7.96	8.0	0.05	0.05	4	4.5
			26.2		<0.1		7.16		92.8		4.73		7.96		0.05		5	

Date	17-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	10:00	0.15	27	27.0	<0.1	<0.1	7.1	7.10	93.4	93.3	45.8	45.7	8.18	8.2	0.04	0.04	40	40.5
			27		<0.1		7.09		93.2		45.6		8.18		0.04		41	



Date	19-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.15	26.1	26.1	<0.1	<0.1	6.83	6.83	89.5	89.5	51.5	50.9	7.45	7.5	0.03	0.03	49	48.5
			26.1		<0.1		6.82		89.4		50.2		7.45		0.03		48	

Date	22-Aug-22																	
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	26.9	26.9	<0.1	<0.1	7.11	7.10	93.7	93.5	1.67	1.6	7.95	8.0	0.03	0.03	6	6.5
			26.9		<0.1		7.08		93.3		1.58		7.95		0.03		7	

Date	24-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	10:00	0.13	28	28.0	<0.1	<0.1	6.86	6.85	93.5	93.4	7.11	7.0	8.00	8.0	0.04	0.04	7	7.5
			28		<0.1		6.84		93.2		6.98		8.00		0.04		8	

Date	26-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	9:30	0.15	26.6	26.6	<0.1	<0.1	7.14	7.12	93.4	93.2	6.1	6.0	7.88	7.9	0.04	0.04	5	5.5
			26.6		<0.1		7.1		93.0		5.8		7.88		0.04		6	

Date	29-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M1	10:00	0.13	26.7	26.7	<0.1	<0.1	6.97	6.95	92.5	92.3	4.59	4.6	7.94	7.9	0.06	0.06	5	5.0
			26.7		<0.1		6.93		92.1		4.58		7.94		0.06		5	

Date	31-Aug-22																	
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	27.1	27.1	<0.1	<0.1	6.84	6.83	91.8	91.6	3.99	4.0	7.79	7.8	0.06	0.06	5	5.0
			27.1		<0.1		6.81		91.4		4		7.79		0.06		5	

Legend	Limit Level exceedance
--------	------------------------



**Water Quality Impact Monitoring Result for M2**

Date	1-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:25	0.00																

Date	3-Aug-22														
Location	Time	Depth (m)	Temp (oC)	Flow Velocity (m/s)	DO (mg/L)	DO (%)	Turbidity (NTU)	pH	Salinity	SS(mg/L)					
	M2	10:05	0.00												

Date	5-Aug-22																	
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	25.7	25.7	<0.1	<0.1	7.42	7.37	95.5	95.1	37.1	36.6	7.80	7.8	0.03	0.03	61	61.5
			25.7		<0.1		7.32		94.7		36		7.80		0.03		62	

Date	8-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:10	0.02	26.5	26.5	<0.1	<0.1	7.14	7.20	93.3	93.4	16.6	16.6	7.53	7.5	0.00	0.00	11	11.5
			26.5		<0.1		7.25		93.5		16.5		7.53		0.00		12	

Date	10-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:00	0.10	26	26.0	<0.1	<0.1	7.26	7.23	92.9	92.5	36.7	36.5	7.69	7.7	0.01	0.01	50	50.5
			26		<0.1		7.19		92.0		36.2		7.69		0.01		51	

Date	12-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:50	0.11	25.3	25.3	<0.1	<0.1	7.01	6.99	89.5	89.3	42.6	42.4	7.83	7.8	0	0.00	66	65.0
			25.3		<0.1		6.96		89.0		42.1		7.83		0		64	

Date	15-Aug-22																	
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	26.7	26.7	<0.1	<0.1	7.37	7.33	95.3	95.0	21.1	20.9	7.99	8.0	0.04	0.04	28	27.0
			26.7		<0.1		7.28		94.6		20.7		7.99		0.04		26	

Date	17-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M2	10:40	0.07	28.6	28.6	<0.1	<0.1	6.89	6.87	91.9	91.6	35.1	34.9	8.03	8.0	0.06	0.06	65	68.0
			28.6		<0.1		6.85		91.3		34.6		8.03		0.06		71	



Date	19-Aug-22																
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	26.4	26.4	<0.1	<0.1	6.96	6.91	90.3	90.0	37.5	37.1	7.59	7.6	0.04	0.04	60
			26.4		<0.1		6.85		89.6		36.6		7.59		0.04		59

59.5

Date	22-Aug-22																
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)
M2	10:10	0.00															

Date	24-Aug-22																
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)
M2	10:45	0.00															

Date	26-Aug-22																
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)
M2	10:10	0.00															

Date	29-Aug-22																
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)
M2	10:50	0.00															

Date	31-Aug-22																
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)
M2	10:00	0.00															

Legend	Limit Level exceedance
--------	------------------------



**Water Quality Impact Monitoring Result for M3**

Date	1-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:35	2.45	29.2	29.2	<0.1	<0.1	6.89	6.87	93.8	93.5	1.73	1.7	7.57	7.6	0.01	0.01	4	3.5
			29.2		<0.1		6.84		93.2		1.69		7.57		0.01		3	

Date	3-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:15	2.45	27.3	27.3	<0.1	<0.1	6.53	6.51	89.4	89.0	2.6	2.5	7.59	7.6	0.01	0.01	5	5.5
			27.3		<0.1		6.48		88.6		2.48		7.59		0.01		6	

Date	5-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:45	2.45	25.3	25.3	<0.1	<0.1	6.07	6.04	79.6	79.2	4.2	4.5	7.15	7.2	0.01	0.01	5	4.5
			25.3		<0.1		6		78.8		4.8		7.15		0.01		4	

Date	8-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:20	2.45	27.1	27.1	<0.1	<0.1	6.65	6.62	87.4	86.9	2.07	2.1	7.44	7.4	0.01	0.01	5	4.5
			27.1		<0.1		6.58		86.4		2.07		7.44		0.01		4	

Date	10-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:15	2.45	25.9	25.9	<0.1	<0.1	7.53	7.52	95.0	94.9	5.36	5.4	7.86	7.9	0.01	0.01	9	8.5
			25.9		<0.1		7.5		94.7		5.35		7.86		0.01		8	

Date	12-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	11:05	2.48	25.2	25.2	<0.1	<0.1	6.99	6.97	89.3	89.0	5.35	5.4	7.85	7.9	0.01	0.01	7	7.5
			25.2		<0.1		6.94		88.7		5.51		7.85		0.01		8	

Date	15-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:20	2.45	26.6	26.6	<0.1	<0.1	6.9	6.89	89.8	89.7	5.3	5.3	7.84	7.8	0.01	0.01	8	8.5
			26.6		<0.1		6.87		89.5		5.27		7.84		0.01		9	

Date	17-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:50	2.45	27.8	27.8	<0.1	<0.1	6.52	6.52	87.1	87.0	3.7	3.7	8.01	8.0	0.01	0.01	7	8.0
			27.8		<0.1		6.51		86.9		3.6		8.01		0.01		9	



Date	19-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:20	2.45	26.2	26.2	<0.1	<0.1	6.81	6.78	89.4	89.0	4.49	4.5	7.52	7.5	0.01	0.01	8	7.5
			26.2		<0.1		6.74		88.5		4.48		7.52		0.01		7	

Date	22-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:20	2.45	27.3	27.3	<0.1	<0.1	7.02	7.01	92.8	92.6	1.03	1.0	7.80	7.8	0.01	0.01	4	3.5
			27.3		<0.1		6.99		92.4		1.02		7.80		0.01		3	

Date	24-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:55	2.45	28.6	28.6	<0.1	<0.1	6.84	6.82	93.5	93.3	3.21	3.0	7.98	8.0	0.01	0.01	4	4.5
			28.6		<0.1		6.8		93.0		2.81		7.98		0.01		5	

Date	26-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:20	2.45	26.9	26.9	<0.1	<0.1	6.82	6.79	90.3	89.9	3.51	3.5	7.77	7.8	0.01	0.01	4	4.5
			26.9		<0.1		6.76		89.5		3.48		7.77		0.01		5	

Date	29-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	11:00	2.45	26.9	26.9	<0.1	<0.1	6.74	6.74	89.9	89.9	1.82	1.8	7.72	7.7	0.02	0.02	6	5.5
			26.9		<0.1		6.73		89.8		1.8		7.72		0.02		5	

Date	31-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:10	2.45	27.4	27.4	<0.1	<0.1	6.65	6.63	89.2	89.0	1.25	1.3	7.65	7.7	0.01	0.01	3	3.0
			27.4		<0.1		6.6		88.7		1.26		7.65		0.01		3	



**Water Quality Impact Monitoring Result for M4**

Date	1-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:50	0.48	29.4	29.4	<0.1	<0.1	7.04	6.98	95.4	94.8	1.3	1.2	7.44	7.4	0.03	0.03	2	2.0
			29.4		<0.1		6.91		94.1		1.2		7.44		0.03		2	

Date	3-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.45	27.5	27.5	<0.1	<0.1	6.49	6.47	88.7	88.3	0.2	0.2	7.66	7.7	0.01	0.01	<2	<2
			27.5		<0.1		6.44		87.8		0.2		7.66		0.01		<2	

Date	5-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:15	0.48	25.4	25.4	<0.1	<0.1	6.86	6.85	88.5	88.4	24.2	23.9	7.53	7.5	0.07	0.07	44	45.0
			25.4		<0.1		6.83		88.2		23.6		7.53		0.07		46	

Date	8-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:35	0.45	27.3	27.3	<0.1	<0.1	6.62	6.60	87.1	86.7	4.8	4.7	7.41	7.4	0.03	0.03	2	2.0
			27.3		<0.1		6.57		86.3		4.5		7.41		0.03		2	

Date	10-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:35	0.48	26.1	26.1	<0.1	<0.1	6.64	6.62	84.3	84.0	26.9	26.9	7.57	7.6	0.08	0.08	46	46.0
			26.1		<0.1		6.59		83.6		26.8		7.57		0.08		46	

Date	12-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:20	0.47	25.3	25.3	<0.1	<0.1	6.73	6.68	85.9	85.3	34.0	33.5	7.80	7.8	0.04	0.04	98	99.0
			25.3		<0.1		6.62		84.6		33.0		7.80		0.04		100	

Date	15-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:40	0.46	26.8	26.8	<0.1	<0.1	4.51	4.51	58.4	58.4	2.5	2.5	7.61	7.6	0.04	0.04	4	4.5
			26.8		<0.1		4.5		58.3		2.5		7.61		0.04		5	

Date	17-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:10	0.45	28.2	28.2	<0.1	<0.1	3.64	3.65	47.5	47.6	1.1	1.1	7.81	7.8	0.1	0.10	4	3.5
			28.2		<0.1		3.65		47.6		1.1		7.81		0.1		3	



Date	19-Aug-22																		
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	26.4	26.4	<0.1	<0.1	5.15	5.11	66.9	66.4	1.5	1.5	7.32	7.3	0.03	0.03	3	3.5
				26.4		<0.1		5.07		65.9		1.5		7.32		0.03		4	

Date	22-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:40	0.47	27.5	27.5	<0.1	<0.1	4.56	4.53	60.6	60.2	0.9	0.9	7.41	7.4	0.04	0.04	4	4.5
			27.5		<0.1		4.49		59.8		0.9		7.41		0.04		5	

Date	24-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:10	0.41	28.4	28.4	<0.1	<0.1	6.45	6.42	88.3	87.9	2.2	2.2	7.85	7.9	0.04	0.04	<2	<2
			28.4		<0.1		6.38		87.5		2.2		7.85		0.04		<2	

Date	26-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:40	0.48	27.1	27.1	<0.1	<0.1	4.88	4.88	64.7	64.7	5.3	5.2	7.45	7.5	0.04	0.04	4	4.5
			27.1		<0.1		4.87		64.6		5.1		7.45		0.04		5	

Date	29-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	11:15	0.46	27.1	27.1	<0.1	<0.1	5.48	5.46	73.1	72.8	2.0	2.0	7.66	7.7	0.09	0.09	3	3.5
			27.1		<0.1		5.43		72.4		2.0		7.66		0.09		4	

Date	31-Aug-22																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M4	10:30	0.44	27.7	27.7	<0.1	<0.1	6.33	6.30	85.1	84.7	1.0	1.0	7.56	7.6	0.05	0.05	2	2.0
			27.7		<0.1		6.27		84.3		1.0		7.56		0.05		2	

Legend	Limit Level exceedance
--------	------------------------

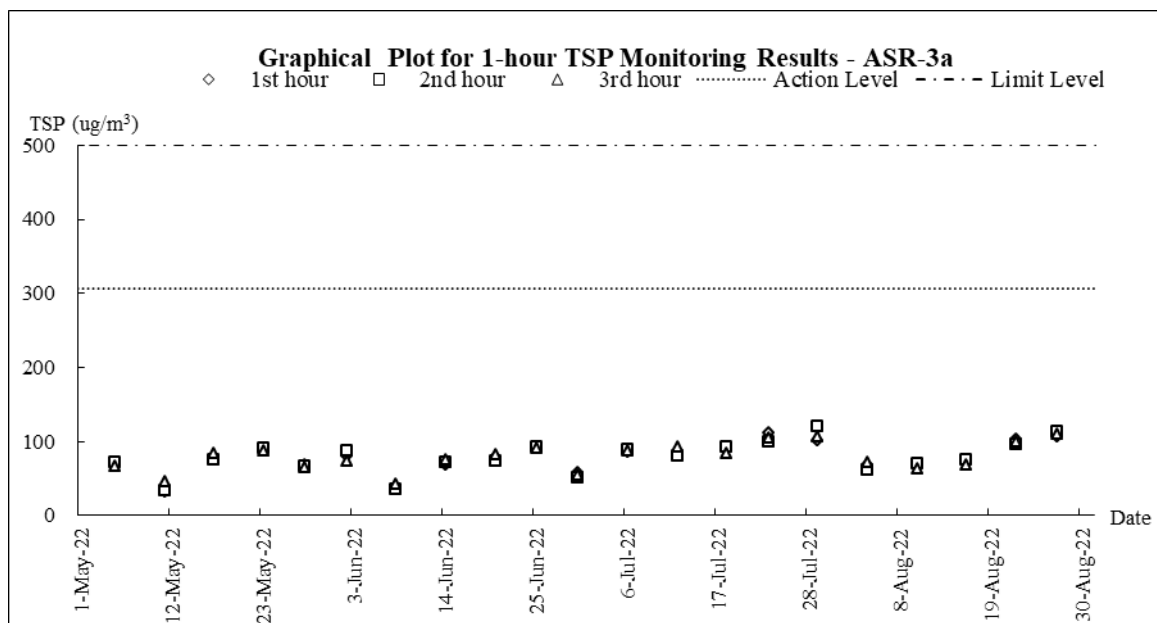
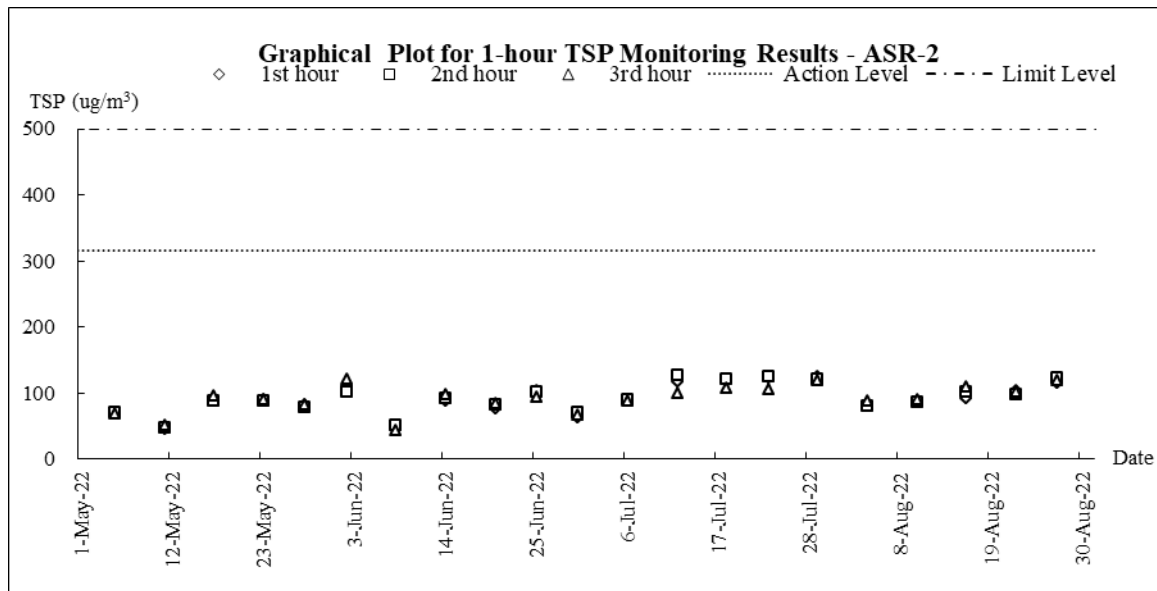
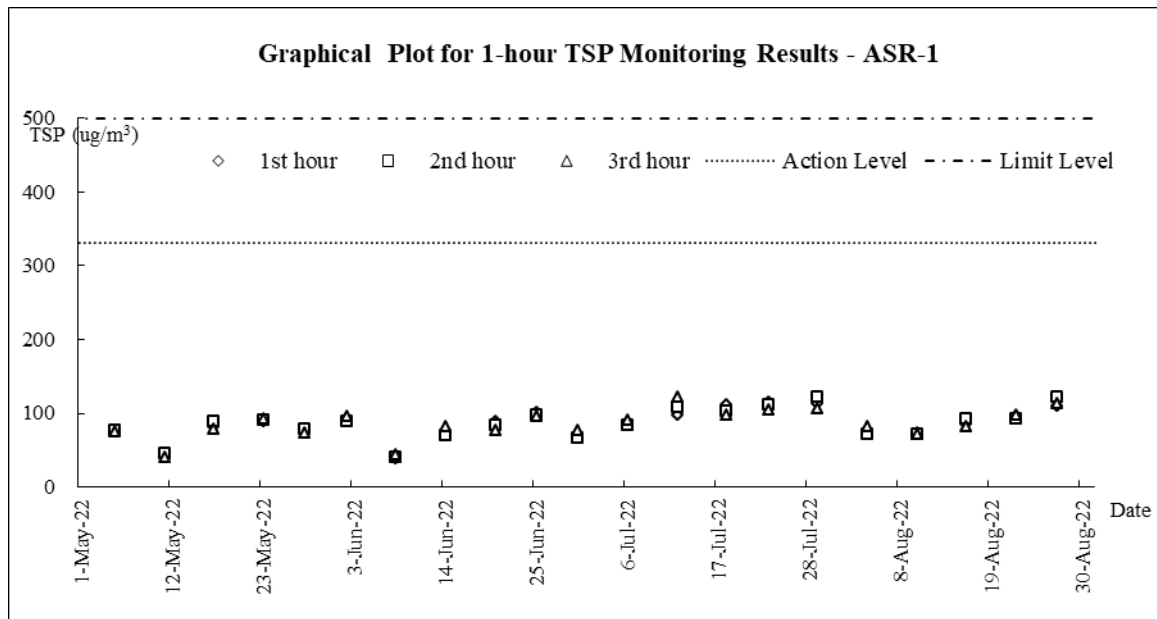


## **Appendix I**

### **Graphical Plots of Air Quality, Noise and Water Quality**

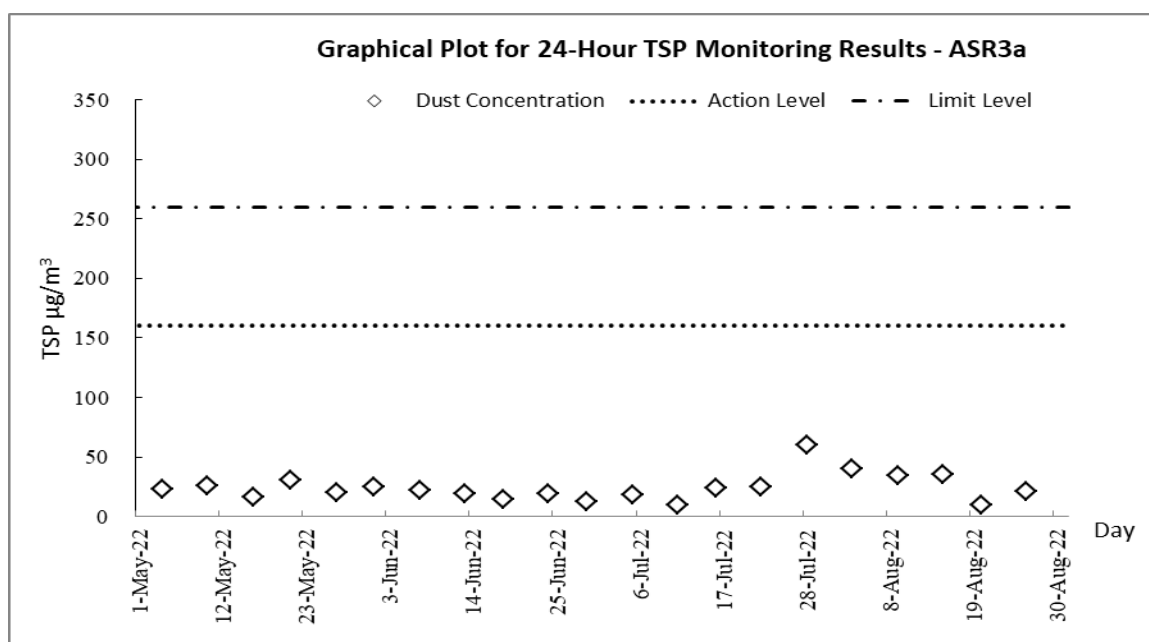
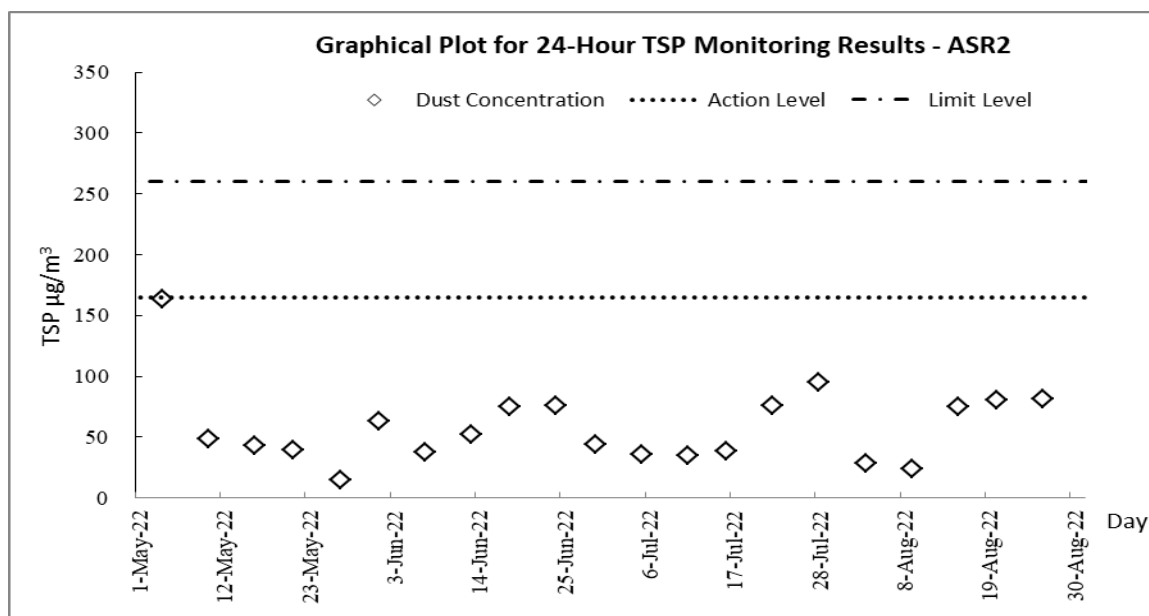
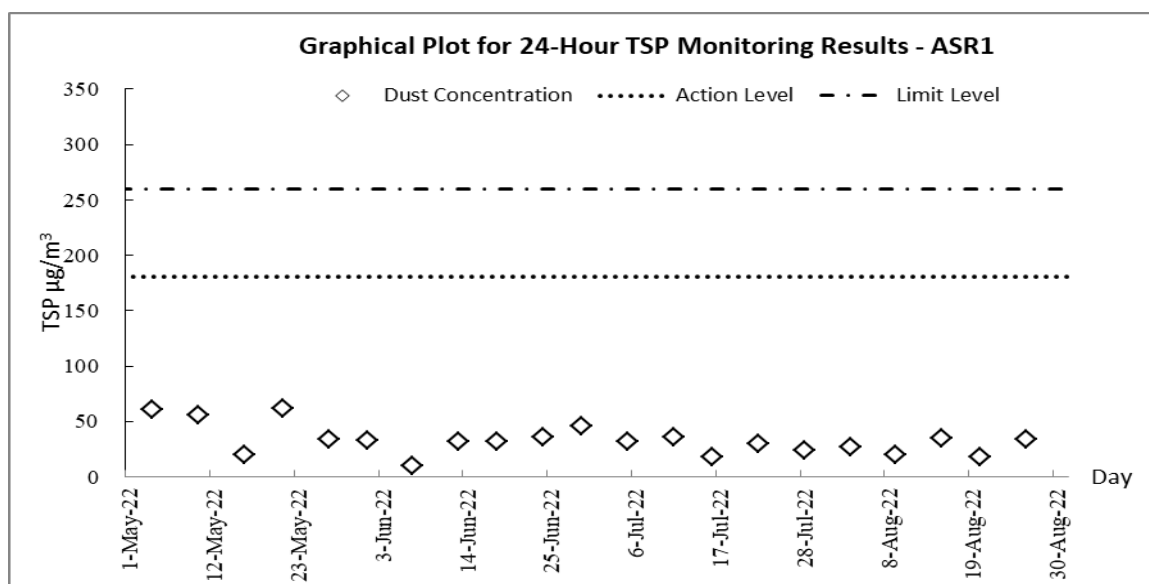


### Air Quality Impact Monitoring – 1-hour TSP



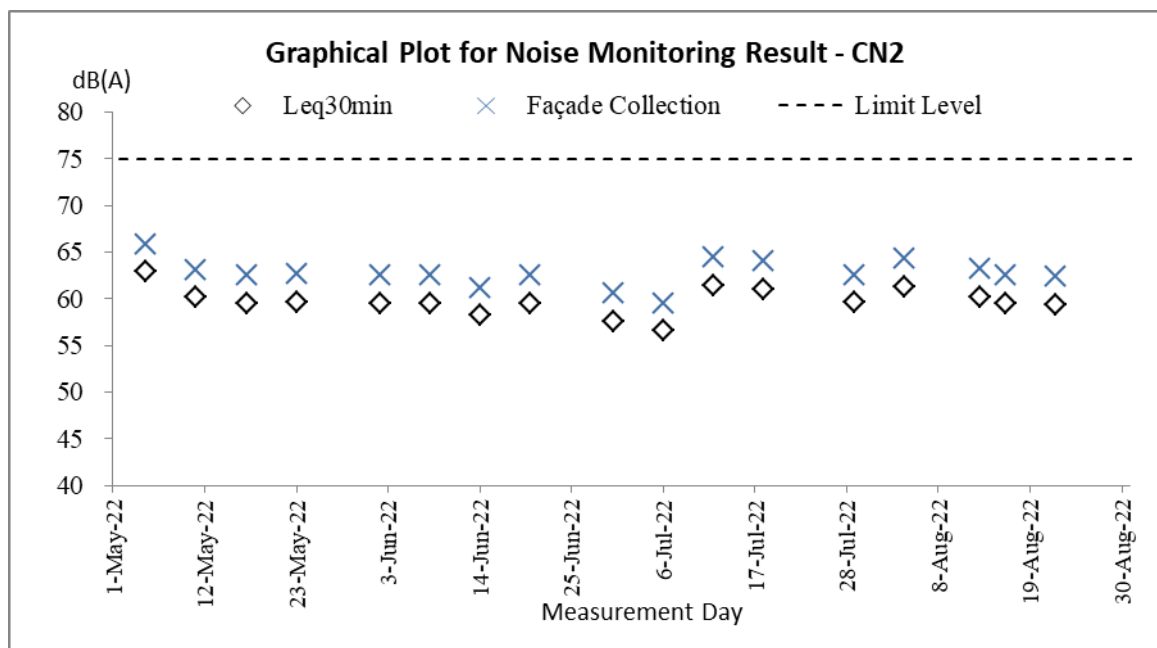
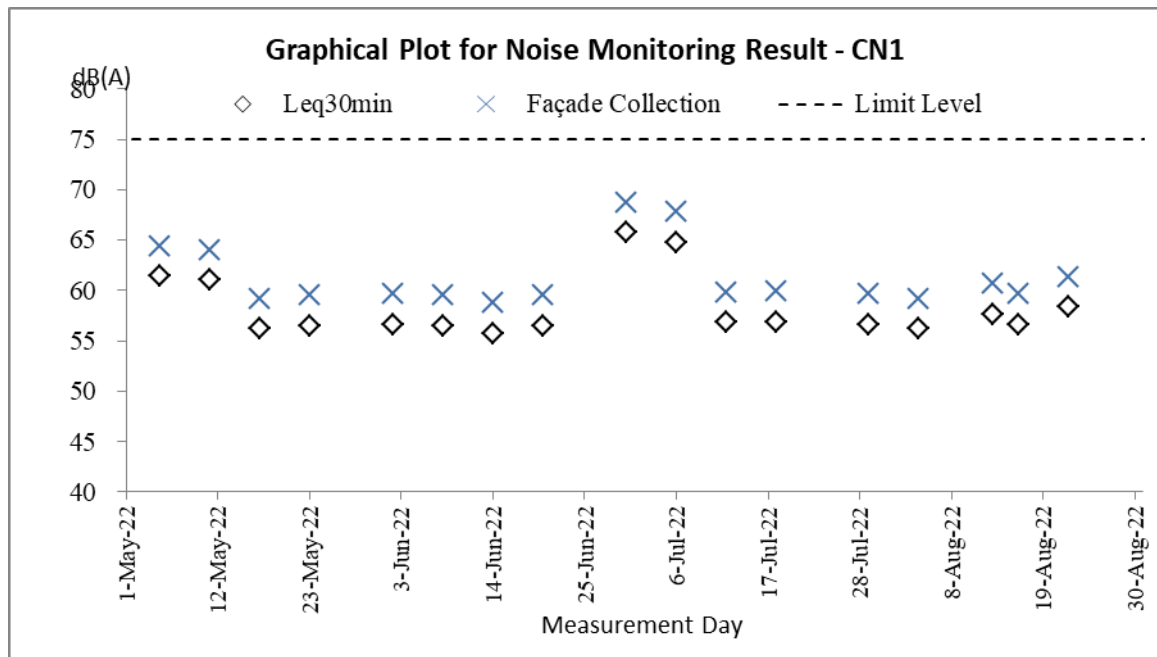


### Air Quality Impact Monitoring – 24-hour TSP

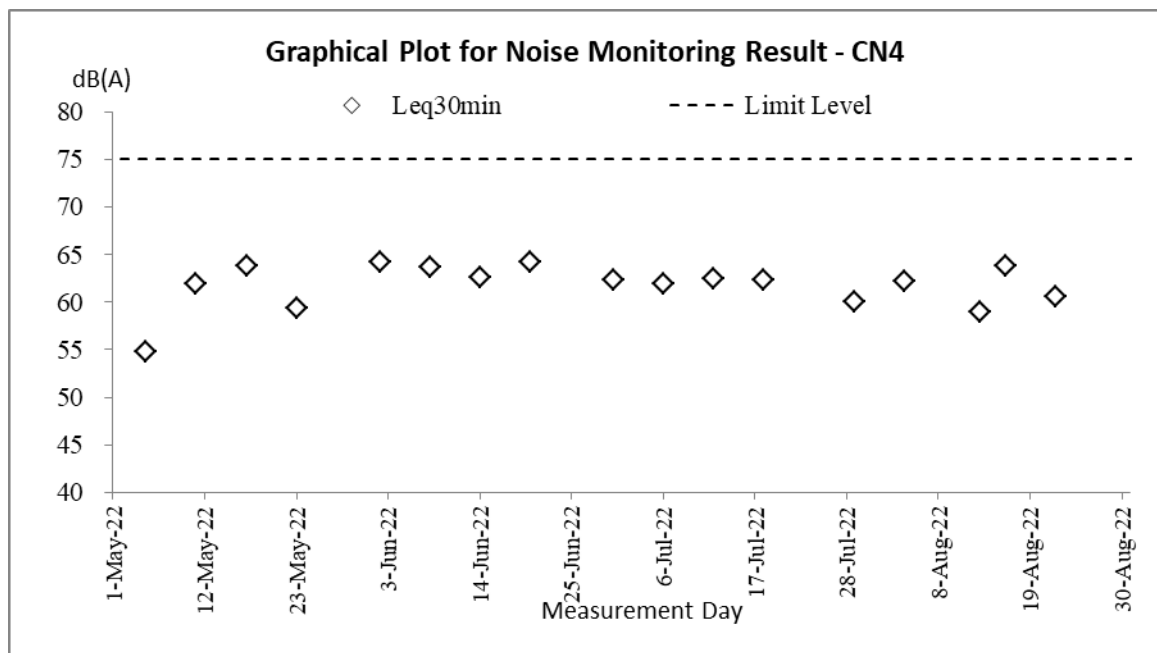
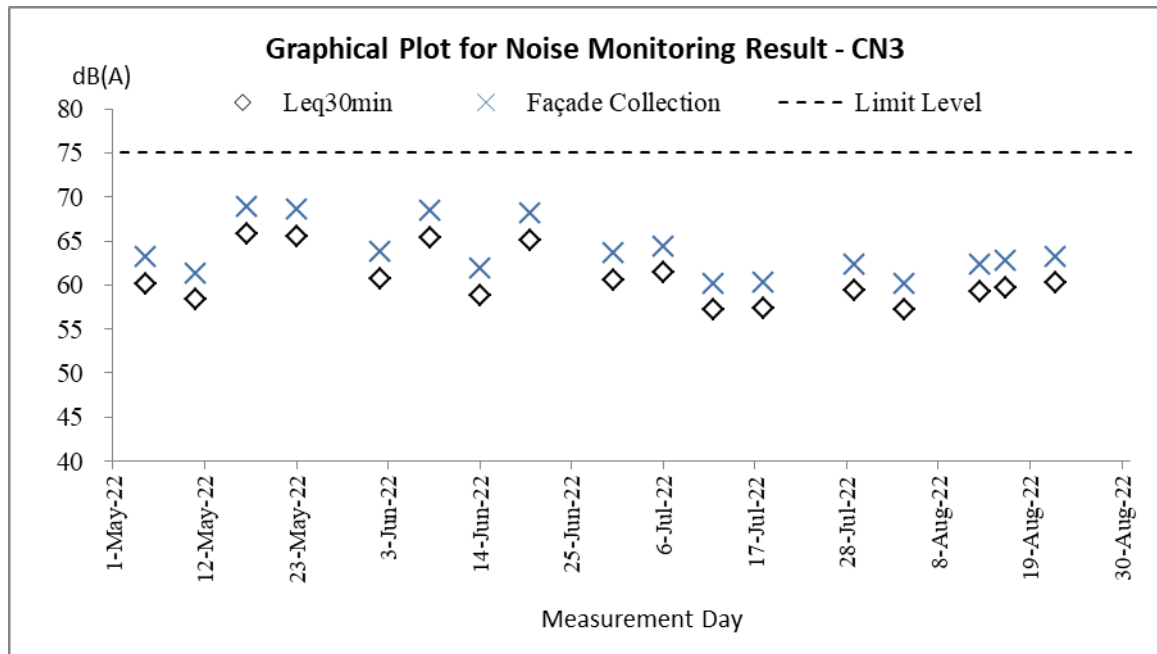




### Construction Noise Impact Monitoring

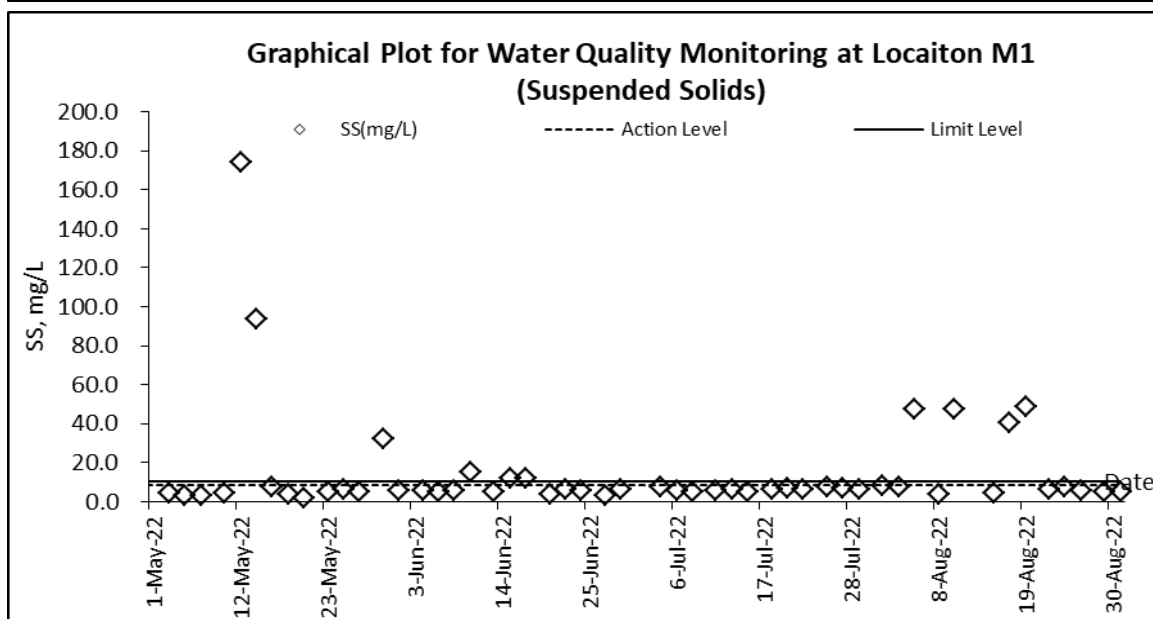
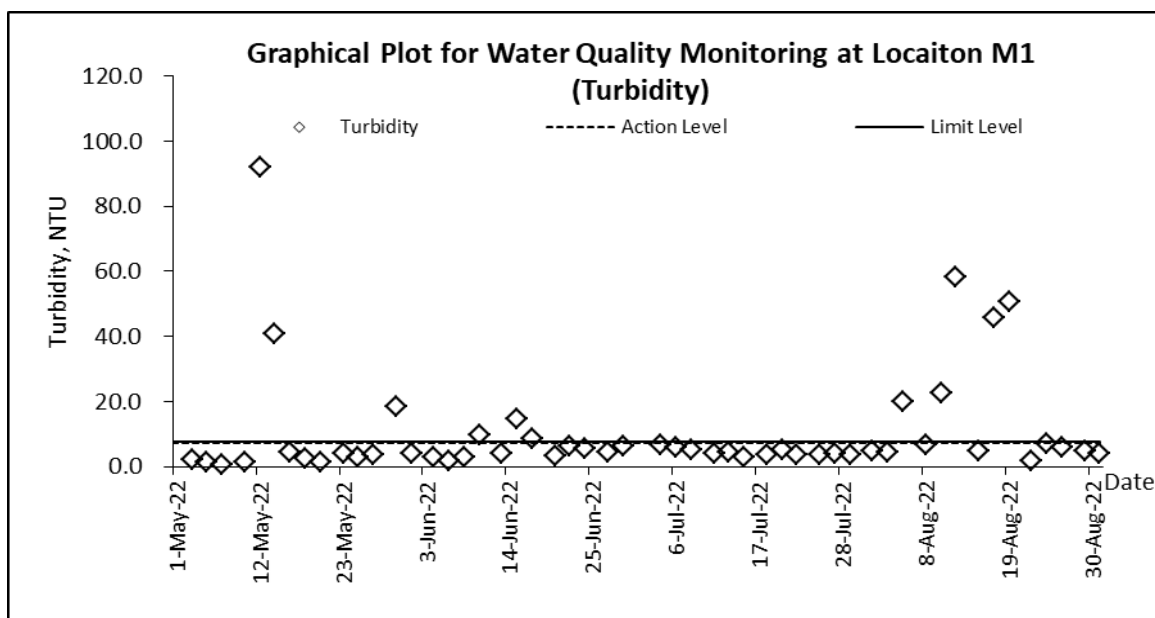
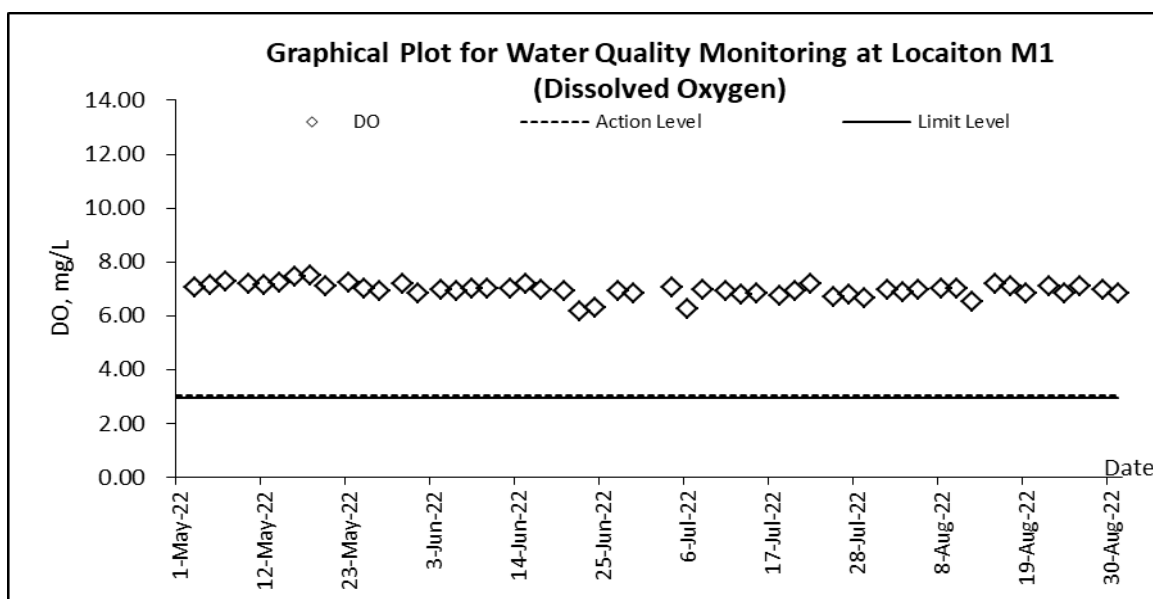




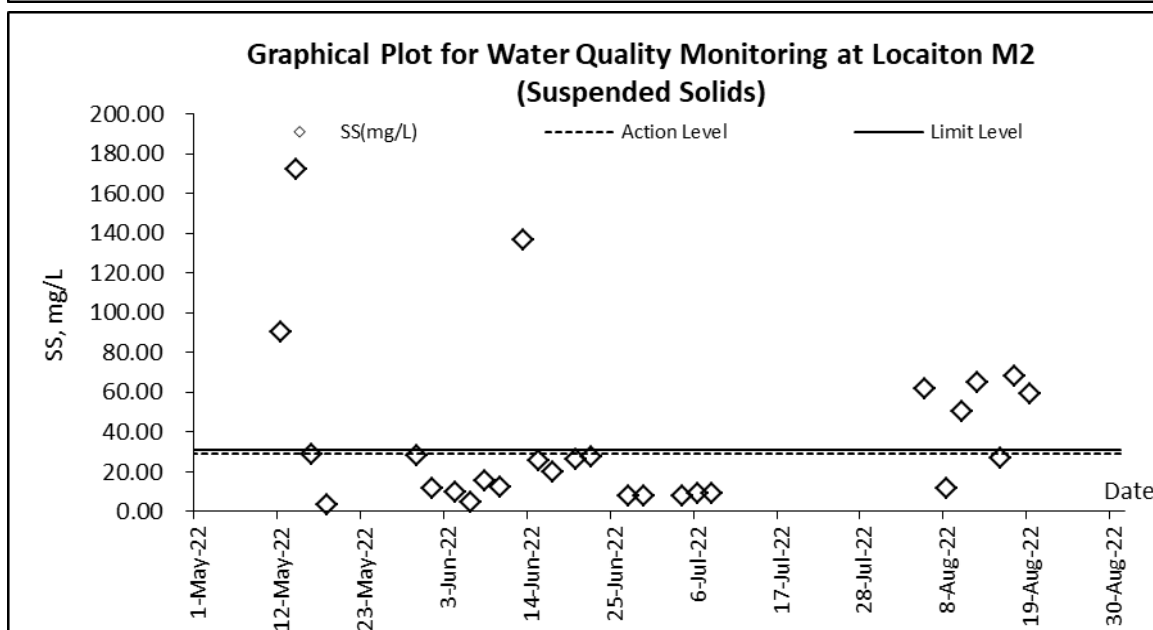
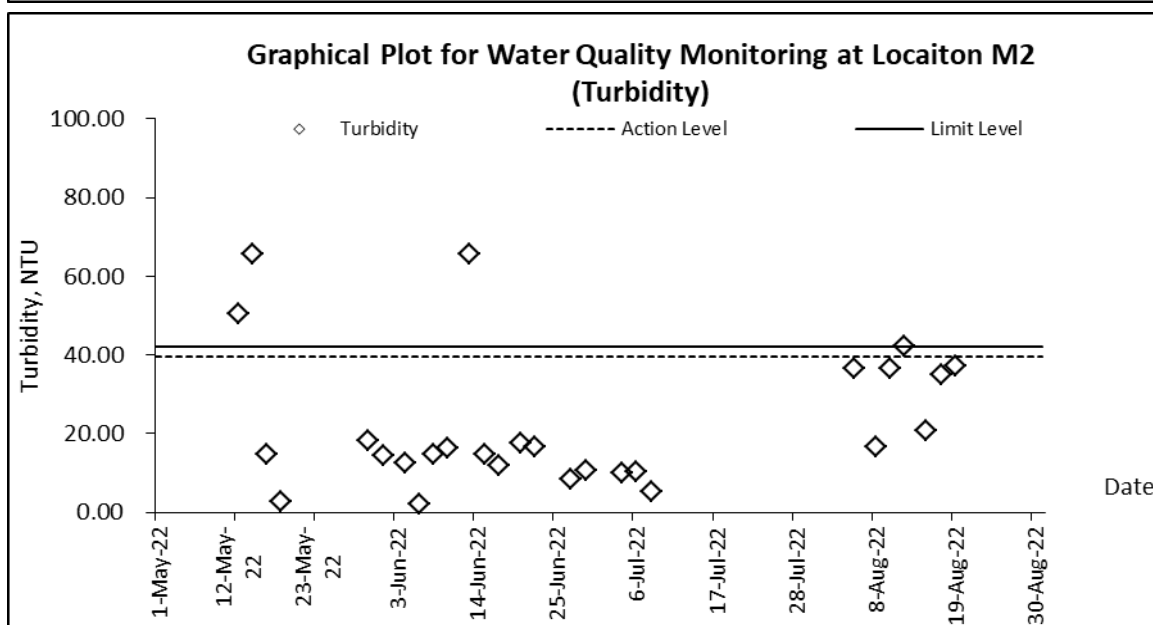
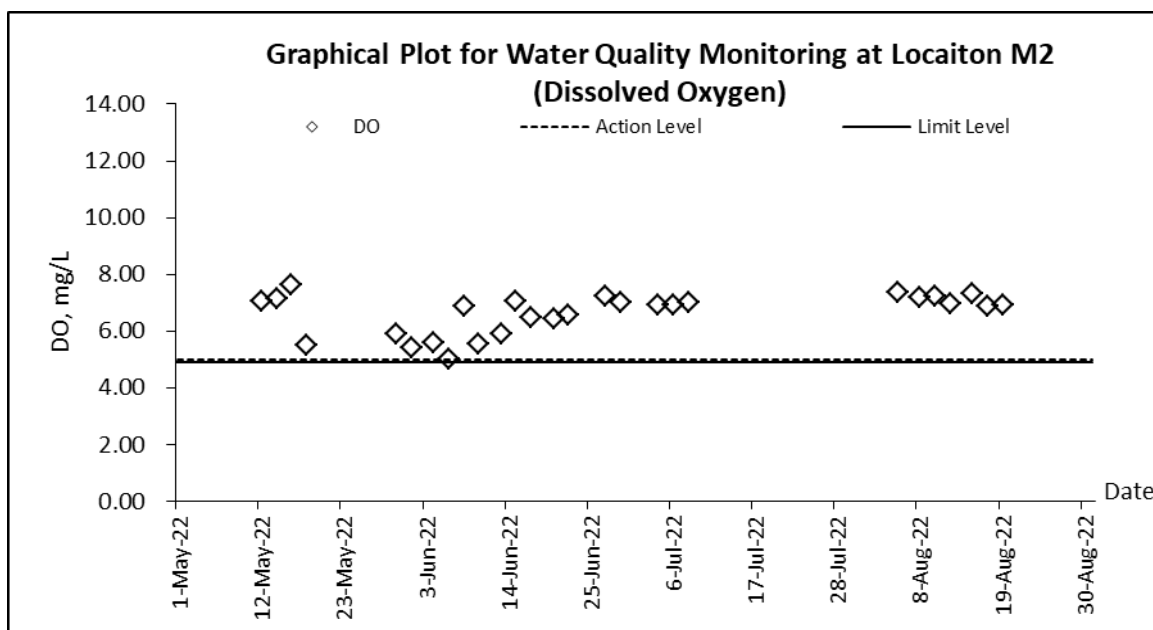




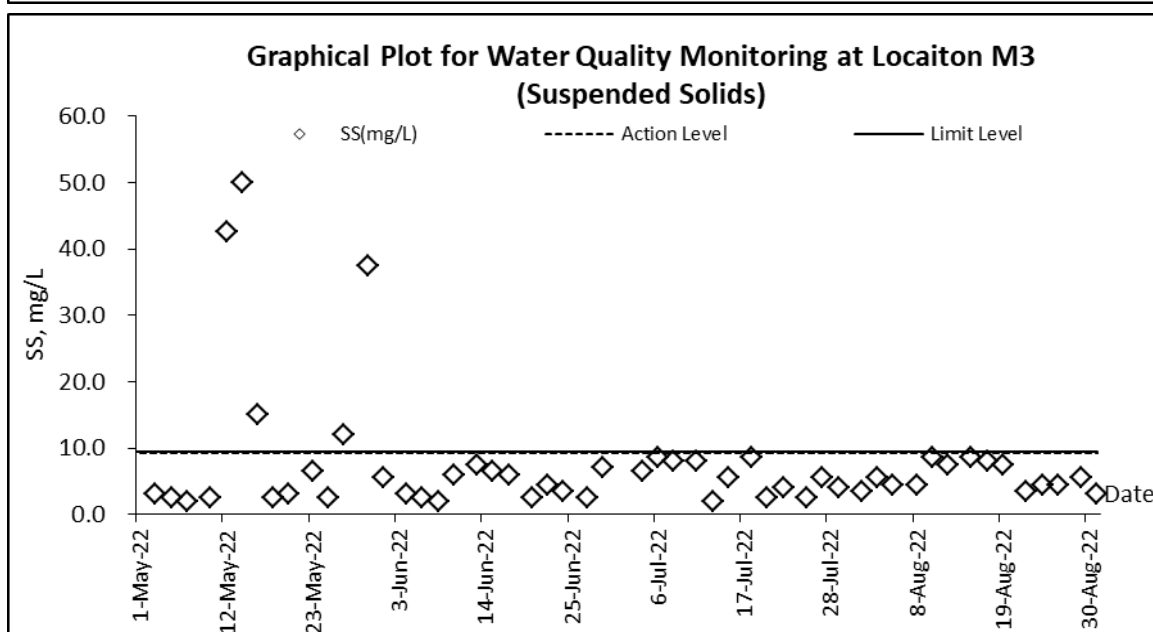
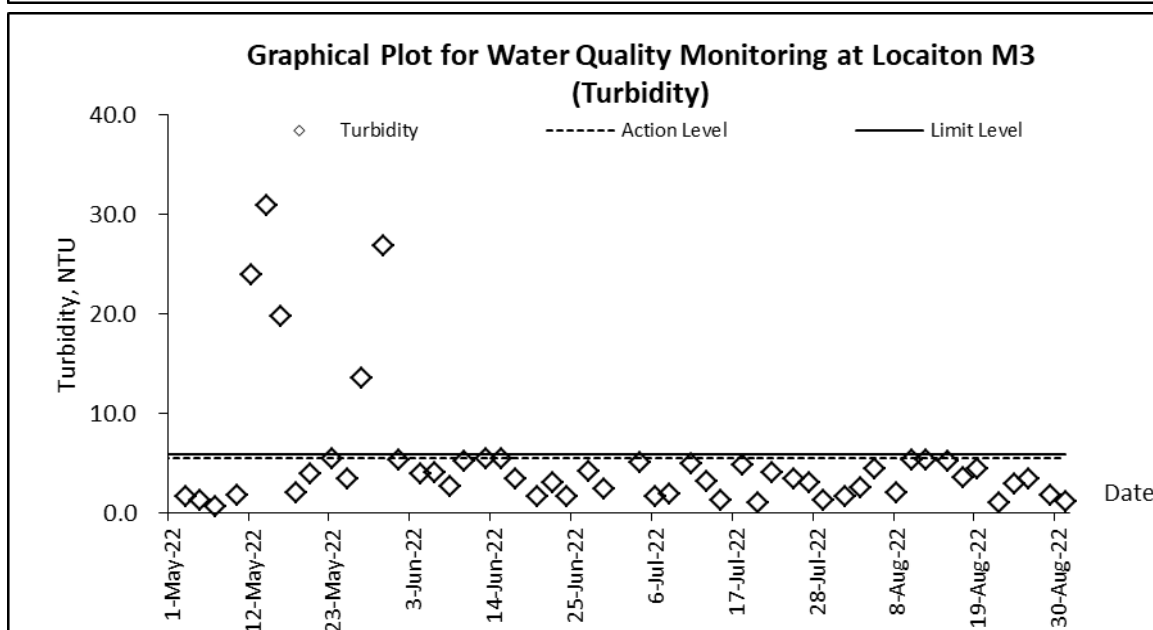
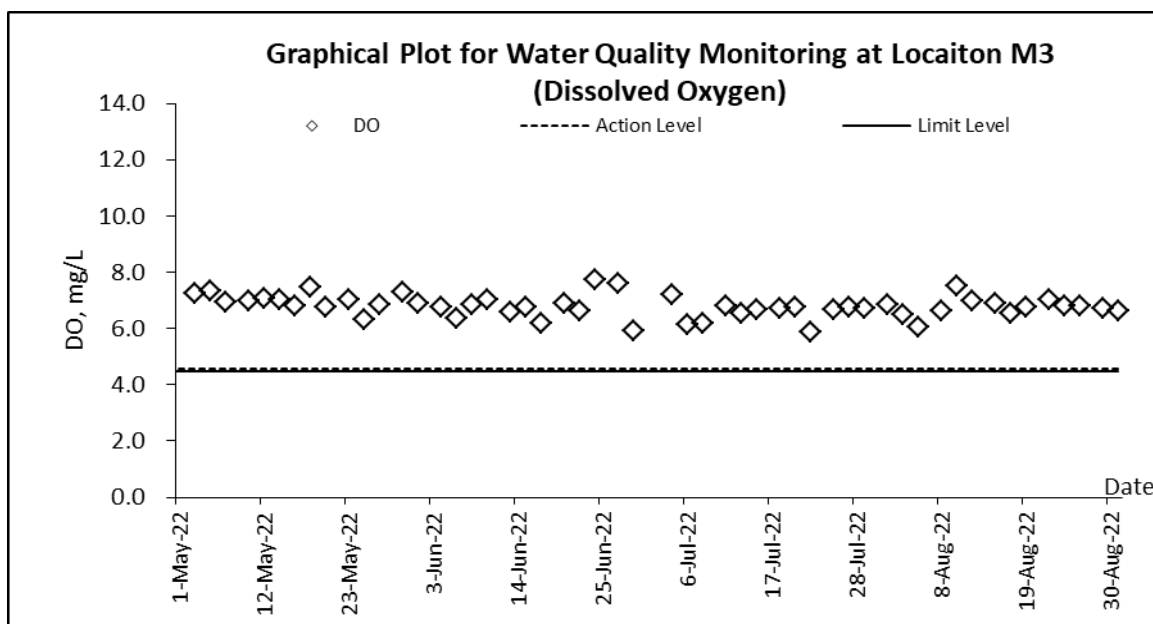
### Water Quality Impact Monitoring



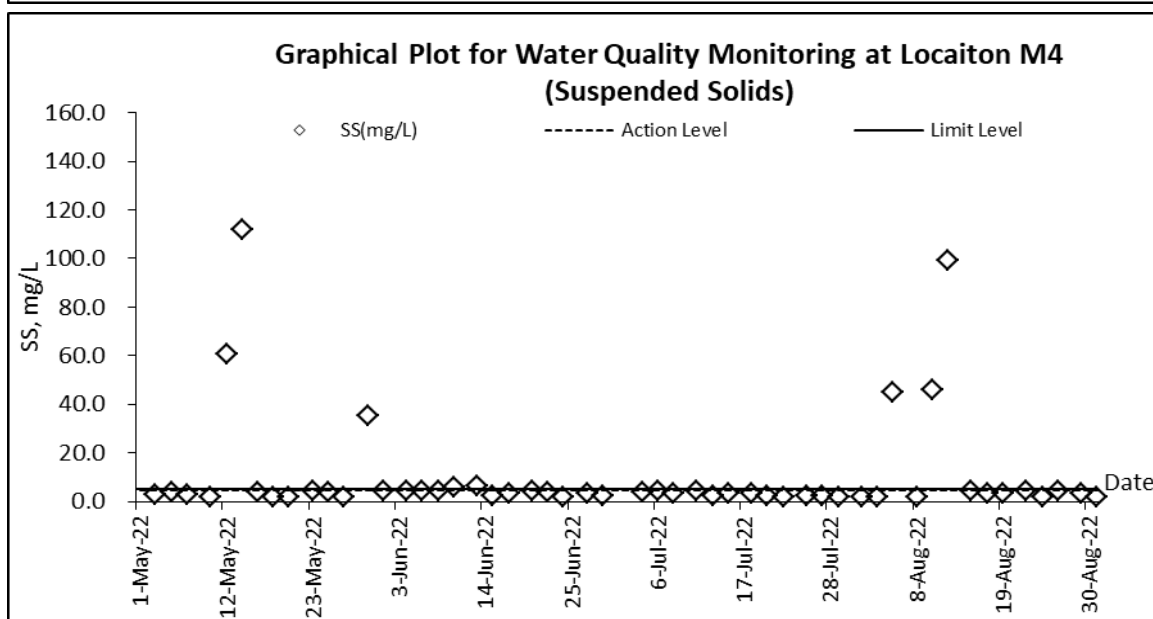
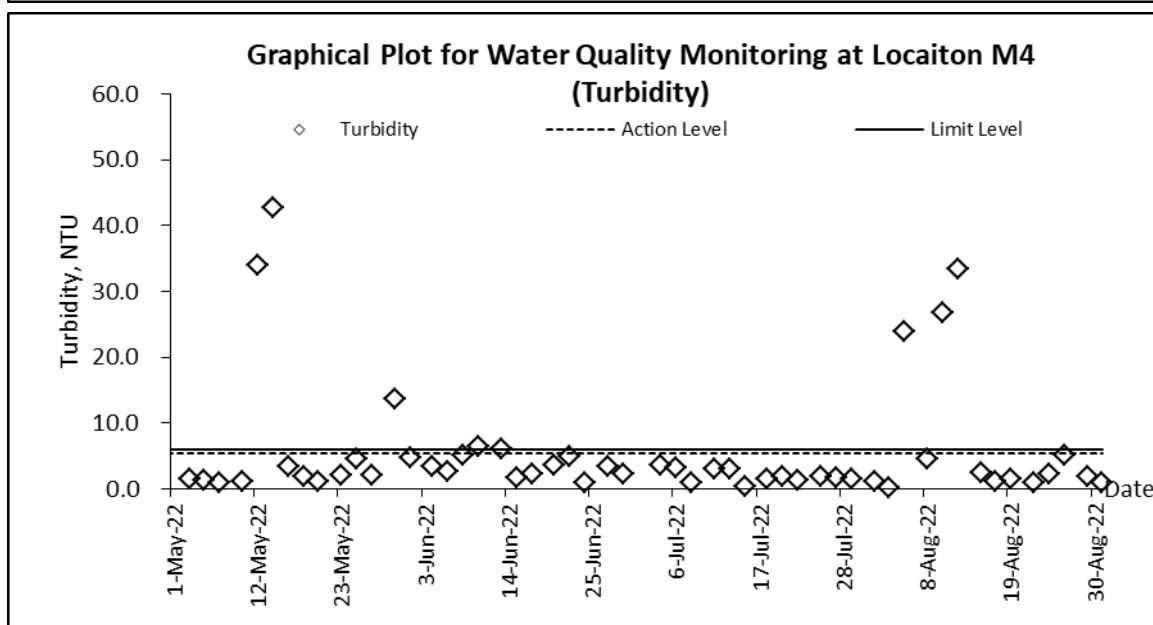
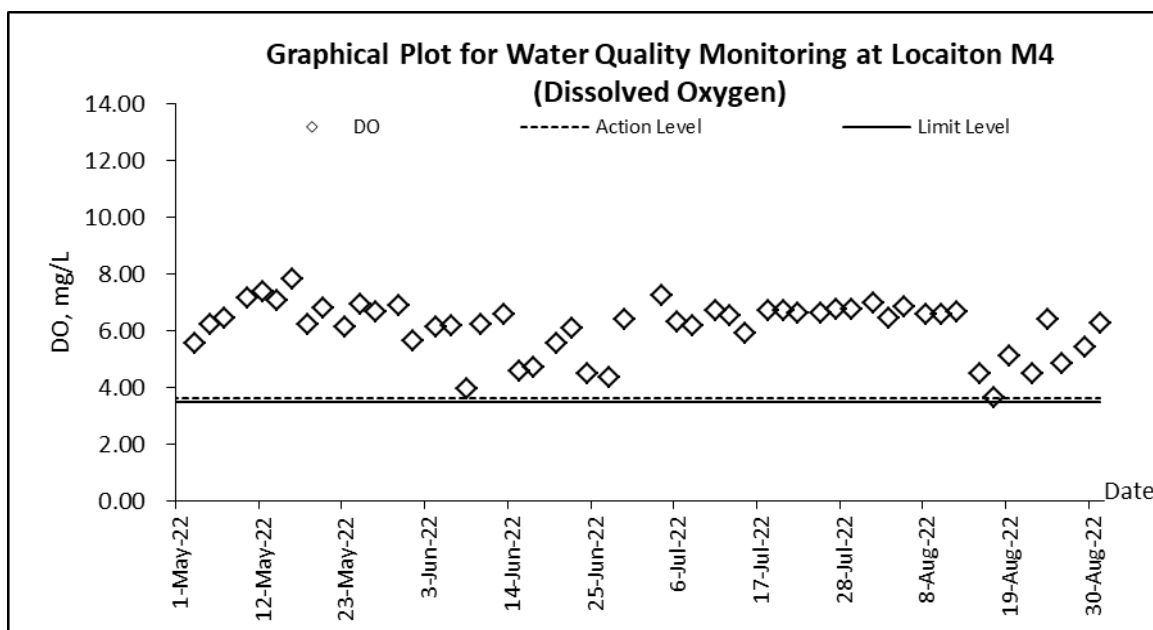














## **Appendix J**

### **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-Aug-22	Mon	Moderate southeasterly winds.	0	31.9	5.2	69.5	E/SE
2-Aug-22	Tue	Sunny intervals in the afternoon.	0.2	31.2	6.7	71.2	E/SE
3-Aug-22	Wed	Moderate easterly winds, fresh offshore later.	34.9	29.7	8.7	77.5	W/SW
4-Aug-22	Thu	Showers will be heavy at times at first.	14.9	26.2	5	92.5	E/SE
5-Aug-22	Fri	Sunny intervals in the afternoon.	165.5	27.2	8.7	87.5	E/SE
6-Aug-22	Sat	Moderate southeasterly winds.	5.5	28.7	10.5	79.0	E
7-Aug-22	Sun	Light to moderate northerly winds.	2.8	29.5	10	73.0	E
8-Aug-22	Mon	Light to moderate northerly winds.	33.3	28.9	8.5	79.7	E
9-Aug-22	Tue	Showers will be heavier at times.	72	27.1	13.2	86.7	E
10-Aug-22	Wed	Moderate southeasterly winds.	49.7	27.6	17.5	86.7	E/SE
11-Aug-22	Thu	Cloudy with showers and a few squally thunderstorms.	12.4	27.7	11.7	88.2	E
12-Aug-22	Fri	Cloudy with showers and a few squally thunderstorms.	76	25.5	4.5	94.2	E/SE
13-Aug-22	Sat	Showers will be heavy at times at first.	0	27.9	7	81.0	E/SE
14-Aug-22	Sun	Moderate southeasterly winds.	0	29.1	7	76.2	S/SE
15-Aug-22	Mon	Mainly cloudy with a few showers and isolated thunderstorms.	0	29.8	5	77.5	E/SE
16-Aug-22	Tue	Sunny intervals in the afternoon.	9.1	29.7	7	76.5	E/SE
17-Aug-22	Wed	Moderate easterly winds, fresh offshore later.	29.8	28.9	8.7	80.5	E
18-Aug-22	Thu	Cloudy with showers and a few thunderstorms.	22.1	28.5	6.2	83.2	E/SE
19-Aug-22	Fri	Moderate southeasterly winds, fresh offshore.	4.8	29.0	5.5	82.0	E/SE
20-Aug-22	Sat	Cloudy with showers and a few thunderstorms.	8.4	29.2	6.8	81.0	S/SE
21-Aug-22	Sun	Moderate southeasterly winds, fresh offshore.	1.9	29.9	7.5	76.7	S/SE
22-Aug-22	Mon	Mainly cloudy with a few showers and isolated thunderstorms.	0	30.2	6	75.2	W/SW
23-Aug-22	Tue	Sunny intervals in the afternoon.	0	31.5	11.7	71.7	W/SW
24-Aug-22	Wed	Moderate easterly winds, fresh offshore later.	5.5	30.4	17.5	73.0	E/NE
25-Aug-22	Thu	Showers will be heavy at times at first.	48.1	26.5	16.5	85.5	E/SE
26-Aug-22	Fri	Sunny intervals in the afternoon.	0.1	29.0	6.2	82.2	E/SE
27-Aug-22	Sat	Moderate southeasterly winds.	0	29.6	10.5	81.0	E/SE
28-Aug-22	Sun	Light to moderate northerly winds.	0	30.5	9.2	73.5	E/SE
29-Aug-22	Mon	Light to moderate northerly winds.	0	30.7	6.2	78.7	E



## **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 – August 2022**

Revision	0	
Date of issue	27 August 2022	
Prepared by	Alan Lam	
Reviewed by	Rachel Siu	
Verified by	Mike Leung	



## Table of Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
1.1	BACKGROUND	4
1.2	OBJECTIVE	4
<b>2</b>	<b>ECOLOGICALLY SENSITIVE HABITATS</b>	<b>5</b>
2.1	DESCRIPTION OF HABITATS	5
2.2	MONITORING MEASURES OF WETLAND HABITATS	6
2.3	MONITORING MEASURES OF NON-WETLAND HABITATS	6
<b>3</b>	<b>METHODOLOGY</b>	<b>7</b>
3.1	MAMMAL SURVEY	7
3.2	BIRD SURVEY	7
3.3	HERPETOFAUNA SURVEY	7
3.4	DRAGONFLY SURVEY	7
3.5	BUTTERFLY SURVEY	8
3.6	AQUATIC FAUNA SURVEY	8
<b>4</b>	<b>RESULT</b>	<b>9</b>
<b>5</b>	<b>DISCUSSION</b>	<b>14</b>
	<b>Appendix I – Transect Routes for Contract CV/2016/10</b>	<b>17</b>



<b><u>LIST OF TABLE</u></b>	
Table 1	Action and Limit Levels and Responses to Evidence of Declines in Aquatic Fauna
Table 2	Action and Limit Levels and Responses to Evidence of Declines in Non-Aquatic Fauna
Table 3	Survey Schedule
Table 4	Result of mammal in survey
Table 5	Result of Avifauna in survey
Table 6	Result of reptile in survey
Table 7	Result of amphibian in survey
Table 8	Result of butterfly in survey
Table 9	Result of Odonate in survey
Table 10	Result of freshwater communities in survey

<b><u>LIST OF APPENDIX</u></b>	
Appendix I	Transect Routes for Contract CV/2016/10

<b><u>LIST OF FIGURES</u></b>	
Figure 1	Bar chart showing the total species richness within site boundary from 2019 to 2022
Figure 2	Bar chart showing the total abundance within site boundary from 2019 to 2022
Figure 3	Bar chart showing the species richness within site boundary by taxa from 2019 to 2022
Figure 4	Bar chart showing the species richness based on habitat type from 2019 to 2022
Figure 5	Bar chart showing the abundance based on habitat type from 2019 to 2022



# 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 conservation 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 23<sup>rd</sup> August 2022, 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 34 bird individuals from 10 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey. Two species of conservation interests was recorded in this survey: Chinese Hwamei (*Garrulax canorus*) 畫眉 and Greater Coucal (*Centropus sinensis*) 褐翅鴉鵂.

### ■ 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 5 species recorded in the monitoring area.

### ■ Dragonfly

There were a total of 7 odonate individuals from 4 species recorded in the monitoring area. One species of conservation interests was recorded in this survey: Scarlet Basker (*Urothemis signata*) 赤斑曲鈎脈蜻.

### ■ Freshwater communities

There were 2 freshwater community recorded in the monitoring area.



**Picture 1**

Wet woodland in monitoring area.



**Picture 2**

(*Somanniathelphusa zanklon*) 鎌刀束腰蟹





**Table 4 Result of mammal in survey**

Scientific Name	Common Name	Chinese Name	Conservation Status	23/08/2022				
				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	23/08/2022				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
<i>Spilopelia chinensis</i>	Spotted Dove	珠頸斑鳩		1	3			
<i>Centropus sinensis</i>	Greater Coucal	褐翅鴉鵂	Class 2 Protected Animal of China; China Red Data Book Status: (Vulnerable)	1				
<i>Lanius schach</i>	Long-tailed Shrike	棕背伯勞					1	
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	紅耳鵲		2			5	
<i>Pycnonotus aurigaster</i>	Sooty-headed Bulbul	白喉紅臀鵲					4	
<i>Prinia flaviventris</i>	Yellow-bellied Prinia	黃腹鷦鶯					2	
<i>Orthotomus sutorius</i>	Common Tailorbird	長尾縫葉鶯			1			
<i>Garrulax canorus</i>	Chinese Hwamei	畫眉	Appendix 2 of CITES				2	
<i>Garrulax perspicillatus</i>	Masked Laughingthrush	黑臉噪鵲		4				
<i>Motacilla alba</i>	White Wagtail	白鵲鶯		8				

\*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	23/08/2022				
				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	23/08/2022				
				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	23/08/2022				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
<i>Borbo cinnara</i>	Formosan Swift	杣弄蝶		2				
<i>Abisara echerius</i>	Plum Judy	蛇目褐蛱蝶		1			1	
<i>Neptis hylas</i>	Common Sailer	中環蛱蝶		1				
<i>Mycalesis mineus</i>	Dark Brand Bush Brown	小眉眼蝶			1			
<i>Catopsilia pomona</i>	Lemon Emigrant	遷粉蝶		3				

\*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	23/08/2022				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
<i>Ceriagrion auranticum</i>	Orange-tailed Sprite	翠胸黃蟴						2
<i>Brachydiplax chalybea</i>	Blue Dasher	藍額疏脈蜻						1
<i>Pantala flavescens</i>	Wandering Glider	黃蜻						2
<i>Urothemis signata</i>	Scarlet Basker	赤斑曲鈎脈蜻	Fellowes et al. (2002): LC					2

\*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	23/08/2022				
				Non-wetland		Wetland		
				UG	WL	MA	WW	WC
<i>Puntius semifasciolatus</i>	Chinese Barb	五線無鬚鯢						10
<i>Somanniathelphusa zanklon</i>		鎌刀束腰蟹						10

\*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 August 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.

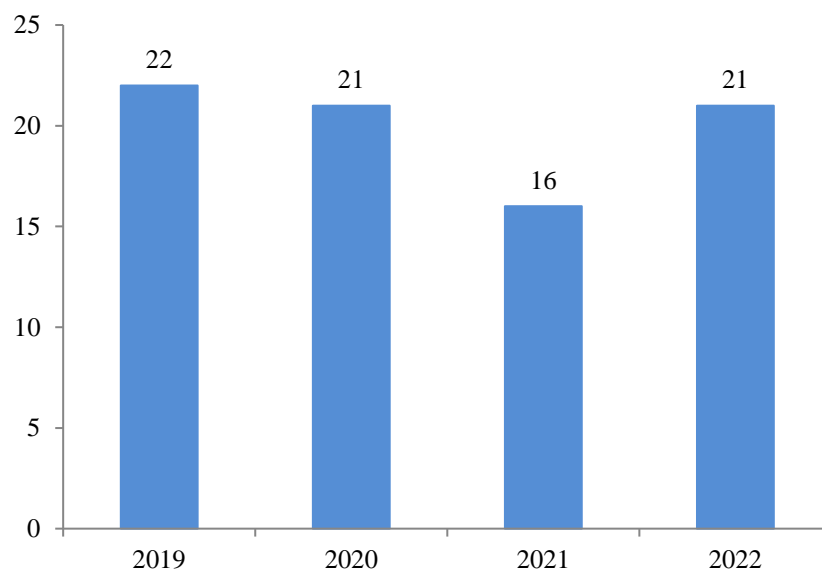


Figure 1: Bar chart showing the total species richness within site boundary from 2019 to 2022 (Actual quantity annotated at the top of each bar)

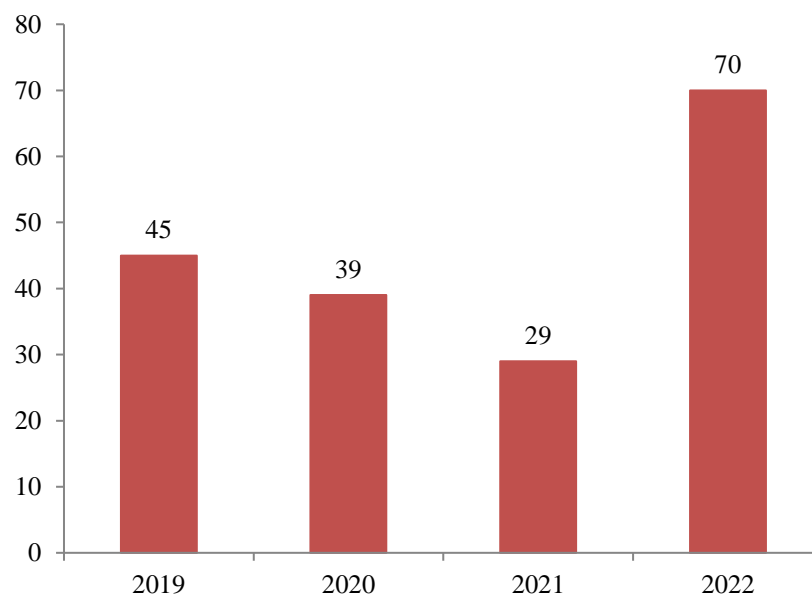


Figure 2: Bar chart showing the total abundance within site boundary from 2019 to 2022 (Actual quantity annotated at the top of each bar)



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.

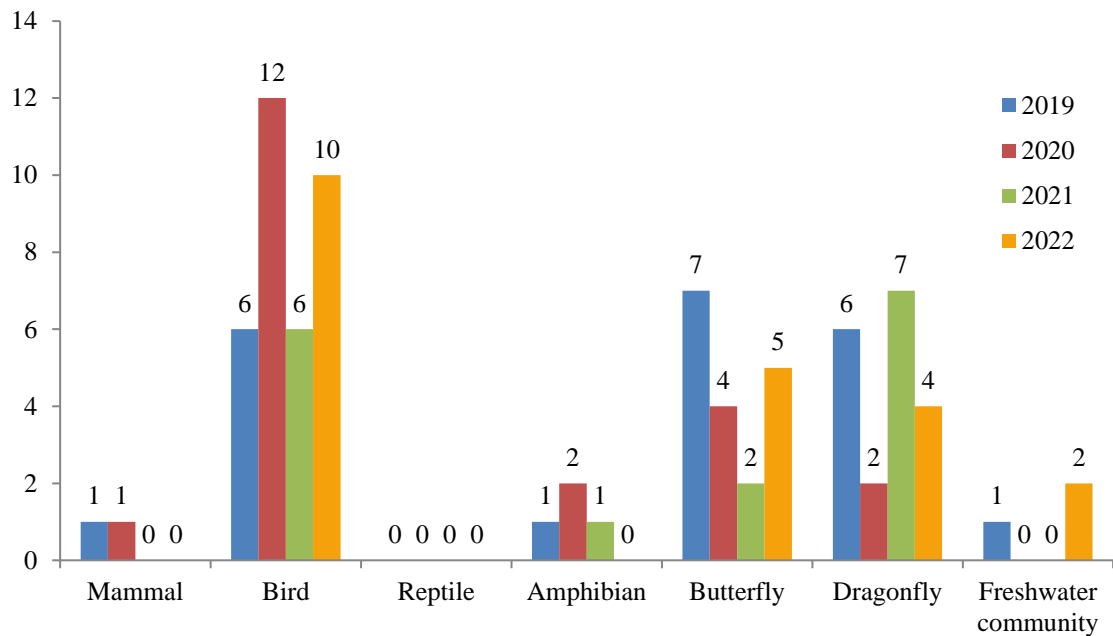


Figure 3: Bar chart showing the species richness within site boundary by taxa from 2019 to 2022  
 (Actual quantity annotated at the top of each bar)

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 August over years were compared in Figures 4 and 5.

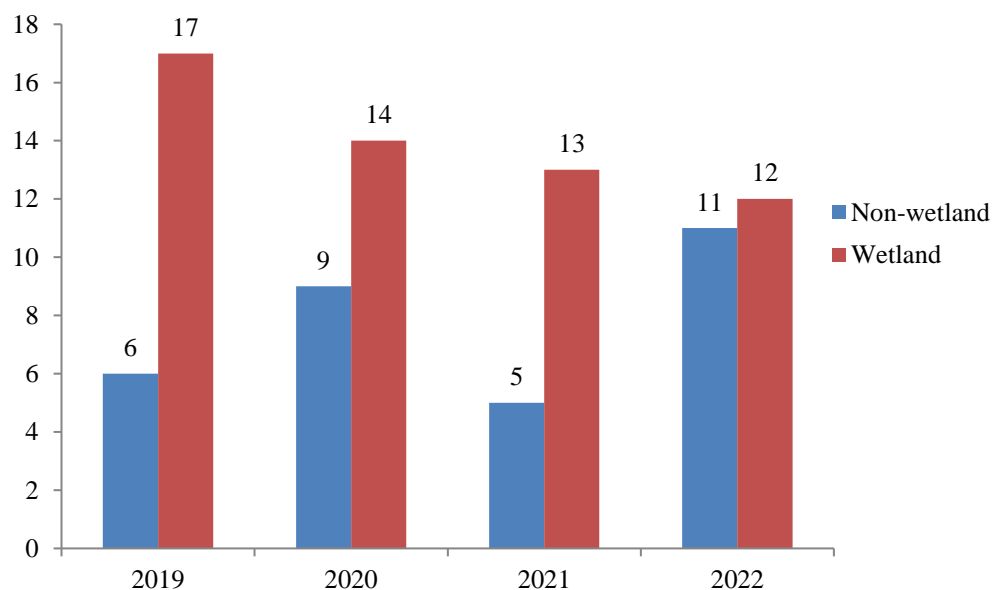


Figure 4: bar chart showing the species richness based on habitat type from 2019 to 2022  
 (Actual quantity annotated at the top of each bar)



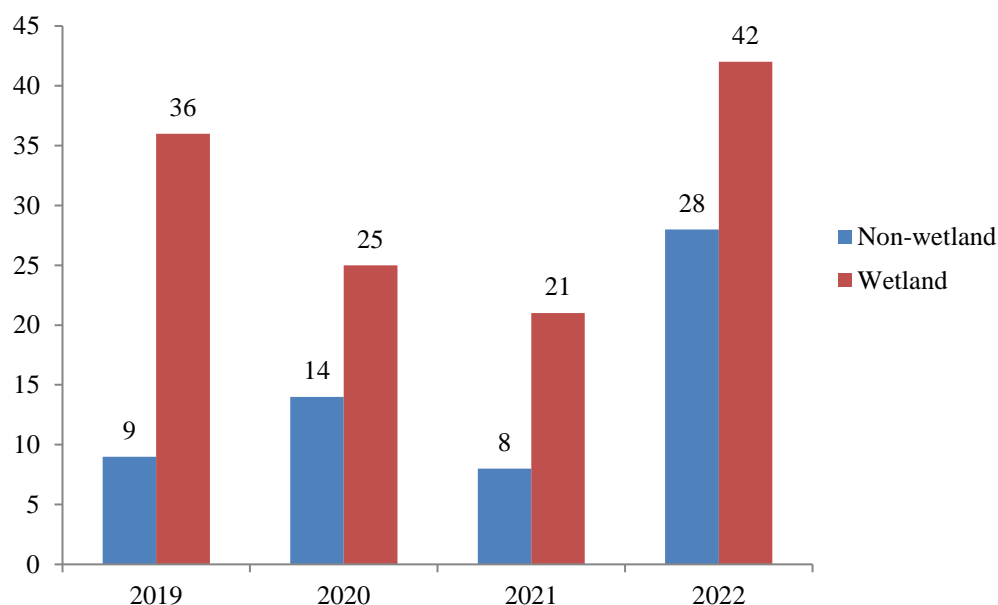


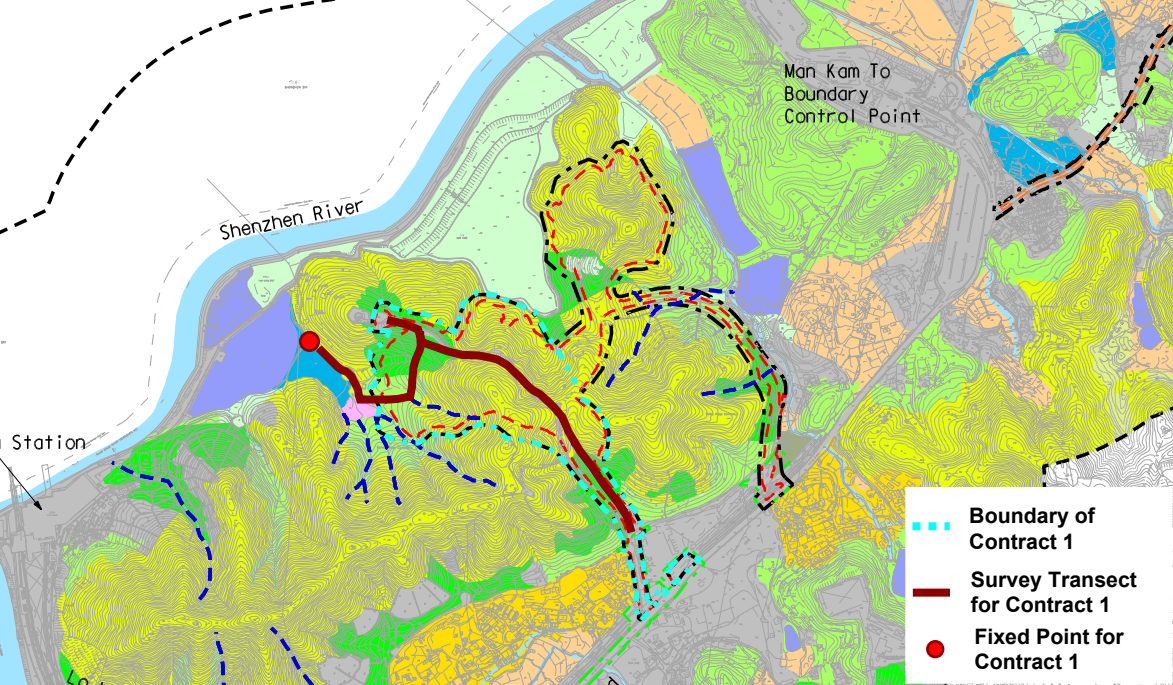
Figure 5: bar chart showing the abundance based on habitat type from 2019 to 2022  
 (Actual quantity annotated at the top of each bar)

5.4 After analysing survey results in August from 2019 to 2022, there was no significant drop in species richness and abundance for wetland habitat. The reduction could be due to natural fluctuation. Yet, 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. Unnecessary site clearance should be avoided as well. 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/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**






## **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 – August 2022**

Revision	0	
Date of issue	27 August 2022	
Prepared by	Alan Lam	
Reviewed by	Rachel Siu	
Verified by	Mike Leung	



## Table of Contents

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
1.1	BACKGROUND	4
1.2	OBJECTIVE	4
<b>2</b>	<b>ECOLOGICALLY SENSITIVE HABITATS</b>	<b>5</b>
2.1	DESCRIPTION OF HABITATS	5
2.2	MONITORING MEASURES OF WETLAND HABITATS	6
2.3	MONITORING MEASURES OF NON-WETLAND HABITATS	6
<b>3</b>	<b>METHODOLOGY</b>	<b>7</b>
3.1	MAMMAL SURVEY	7
3.2	BIRD SURVEY	7
3.3	HERPETOFAUNA SURVEY	7
3.4	DRAGONFLY SURVEY	7
3.5	BUTTERFLY SURVEY	8
3.6	AQUATIC FAUNA SURVEY	8
<b>4</b>	<b>RESULT</b>	<b>9</b>
<b>5</b>	<b>DISCUSSION</b>	<b>13</b>
	<b>Appendix I – Transect Routes for Contract CV/2017/02</b>	<b>16</b>



<b><u>LIST OF TABLE</u></b>	
Table 1	Action and Limit Levels and Responses to Evidence of Declines in Aquatic Fauna
Table 2	Action and Limit Levels and Responses to Evidence of Declines in Non-Aquatic Fauna
Table 3	Survey Schedule
Table 4	Result of mammal in survey
Table 5	Result of Avifauna in survey
Table 6	Result of reptile in survey
Table 7	Result of amphibian in survey
Table 8	Result of butterfly in survey
Table 9	Result of Odonate in survey
Table 10	Result of freshwater communities in survey

<b><u>LIST OF APPENDIX</u></b>	
Appendix I	Transect Routes for Contract CV/2017/02

<b><u>LIST OF FIGURES</u></b>	
Figure 1	Bar chart showing the total species richness within site boundary from 2019 to 2022
Figure 2	Bar chart showing the total abundance within site boundary from 2019 to 2022
Figure 3	Bar chart showing the species richness within site boundary by taxa from 2019 to 2022
Figure 4	Bar chart showing the species richness based on habitat type from 2019 to 2022
Figure 5	Bar chart showing the abundance based on habitat type from 2019 to 2022



# 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 conservation 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 23<sup>rd</sup> August 2022, 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 5 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 were one amphibian species recorded in the monitoring area.

- Butterfly

There was a total of 3 butterfly individual from 2 species recorded in the monitoring area.

- Dragonfly

There were a total of 3 odonate from 2 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**

Watercourse in monitoring area.





**Table 4 Result of mammal in survey**

Scientific Name	Common Name	Chinese Name	Conservation Status	23/08/2022				
				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	23/08/2022				
				UG	WL	MA	WW	WC
<i>Urocissa erythroryncha</i>	Red-billed Blue Magpie	紅嘴藍鵲			1			
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	紅耳鵲			7			
<i>Prinia flaviventris</i>	Yellow-bellied Prinia	黃腹鷦鶯		2				
<i>Garrulax perspicillatus</i>	Masked Laughingthrush	黑臉噪鵲		5				
<i>Motacilla alba</i>	White Wagtail	白鵲				1	2	

\*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	23/08/2022				
				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	23/08/2022				
				UG	WL	MA	WW	WC
<i>Polypedates megacephalus</i>	Brown Tree Frog	斑腿泛樹蛙				+		

\*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	23/08/2022				
				UG	WL	MA	WW	WC
<i>Graphium agamemnon</i>	Tailed Jay	統帥青鳳蝶				2		
<i>Eurema hecabe</i>	Common Grass Yellow	寬邊黃粉蝶				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	23/08/2022				
				UG	WL	MA	WW	WC
<i>Orthetrum prunosum</i>	Common Red Skimmer	赤褐灰蜻				2		
<i>Copera marginipes</i>	Yellow Featherlegs	黃狹扇尾						1

\*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	23/08/2022				
				UG	WL	MA	WW	WC
<i>Gambusia affinis</i>	Mosquito fish	食蚊魚						+
<i>Puntius semifasciolatus</i>	Chinese Barb	五線無鬚魮						+

\*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 August over years were compared to show the trends. Figures 1 and 2 indicate total species richness and total abundance within the site boundary respectively.

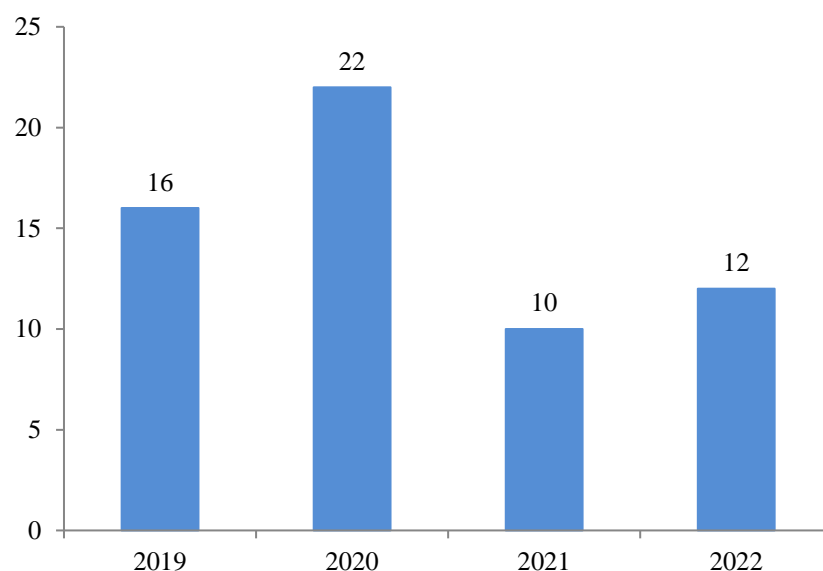


Figure 1: Bar chart showing the total species richness within site boundary from 2019 to 2022 (Actual quantity annotated at the top of each bar)

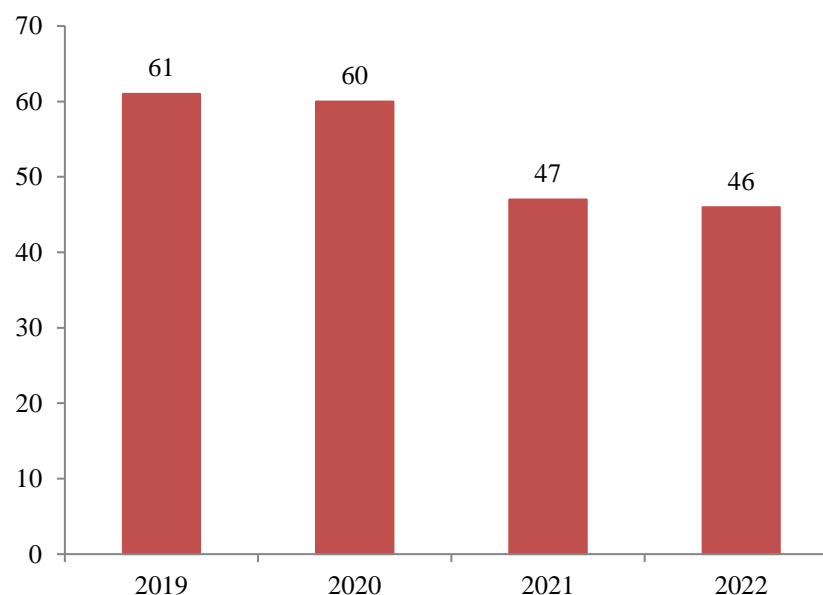


Figure 2: Bar chart showing the total abundance within site boundary from 2019 to 2022 (Actual quantity annotated at the top of each bar)



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.

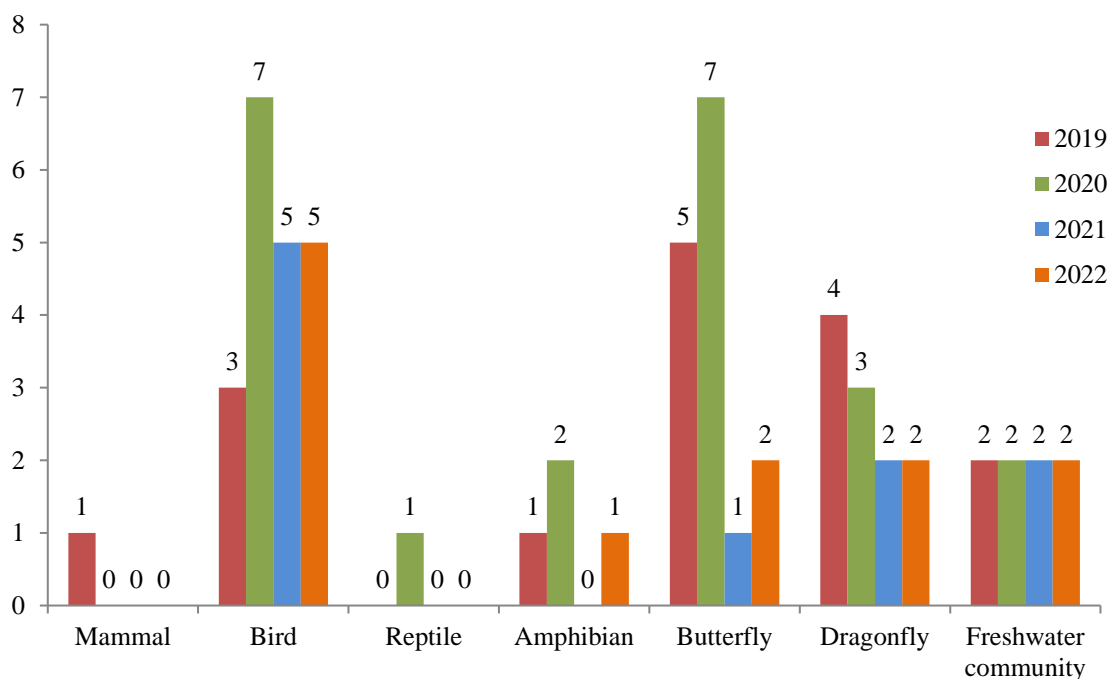


Figure 3: Bar chart showing the species richness within site boundary by taxa from 2019 to 2022  
(Actual quantity annotated at the top of each bar)

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 August over years were compared in figures 4 and 5.

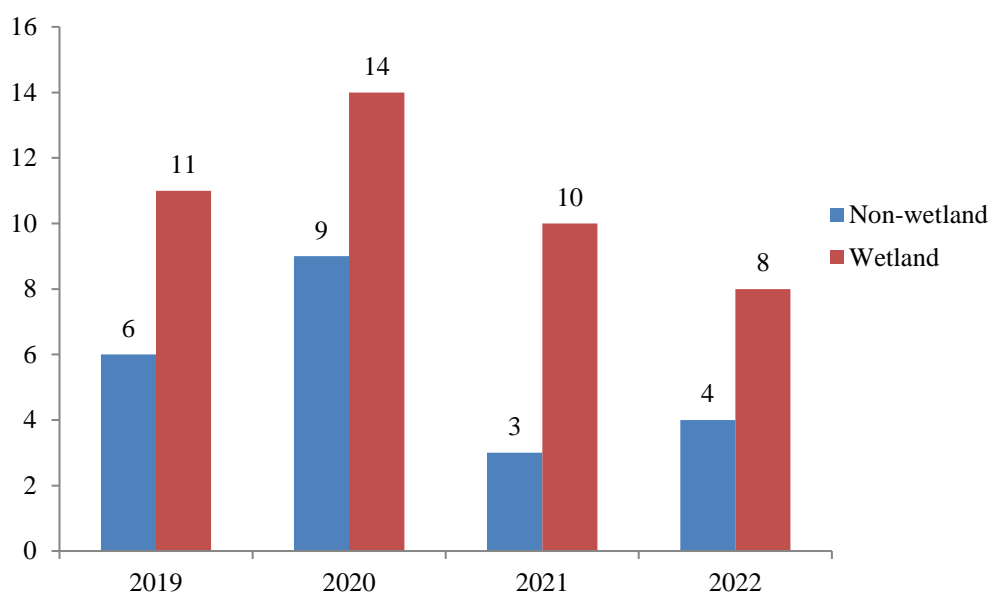


Figure 4: bar chart showing the species richness based on habitat type from 2019 to 2022  
(Actual quantity annotated at the top of each bar)



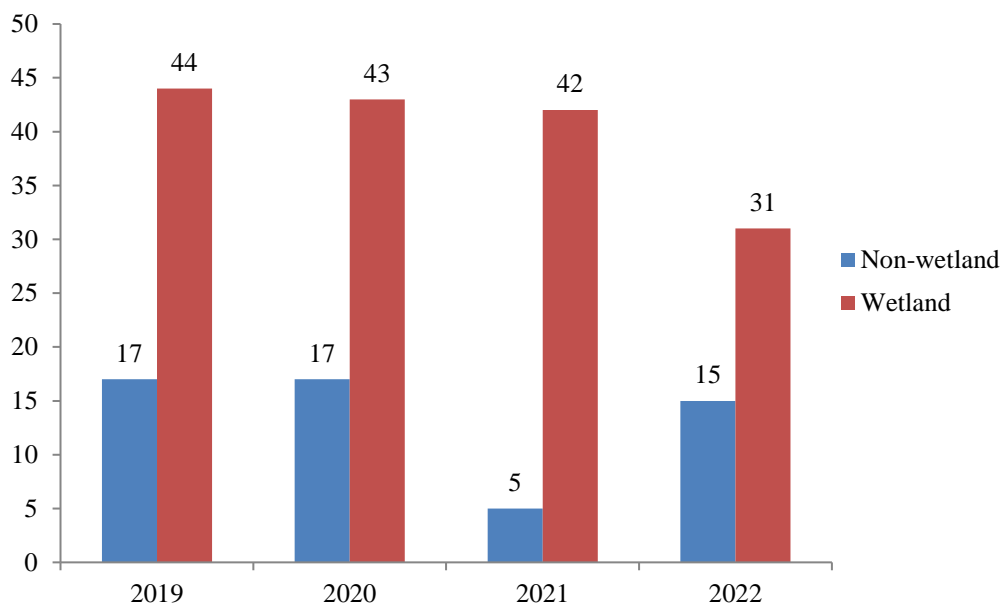


Figure 5: bar chart showing the abundance based on habitat type from 2019 to 2022  
 (Actual quantity annotated at the top of each bar)

5.4 After analysing survey results in August from 2019 to 2022, there was a decrease in species richness and abundance for wetland and non-wetland habitats. 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. Unnecessary site clearance should be avoided as well. 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.

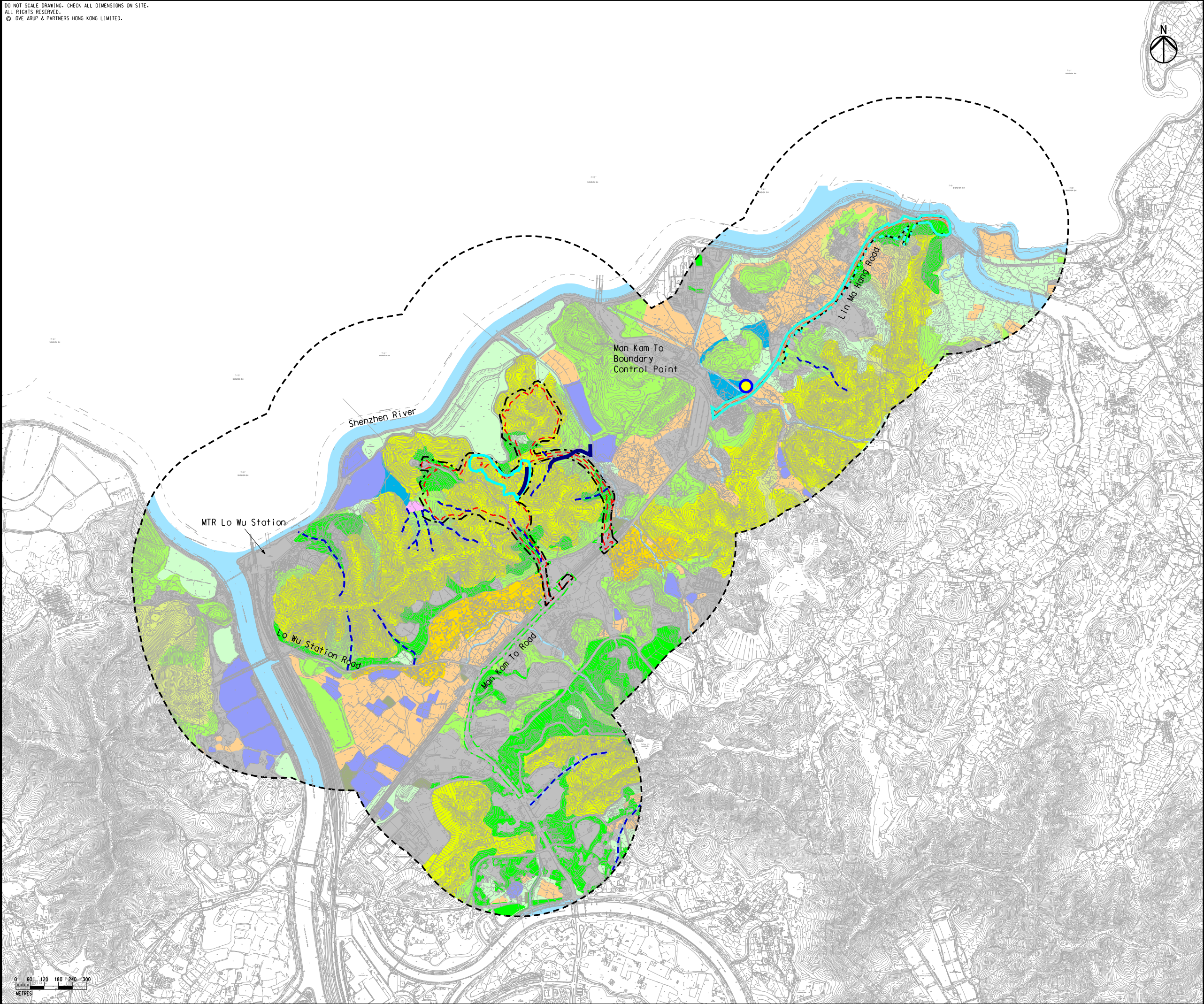


## **Appendix I – Transect Routes for Contract CV/2017/02**



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.

Printed by : 2/29/2016  
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\015 EIA\20160229 Revised FinalEIA\_v1\Ch 9 Ecology\Figure 9.4b - Habitat Map at Sandy Ridge.dgn



### 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

G	SEVENTH ISSUE	GL	02/16
F	SIXTH ISSUE	GL	01/16
E	FIFTH ISSUE	GL	12/15
D	FOURTH ISSUE	GL	10/15
Rev	Description	By	Date

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	Status		
AS SHOWN	PRELIMINARY		

COPYRIGHT RESERVED

土木工程拓展署  
Civil Engineering and Development Department



## **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:** 30/08/2022 15:30 **Weather:** Fine/ Overcast/ Rain/ Windy

Item	Mitigation Measures	Implementation			Actions/ Remarks
		Yes	No	N/A	
<b>1</b>	<b>Landscape and Visual</b>				
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:

1. Transplanted tree T2468, with sparse foliage, brown foliage and small foliage size, was found removed. According to contractor, it was found collapsed due to typhoon.

### 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-2468) - Removed

**Fig G.**



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: 30/08/2022 16:30 Weather: Fine/ Overcast/ Rain/ Windy**

Item	Mitigation Measures	Implementation			Actions/ Remarks
		Yes	No	N/A	
<b>1</b>	<b>Landscape and Visual</b>				
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	 	7 Sep 2022
Checked by	Environmental Team Leader		8 Sep 2022
	Independent Environmental Checker		14 Sep 2022



## **Appendix M**

### **Monthly Summary Waste Flow Table**



## Monthly Summary Waste Flow Table for 2022

Department: Civil Engineering and Development Department      Contract No.: CV/2016/10  
 Contract Title: Site Formation and Associated 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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	2.177	0.000	0.500	0.000	1.089	0.588	0.000	0.000	0.000	0.000	0.070
Feb	0.486	0.000	0.200	0.000	0.286	0.000	0.000	0.000	0.000	0.000	0.015
Mar	0.669	0.000	0.200	0.000	0.469	0.000	0.000	0.000	0.000	0.000	0.020
Apr	0.752	0.000	0.200	0.000	0.552	0.000	0.000	0.000	0.000	0.000	0.025
May	0.200	0.000	0.100	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.004
June	0.200	0.000	0.100	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.003
<b>Sub-total</b>	<b>4.484</b>	<b>0.000</b>	<b>1.300</b>	<b>0.000</b>	<b>2.596</b>	<b>0.588</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.137</b>
July	0.380	0.000	0.100	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.020
Aug	0.615	0.000	0.115	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.002
Sept											
Oct											
Nov											
Dec											
<b>Total</b>	<b>5.479</b>	<b>0.000</b>	<b>1.515</b>	<b>0.000</b>	<b>3.196</b>	<b>0.588</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.159</b>

- 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 2022

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	401.710	0.000	0.000	0.000	401.71	0.000	0.000	0.000	0.000	0.000	13.180
FEB	639.350	0.000	0.000	0.000	639.35	0.000	0.000	0.000	0.000	0.000	5.670
MAR	140.740	0.000	0.000	0.000	140.74	0.000	0.000	0.000	0.000	0.000	12.640
APRIL	938.880	0.000	0.000	0.000	938.88	0.000	0.000	0.000	0.000	0.000	3.670
MAY	552.820	0.000	0.000	0.000	552.82	0.000	0.000	0.000	0.000	0.000	7.080
JUN	562.680	0.000	0.000	0.000	562.68	0.000	0.000	0.000	0.000	0.000	6.570
Sub Total	3236.180	0.000	0.000	0.000	3236.18	0.000	0.000	0.000	0.000	0.000	48.810
JUL	1304.780	0.000	0.000	0.000	1304.78	0.000	0.000	0.000	0.000	0.000	0.000
AUG	606.890	0.000	0.000	0.000	606.89	0.000	0.000	0.000	0.000	0.000	2.060
SEP											
OCT											
NOV											
DEC											
Total	5147.850	0.000	0.000	0.000	5147.850	0.000	0.000	0.000	0.000	0.000	50.870

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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
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 and**

**Investigation Report**



### Complaint Log for Contract 1

Log ref.	Date of complaint	Complaint route	Reference no.	Complaint nature	Investigation finding	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 finding	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 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
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





## Fax Cover Sheet

---

To **Mr. Elvin Lam** Fax No By email

Company **Sang Hing Civil Contractors Co., Ltd**

cc

From **Nicola Hon** Date **19 August 2022**

Our Ref TCS00944/18/300/**F0434** No of Pages 8 (Incl. cover sheet)

RE **Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery**  
**Investigation Report for Complaint about the Soil/muddy water from construction site at Lin Ma Hang Road**

---

*If you do not receive all pages, or transmission is illegible, please contact the originator on (852) 2959-6059 to re-send. Should this facsimile be sent to the wrong fax number, would receiver please destroy this copy and notify Action-United Environmental Services & Consulting immediately. Thank you.*

---

Dear all,

Enclosed please find the investigation report for the captioned for your follow up action.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079**.

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**

Nicola Hon  
Environmental Consultant

Encl.

cc	CEDD	Mr. SHUM Ngai Hung, Steven	by e-mail
	ARUP (RE of Contract 2)	Mr. Anthony Lau	by e-mail
	Acuity (IEC)	Mr. Jacky Leung	by e-mail
	EPD	Mr. Alice Tang	by e-mail



**Site Formation and Associated Infrastructural Works for Development of Columbarium,  
Crematorium and Related Facilities at Sandy Ridge Cemetery**  
**Investigation Report on Environmental Complaint / Enquires**

<b>Log No.</b>	CV/2017/02 – 02
<b>Received Date by ET</b>	12 August 2022
<b>Related Contract under Investigation</b>	CV/2017/02 (Contract 2)
<b>Complaint Details</b>	要求環境署徹查麻坑路木湖路口有冇違反環保條例，此路 週邊地盤倉經常帶泥頭出 蓮麻坑路面，造成路面全部都係泥。把私人範圍及週邊政府範圍嘅河流堵塞，造成嚴重水浸。破壞環境影響生態。
<b>Location</b>	Sandy Ridge
<b>Date of Complaint</b>	14 July 2022
<b>Environmental Aspect</b>	Soil / muddy water
<b>Complainant</b>	Undisclosed
<b>Complaint Route</b>	EPD (EPD Ref.: N07/RN/00014141-22)
<b>Investigation Result</b>	<ol style="list-style-type: none"> <li>1. A public complaint was received from EPD on 14 July concerning that the soil/ muddy water from construction site at Lin Ma Hang Road, and the description of complaint in relation to environmental aspect is shown in “Complaint Details” above. In EPD’s inspection, it is suspected that the construction site under complaint is within the site boundary of subject project, which near lamppost N4221. <i>(Photo 1)</i> The Site Agent and Environmental Officer of Contractor of Contract 2 (Sang Hing) was contacted and reminded to cover the stockpile to prevent muddy water discharge.</li> <li>2. Following the complaint handling procedure in accordance with the EM&amp;A Manual, the Environmental Team shall investigate if the above is related to the Site Formation and Associated Infrastructure Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery.</li> <li>3. According to the information and photo provided, the suspected site near lamppost N4221 is the Aggregate Stockpile Area (ASA) belongs to Sang Hing. The ASA is for stockpiling of aggregate only and there is no construction activities carried out within the ASA. The current site activities conducted on Lin Ma Hang Road under Contract 2 are located at TTA1 to TTA3 for road widening and footpath construction. The complaint location and current site activities on Lin Ma Hang Road under Contract 2 are illustrated in <i>Figures 1 to 3</i>.</li> <li>4. Joint site inspections have been carried out by RE, Sang Hing and ET on weekly basis for the implementation status of mitigation measures and audit the site practice of Contractors. The observations and respective environmental mitigation measures are summarized in below. <ol style="list-style-type: none"> <li>(a) Road widening, drainage construction and noise barrier were conducted at TTA3 on Lin Ma Hang Road. No noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022. <i>(Photos 2 &amp; 3)</i></li> <li>(b) Footpath construction was conducted at TTA2 on Lin Ma Hang</li> </ol> </li> </ol>



**Site Formation and Associated Infrastructural Works for Development of Columbarium,  
Crematorium and Related Facilities at Sandy Ridge Cemetery**  
**Investigation Report on Environmental Complaint / Enquires**

	<p>Road. No noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022. <b>(Photos 4 &amp; 5)</b></p> <p>(c) Soil nail work was conducted at TTA1 on Lin Ma Hang Road. The finished slope was fully compacted and no noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022. <b>(Photo 6)</b></p> <p>(d) There was no construction activities carried out within the ASA. The unused aggregate have been covered by impervious sheet to prevent muddy water discharge. <b>(Photo 7)</b></p> <p>(e) As advised by Sang Hing, there were several private owner depots located on Lin Ma Hang Road, and carrying of mud from the private owner depots were observed occasionally. Moreover, one of the private owner depot (outside the boundary of the project) is located adjacent to the river course, which likely causing concern of blockage the rivers, flooding and environment problems. <b>(Photos 8 to 9)</b></p> <p>5. In our investigation, the current site areas on Lin Ma Hang Road under Contract 2 are generally in order and no noticeable dust and muddy discharge problem was observed during site inspection. For the concerned ASA under management of Sang Hing, the unused aggregate have been covered by impervious sheeting to prevent generation of muddy water, and Sang Hing was reminded to provide proper environmental mitigation measures within the ASA. Having noticed the adverse environmental impact arising from other private owner depots on Lin Ma Hang Road, it is considered that the complaint is unlikely attributed to the works under the Project.</p> <p>6. Nevertheless, Sang Hing was reminded to fully implement the dust mitigation measures as far as practicable. The ET will closely inspect the implementation of mitigation measures during regularly site inspection and give advice on enhancement measures, where necessary.</p>
--	---



## Photo Record



**Photo 1**

Photo of complaint location as provided by EPD. The suspected site near lamppost N4221 is the Aggregate Stockpile Area belongs to Sang Hing.



**Photo 2**

Road widening, drainage construction and noise barrier were conducted at TTA3 on Lin Ma Hang Road. No noticeable dust impact and muddy water discharge was observed during site inspection on 12 August 2022.



**Photo 3**

Road widening, drainage construction and noise barrier were conducted at TTA3 on Lin Ma Hang Road. No noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022.



**Photo 4**

Footpath construction was conducted at TTA2 on Lin Ma Hang Road. No noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022.



**Photo 5**

Footpath construction was conducted at TTA2 on Lin Ma Hang Road. No noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022.



**Photo 6**

Soil nail work was conducted at TTA1 on Lin Ma Hang Road. The finished slope was fully compacted. No noticeable dust impact and muddy water discharge was observed during inspection on 12 August 2022.





**Photo 7**

There was no construction activities carried out within the ASA. The unused aggregate have been covered by impervious sheet to prevent muddy water discharge.



**Photo 8**

As advised by Sang Hing, there were several private owner depots located on Lin Ma Hang Road, and carrying of mud from the private owner depots were observed occasionally.



**Photo 9**

Moreover, one of the private owner depot (outside the boundary of the project) is located adjacent to the river course, which likely causing concern of blockage the rivers, flooding and environment problems.









### Figure 2 Location Map



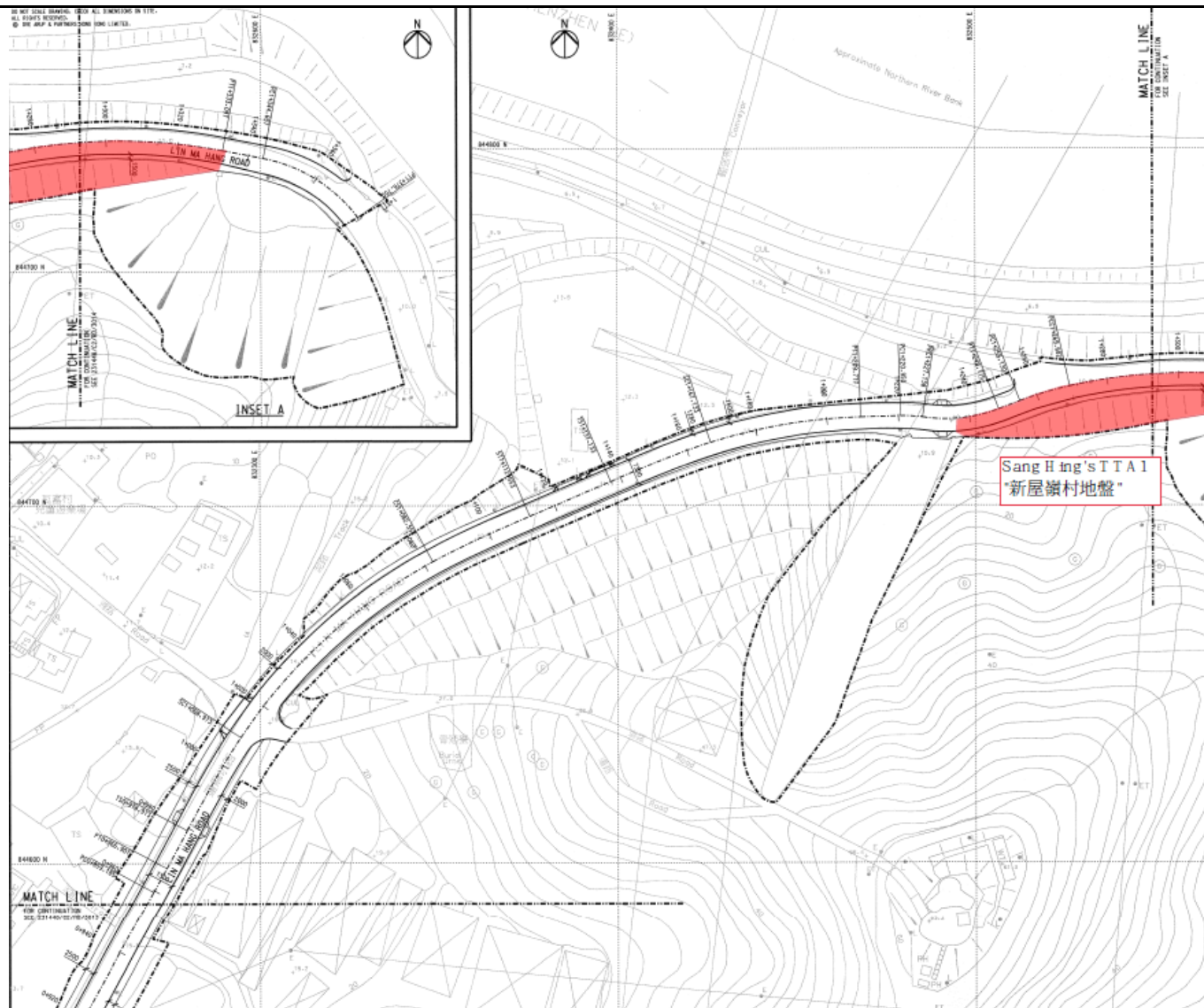


Figure 3 Location Map



## **Appendix O**

### **Implementation Schedule for Environmental Mitigation Measures**



## Environmental Mitigation Implementation Schedule – Sandy Ridge

[illegible]







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.
<b>Operational Noise (Road Traffic Noise)</b>							
S5.6.6.4	<p>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:</p> <p><i>For existing representative NSRs</i></p> <ul style="list-style-type: none"> <li>• Approx. 12m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM1);</li> <li>• Approx. 92m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM2);</li> <li>• Approx. 28m of absorptive noise barrier 3m above road level along Project Road near Sha Ling Road (MM3);</li> <li>• Approx. 51m of absorptive noise barrier 3m above road level along Project Road near Sha Ling Road (MM4);</li> <li>• Approx. 25m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM5);</li> <li>• Approx. 21m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM6);</li> <li>• Approx. 14m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM7);</li> <li>• Approx. 18m of absorptive noise barrier 3m above road level along Lin Ma Hang Road near San Uk Ling (MM8);</li> <li>• Approx. 42m of absorptive noise barrier 3m above road level along temporary pullover space opposite San Uk Ling (MM9);</li> <li>• Approx. 93m of absorptive noise barrier 3m above road level along Lin Ma Hang Road opposite San Uk Ling (MM10);</li> <li>• Approx. 185m of low noise surfacing materials along Lin Ma Hang Road near San Uk Ling (MM11);</li> <li>• For planned representative NSRs</li> <li>• Approx. 36m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM12);</li> <li>• Approx. 47m of absorptive noise barrier 5m above road level along Lin Ma Hang</li> </ul>	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*
	<p>Road near Muk Wu Nga Yiu (MM13);</p> <ul style="list-style-type: none"> <li>• Approx. 31m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM14);</li> <li>• Approx. 31m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM15);</li> <li>• Approx. 41m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM16);</li> <li>• Approx. 340m of low noise surfacing materials along Lin Ma Hang Road near Muk Wu Nga Yiu (MM17).</li> </ul>						
<b>Water Quality (Construction Phase)</b>							
S6.4.4.1 – S6.4.4.3	<p>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:</p> <p><u>General Site Operation</u></p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• 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 m³ 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• Construction works should be programmed to minimise surface excavation works during the rainy seasons (April to September). All exposed earth areas should be</li> </ul>	To minimise water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where applicable	Construction phase	<ul style="list-style-type: none"> <li>• Water Pollution Control Ordinance</li> <li>• ProPECC PN1/94</li> <li>• TM-EIAO</li> <li>• TM-DSS</li> </ul>	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>



[illegible]



[illegible]



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	<p>The following mitigation measures during operational phase are recommended:</p> <ul style="list-style-type: none"> <li>• Sewage and wastewater discharge should be connected to foul sewerage system;</li> <li>• Proper drainage systems with silt traps and oil interceptors should be installed;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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.</li> </ul>	To minimise the road runoff, wastewater discharge and erosion of seasonal watercourse during the operational phase	Highways Department /Contractors	Whole alignment	Construction / Operational Phase	<ul style="list-style-type: none"> <li>• Water Pollution Control Ordinance</li> <li>• TM-DSS</li> </ul>	For Operational phase
<b>Waste Management (Construction Waste)</b>							
S7.3.3.8	<p><u>Construction &amp; Demolition Material Management Plan (C&amp;DMMP)</u></p> <ul style="list-style-type: none"> <li>• A C&amp;DMMP shall be submitted to the Public Fill Committee for approval in the case of C&amp;D materials disposal exceeding 50,000m<sup>3</sup>.</li> </ul>	To enhance the management of construction and demolition (C&D) material including rock in public works projects	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• Project Administrative Handbook for Civil Engineering Works, 2012 Edition</li> </ul>	
S7.3.4.2	<p><u>Good Site Practice</u></p> <p>The following good site practices are recommended throughout the construction activities:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;</li> <li>• provision of sufficient waste disposal points and regular collection for disposal;</li> <li>• appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;</li> <li>• regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;</li> <li>• a Waste Management Plan (WMP) should be prepared by the contractor and submitted to the Engineer for approval.</li> </ul>	Minimise waste generation during construction	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• Waste Disposal Ordinance</li> </ul>	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>



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	<u>Waste Reduction Measures</u> 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: <ul style="list-style-type: none"> <li>segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> <li>proper storage and site practices to minimise the potential for damage and contamination of construction materials;</li> <li>plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste;</li> <li>sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete metal etc.);</li> <li>provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.</li> </ul>	Reduce waste generation	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Waste Disposal Ordinance</li> </ul>	Implemented  Implemented  Implemented  Implemented  Implemented
S7.3.4.5	<u>Storage of Waste</u> The following recommendation should be implemented to minimise the impacts: <ul style="list-style-type: none"> <li>non-inert C&amp;D materials such as soil should be handled and stored well to ensure secure containment;</li> <li>stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away;</li> <li>different locations should be designated to stockpile each material to enhance reuse;</li> </ul>	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	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> <li>ETWB TCW No. 19/2005</li> </ul>	Implemented  Implemented  Implemented
S7.3.4.6	<u>Collection and Transportation of Waste</u> The following recommendation should be implemented to minimise the impacts: <ul style="list-style-type: none"> <li>remove waste in timely manner;</li> <li>employ the trucks with cover or enclosed containers for waste transportation;</li> <li>obtain relevant waste disposal permits from the appropriate authorities; and</li> <li>disposal of waste should be done at licensed waste disposal facilities.</li> </ul>	Minimise waste impacts from storage	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Waste Disposal Ordinance</li> </ul>	Implemented Implemented Implemented Implemented
S7.3.4.8 – S7.3.4.15	<u>Excavated and C&amp;D Materials</u> 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: <ul style="list-style-type: none"> <li>maintain temporary stockpiles and reuse excavated fill material for backfilling;</li> <li>carry out on-site sorting;</li> <li>make provisions in the Contract documents to allow and promote the</li> </ul>	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance</li> <li>Waste Disposal Ordinance</li> </ul>	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*
	<ul style="list-style-type: none"> <li>• use of recycled aggregates where appropriate; and</li> <li>• implement a recording system for the amount of waste generated, recycled and disposed of for checking.</li> <li>• The recommended C&amp;D materials handling should include:</li> <li>• On-site sorting of C&amp;D materials;</li> <li>• Reuse of C&amp;D materials; and</li> <li>• Use of Standard Formwork and Planning of Construction Material purchasing.</li> </ul>						<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S7.3.4.17 – S7.3.4.18	<p><b>Chemical Waste</b></p> <p>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.</p>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• Waste Disposal (Chemical Waste) General) Regulation</li> <li>• Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</li> </ul>	Implemented
S7.3.4.19	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>• General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling.</li> <li>• 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.</li> <li>• A reputable waste collector should be employed to remove general refuse on a daily basis.</li> </ul>	Minimise production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• Waste Disposal Ordinance</li> </ul>	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S7.3.4.20	<p><u>Sewage</u></p> <ul style="list-style-type: none"> <li>• The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities.</li> <li>• Regularly collection by licensed collectors should be arranged to minimise potential environmental impacts.</li> </ul>	Minimise production of sewage impacts	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> <li>• Waste Disposal Ordinance</li> </ul>	<p>Implemented</p> <p>Implemented</p>
<b>Waste Management (Operational Waste)</b>							
S7.4.4.1	<p><u>General Refuse</u></p> <p>A reputable waste collector should be employed to remove general refuse on a daily basis.</p>	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	<ul style="list-style-type: none"> <li>• Waste Disposal Ordinance</li> </ul>	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*
<b>Land Contamination</b>							
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)	<ul style="list-style-type: none"> <li>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);</li> <li>Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management;</li> <li>Guidance Notes for Contaminated Land Assessment and Remediation; and</li> <li>Practice Guide for Investigation and Remediation of Contaminated Land</li> <li>Recommendations in Health Risk Assessment</li> </ul>	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.
<b>Ecology ( Construction Phase)</b>							
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 <b>Figure 9.11</b> of the EIA Report	Prior to construction phase	<ul style="list-style-type: none"> <li>Reinstatement and establishment requirements to be detailed in Upland Grassland Reinstatement Plan</li> <li>TM-EIAO</li> </ul>	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.	<p>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.</p> <p>The Transplantation Proposal will recommend locations of the receptor site(s), transplantation methodology, implementation programme of transplantation and post-transplantation monitoring</p>	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	<ul style="list-style-type: none"> <li>Survey findings and transplantation methodology to be detailed in Vegetation Survey Report and Transplantation Plan respectively.</li> <li>TM-EIAO.</li> </ul>	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 <b>Figure 9.11</b> of the EIA Report	Prior to construction phase	<ul style="list-style-type: none"> <li>Enhancement planting and establishment requirements to be detailed in Wooded Enhancement Proposal.</li> <li>TM-EIAO</li> </ul>	Implemented *Woodland compensation plan was submitted to EPD.
S9.7.3.1 – S9.7.3.3	<p>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.</p> <p>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).</p> <p>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.</p>	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	<ul style="list-style-type: none"> <li>ETWB TCW No. 5/2005</li> <li>TM-EIAO</li> </ul>	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	<p>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.</p> <p>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.</p> <p>Works will be restricted to daytime and any construction lighting should be designed and positioned as to not impact on adjacent ecologically sensitive areas.</p>	<p>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</p>	Contractor Project Proponent	All construction sites	Prior to commencement and during construction phase	<ul style="list-style-type: none"> <li>• TM-EIAO.</li> </ul>	
.9.7.3.7	<p>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:</p> <ul style="list-style-type: none"> <li>• Put up signs to alert site staff about any locations which are ecologically sensitive and measures to prevent accidental impacts;</li> <li>• Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering</li> </ul>	<p>Minimise impacts on hydrological condition and water quality of hillside watercourses and reduce chances of hillfires.</p>	Contractor	All construction sites	Prior to commencement and during construction phase	<ul style="list-style-type: none"> <li>• TM-EIAO.</li> </ul>	<p>Implemented</p> <p>Implemented</p>



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; <ul style="list-style-type: none"> <li>Prohibition of soil storage against trees or close to waterbodies;</li> <li>Delineation of works site to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value;</li> <li>No smoking, hot works or sources of fire close to upland grassland;</li> <li>No on-site burning of waste; and</li> <li>Waste and refuse in appropriate receptacles.</li> </ul>						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	<ul style="list-style-type: none"> <li>TM-EIAO</li> <li>WAPO</li> </ul>	Implemented during breeding season.
<b>Ecology (Operational Phase)</b>							
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 <b>Figure 9.11</b> of the EIA Report	Operational phase	<ul style="list-style-type: none"> <li>Monitoring methodology and successfulness of survival of upland grassland should follow Upland Grassland Reinstatement Plan.</li> <li>TM-EIAO.</li> </ul>	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	<ul style="list-style-type: none"> <li>Enhancement planting and establishment requirements to be detailed in Wooded Area Proposal.</li> <li>TM-EIAO.</li> </ul>	



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 <b>Figure 9.11</b> of the EIA Report			
S9.7.4.1 – S9.7.4.5	<u>Mitigation for Impacts to Water Quality and Hydrology (Operational Phase)</u> <ul style="list-style-type: none"> <li>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</li> <li>The proposed small diameter bore pile system at the foundation of the proposed platform structure.</li> </ul>	<p>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.</p> <p>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.</p> <p>The proposed small diameter bore pile system at the foundation of the</p>	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	<ul style="list-style-type: none"> <li>TM-EIAO</li> </ul>	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	<p><u>Minimise the potential indirect light disturbance on the Street Lighting on fireflies surrounding the Project Site during operational phase</u></p> <ul style="list-style-type: none"> <li>It is considered that at the detailed design stage, street lighting of similar lux/light intensity as to what is currently present is utilised.</li> </ul> <p>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.</p>	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	<p>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.</p> <p>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.</p> <p>This will require input in the detailed design phase.</p>	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
<b>Fisheries</b>							
S10.5.1.1	No loss of fish ponds is anticipated and no <i>in situ</i> 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
<b>Landscape &amp; Visual</b>							
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 and demolition 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	<ul style="list-style-type: none"> <li>• DEVB TC(W) 07/2015</li> <li>• Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB</li> </ul>	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	<ul style="list-style-type: none"> <li>• ‘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</li> </ul>	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	<ul style="list-style-type: none"> <li>Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB</li> <li>DEVB TCW No. 06/2015 – Maintenance of Vegetation and Hard Landscape Features</li> </ul>	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	<ul style="list-style-type: none"> <li>WBTC No. 36/2004 - ACABAS - submission is required to ACABAS for approval of any bridges and associated structures within the public highway</li> </ul>	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 detailed Tree Survey Report showing all identified valuable trees and OVT will be undertaken in a separate Tree Preservation and Removal Proposal.
- 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.
- 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
- 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..
- 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	<ul style="list-style-type: none"> <li>• EIAO Guidance Note No.4/2010</li> <li>• TM-EIAO</li> </ul>	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	<ul style="list-style-type: none"> <li>• EIAO Guidance Note No.4/2010</li> <li>• TM-EIAO</li> </ul>	Implemented



## **Appendix P**

### **Illustrations of Site Activities**





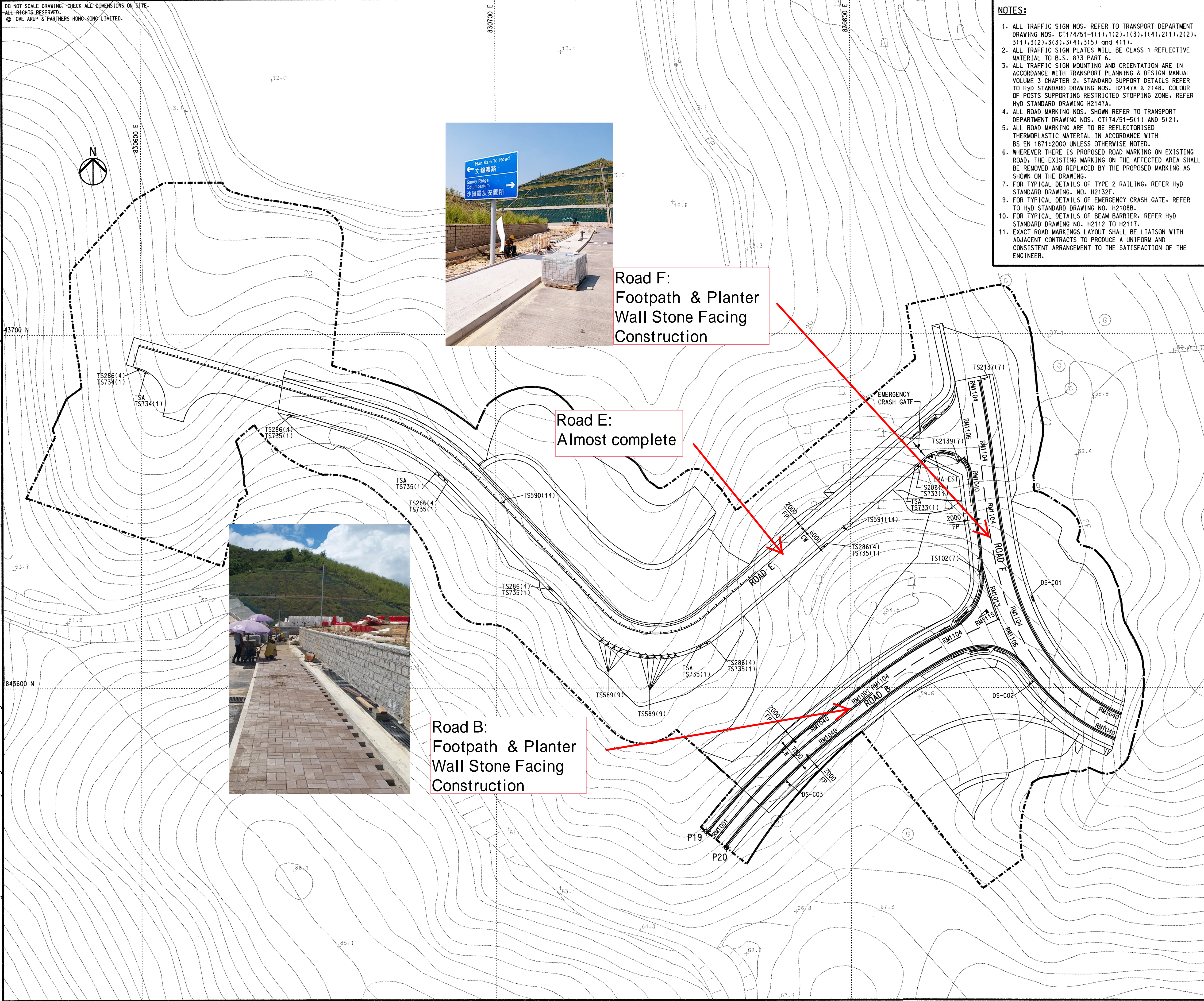






DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© DVE ARUP & PARTNERS HONG KONG LIMITED.

Printed by : 5/24/2018  
Filename : m:\Drawing\231000\231448 (Sandy Ridge D&C)\Drawing\20180524 (CV\_2017\_02 Contract Drawing\_C2\_RD\_2101-2102)\231448\_C2\_RD\_2101.dgn

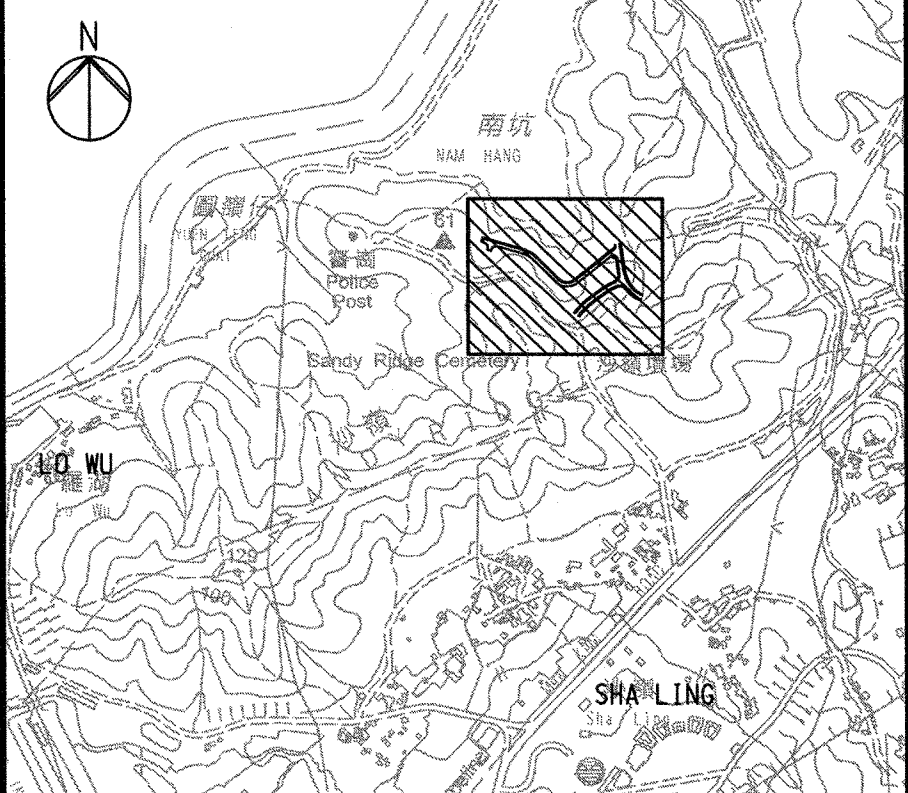


Road F:  
Footpath & Planter  
Wall Stone Facing  
Construction

Road E:  
Almost complete

Road B:  
Footpath & Planter  
Wall Stone Facing  
Construction

- NOTES:**
1. ALL TRAFFIC SIGN NOS. REFER TO TRANSPORT DEPARTMENT DRAWING NOS. CT174/51-1(1),1(2),1(3),1(4),2(1),2(2), 3(1),3(2),3(3),3(4),3(5) and 4(1).
  2. ALL TRAFFIC SIGN PLATES WILL BE CLASS 1 REFLECTIVE MATERIAL TO B.S. 873 PART 6.
  3. ALL TRAFFIC SIGN MOUNTING AND ORIENTATION ARE IN ACCORDANCE WITH TRANSPORT PLANNING & DESIGN MANUAL VOLUME 3 CHAPTER 2. STANDARD SUPPORT DETAILS REFER TO HYD STANDARD DRAWING NOS. H2147A & 2148. COLOUR OF POSTS SUPPORTING RESTRICTED STOPPING ZONE, REFER HYD STANDARD DRAWING H2147A.
  4. ALL ROAD MARKING NOS. SHOWN REFER TO TRANSPORT DEPARTMENT DRAWING NOS. CT174/51-5(1) AND 5(2).
  5. ALL ROAD MARKING ARE TO BE REFLECTORISED THERMOPLASTIC MATERIAL IN ACCORDANCE WITH BS EN 1871:2000 UNLESS OTHERWISE NOTED.
  6. WHEREVER THERE IS PROPOSED ROAD MARKING ON EXISTING ROAD, THE EXISTING MARKING ON THE AFFECTED AREA SHALL BE REMOVED AND REPLACED BY THE PROPOSED MARKING AS SHOWN ON THE DRAWING.
  7. FOR TYPICAL DETAILS OF TYPE 2 RAILING, REFER HYD STANDARD DRAWING. NO. H2132F.
  9. FOR TYPICAL DETAILS OF EMERGENCY CRASH GATE, REFER TO HYD STANDARD DRAWING NO. H2108B.
  10. FOR TYPICAL DETAILS OF BEAM BARRIER, REFER HYD STANDARD DRAWING NO. H2112 TO H2117.
  11. EXACT ROAD MARKINGS LAYOUT SHALL BE LIAISON WITH ADJACENT CONTRACTS TO PRODUCE A UNIFORM AND CONSISTENT ARRANGEMENT TO THE SATISFACTION OF THE ENGINEER.



**KEY PLAN**

**LEGEND :**

- PROPOSED WORKS SITE
- ▨ TACTILE TILES
- TS102(6) TRAFFIC SIGN NO. AND SIZE CODE
- RM1105 ROAD MARKING CODE NO.
- TYPE 2 RAILING AT JUNCTIONS AND CROSSING
- TYPE 2 RAILING
- BEAM BARRIERS
- EMERGENCY CRASH GATE

Rev	Description	By	Date

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

**SANDY RIDGE CEMETERY - TRAFFIC SIGNS, DIRECTIONAL SIGNS AND ROAD MARKINGS**

Drawing no.		Rev.	
231448/C2/RD/2101		-	
Drawn	Date	Checked	Approved
WKKL	11/17	BF	DL
Scale	1:500 @A1		Status
			CONTRACT

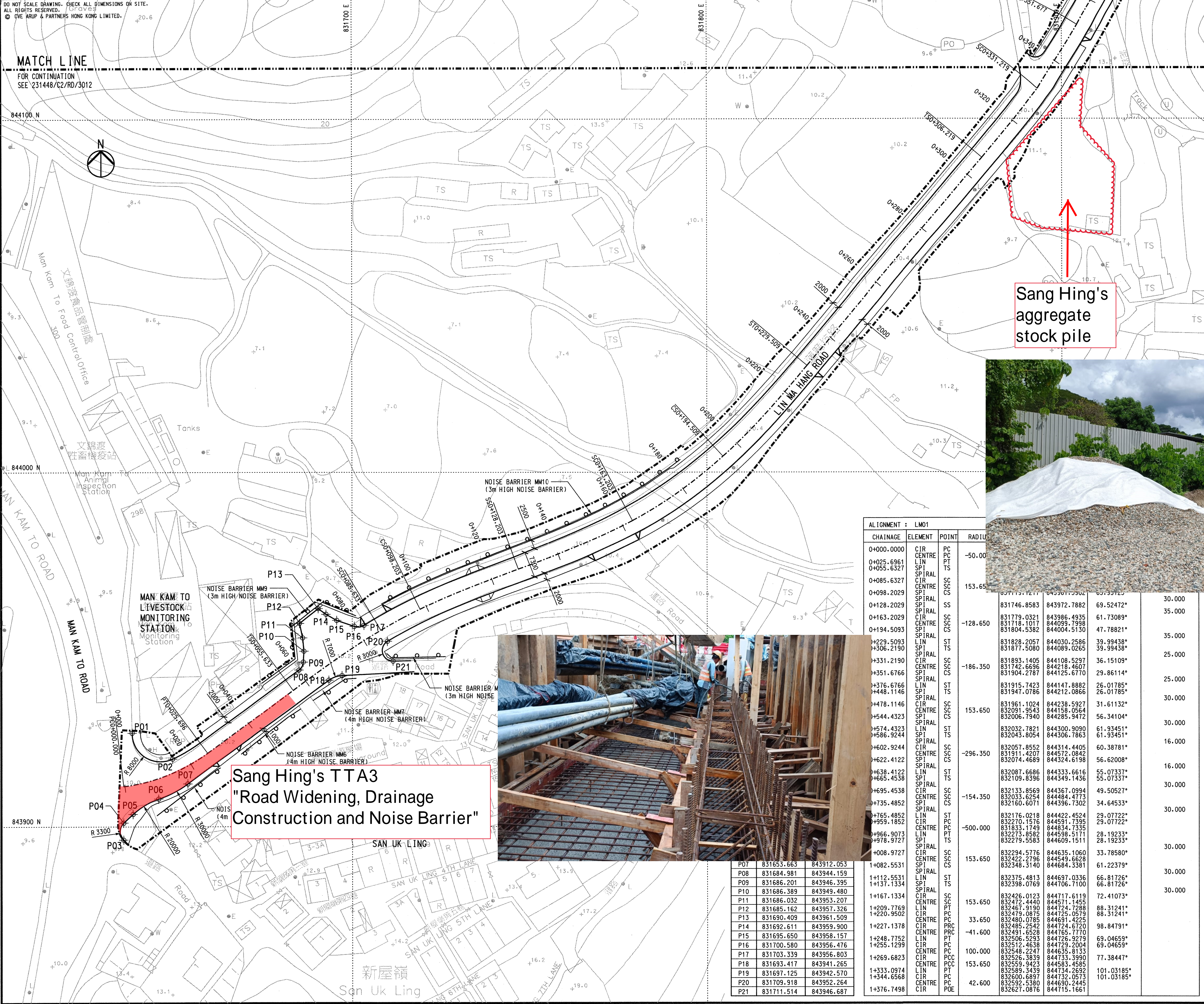
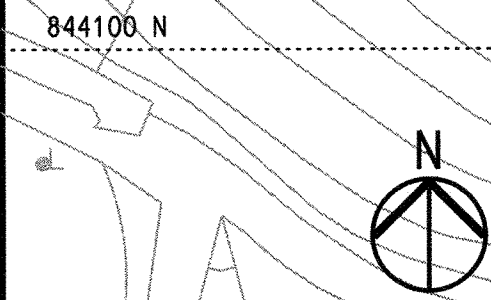
COPYRIGHT RESERVED

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



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.

MATCH LINE  
FOR CONTINUATION  
SEE 231448/C2/RD/3012

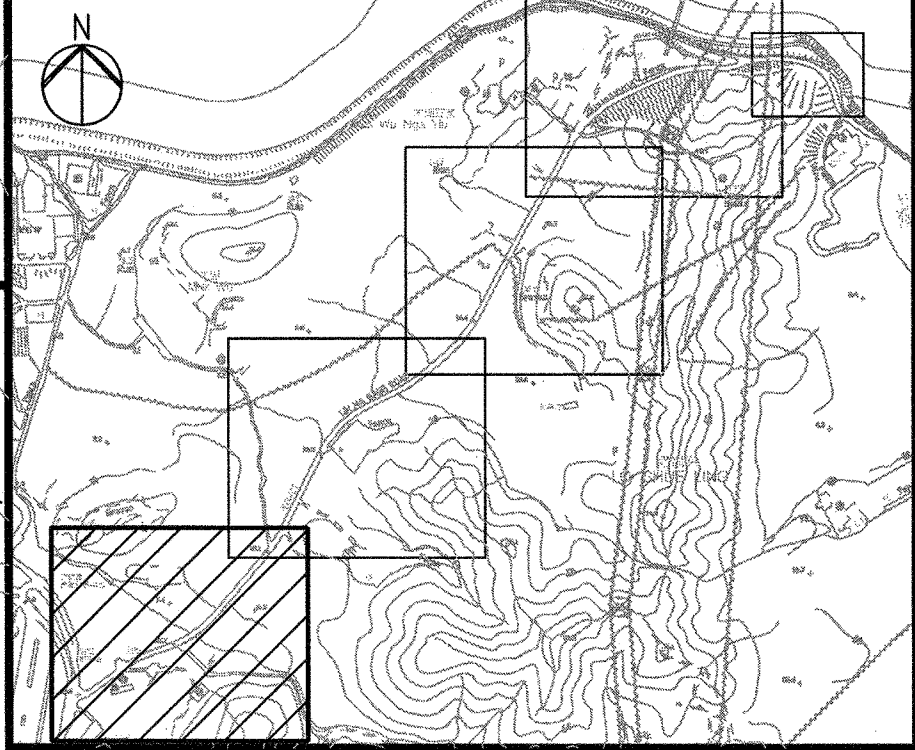


Sang Hing's TTA3  
"Road Widening, Drainage  
Construction and Noise Barrier"



P07	831653.663	843912.053
P08	831684.981	843944.159
P09	831686.201	843946.395
P10	831686.389	843949.480
P11	831686.032	843953.207
P12	831685.162	843957.326
P13	831690.409	843961.509
P14	831692.611	843959.900
P15	831695.650	843958.157
P16	831700.580	843956.476
P17	831703.339	843956.803
P18	831693.417	843941.265
P19	831697.125	843942.570
P20	831709.918	843952.264
P21	831711.514	843946.687

ALIGNMENT : LM01							
CHAINAGE	ELEMENT	POINT	RADIUS				
0+000.0000	CIR	PC	-50.00				
0+025.6961	CENTRE	PT					
0+055.6327	SPI	TS					
0+085.6327	CIR	SC	153.65				
0+098.2029	CENTRE	SC					
0+128.2029	SPI	SS					
0+163.2029	CIR	SC	-128.650				
0+194.5093	CENTRE	SC					
0+229.5093	SPI	CS					
0+306.2190	CIR	ST	-186.350				
0+331.2190	CENTRE	SC					
0+351.6766	SPI	CS					
0+376.6766	CIR	ST	153.650				
0+448.1146	CENTRE	SC					
0+478.1146	SPI	CS					
0+544.4323	CIR	ST	-296.350				
0+574.4323	CENTRE	SC					
0+586.9244	SPI	CS					
0+602.9244	CIR	ST	-154.350				
0+622.4122	CENTRE	SC					
0+638.4122	SPI	CS					
0+665.4538	CIR	ST	153.650				
0+695.4538	CENTRE	SC					
0+735.4852	SPI	CS					
0+765.4852	CIR	ST	-500.000				
0+959.1852	CENTRE	SC					
0+966.9073	SPI	CS					
0+978.9727	CIR	ST	153.650				
0+008.9727	CENTRE	SC					
1+082.5531	SPI	CS					
1+112.5531	CIR	ST	153.650				
1+137.1334	CENTRE	SC					
1+167.1334	SPI	CS					
1+209.7769	CIR	ST	33.650				
1+220.9502	CENTRE	SC					
1+227.1378	SPI	CS					
1+248.7752	CIR	ST	-41.600				
1+255.1299	CENTRE	SC					
1+269.6823	SPI	CS					
1+333.0974	CIR	ST	100.000				
1+344.6568	CENTRE	SC					
1+376.7498	SPI	CS					



### KEY PLAN

### NOTES:

1. CO-ORDINATES ARE RELATIVE TO HONG KONG METRIC GRID (1980).
2. CHAINAGES ARE IN METRES UNLESS OTHERWISE SHOWN.
3. LEVELS ARE IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (P.D.).
4. BEARINGS WHERE SHOWN ARE WHOLE CIRCLE BEARINGS IN DEGREE, MINUTE AND SECOND.
5. FOR LONGITUDINAL PROFILE OF ALIGNMENTS, REFER TO DRAWING NO. 231448/C2/RD/3031-3032.
6. THE DIMENSION AS SHOWN ON THE DRAWINGS ARE CLEAR DIMENSION UNLESS OTHERWISE SPECIFIED.

### LEGEND:



Sang Hing's  
aggregate  
stock pile

Rev	Description	By	Date
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			
LIN MA HANG ROAD - ROAD SETTING OUT PLAN (SHEET 1 OF 4)			
Drawing no.		Rev.	
231448/C2/RD/3011		-	
Drawn	Date	Checked	Approved
WM	05/17	AW	DL
Scale	1:500 @A1		Status
CONTRACT			
COPYRIGHT RESERVED			
CEDD			
土木工程拓展署			
Civil Engineering and Development Department			



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.

MATCH LINE

FOR CONTINUATION  
SEE 231448/C2/RD/3013

844300 N

844200 N

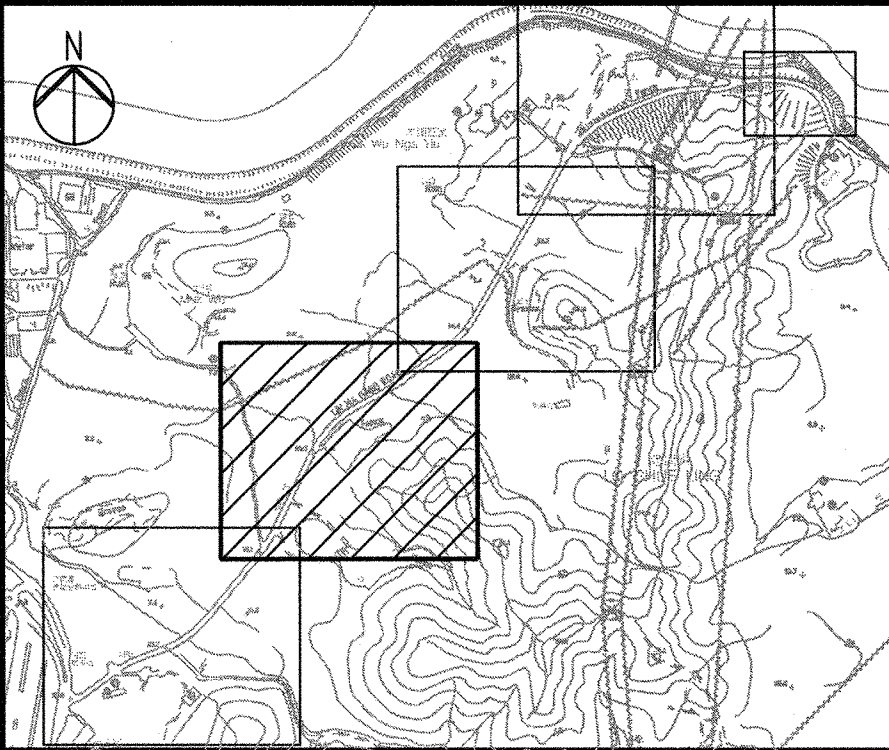
MATCH LINE

FOR CONTINUATION  
SEE 231448/C2/RD/3011

844100 N



Sang Hing's TTA2  
"Footpath Construction"



KEY PLAN

NOTE:

1. FOR NOTES AND LEGEND, PLEASE REFER TO DRAWING NO.  
231448/C2/RD/3011.

Rev	Description	By	Date

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  
**LIN MA HANG ROAD -  
ROAD SETTING OUT PLAN  
(SHEET 2 OF 4)**

Drawing no. <b>231448/C2/RD/3012</b>		Rev. -	
Drawn WM	Date 03/17	Checked AW	Approved DL
Scale 1:500 @A1		Status <b>CONTRACT</b>	

COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© OVE ARUP & PARTNERS HONG KONG LIMITED.

MATCH LINE

FOR CONTINUATION  
SEE 231448/C2/RD/3014

844500 N

844400 N

MATCH LINE

FOR CONTINUATION  
SEE 231448/C2/RD/3012



KEY PLAN

NOTE:

1. FOR NOTES AND LEGEND, PLEASE REFER TO DRAWING NO.  
231448/C2/RD/3011.

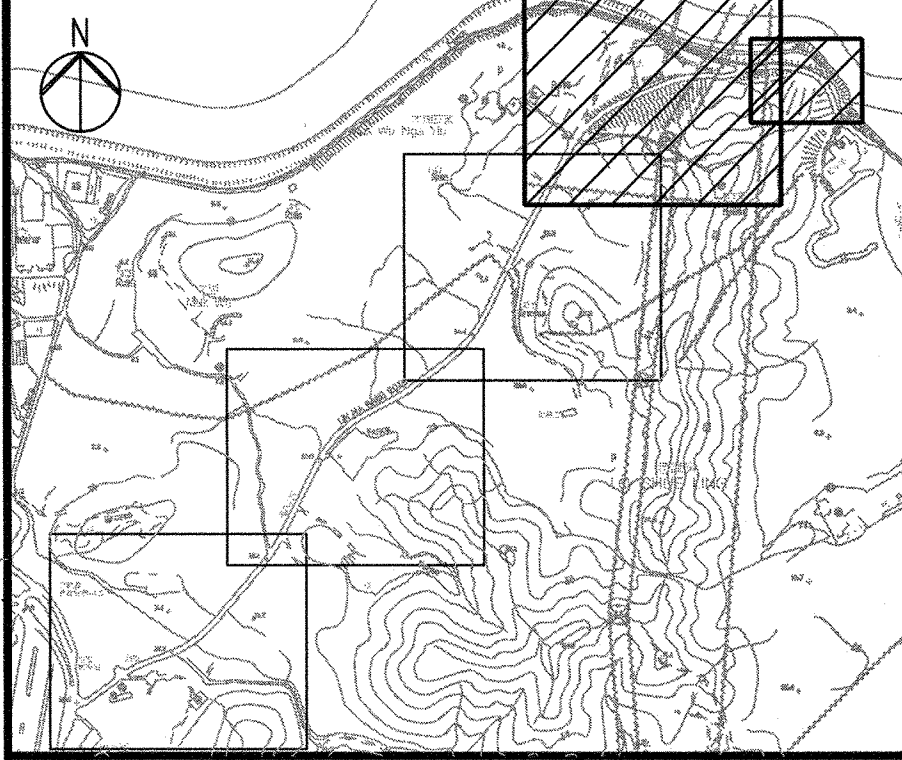
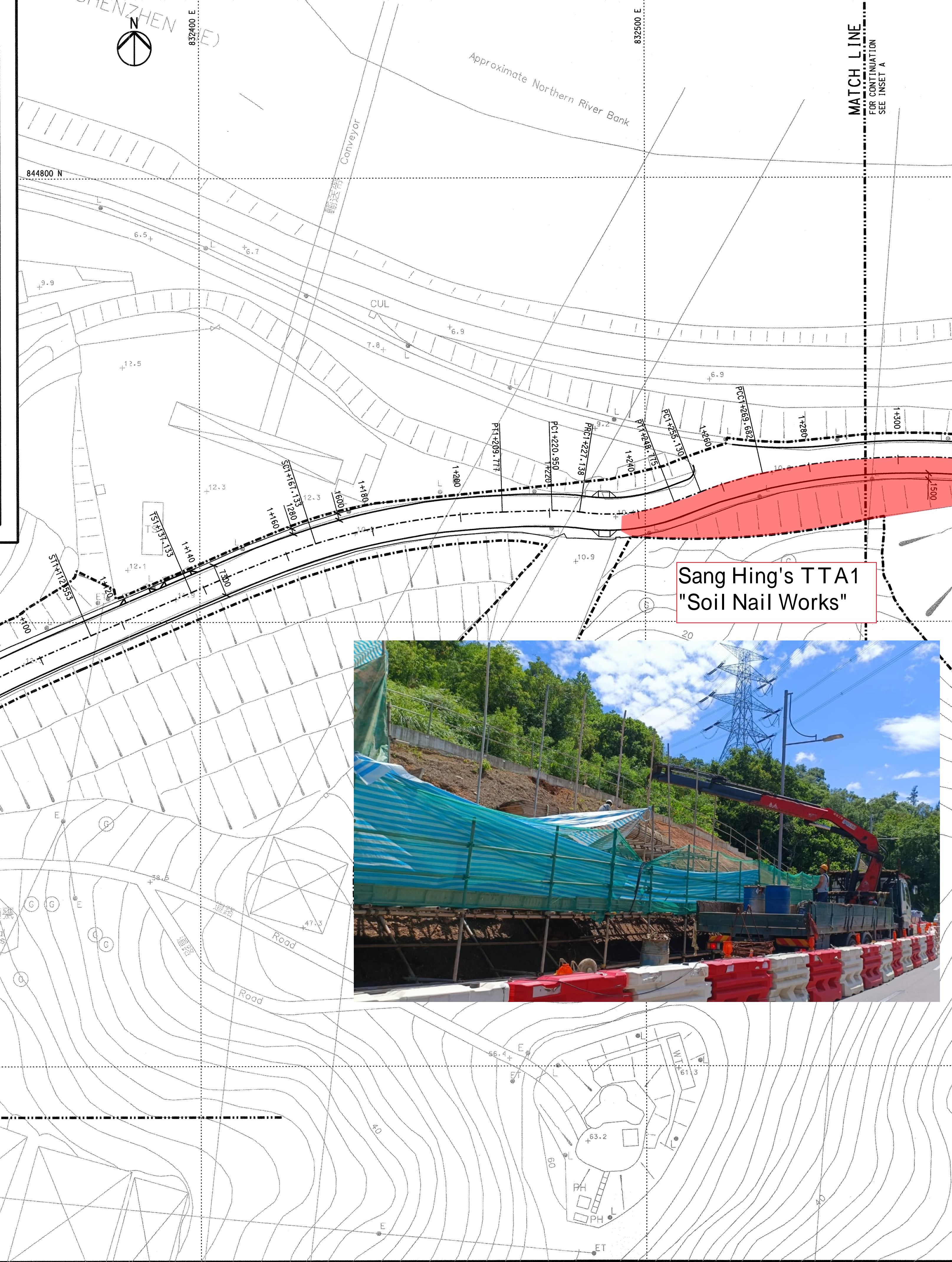
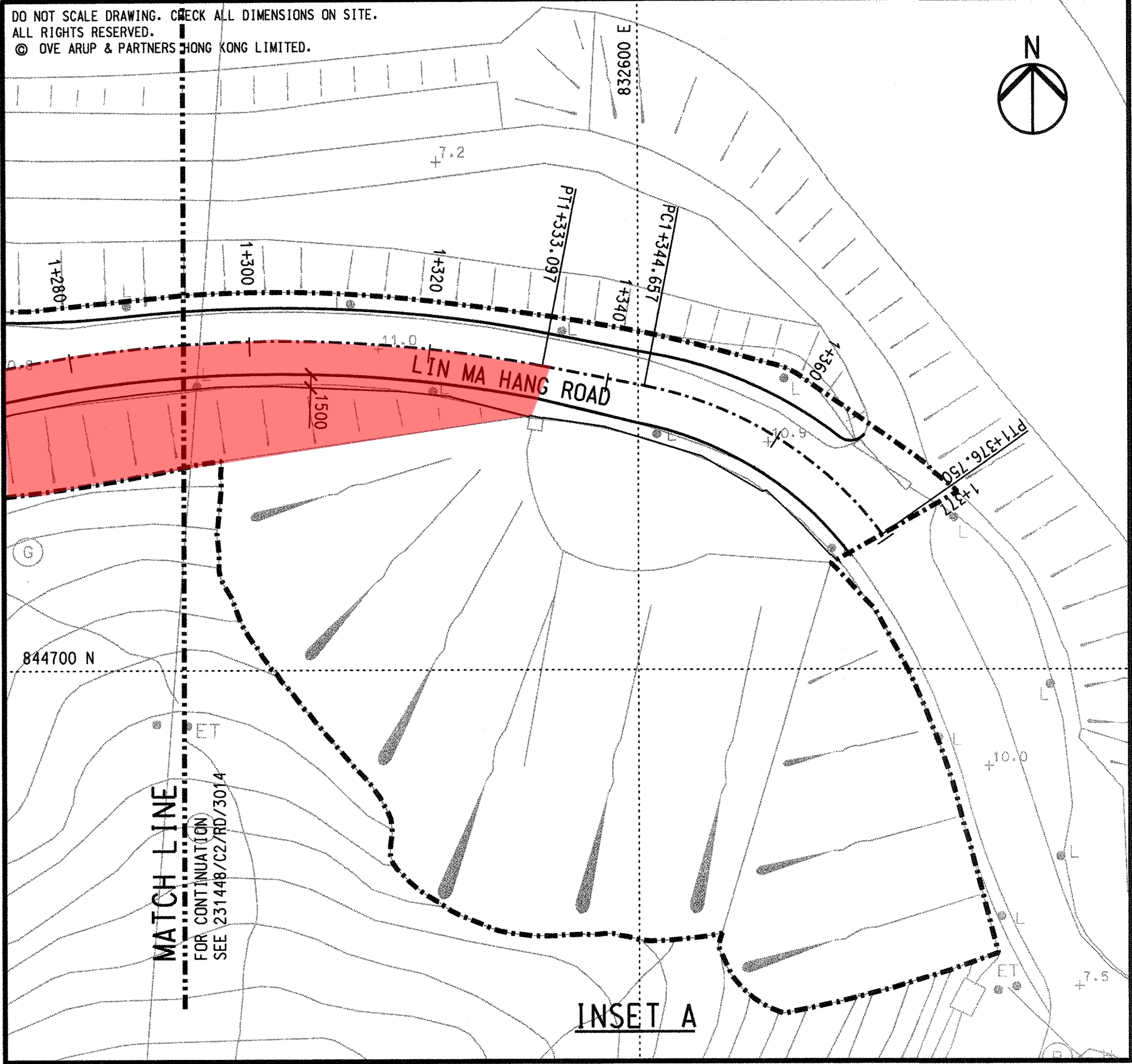
Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title:			
Contract No. CV/2017/02			
Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road			
Drawing title			
LIN MA HANG ROAD - ROAD SETTING OUT PLAN (SHEET 3 OF 4)			
Drawing no.			Rev.
231448/C2/RD/3013			-
Drawn WM	Date 05/17	Checked AM	Approved DL
Scale 1:500 @A1		Status	
CONTRACT			

COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department





NOTE:

1. FOR NOTES AND LEGEND, PLEASE REFER TO DRAWING NO. 231448/C2/RD/3011.

Rev	Description			By	Date
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					
LIN MA HANG ROAD - ROAD SETTING OUT PLAN (SHEET 4 OF 4)					
Drawing no.				Rev.	
231448/C2/RD/3014				-	
Drawn	Date	Checked	Approved		
WM	05/17	AW	DL		
Scale	Status				
1:500 @A1	CONTRACT				



## **Appendix Q**

### **Investigation Report for Exceedance**



**To**            **Mr. Elvin Lam****Fax No**            **By-email****Company**   **Sang Hing Civil Contractors Co., Ltd****cc****From**            **Nicola Hon****Date**            **11 August 2022****Our Ref**        **TCS00944/18/300/F0435**            **No of Pages**        **5**            **(Incl. cover sheet)**

**RE**            **Contract No. CV/2017/02**  
**Development of Columbarium at Sandy Ridge Cemetery – Infrastructural Works**  
**at Man Kam To Road and Lin Ma Hang Road**  
**Notification of Exceedance (NOE) and Investigation Report for Water Quality**  
**Monitoring at Locations M1, M2 and M4 on 5 August 2022**

---

*If you do not receive all pages, or transmission is illegible, please contact the originator on (852) 2959-6059 to re-send. Should this facsimile be sent to the wrong fax number, would receiver please destroy this copy and notify Action-United Environmental Services & Consulting immediately. Thank you.*

---

Dear Sir,

Please find attached the “Incident Report on Action or Limit Level Non-compliance” referenced above for your information.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079**.

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
Environmental Consultant

Encl.

**cc**

ARUP (ER)

Mr. Anthony Lau

by email

Acuity (IEC)

Mr. Jacky Leung

by email



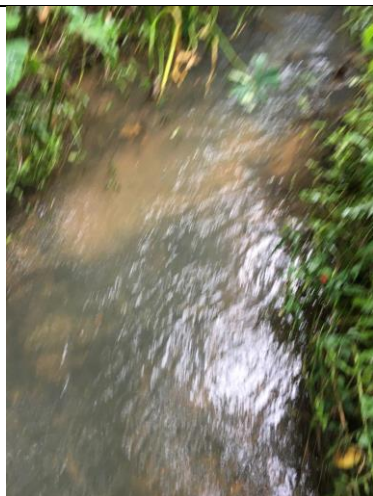
**CEDD Contract CV/2017/02**  
**Development of Columbarium at Sandy Ridge Cemetery –**  
**Infrastructural Works at Man Kam To Road and Lin Ma Hang Road**

**Incident Report on Action or Limit Level Non-compliance**

<b>Project</b>	CV/2017/12		
<b>Date</b>	5 Aug 2022	5 Aug 2022	5 Aug 2022
<b>Monitoring Location</b>	<b>M1</b>	<b>M2</b>	<b>M4</b>
<b>Time</b>	10:00	10:35	10:15
<b>Parameter</b>	Turbidity / Suspended Solids	Turbidity / Suspended Solids	Turbidity / Suspended Solids
<b>Action Level</b>	7.1 / 8.5	39.7 / 29.0	5.4 / 4.8
<b>Limit Level</b>	7.6 / 10.1	42.2 / 31.0	5.9 / 5.0
<b>Measured Level</b>	<b>20.0 / 47.5</b>	<b>36.6 / 61.5</b>	<b>23.9 / 45.0</b>
<b>Exceedance</b>	<b>Limit level / Limit level</b>	<b>N/A / Limit level</b>	<b>Limit level / Limit level</b>
<b>Possible reason for Action or Limit Level Non-compliance</b>	<ol style="list-style-type: none"> <li>1. According to the Contractor's work programme, construction of footpath was conducted on Lin Ma Hang Road and construction of road works was conducted on Sandy Ridge. The location map for water quality monitoring locations and site boundary of the Contract 2 is shown in <b>Figure 1</b>.</li> <li>2. According to the site photos taken by the monitoring team on 5 August 2022, the water flowing at M1 was slightly turbid and muddy water was observed at M2. Furthermore, water quality at M4 was visually turbid. (<b>Photos 1 to 3</b>)</li> <li>3. According to the weather data from Observatory, there was heavy rainstorm on 5 August 2022, in which Amber Rainstorm Warning Signals were issued at 4:08 and 13:08 on 5 August 2022 respectively. (<b>Photo 4</b>) Under the influence of rain, the water quality of seasonal watercourse was inevitably be affected by the stirred up sediment and erosion from the surrounding environment even outside the construction site.</li> <li>4. Site inspection by ET was conducted on 4 August 2022. 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. (<b>Photo 5 and Figure 1</b>) Construction of footpath at TTA3 was conducted near M4 on Lin Ma Hang Road, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day. (<b>Photo 6 and Figure 1</b>). Construction of road works was conducted on Sandy Ridge, most of area 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 (<b>Photo 7 and Figure 1</b>).</li> <li>5. 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 likely related to the impact of rainstorm and not caused by the work under the project.</li> </ol>		
<b>Action to be taken</b>	Investigation concluded that the exceedance was not project-related, therefore, increase of monitoring frequency is not required according to EM&A Manual 7.8.1.3.		
<b>Remark</b>	N/A		



## Photo Record



**Photo 1**

During the water quality monitoring on 5 August 2022, the water flowing at M1 was slightly turbid.



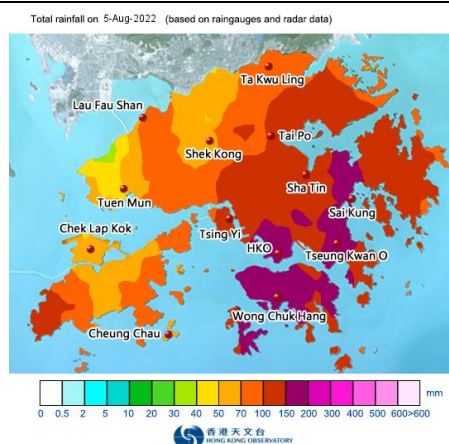
**Photo 2**

During the water quality monitoring on 5 August 2022, muddy water was observed at M2. M2 was receiving water from seasonal channel and M1, no works were carried out near location M2.



**Photo 3**

During the water quality monitoring on 5 August 2022, the water quality M4 was slightly turbid.



**Photo 4**

According to the weather data from Observatory, there was heavy rainstorm on 5 August 2022.





**Photo 5**

In view of the geographic 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. There was no works carried out near M1.



**Photo 6**

Construction of footpath was conducted near M4, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day.



**Photo 7**

Construction of road works was conducted on Sandy Ridge, most of area was hard paved and no adverse water quality impact was observed after rainy day.



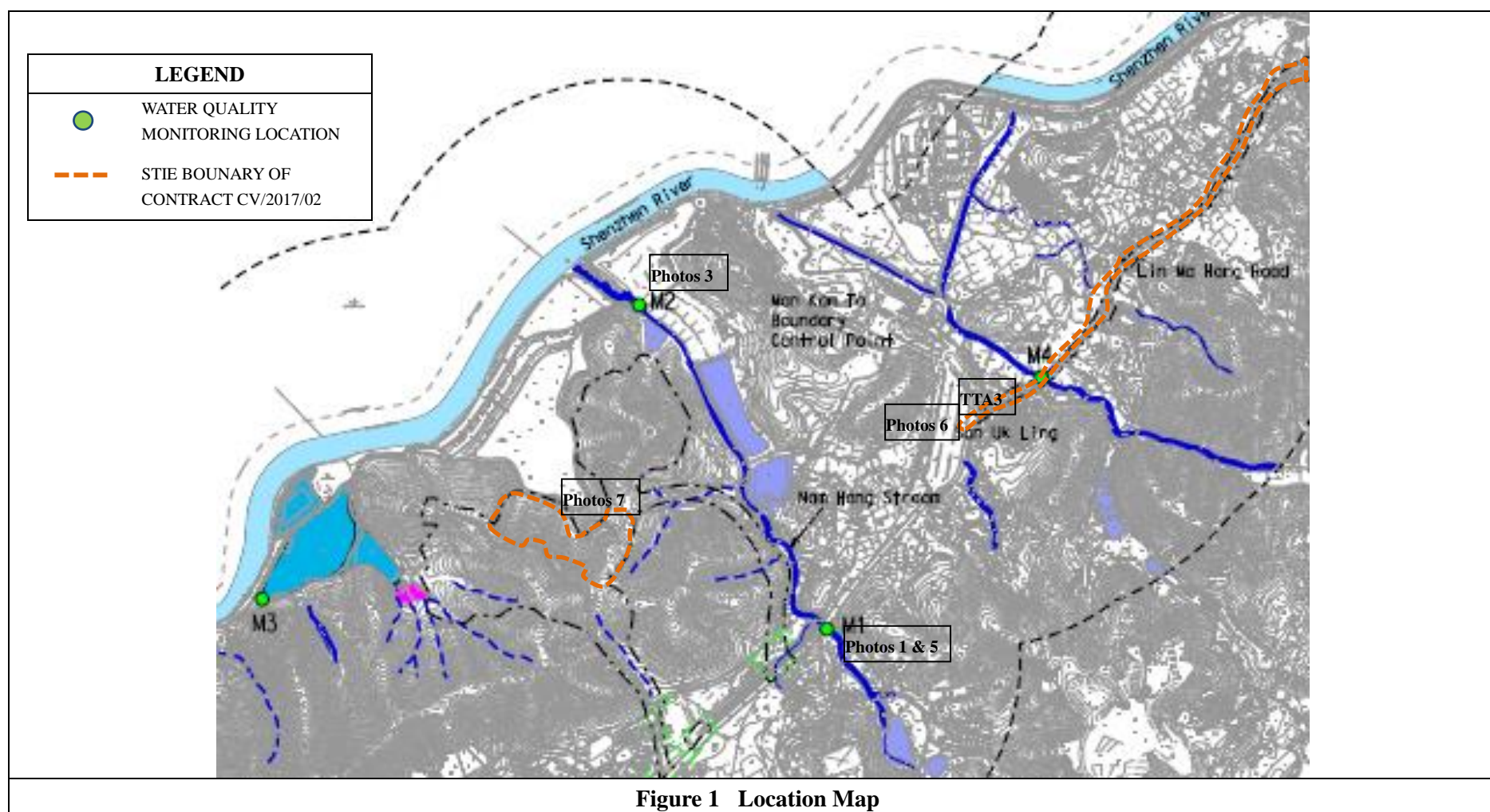


Figure 1 Location Map



**To**            **Mr. Elvin Lam****Fax No**            **By-email****Company**   **Sang Hing Civil Contractors Co., Ltd****cc****From**            **Nicola Hon****Date**            **17 August 2022****Our Ref**        TCS00944/18/300/**F0436**            **No of Pages**        6            **(Incl. cover sheet)**

**RE**            **Contract No. CV/2017/02**  
**Development of Columbarium at Sandy Ridge Cemetery – Infrastructural Works**  
**at Man Kam To Road and Lin Ma Hang Road**  
**Notification of Exceedance (NOE) and Investigation Report for Water Quality**  
**Monitoring at Locations M1, M2 and M4 on 10 and 12 August 2022**

*If you do not receive all pages, or transmission is illegible, please contact the originator on (852) 2959-6059 to re-send. Should this facsimile be sent to the wrong fax number, would receiver please destroy this copy and notify Action-United Environmental Services & Consulting immediately. Thank you.*

Dear Sir,

Please find attached the “Incident Report on Action or Limit Level Non-compliance” referenced above for your information.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079**.

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
Environmental Consultant

Encl.

**cc**

ARUP (ER)

Mr. Anthony Lau

by email

Acuity (IEC)

Mr. Jacky Leung

by email



**CEDD Contract CV/2017/02**  
**Development of Columbarium at Sandy Ridge Cemetery –**  
**Infrastructural Works at Man Kam To Road and Lin Ma Hang Road**

**Incident Report on Action or Limit Level Non-compliance**

Project	CV/2017/12					
Date	10 Aug	12 Aug	10 Aug	12 Aug	10 Aug	12 Aug
Monitoring Location	M1		M2		M4	
Time	9:30	10:10	10:00	10:50	10:35	11:20
Parameter	Turbidity / Suspended Solids		Turbidity / Suspended Solids		Turbidity / Suspended Solids	
Action Level	7.1 / 8.5		39.7 / 29.0		5.4 / 4.8	
Limit Level	7.6 / 10.1		42.2 / 31.0		5.9 / 5.0	
Measured Level	22.7 / 47.5	58.2 / 235.0	36.5 / 50.5	42.4 / 65.0	26.9 / 33.5	46.0 / 99.0
Exceedance	Limit Level / Limit Level	Limit Level / Limit Level	N/A / Limit Level	Limit Level / Limit Level	Limit level / Limit level	Limit level / Limit level
Possible reason for Action or Limit Level Non-compliance	<ol style="list-style-type: none"> <li>1. According to the Contractor's work programme, construction of footpath was conducted on Lin Ma Hang Road and construction of road works was conducted on Sandy Ridge. The location map for water quality monitoring locations and site boundary of the Contract 2 is shown in <b>Figure 1</b>.</li> <li>2. According to the site photos taken by the monitoring team on 10 and 12 August 2022, the water flowing at M1 was slightly turbid/ turbid and muddy water was observed at M2. Furthermore, water quality at M4 was visually turbid. (<b>Photos 1 to 6</b>)</li> <li>3. According to the weather data from Observatory, there was successive heavy rainstorm on 10 to 12 August 2022, in which Amber Rainstorm Warning Signals were issued at 12:15 on 12 August 2022. (<b>Photos 7 &amp; 8</b>) Under the influence of rain, the water quality of seasonal watercourse was inevitably be affected by the stirred up sediment and erosion from the surrounding environment even outside the construction site.</li> <li>4. Site inspection by ET was conducted on 11 August 2022. 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. (<b>Photo 9 and Figure 1</b>) Construction of footpath at TTA3 was conducted near M4 on Lin Ma Hang Road, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day. (<b>Photo 10 and Figure 1</b>). Construction of road works was conducted on Sandy Ridge, most of area 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 (<b>Photo 11 and Figure 1</b>).</li> <li>5. 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 likely related to the impact of rainstorm and not caused by the work under the project.</li> </ol>					
Action to be taken	Investigation concluded that the exceedance was not project-related, therefore, increase of monitoring frequency is not required according to EM&A Manual 7.8.1.3.					
Remark	N/A					



---

**Photo Record****Photo 1**

During the water quality monitoring on 10 August 2022, the water flowing at M1 was slightly turbid.

**Photo 2**

During the water quality monitoring on 12 August 2022, the water flowing at M1 was turbid.

**Photo 3**

During the water quality monitoring on 10 August 2022, muddy water was observed at M2. M2 was receiving water from seasonal channel and M1, no works were carried out near location M2.

**Photo 4**

During the water quality monitoring on 12 August 2022, muddy water was observed at M2. M2 was receiving water from seasonal channel and M1, no works were carried out near location M2.





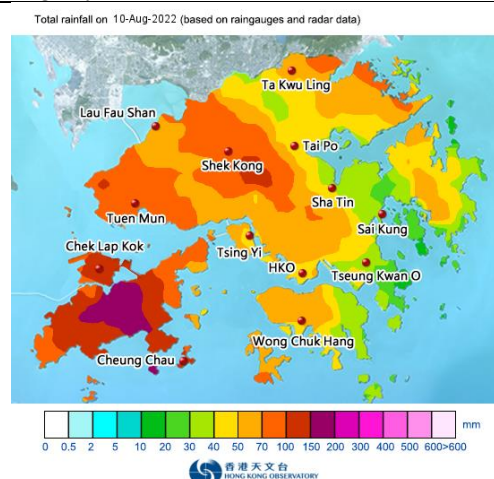
**Photo 5**

During the water quality monitoring on 10 August 2022, the water quality M4 was slightly turbid.



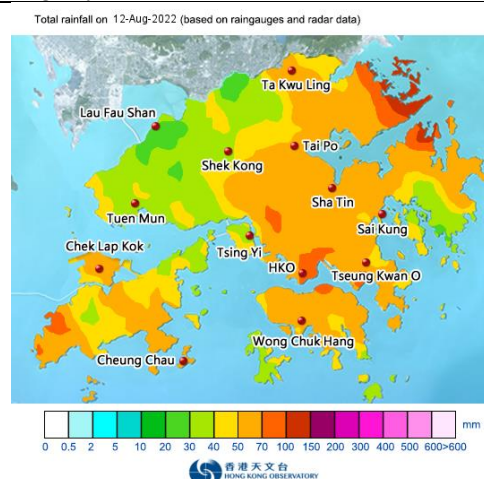
**Photo 6**

During the water quality monitoring on 12 August 2022, the water quality M4 was slightly turbid.



**Photo 7**

According to the weather data from Observatory, there was heavy rainstorm on 10 August 2022.



**Photo 8**

According to the weather data from Observatory, there was heavy rainstorm on 12 August 2022.





**Photo 9**

In view of the geographic 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. There was no works carried out near M1.



**Photo 10**

Construction of footpath was conducted near M4, there was no discharge in view of the work nature and no adverse water quality impact was observed after rainy day.



**Photo 11**

Construction of road works was conducted on Sandy Ridge, most of area was hard paved and no adverse water quality impact was observed after rainy day.



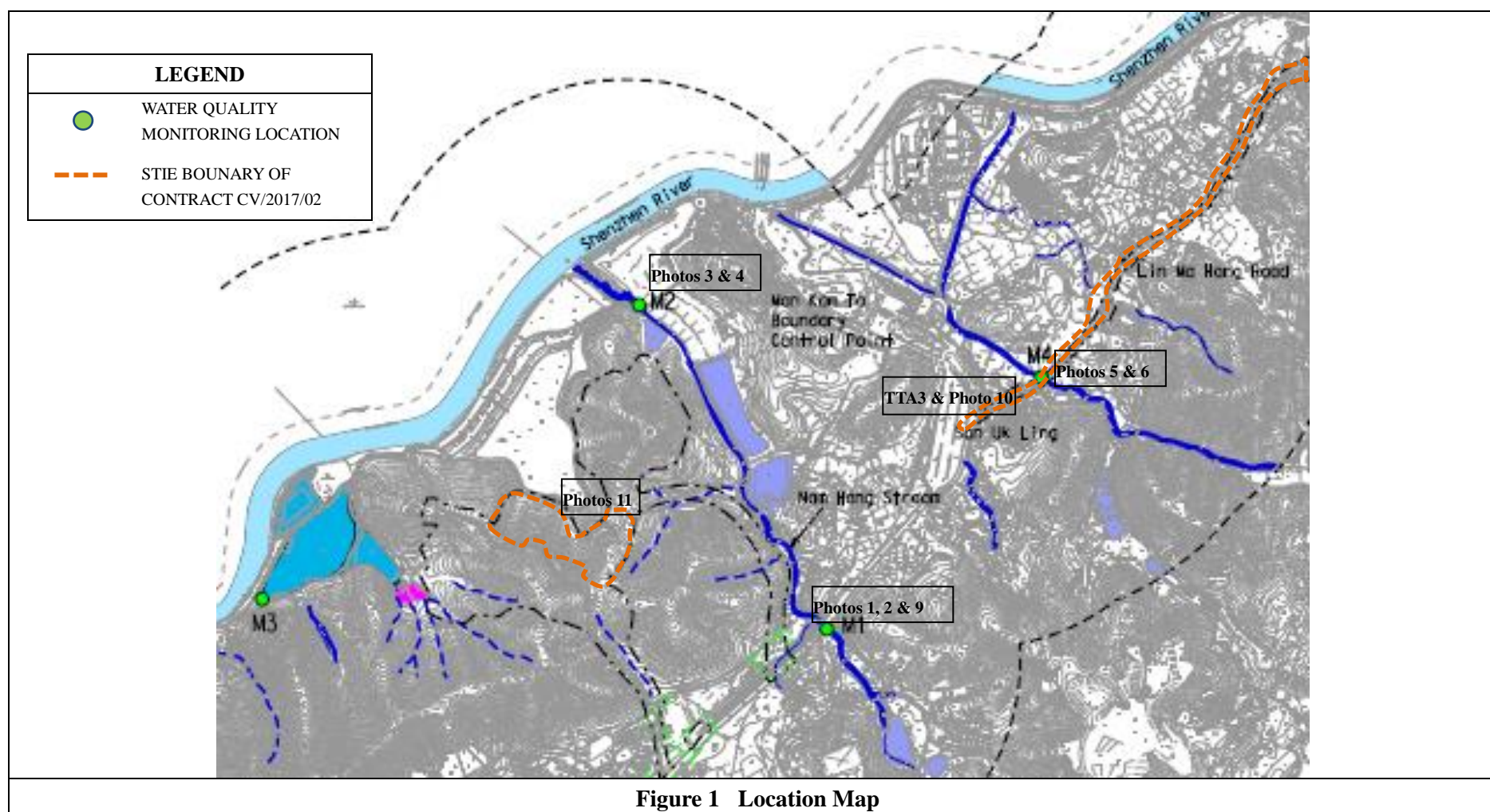


Figure 1 Location Map



**To**            **Mr. Elvin Lam****Fax No**            **By-email****Company**   **Sang Hing Civil Contractors Co., Ltd****cc****From**            **Nicola Hon****Date**              **24 August 2022****Our Ref**        TCS00944/18/300/**F0437****No of Pages**        **5**            **(Incl. cover sheet)**

**RE**                **Contract No. CV/2017/02**  
**Development of Columbarium at Sandy Ridge Cemetery – Infrastructural Works**  
**at Man Kam To Road and Lin Ma Hang Road**  
**Notification of Exceedance (NOE) and Investigation Report for Water Quality**  
**Monitoring at Locations M1 and M2 on 17 and 19 August 2022**

*If you do not receive all pages, or transmission is illegible, please contact the originator on (852) 2959-6059 to re-send. Should this facsimile be sent to the wrong fax number, would receiver please destroy this copy and notify Action-United Environmental Services & Consulting immediately. Thank you.*

Dear Sir,

Please find attached the “Incident Report on Action or Limit Level Non-compliance” referenced above for your information.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079**.

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
Environmental Consultant

Encl.

**cc**

ARUP (ER)

Mr. Anthony Lau

by email

Acuity (IEC)

Mr. Jacky Leung

by email



**CEDD Contract CV/2017/02**  
**Development of Columbarium at Sandy Ridge Cemetery –**  
**Infrastructural Works at Man Kam To Road and Lin Ma Hang Road**

**Incident Report on Action or Limit Level Non-compliance**

Project	CV/2017/12			
Date	17 Aug 2022	19 Aug 2022	17 Aug 2022	19 Aug 2022
Monitoring Location	<b>M1</b>		<b>M2</b>	
Time	10:00	9:30	10:40	10:50
Parameter	Turbidity / Suspended Solids		Turbidity / Suspended Solids	
Action Level	7.1 / 8.5		39.7 / 29.0	
Limit Level	7.6 / 10.1		42.2 / 31.0	
Measured Level	<b>45.7 / 40.5</b>	<b>50.9 / 48.5</b>	<b>34.9 / 68.0</b>	<b>37.1 / 59.5</b>
Exceedance	<b>Limit Level /</b> <b>Limit Level</b>	<b>Limit Level /</b> <b>Limit Level</b>	<b>N/A /</b> <b>Limit Level</b>	<b>N/A /</b> <b>Limit Level</b>
<b>Possible reason for Action or Limit Level Non-compliance</b>	<ol style="list-style-type: none"> <li>1. According to the Contractor's work programme, construction of footpath was conducted on Lin Ma Hang Road and construction of road works was conducted on Sandy Ridge. The location map for water quality monitoring locations and site boundary of the Contract 2 is shown in <b>Figure 1</b>.</li> <li>2. According to the site photos taken by the monitoring team on 17 and 19 August 2022, muddy water was observed at M1 and M2. (<b>Photos 1 to 4</b>)</li> <li>3. According to the weather data from Observatory, there was successive heavy rainstorm on 17 to 19 August 2022, in which Amber Rainstorm Warning Signals were issued at 16:10 on 17 August 2022. (<b>Photos 5 &amp; 6</b>) Under the influence of rain, the water quality of seasonal watercourse was inevitably be affected by the stirred up sediment and erosion from the surrounding environment even outside the construction site.</li> <li>4. Site inspection by ET was conducted on 18 August 2022. 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. (<b>Photo 7 and Figure 1</b>) Construction of road works was conducted on Sandy Ridge, most of area was hard paved / hydroseeded and no adverse water quality impact was observed. Contribution of polluted water to Nam Hang Road to M2 through seasonal channel was unlikely (<b>Photos 8 &amp; 9 and Figure 1</b>).</li> <li>5. 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 likely related to the impact of rainstorm and not caused by the work under the project.</li> </ol>			
<b>Action to be taken</b>	Investigation concluded that the exceedance was not project-related, therefore, increase of monitoring frequency is not required according to EM&A Manual 7.8.1.3.			
<b>Remark</b>	N/A			



**Photo Record****Photo 1**

During the water quality monitoring on 17 August 2022, the water flowing at M1 was slightly turbid.

**Photo 2**

During the water quality monitoring on 19 August 2022, the water flowing at M1 was turbid.

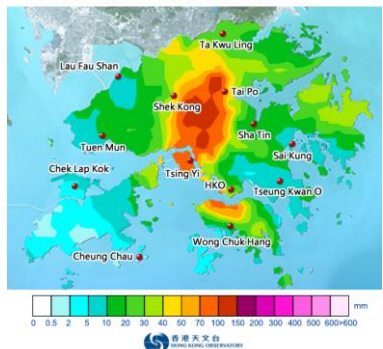
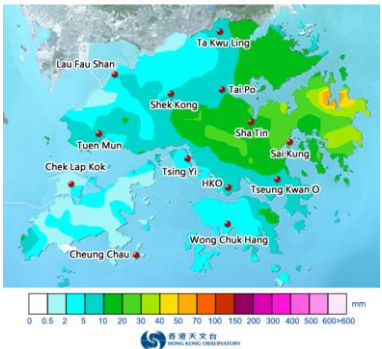



**Photo 3**

During the water quality monitoring on 17 August 2022, muddy water was observed at M2. M2 was receiving water from seasonal channel and M1, no works were carried out near location M2.

**Photo 4**

During the water quality monitoring on 19 August 2022, muddy water was observed at M2. M2 was receiving water from seasonal channel and M1, no works were carried out near location M2.



<p>Total rainfall on 17-Aug-2022 (based on raingauges and radar data)</p>  <p>Photo 5</p> <p>According to the weather data from Observatory, there was heavy rainstorm on 17 August 2022.</p>	<p>Total rainfall on 19-Aug-2022 (based on raingauges and radar data)</p>  <p>Photo 6</p> <p>According to the weather data from Observatory, it was rainy on 19 August 2022.</p>
 <p>Photo 7</p> <p>In view of the geographic 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. There was no works carried out near M1.</p>	 <p>Photo 8</p> <p>Construction of road works was conducted on Sandy Ridge, most of area was hard paved and no adverse water quality impact was observed.</p>
 <p>Photo 9</p> <p>Most of area on Sandy Ridge was hard paved and hydroseeded and no adverse water quality impact was observed.</p>	<p>N/A</p>



